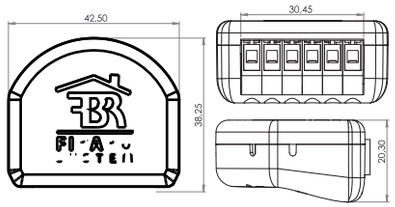
OPERATING MANUAL
UNIVERSAL DIMMER
FGD-212-EN-A-v1.01

Remotely controlled light dimming module is designed to work with various types of light sources. It may be connected to two-wire or three-wire cable so it can operate with or without neutral lead. Fibaro Dimmer can switch or dim connected light source either through radio waves or through the wall switch connected directly to it. New Fibaro Dimmer is equipped with an algorithm of smart light source detection which makes configuration easier and ensures high compatibility of the device. It may be used as a switch with non-dimmable light sources (in 3-wire connection).

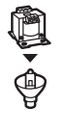
- 230V operated conventional incandescent and halogen light sources
- 12V operated ELV halogen lamps and dimmable LED bulbs (with electronic transformers)
- 12V operated MLV halogen lamps (with ferromagnetic transformers)
- dimmable LED bulbs
- dimmable compact fluorescent CFL tube lamps
- supported dimmable light sources (power factor > 0.5) with minimal power of 5VA using FGB-002 (depending on the type of load)

- compact fluorescent CFL tube lamps with electronic ballast
- fluorescent tube lamps with electronic ballast
- LED bulbs (power factor > 0.7)
- supported light sources (power factor > 0.5) with minimal power of 5VA using FGB-002 (depending on the type of load)

Power supply:	220-240V ~ 50Hz
Power consumption:	< 1.3W
Operational temperature:	0-35°C
Dimensions (L x W x H):	42.5 x 38.25 x 20.3 mm
For installation in boxes:	Ø ≥ 50mm
Rated load current:	0.25-1.1A
Device temperature protection:	105°C
Overcurrent protection:	required external 10A circuit breaker
Active element:	semiconductor electronic switch ε
Device control:	remotely - radio waves directly - external switch
Radio protocol:	Z-Wave
Radio signal power:	up to 1mW
Radio Frequency:	868.4, 869.85 MHz EU; 908.4, 916.0 MHz US; 921.4, 919.8 MHz ANZ; 869.0 MHz RU; 919.8 MHz HK; 868.1 MHz MY; 865.2 MHz IN; 915.0 Mhz - 917.0 Mhz IL; 922.0 MHz - 926.0 MHz JP; 868.4 MHz CN, KR;
Range:	up to 50 m outdoors up to 30 m indoors (depending on building materials)
Comply with EU directives:	RoHS 2011/65/EU LVD 2006/95/EC EMC 2004/108/EC R&TTE 1999/5/EC



- Compatible with any Z-Wave or Z-Wave+ Controller
- Controlled by FIBARO Home Center or any other Z-Wave controller
- Active element: semiconductor electronic switch
- Electronic switch is an electronic extension unit
- Advanced microprocessor control
- Implemented algorithm of smart light source detection
- Auto-adjustment of the appropriate control mode to connected load
- Active power and energy metering functionality
- Soft start function
- Memory of the last lighting level settings
- Works with various types of switches momentary, toggle, three-way, etc.
- To be installed in wall switch boxes of dimensions allowing for installation, conforming to provisions of applicable regulations

FGD-212	220-240 V~
1  incadescent lamp	50-250W
2  ferromagnetic transformer	50-225VA
3  fluorescent tube lamp (compact / with electronic ballast), electronic transformer, LED	50-200VA

1) resistive load (R) - trailing edge
2) resistive-inductive load (RL) - leading edge
3) resistive-capacitive load (RC) - trailing edge

FIBARO is a wireless system, based on Z-Wave technology. FIBARO provides many advantages when compared to similar systems. In general, radio systems create a direct connection between the receiver and transmitter. But the radio signal is weakened by various obstacles located on its path (apartment walls, furniture, etc.) and in extreme cases it fails to transfer required data. The advantage of FIBARO system is that its devices apart from being transmitters and receivers of signals, they are also a signal repeater. When a direct connection path between the transmitter and the receiver can not be established, the connection may be achieved through other intermediate devices.

FIBARO is a bi-directional wireless system. It means that the signal is not only sent to the receivers but also the receivers send the confirmation of its reception. This operation confirms their status so to check whether they are active. Safety of the FIBARO system transmission is comparable to the safety of transmission in data bus wired systems.

FIBARO operates in the free band for data transmission. The frequency depends on radio regulations in individual country . Each FIBARO network has its own unique network identification number (home ID), which is why it is possible to co-operate two or more independent systems in a single building without any interference.

Although Z-Wave is quite new technology, it has already become recognizable and officially binding standard, similarly to Wi-Fi. Many manufacturers in various industries offer solutions based on Z-Wave technology, guaranteeing their compatibility. This means that the system is open and it may be extended in the future. Find more information at www.fibaro.com.

FIBARO generates a dynamic network structure. After FIBARO system is switched on, the location of its individual components is automatically updated in real-time through status confirmation signals received from devices operating in a "mesh" network.

The In-wall Universal Dimmer is hereinafter referred to as Dimmer. It is designed to turn on and dim lamps (see specifications) using radio waves, controllers and external switch directly connected to the Dimmer. Fibaro Dimmer automatically recognizes connected load, is protected from overcurrent and short circuit, works noiselessly and has soft-start function which allows soft brightening of connected load. In case of fluorescent lamps and other specific lamps i.e. with starter or some transformers of an old type, it is possible only to turn on/off without a possibility of dimming.

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.

Dimmer is designed to operate in electrical home installation. Faulty connection or use may result in fire or electric shock.

All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

Even when the device is turned off, voltage may be present at its terminals. Any maintenance introducing changes into the configuration of connections or the load must be always performed with disconnected voltage (disable the fuse).

The Dimmer during its operation requires the minimum load of 50 VA (or when using FGB-002 device 5VA, cosφ>0.5) - do not connect the power supply without a load. In the case of 2-wire connection do not connect load below minimal power without FGB-002. Dimmer was designed to work only with FGB-002. Connecting other device may cause damage to the Dimmer.

Make sure that the loads are the same type! Use only light sources that are adapted to dimming .

When using Fibaro Dimmer with transformers, it is not recommended to connect more than one transformer with one dimmer output.

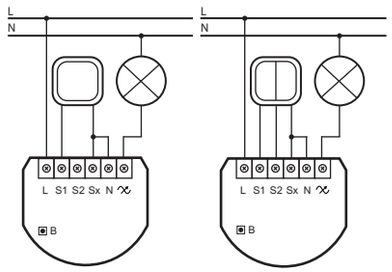
Electronic transformers can produce significant noises in electrical networks which can cause malfunction of Fibaro Dimmer. It is recommended to minimize number of the electronic transformers in particular circuit.

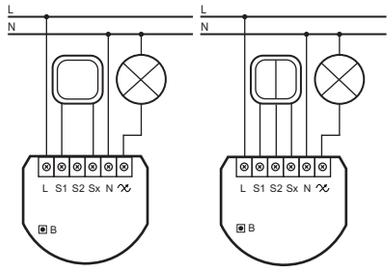
When using the Dimmer with magnetic transformers it should be loaded with 50% of its nominal power at minimal.

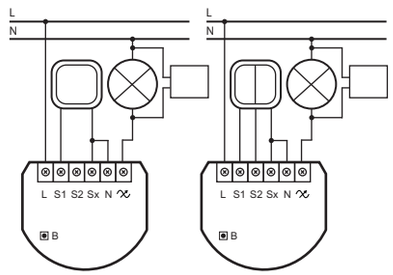
The circuit containing Fibaro Dimmer has to be directly connected to overcurrent protection of up to 10A.

Connect only in accordance with the diagram presented in the manual. Incorrect connection may cause risk to health, life or material damage.

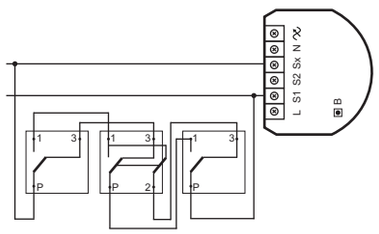
- Z-Wave device learning mode, allowing to add the device to existing Z-Wave network.
- Z-Wave device learning mode, allowing to remove the device from existing Z-Wave network.
- direct control of other devices within the Z-Wave system network using the wall switch connected to the Dimmer.
- controlling other multi-channel devices within the Z-Wave network using the wall switch connected to the Dimmer.



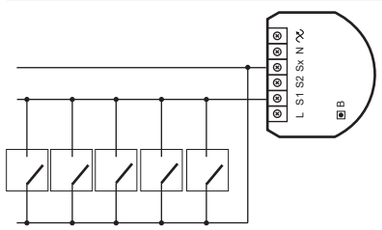




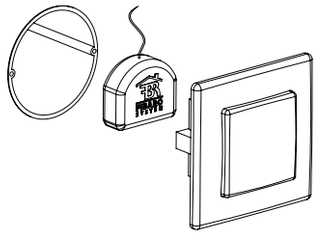
It reduces flickering of the LED lights and glowing of the turned off compact fluorescent lamps. Fibaro Bypass also provides powering of the Dimmer in case of controlling the low loads in a 2-wire connection.



(momentary, toggle, etc.) in a 3-way connection.



- terminal for live lead
- terminal for switch no. 1 (has the option of entering the device in learning mode)
- terminal for switch no. 2
- terminal for power supply to the switch connected to the Dimmer
- terminal for neutral lead
- output terminal of the Dimmer (controlling connected lighting device)
- service button (used to add/remove the device and navigate the menu)



The switch box must be compliant with the relevant national safety standards and it's depth should not be less than 60mm.

The device is designed for installation in wall switch boxes and can work only with the electrical connectors compliant with the relevant safety standards.

The length of wires used to connect the control switch should not exceed 20m.

It should be noted that the switch connected to S1 terminal is a master switch. It activates the basic functionality of the Dimmer (turning the light on/off, dimming) and starts the learning mode (Include / Exclude). The switch connected to S2 terminal is an optional switch and pushing it without changing the configuration parameters will not affect the status of the device.

There is a possibility to switch functionality of switches connected to S1 and S2 terminals by adjusting value of the advanced parameter. In this case, the S1 switch takes over all the tasks of the S2 switch, and the S2 switch takes over all the tasks of the S1 switch.

Locate the antenna as far from metal elements as possible (connecting wires, bracket rings, etc.) in order to prevent interferences.

Metal surfaces in the direct vicinity of the antenna (e.g. flush mounted metal boxes, metal door frames) may impair signal reception!

Do not cut or shorten the antenna - its length is perfectly matched to the band in which the system operates.

Connect the device in accordance with the wiring diagram presented in Fig. 1, Fig. 2 or Fig. 3. Switch on the mains voltage. LED indicator will signal Z-Wave network inclusion state with a colour:
- device added,
- device not added,
- Z-Wave error (possible device malfunction, we recommend contacting our support team or performing guarantee procedure).

After mains voltage appears, wait around 30 seconds. Dimmer will perform the light source calibration process. During the calibration process light source may blink. Calibration result will be indicated with embedded LED (see p. IV). After successful calibration Dimmer will set the last remembered state (turned off by default).

During the calibration process communication with the Z-Wave network is disabled.

The Dimmer must be placed within the range of Home Center controller, as adding mode requires direct communication with the controller.

Identify switch no. 1. which turns on the light (see NOTE II for toggle switch) or the B-button on the housing of the device.

Set the Z-Wave controller in add/remove mode in security/non-security mode (see the controller's manual).

The Dimmer enters the inclusion/exclusion mode after a quick pressing three times the switch connected to S1 terminal or the B-button located on the housing. For toggle switch perform 3 position changes.

Successful inslusion/exclusion proccess will be confirmed by the Z-Wave controller message (see the controller's manual).

For toggle switches, it is recommended to enter the device into the inclusion/exclusion mode by using the B-button.

Removing the Dimmer from the Z-Wave network restores all the default parameters of the device, but does not reset power metering data (to reset power and energy measurements - see p. VI, IX). After successful reset, Fibaro Dimmer will perform the calibration of a connected load.

The Dimmer is set by default to operate with momentary switches (i.e. single-pole switch or bell switch). While adding the Dimmer to the network with toggle switches, ensure that all switch contacts are open (off). Closing them results in activating the external switch terminal. It will prevent adding the device to the network.

Disconnect the power supply, remove the Dimmer from the wall switch box, then connect the power supply.

Locate the B-button on the housing.

Click and hold the B-button to enter the menu mode.

Release and click the B-button to choose "Device reset" option in the menu that is signaled with the yellow LED indicator colour.

After few seconds the device will be restarted, which is signaled with the red LED indicator colour and entering the calibration mode.

Reset of the device is not the recommended way of device exclusion. Certain device exclusion can be achieved by the procedure of removing the device from the Z-Wave network, which we recommend.

- Turning the light ON/OFF: change the position of switch no. 1. The Dimmer will be activated always at previously set brightness level.

- Brightening/dimming the light: hold switch no. 1 down. When the switch is held down, the Dimmer will always reach the extreme value of 1% or 99%.

- Turning the light ON completely: fast double-click switch no. 1. The Dimmer will set the load at 99%.

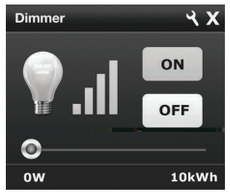
- Turning the light ON/OFF: toggle switch no. 1. The Dimmer will be activated always at previously set brightness level.

- Turning the light ON completely: toggle twice switch no. 1. The Dimmer will set the load at 99%.

The Dimmer responds to commands ALL ON/ALL OFF that may be sent by the Z-Wave controller. ALL ON/ALL OFF commands are usually implemented in the remote controllers using Z-wave protocol, and they are used to issue commands directed to the entire system.

By default, both commands ALL ON and ALL OFF are accepted. Settings may be changed by modifying the value of parameter 11 (see p. X - Configuration). In this way the user may determine to which commands the device should respond.

After adding the Dimmer to the network, it will be represented in the Fibaro controller by the following icon:



Dimming / brightening is performed by moving the slider. The current status of the Dimmer is shown on the bar indicator.
Turning the device ON/OFF □ ON and OFF icons are used for setting the last saved state or turning off the Dimmer.

Configuration

Fibaro Dimmer is equipped with an algorithm of smart light source detection. Depending on the connected type of light source, it automatically adjusts an optimal control mode (leading edge for inductive loads, trailing edge for capacitive or resistive loads). The procedure of learning the light source type is called calibration.

For the device that is not added to the Z-Wave network, the calibration procedure is activated whenever the power is turned on. Calibration automatically adjust maximum and minimum light levels (only in a 3-wire connection). However, the installer is obliged to verify the proper operation of the device, according to control modes description.

Calibration may be launched automatically based on parameter 35 settings, forced by setting parameter 13 to 1 or 2 (with/without Fibaro Bypass), through triple clicking and holding (each hold for more than 5 seconds) the switch connected to S1 or by selecting the appropriate MENU option (see p. VI).

By default, calibration is performed without Fibaro Bypass. In case of connecting the bypass, it is required to force the appropriate calibration procedure using B-button menu or through parameter 13. The device saves the last calibration enforcement mode (with or without bypass).

The result of calibration will be confirmed with the LED indicator glowing in one of the following colours:

- Light source recognized as dimmable, dimming levels set, brightness may be controlled using the S1 switch.

- Light source recognized as non-dimmable, possibility to turn ON/OFF connected light with default parameters settings.

- Calibration procedure failed. Possible reasons: lack of connected load or connected light source exceeds maximum power, which may be controlled by the Dimmer.

- Calibration procedure failed. Possible reasons: installation failure or damaged load (causing activation of the overcurrent protection).

Some types of LED and CF lamps are designed to operate in leading edge mode (with conventional dimmers). Information about proper operation mode of the bulb should be included in its manual. Then you have to manually force the desired operating mode using parameter 30.

If you need to change the load: turn off the Dimmer, change the load and launch the calibration using the parameter 13, or delete and add the device. The lighting should not be used before changing the operating mode or calibration procedure. It is required to verify the operating mode, according to product documentation.

During the calibration procedure, radio connection is disabled and the Dimmer does not respond to any commands. It may cause temporary problems with communication in the Z-Wave network. After completing the calibration, communication with the module will be restored.

Calibration procedure is performed always after removing the device from the Z-Wave network. If the device is not included, after each power on/off calibration will occur. For the included device, calibration is performed in accordance with the parameter 35 settings.

Menu

The Fibaro Dimmer is equipped with a B-button, which enables the installer to use a MENU. Each MENU level is signaled through a LED indicator colour. Navigating through the menu is performed by holding the B-button. Release and press the B-button to select the desired MENU option.

- alarm mode cancellation (flashing alarm)
- exit the error mode
- select the desired MENU option (if MENU mode is active)

- send the Node Info Z-Wave command frame (inclusion/exclusion mode)

- enter the MENU mode (confirmed by the LED indicator)

Fibaro Dimmer has a MENU with each level indicated by the specified LED indicator colour. In order to enter the menu press the B-button and hold for at least 2 seconds. While the B-button is still pressed, LED indicator colour will change in the following sequence:

- initiate the load calibration procedure (see p. IV)
- load calibration procedure with Fibaro Bypass (see p. IV)
- activate turning the load on/off using the B-button
- reset the energy consumption data memory (see p. IX)
- initiate the Z-Wave network range test (see p. VIII)
- reset the Fibaro Dimmer to factory defaults

Release the B-button to choose the desired function and confirm your choice with the B-button click.

Association

The association enables the Dimmer to control directly a device included in Z-Wave network e.g. other Dimmer, Relay Switch, Roller Shutter or scene (may be controlled only through a Z-Wave controller).

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

□Lifeline□ reports state of the device. Main Z-Wave+ network controller should be added to this group. The □Lifeline□ group can handle only one device. It is not recommended to modify this group.

□On/Off (S1)□ is assigned to switch no. 1. Sends BASIC command class frame according to the state of the device.

□Dimmer (S1)□ is assigned to switch no. 1. Sends MULTILEVEL SWITCH command class frame. Allows sending dim/brighten command to associated devices.

□On/Off (S2)□ is assigned to switch no. 2. Sends BASIC command class frame according to the state of the device.

□Dimmer (S2)□ is assigned to switch no. 2. Sends MULTILEVEL SWITCH command class frame. Allows sending dim/brighten command to associated devices.

The Dimmer in 2nd to 5th group allows for controlling 5 regular and 5 multichannel devices per an association group, out of which 1 field is reserved for the Z-Wave network main controller. 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) go to device options by clicking the following icon:

Select the "Advanced" tab. Then specify to which group and what devices are to be associated. Sending relevant information to devices added to associated groups may take even a few minutes.

FGD-212 Dimmer supports the operation of multichannel devices. Multichannel devices are devices that include two or more circuits inside one physical unit.

Range test

The Fibaro Dimmer has a built in Z-Wave network main controller's range tester.

To make Z-Wave range test possible, the device must be added to the Z-Wave controller. Testing may load the network, so it is recommended to perform the test only in special cases.

Follow the below instructions to test the main controller's range:
Press and hold the B-button until the LED glows violet.
Release the B-button.
Press the B-button again, briefly.
LED will indicate the Z-Wave network's range (range signaling modes described below).
To exit Z-Wave range test, press the B-button briefly.

Z-WAVE RANGE TESTER SIGNALING MODES:

- Fibaro Dimmer attempts to establish a direct communication with the main controller. If a direct communication attempt fails, the device will try to establish a routed communication, through other modules, which will be signaled by LED indicator pulsing yellow.

- Fibaro Dimmer communicates with the main controller directly.

- Fibaro Dimmer tries to establish a routed communication with the main controller through other modules (repeaters).

- Fibaro Dimmer communicates with the main controller through the other modules. After 2 seconds the device will retry to establish a direct communication with the main controller, which will be signaled with LED pulsing green.

- Fibaro Dimmer does communicate at the maximum distance of the Z-Wave network. If connection proves successful it will be confirmed with a yellow glow. It's not recommended to use the device at the range limit.

- Fibaro Dimmer is not able to connect to the main controller directly or through another Z-Wave network device (repeater).

Communication mode of the Dimmer may switch between direct and one using routing, especially if the device is on the limit of the direct range.

Power and energy consumption

The Fibaro Dimmer allows for the active power and energy consumption monitoring. Data is sent to the main Z-Wave controller, e.g. Home Center.

Measuring is carried out by the most advanced microcontroller technology, assuring maximum accuracy and precision.

The Dimmer in the 3-wire connection has the measurement function. In case of the 2-wire connection this function is available only for load of cosφ ≥ 0.99. In other cases power is estimated and can differ from actual power consumed by the device.

- power that energy receiver is changing into a work or a heat. The unit of active power is Watt [W].

- energy consumed by a device through a time period. Consumers of electricity in households are billed by suppliers on the basis of active power used in given unit of time. Most commonly measured in kilowatt-hour [kWh]. One kilowatt-hour is equal to one kilowatt of power consumed over period of one hour, 1kWh = 1000Wh.

The Fibaro Dimmer allows to erase stored consumption data in three ways:

By resetting the device (see p. VI).

Using functionality of a Z-Wave controller (see the controller's manual).

Manually clearing the data using the following procedure:

a) Make sure that the device is connected to the power supply.
b) Press and hold the B-button for a few seconds, until LED indicator glows GREEN.
c) Release the B-button.
d) Press the B button briefly.
e) Energy consumption memory has been erased.

The Fibaro Dimmer stores periodically the consumption data in the device memory. Disconnecting the module from the power supply will not erase the energy consumption data.

FGD-212	3-wire connection		2-wire connection	
	Brightness>70%	Brightness<70%	Brightness>70%	Brightness<70%
resistive load	+/- (0.5% + 0.2W)	+/- (2% + 0.2W)	+/- (2% + 0.2W)	+/- (4% + 0.2W)
resistive-inductive load	+/- (0.5% + 0.2W)	+/- (2% + 0.2W)	Power metering approximate*	Power metering approximate*
resistive-capacitive load	+/- (0,5% + 0.2W)	+/- (2% + 0.2W)	Power metering approximate*	Power metering approximate*

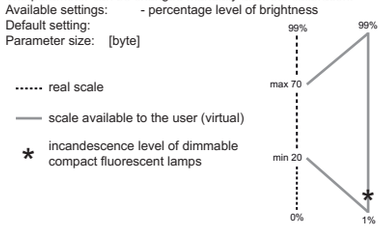
Power measurement in the 2-wire connection does not include mains voltage fluctuations within +/- 10%.
* Measurements in this case are only illustrative, returned values may differ from the actual measurement. In the case of reporting incorrect values change the values of parameters 58 and 59.

Configuration

In order to configure Fibaro Dimmer (using the Home Center controller), go to device options by clicking the icon and selecting "Advanced" tab.

(parameter is set automatically during the calibration process)
The parameter can be changed manually after the calibration.
Available settings: - percentage level of brightness
Default setting:
Parameter size: [byte]

(parameter is set automatically during the calibration process)
The parameter can be changed manually after the calibration.
Available settings: - percentage level of brightness
Default setting:
Parameter size: [byte]



The maximum level (parameter 2) must be greater than the minimum level (parameter 1).

Virtual value set as a percentage level between parameters MIN (1%) and MAX. (99%). The Dimmer will set to this value after first switch on. It is required for warming up and switching dimmable compact fluorescent lamps and certain types of light sources.
Available settings: - percentage level of brightness
Default setting:
Parameter size: [byte]

This parameter determines the time required for switching compact fluorescent lamps and certain types of light sources. Setting this parameter to 0 will disable the incandescence functionality.
Available settings: (0s - 25,5s)
Default setting:
Parameter size: [bytes]

Available settings:
Default setting:
Parameter size: [byte]

Available settings: (0s - 2,55s)
Default setting:
Parameter size: [bytes]

Available settings:
Default setting:
Parameter size: [byte]

Available settings: (0s - 2,55s)
Default setting:
Parameter size: [bytes]

The Dimmer will return to the last state before power failure.
Available settings:
- the Dimmer does not save the state before a power failure, it returns to "off" position
- the Dimmer restores it's state before power failure
Default setting:
Parameter size: [byte]

Available settings:
- Function disabled
- time to turn off measured in seconds (1s - 9,1h)
Default setting:
Parameter size: [bytes]

Available settings:
- ALL ON not active, ALL OFF not active
- ALL ON not active, ALL OFF active
- ALL ON active, ALL OFF not active
- ALL ON active, ALL OFF active
Default setting:
Parameter size: [bytes]

Changing value of this parameter will force the calibration process. During the calibration parameter is set to 1 or 2 and switched to 0 upon completion.
Available settings:
- readout
- force auto-calibration of the load without Fibaro Bypass
- force auto-calibration of the load with Fibaro Bypass
Default setting:
Parameter size: [byte]

(read-only parameter)
This parameter determines operating mode of the Dimmer (automatic/manual settings).
Available settings:
- calibration procedure not performed or Dimmer operates on manual settings
- Dimmer operates on auto-calibration settings
Default setting:
Parameter size: [byte]

Function based on the sudden power variation of a specific value, interpreted as a LOAD ERROR.
Available settings:
- function disabled
- percentage value of power variation, compared to standard power consumption, measured during the calibration procedure (to be interpreted as load error/burnt out bulb)
Default setting:
Parameter size: [byte]

Parameter is relevant only when parameter 58 is set to 0 and the control mode is consistent with the mode set during the calibration process (parameter 30).

Time of delay (in seconds) for power variation detection, interpreted as a LOAD ERROR or OVERLOAD detection (too much power connected to the Dimmer).
Available settings:
- detection of a burnt out bulb disabled
- delay time in seconds
Default setting:
Parameter size: [bytes]

If the parameter is active, switching on the Dimmer (S1 single click) will always set this brightness level.
Available settings:
- function disabled
- percentage level of brightness
Default setting:
Parameter size: [byte]

Choose between momentary switch, toggle switch and roller blind switch.
Available settings:
- momentary switch
- toggle switch
- Roller blind switch - two switches operate the Dimmer (S1 to brighten, S2 to dim)
Default setting:
Parameter size: [byte]

Available settings:
- 0xFF value is sent, which will set associated devices to their last saved state.
- Current Dimmer state is sent, which will synchronize brightness level of associated devices (other Dimmers for example).
Default setting:
Parameter size: [byte]

Available settings:
- Device changes status on switch status change.
- Device status is synchronized with switch status.
Default setting:
Parameter size: [byte]

Available settings:
- double click disabled
- double click enabled
Default setting:
Parameter size: [byte]

Parameter determines, which actions will not result in sending frames to association groups. Parameter values may be combined, e.g. 1+2=3 means that associations on switching on or off the Dimmer (single click) will not be sent.
Available settings:
- all actions send to association groups
- do not send when switching on the Dimmer (single click)
- do not send when switching off the Dimmer (single click)
- do not send when changing dimming level (holding and releasing)
- do not send on double click
- send 0xFF value on double click
Default setting:
Parameter size: [byte]

Parameter determines, which actions will not result in sending frames to association groups. Parameter values may be combined, e.g. 1+2=3 means that associations on switching on or off the Dimmer (single click) will not be sent.
Available settings:
- all actions send to association groups
- do not send when switching on the Dimmer (single click)
- do not send when switching off the Dimmer (single click)
- do not send when changing dimming level (holding and releasing)
- do not send on double click
- send 0xFF value on double click
Default setting:
Parameter size: [byte]

Switch no. 2 controls the Dimmer additionally (in 3-way switch mode). Function disabled for parameter 20 set to 2 (roller blind switch).
Available settings:
- 3-way switch function for S2 disabled
- 3-way switch function for S2 enabled
Default setting:
Parameter size: [byte]

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 Lifeline group. Parameter values may be combined, e.g. 1+2=3 means that 2nd & 3rd group are sent as secure.
Available settings:
- all groups (II-V) sent as non-secure
- 2nd group sent as secure
- 3rd group sent as secure
- 4th group sent as secure
- 5th group sent as secure
- all groups (II-V) sent as secure
Default setting:
Parameter size: [byte]

SCENE ID depends on the switch type configurations.
Available settings:
- functionality deactivated
- functionality activated
Default setting:
Parameter size: [byte]

Enabling scene activation fuctionality may cause slight delay in response to external switches and sending associations.

SCENE ID value sent at specified configuration:

SCENE ID: S1 input	SCENE ID: S2 input
16 : 1 x click 14 : 2 x click - : 3 x click 12 : hold 13 : release	26 : 1 x click 24 : 2 x click 25 : 3 x click 22 : hold 23 : release

SCENE ID: S1 input	SCENE ID: S2 input
10 : OFF to ON 11 : ON to OFF 14 : 2 x click - : 3 x click	20 : OFF to ON 21 : ON to OFF 24 : 2 x click 25 : 3 x click

SCENE ID: S1 input	SCENE ID: S2 input
10 : turn ON (1 x click) 13 : release 14 : 2 x click - : 3 x click 17 : brightening	11 : turn OFF (1 x click) 13 : release 14 : 2 x click 15 : 3 x click 18 : dimming

Available settings:
- standard mode
- S1 operates as S2, S2 operates as S1
Default setting:
Parameter size: [byte]

Forced auto-calibration will set this parameter's value to 2.
Available settings:
- forced leading edge control
- forced trailing edge control
- control mode selected automatically (based on auto-calibration)
Default setting:
Parameter size: [byte]

(read only).
Available settings:
- leading edge
- trailing edge
Parameter size: [byte]

This mode is necessary while connecting non-dimmable light sources. Setting this parameter to 1 automatically ignores brightening/dimming time settings. Forced auto-calibration will set this parameter's value to 2.
Available settings:
- on/off mode disabled (dimming is possible)
- on/off mode enabled (dimming is not possible)
- mode selected automatically
Default setting:
Parameter size: [byte]

(read only)
Available settings:
- Load recognized as dimmable
- Load recognized as non-dimmable
Parameter size: [byte]

Time required to warm up the filament of halogen bulb.
Available settings:
- no soft-start
- short soft-start (0,1s)
- long soft-start (0,5s)
Default setting:
Parameter size: [byte]

This parameter determines the trigger of auto-calibration procedure, e.g. power on, load error, etc.
Available settings:
- No auto-calibration of the load after power on
- Auto-calibration performed after first power on
- Auto-calibration performed after each power on
- Auto-calibration performed after first power on or after each LOAD ERROR alarm (no load, load failure, burnt out bulb), if parameter 37 is set to 1 also after alarms: SURGE (Dimmer output overvoltage) and OVERCURRENT (Dimmer output overcurrent)

- Auto-calibration performed after each power on or after each LOAD ERROR alarm (no load, load failure, burnt out bulb), if parameter 37 is set to 1 also after alarms: SURGE (Dimmer output overvoltage) and OVERCURRENT (Dimmer output overcurrent)
Default setting:
Parameter size: [byte]

Available settings:
- device permanently disabled until re-enabling by comand or external switch
- three atempts to turn on the load
Default setting:
Parameter size: [byte]

Reaching the defined value will result in turning off the load. Additional apparent power limit of 350VA is active by default.
Available settings:
- functionality disabled
- 1W-350W
Default setting:
Parameter size: [bytes]

Parameter is relevant only when parameter 58 is set to 0.

Available settings:
- No reaction
- Turn on the load
- Turn off the load
- Load blinking
Default setting:
Parameter size: [byte]

Available settings:
- No reaction
- Turn on the load
- Turn off the load
- Load blinking
Default setting:
Parameter size: [byte]

Available settings:
- No reaction
- Turn on the load
- Turn off the load
- Load blinking
Default setting:
Parameter size: [byte]

Available settings:
- No reaction
- Turn on the load
- Turn off the load
- Load blinking
Default setting:
Parameter size: [byte]

Available settings: (1s - 32767s)
Default setting: (600s)
Parameter size: [bytes]

Alarm state may be cancelled earlier, as a result of pressing the switches or sending the Z-Wave command frame.

(load power consumption too high)
- No reaction
- Send an alarm frame
Default setting:
Parameter size: [byte]

(no load, load failure, burnt out bulb)
- No reaction
- Send an alarm frame
Default setting:
Parameter size: [byte]

(short circuit, burnt out bulb causing overcurrent)
- No reaction
- Send an alarm frame
Default setting:
Parameter size: [byte]

(Dimmer output overvoltage)
- No reaction
- Send an alarm frame
Default setting:
Parameter size: [byte]

(critical temperature) (low voltage)
- No reaction
- Send an alarm frame
Default setting:
Parameter size: [byte]

The parameter defines the power level change that will result in a new power report being sent. The value is a percentage of the previous report.
Available settings:
- power reports disabled
(1-100%) - power report threshold
Default setting: (10%)
Parameter size: [byte]

Parameter 52 defines a time period between consecutive reports. Timer is reset and counted from zero after each report.
Available settings:
- periodic reports disabled
(1-32767 seconds)
Default setting: (3600s)
Parameter size: [bytes]

Energy level change which will result in sending a new energy report.
Available settings:
- energy reports disabled
(0,01 - 2,55 kWh) - report triggering threshold
Default setting: (0,1 kWh)
Parameter size: [byte]

The Dimmer may include active power and energy consumed by itself in reports sent to the main controller.
Available settings:
- Self-measurement inactive
- Self-measurement active
Default setting:
Parameter size: [byte]

This parameter defines how to calculate active power. This parameter is useful in a case of 2-wire connection with light sources other than resistive.
The parameter is set to 0 after forced auto-calibration.
Available settings:
- power measurement based on the standard algorithm
- approximation based on the calibration data
- approximation based on the control angle
Default setting:
Parameter size: [byte]

This parameter determines the approximate value of the power that will be reported by the device at its maximum brightness level. This parameter works only when parameter 58 has a value other than 0.
Available settings:
(0-500W) - power consumed by the load at the maximum brightness level.
Default setting:
Parameter size: [byte]

Events result from installation flaws, faulty light source operation or incorrect manual changes in advanced configuration. The device may stop responding to user's commands and actions, leaving the light source off. Message with infomation about the type of error is sent by default (using Z-Wave network).

Pressing any of the connected switches or changing state of the device using the controller will exit error mode.

The Dimmer features self temperature measurement function. In case of raching critical temperature, the load is turned off and the gateway receives an information about exceeding maximum temperature of the module.

The Dimmer is equipped with functionality of detecting the burnt out bulb. In case of such situation, Fibaro Dimmer sends the notification about load failure. Described function is not available for values of parameter 58 different than 0.

Power variation is detected in accordance with the settings of parameters 15 and 16.

Parameter 15 set to 30%.
Parameter 16 set to 5 seconds.

The Dimmer will detect the change of load at the moment of power variation by 30% compared to standard power consumption (measured during the calibration) and after 5 seconds from brightness level stabilization.

This function is available only in a control mode compliant with the mode recognized during the calibration (parameter 14 set to 1).

If parameter 35 is set to 3 or 4, the load will be calibrated again after an error occurence.

Appearing of an error may be the result of not connecting the load. It may suggest burning out all of the loads connected to the Dimmer. Damaged load should be immediately replaced. After connecting the new load, Fibaro Dimmer will return to normal operation.

If parameter 35 is set to 3 or 4, the load will be calibrated again after turning on the load.

Appearing of an error may be the result of electrical surges, incorrect load control (inductive load controlled in trailing edge mode) or connecting the prohibited type of load.

If parameter 35 is set to 3 or 4, the load will be calibrated again after an error occurence.

Appearing of an error may also be the result of rapid powering on the load. It may also occur if the soft-start functionality is disabled (parameter 34 set to 0) or as a result of the short circuit. If parameter 37 is set to 1, the device will automatically try to turn on again. If described error has been caused by the rapid powering on the load, then Fibaro Dimmer will return to normal operation after reenabling.

After three unsuccessful automatic tries of of turning on the load, Fibaro Dimmer will stay in error mode (module turned off). In such situation, it is required to remove the failure (possible short circuit in the installation.) Otherwise, it is recommended to set the long soft-start (parameter 34 set to 2).

If parameter 35 is set to 3 or 4, the load will be calibrated again after an error occurence.

Appearing of an error is a result of connecting receivers with too much power consumption. In this case Fibaro Dimmer will automatically turn off the lighting. It is required to reduce power consumption of connected load (e.g. by reducing the number of receivers) and turn on the light source again by the wall switch or a Z-Wave command.

Appearing of an error in a 2-wire connection may be the result of mains voltage drop or a too high brightness level of the light source. If parameter 37 is set to 1, the device will automatically try to turn on again. Low voltage error suggests that parameter 2 value should be reduced until disappearing of the failure. You can also recalibrate the load using parameter 13.

After three unsuccessful automatic tries of turning on the load, Fibaro Dimmer will stay in error mode (module turned off).

Appearing of an error is a result of serious hardware failure of the Dimmer. In this case the Dimmer sets the maximum brightness level and the LED visual indicator starts blinking in red. All external actions (Z-Wave commands, pressing the switches, menu settings) will be ignored. We recommend disconnecting the device from the power supply and contacting the customer service or to initiate the guarantee procedure.

The Fibaro Dimmer features remote software update (initiated by the main controller). Update status is signalled by the LED indicator with :

- - transferring data via Z-Wave and saving to the flash memory

- - copying data from the external memory to the memory of the microcontroller

Fibaro system allows user to set response of devices to alarm situations (response to data-frames ALARM_REPORT and SENSOR_ALARM_REPORT). Fibaro Dimmer responds to the following types of alarms:

- General Purpose Alarm- GENERAL PURPOSE ALARM
- Smoke Alarm - ALARM CO2, ALARM CO, ALARM SMOKE
- Water Flooding Alarm - ALARM WATER
- Temperature Alarm - ALARM HEAT

Alarm data-frames are sent by devices that are system sensors (e.g., flood sensors, smoke detectors, motion detectors, etc.).

The device may respond in the following manner to received data-frames (settings are configured in configuration parameters, see p. X):

0 - DEACTIVATION - the device does not respond to alarm data frames
1 - ALARM ON - the device turns on after detecting an alarm
2 - ALARM OFF - the device turns off after detecting an alarm
3 - ALARM FLASHING - the device periodically changes its status to the opposite when it detects an alarm (lights on/off alternately)

- any controller compatible with the Z-Wave system (e.g. Fibaro Home Center)
- switch connected to inputs S1 and S2
- assiociations

- mobile phone (e.g. iPhone, Android phone)
- tablet (np. iPad, Adroid tablet)
- PC, using a web browser

- Make sure that the maximum range is not exceeded and the signal path is not obstructed by metal surfaces such as metal cabinets, reinforced concrete ceilings, bearing walls etc.
- Make sure the device is not in the programming mode
- Repeat the programming process

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.

The Manufacturer is responsible for equipment malfunction resulting from physical defects (manufacturing or material) of the Device for 12 months from the date of its purchasing.

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 of defects. When the repair impossible, the Manufacturer reserves the right to replace the device with a new or regenerated one, which shall be free of any defects and its condition shall not be worse than the original device owned by the Customer.

In special cases, when the device cannot be replaced with the device of the same type (e.g. the device is no longer available in the commercial offer), 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.

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 is 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 an unique number (Return Merchandise Authorization -RMA).

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).

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

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.

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

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.

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.

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,

The Manufacturer shall not be liable for damages to property caused by defective device. The Manufacturer shall not be liable for indirect, incidental, special, consequential or punitive damages, or for any damages, 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.

The guarantee shall not cover:
- mechanical damages (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);
- damages 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;
- damages caused by malfunctioning software, attack of a computer virus, or by failure to update the software as recommended by the Manufacturer;
- damages resulting from: surges in the power 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.
- damages 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;
- damages caused by using accessories not recommended by the Manufacturer
- damages caused by faulty electrical installation of the Customer, including the use of incorrect fuses;
- damages caused by Customer's failure to provide maintenance and servicing activities defined in the operating manual;
- damages 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.

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.

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.

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

Any device compatible with Z-Wave may be added to Fibaro system.

In case of any technical questions contact customer service centre in your country.