ENG

OPERATING MANUAL
DOUBLE RELAY SWITCH
FGS-221-EN-A-v1.00

Remotely Controlled Double Relay Switch of FIBARO system is designed to operate in a wall switch box or in locations where the control of an electric device (up to 1.5kW) is needed. It is also possible to send a signal to any system that is to be integrated with Fibaro system.

Specifications

Power supply:	110 - 230 V AC ±10% 50/60Hz 24-60V DC ±10%
Maximum load current for single AC output:	8A / 230V 50/60Hz
Maximum load current for single DC output:	8A / 30V
Output circuit power (resistive load-230V):	2 x 1.5 kW
Comply with EU standards:	EN 55015 EN 60669-2-1
Circuit temperature limits:	105 °C
Operational temperature:	0 - 40 °C
For installation in boxes:	Ø ≥ 50mm
Radio protocol:	Z-Wave
Radio Frequency:	868,4 MHz for EU; 908,4 MHz for US; 921,4 MHz for AUS/NZ/BRA
Range:	up to 50 m outdoors up to 30 m indoors (depending on building materials)
Dimensions (L x W x H):	42 x 37 x 17 mm
Electricity consumption:	< 0,8W

* In case of load other than resistive, pay attention to the value of cosφ and if necessary apply load lower than the rated load.

Technical Information

- Controlled by FIBARO system devices or any Z-Wave controller.
- Microprocessor control
- Executive elements: relays.
- The device may be operated by mono-stable and bi-stable push-buttons.

DANGER
Danger of electrocution! All works on the device may be performed only by a qualified and licensed electrician. Observe national regulations.

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

TIPS
- Do not connect the device to loads exceeding recommended values.
- Connect only in accordance with the diagram presented in the manual. Improper connections may be dangerous.

I GENERAL INFORMATION ABOUT FIBARO SYSTEM

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 "duplicators". 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.

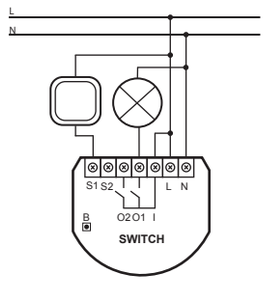
The In-Wall Double Relay Switch is hereinafter referred to as Fibaro Switch. It is designed to switch on/off devices connected to its terminals using radio waves, controllers and a push button directly connected to Fibaro Switch.

II Assembling Double Relay Switch

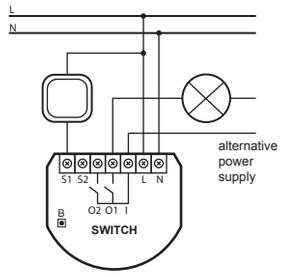
Danger of electrocution.

1. Before installation ensure that the voltage supply is disconnected.
2. Connect Double Relay Switch as shown on the diagram
3. Place the switch in the electrical box
4. Arrange the antenna (tips are presented below diagrams)

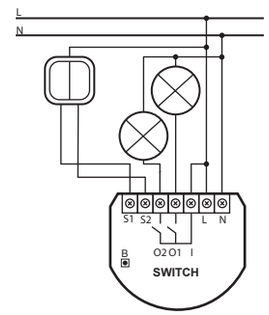
single switch



single switch
- option with an alternative power supply for the load



double switch



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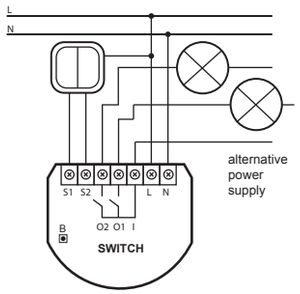


Fig.1 Circuit diagrams for Double Relay Switch.

NOTES FOR THE DIAGRAM:
N - terminal for neutral lead
L - terminal for live lead
I - input terminal for load power supply
O1 i O2 - output terminal of the load
S2 - terminal for key no. 2
S1 – terminal for key no. 1 (has the option of entering the device in learning mode)
B- service button (used to add or remove a device from the system)

Note!
It is possible to supply the load with voltage other than the power supply to Double Relay Switch (e.g. different phase or voltage or even DC. Detailed data are contained in specifications and diagrams of Figure 1).

Durability of the device depends on applied load. For resistive load (light bulbs, etc.) and 8A current, the durability exceeds 200 000 switches. For inductive load, e.g. fluorescent lamp with cosφ = 0.6 the flowing current should be limited to approx. 6A to ensure reliable operation of the device for similar long period.

TIPS FOR ARRANGING THE ANTENNA:

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

Note!
It should be noted that only the push-button connected to S1 terminal and service push-button B enables "learning" mode (Include/ Exclude).

DICTIONARY:

• **INCLUSION (Adding)** - a device sends "Node Info" frame, to enable user to add it to Fibaro system (Home Center)

• **EXCLUSION (Removing)** - removing a device from the Fibaro radio system

• **ASSOCIATION** - controlling other devices of Fibaro system

• **MultiChannelAssociation** - controlling other multichannel devices of Fibaro system

III Activating Double Relay Switch

1. Installing the Double Relay Switch

STEP 1
Connect the device in accordance with the circuit diagram presented in Figure 1. Switch on 230V of the mains voltage.

[Adding/ Removing] Double Relay Switch [to/ from] Z-wave network

STEP 2
Double Relay Switch must be placed within the range of Home Center controller, as adding mode requires direct communication with the controller.

STEP 3
Find key no. 1 which allows to switch circuit 1 on, in accordance with the diagram

STEP 4
Set the Home Center controller in add/remove mode (see the controller's manual)

STEP 5
Add Double Relay Switch to the network by pushing three times key no. or push-button B located inside the housing of the device. For bi-stable switch perform 3 position changes.

WARNING!
Double Relay Switch cancels the "learning" mode after key no. 1 is pressed once. Therefore, pressing key no. 1 four times will not add the devices to the network. The same applies to push-button B.

WARNING!
Double Relay Switch is set by default to operate with mono-stable switches (i.e. single-pole switch or bell switch). While adding Double Relay Switch to the network with bi-stable switches, ensure that all switch contacts are open (off), because closing them results in activating the push-button and this will prevent adding the device to the network.

During the installation it is recommended to use a mono-stable keys or push- button B.

STEP 6
The controller indicates when the device is correctly added to the network, (see the manual of Home Center controller).

2. Resetting Double Relay Switch

Fibaro Switch provides three methods for resetting.

Method I : Reset by removing Double Relay Switch from the existing Z-Wave network. The device may be removed using the controller that has the ability to include/exclude devices from/to Z-Wave network (see the manual of controller).

Method II : Within 5 sec. after connecting mains voltage supply Double Relay Switch allows the user to reset settings by single pressing S1 key and then holding key S2

Method III : Reset by holding B button for 3 sec. after connecting mains voltage to the Switch

3. Controlling Double Relay Switch by mono-stable or bi-stable switches.

Mono-stable switch (after releasing the push-button a spring automatically pushes back and disconnects the button)

- Turning on/off circuit 1 or 2 - briefly press the push-button corresponding to a chosen circuit (see diagram).

Bi-stable switch (operates as a two-position switch, it has no spring that would push back the device after releasing manual pressure)

- Turning on/off the circuit - change the position of selected push-button from the current position.

4. Controlling Double Relay Switch using a command: ALL ON / ALL OFF

Double Relay Switch responds to commands ALL ON / ALL OFF that may be sent by the controller. ALL ON / ALL OFF commands are usually implemented in Z-Wave remote control.

By default, Double Relay Switch accepts both active commands ALL ON and ALL OFF. Settings may be changed by entering an appropriate value into configuration register no. 1 (see configuration)

5. Controlling Double Relay Switch using Home Center controller

After adding Double Fibaro Switch to the network, it will be represented in Home Center by the following two icons (one icon represents one channel):

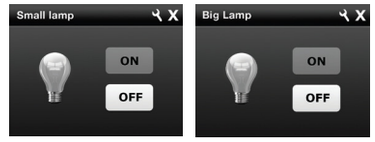


Fig. 2 Icon of Double Relay Switch shown by Home Center controller

Turning on/off the device connected to Double Relay Switch is performed by pressing ON/OFF icon.

IV Association

Association enables Fibaro Switch to directly control a device included in Z-Wave network e.g. Dimmer, Switch (ON-OFF), Roller Shutter or scene (scene may be controlled only through the Home Center controller).

WARNING!
Association ensures direct transfer of control commands between devices, and is performed without participation of the main controller.

Fibaro Switch provides association of three groups.

1st group is assigned to key no. 1

2nd group is assigned to key no. 2

3rd group reports state of devices. Only one device can be associated to this group.

Fibaro Switch enables user to control up to 16 normal devices, and 7 MultiChannel devices in group no. 1 and no. 2, group no. 3 has only one field. The first field in each group is reserved for the network controller. It is recommended to use up to 10 devices, as the time required by the device to send a command to each associated device may be quite long.

To add an association (using the Home Center controller), go to device options by clicking the following icon:

Select the "device options" 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.

WARNING!
When Fibaro Switch sends control commands and a new command is issued, then the current one command transmission is interrupted to send new commands.

FGS221 Fibaro Switch supports the operation of multi-channel devices. Multichannel devices are devices that include two or more circuits inside one physical unit.

FGS221 Double Relay Switch is a multichannel device. It means that it has two independent executive circuits - each circuit is recognized by the Home Center controller as a separate device. Accordingly, each channel is represented by an independent icon. The first channel is operated by a push-button connected to S1 terminal and it is the main (default) channel.
The association of the second channel of the double relay switch may be operated only by devices supporting multi-channel association !

V Configuration

The following settings are available in the Fibaro interface as simple options that may be chosen by selecting the appropriate box

In order to configure Fibaro Switch (using the Home Center controller), go to device options by clicking the following icon:

Parameter no. 1 - Activate / deactivate functions ALL ON / ALL OFF. default value 255

Available configuration parameters:
255 - ALL ON active, ALL OFF active.
0 - ALL ON is not active ALL OFF is not active
1 - ALL ON is not active ALL OFF active
2 - ALL ON active ALL OFF is not active

Parameter no. 3 - Automatic turning off relay after set time default value 0

Available configuration parameters:
0 - Auto OFF disabled for both relays
1 - Auto OFF enabled for relay no. 1. disabled for relay no. 2.
2 - Auto OFF disabled for relay no. 1. enabled for relay no. 2.
3 - Auto OFF enabled for both relays

Parameter no. 4 - Time after witch relay is automatically turned off.
default value 20 (200ms)

Available configuration parameters:
[1- 255] (10ms – 2,5s) time after relay is automatically turned off.

Parameter no. 5 – Time after witch relay no. 2 is automatically turned off. default value 20 (200ms)

Available configuration parameters:
[1- 255] (10ms – 2,5s) time after relay is automatically turned off.

Parameter no. 6 - Sending commands to control devices assigned to 1-st association group (key no. 1) default value 0

Available configuration parameters:

0 commands are sent when device is turned on and off

1 commands are sent when device is turned off. Enabling device does not send control commands. Double-clicking key sends 'turn on' command, dimmers memorize the last saved state (e.g. 50% brightness).

2 commands are sent when device is turned off. Enabling device does not send control commands. Double-clicking key sends 'turn on' command and dimmers are set to 100% brightness.

NOTE: Parameter 15 value must be set to 1 to work properly. This activates the double-click functionality - dimmer/roller shutter control.

Parameter no. 7 – Sending commands to control devices assigned to 2-nd association group (key no. 2)
default value 0

Available configuration parameters:

0 commands are sent when device is turned on and off

1 commands are sent when device is turned off. Enabling device does not send control commands. Double-clicking key sends 'turn on' command, dimmers memorize the last saved state (e.g. 50% brightness).

2 commands are sent when device is turned off. Enabling device does not send control commands. Double-clicking key sends 'turn on' command and dimmers are set to 100% brightness.

Info: Parameter 15 must be set to 1 to make this parameter work properly. This activates the double-click functionality - dimmer/roller shutter control.

Parameter no. 13 - Assigns bistable key status to the device status. default value 0

Available configuration parameters:
0 [On / Off] device changes status on key status change.
1 Device status depends on key status: ON when the key is ON, OFF when the key is OFF.

Info: Remote control from Fibaro System Is Still Possible. This function is useful When you want display status of external devices, e.g. Motion Sensor, in Fibaro System.

Parameter no. 14 - Switch type connector, you may choose between mono-stable and bi-stable switches. default value 1

Options for changing the parameter:
0 - mono-stable switch
1 - bi-stable switch

Parameter no. 15 - Operation of the Dimmer and Roller Shutter Controller – enabling this option allows the user to dim lighting/shut roller by associating Dimmer/Roller Shutter Controller and holding or double press of double switch (only mono-stable switch). default value 0

Available configuration parameters:
0 - Dimmer/Roller Shutter Controller control is not active
1 - Dimmer/Roller Shutter Controller control is active

Parameter no. 16 - Saving the state of the device after a power failure. Fibaro Switch returns to the last position saved before a power failure. default value 1

Options for changing the parameter 0-1

0 - Fibaro Switch does not save the state after a power failure, it returns to "off" position
1 - Fibaro Switch saves its state before power failure

Possibility to change the configuration of the following parameters [30 – 33, 40 - 43].

0 - DEACTIVATION - the device does not respond to alarm data frames
1 - ALARM RELAY ON - the device turns on after detecting an alarm
2- ALARM RELAY 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 within 10 min.

Parameter no. 30 - General Alarm, set for relay no. 1

default value 3[byte] ALARM FLASHING

Parameter No. 40 - General Alarm, set for switch No. 2

default value 3[byte] ALARM FLASHING

Parameter no. 31 - Alarm of flooding with water, set for relay no. 1

default value 2[byte] ALARM RELAY OFF

Parameter no. 41 - Alarm of flooding with water, set for relay no. 2

default value 2[byte] ALARM RELAY OFF

Parameter No. 32 - Smoke, CO, CO2 Alarm. Set for relay no. 1

default value 3[byte] ALARM FLASHING

Parameter No. 42 - Smoke, CO, CO2 Alarm. Set for relay no. 2

default value 3[byte] ALARM FLASHING

Parameter no. 33 - Temperature Alarm, set for relay no. 1

default value 1[byte] ALARM RELAY ON

Parameter no. 43 - Temperature Alarm, set for relay no. 2

default value 1[byte] ALARM RELAY ON

Parameter no. 39 - Active flashing alarm time

default value 600
Available configuration parameters: [1-65535][ms]

VI Additional Functionality

Operating alarm data frames

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

• General Purpose Alarm - GENERAL PURPOSE ALARM [0x00]
• Smoke Alarm - ALARM CO2 [0x02], ALARM CO [0x01], ALARM SMOKE [0x03]
• Water Flooding Alarm - ALARM WATER [0x05]
• Temperature Alarm - ALARM HEAT [0x04]

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 section V Configuration):

• 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)

Fibaro Double Relay Switch has two independent alarm group (i.e. each of its channels may respond in an individual way to received alarm data-frames).

VII Operating Fibaro Switch

Fibaro Switch may be operated using the following control elements:

− any controller compatible with the system (e.g. Home Center controller)
− a mobile phone (e.g. iPhone and phones from other manufacturers with appropriate software)
− tablet (such as iPad)
− PC, using a web browser
− push-buttons connected to outputs S1 and S2
− service button B, located inside the housing (activates learn monde)

VIII Procedures for malfunctions

The device does not respond to a pre-programmed transmitter:

• Make sure that the maximum range is not exceeded and the signal path is not obstructed by metal surfaces such as metal cabinets, etc.
• Make sure the device is not in the programming mode, or repeat the programming process.

IX GUARANTEE

1. The Guarantee is provided by FIBAR GROUP Sp. z o.o. (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. 370151, NIP 7811858097, REGON: 301595664.

2. 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.

3. During the Guarantee period, the Manufacturer shall remove any defects, free of charge, by repairing or replacing (at the sole discretion of the Manufacturer) any defective components of the Device with new or regenerated components, that are free 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.

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

5. The holder of a valid guarantee shall submit a guarantee claim through the guarantee service. Remember: before you submit a guarantee claim, contact our technical support using telephone or e-mail. More than 50% of operational problems 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.fibargroup.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).

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

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

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

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

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

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

12. AGS shall not accept a complaint claim only when:
• the Device was misused or the manual was not observed,
• the Device was provided by the Customer incomplete, without accessories or nameplate,
• it was determined that the fault was caused by other reasons than a material or manufacturing defect of the Device
• the guarantee document is not valid or there is no proof of purchase,

13. The Manufacturer shall not be liable for 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.

14. 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.

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

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

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

This Device may be used with all devices certified with Z-Wave certificate and should be compatible with such devices produced by other manufacturers.
Any device compatible with Z-Wave may be added to Fibaro system.

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

www.fibargroup.com