



## OPERATING MANUAL FIBARO ROLLER SHUTTER FGRM-222 v2.1 - v2.3

Fibaro Roller Shutter is a universal, Z-Wave compatible, electric motor controller. The device allows for controlling motors of roller blinds, awnings, venetian blinds, gates and others, which are single phase AC powered. Fibaro Roller Shutter allows for precise positioning of a roller blind or venetian blind lamellas. Precise positioning is available for the motors equipped with mechanic and electronic end switches.

The module may be controlled wirelessly, through the Z-Wave network main controller, or through the switch keys connected to it. It's also possible to combine few devices into groups of devices, which then can be controlled simultaneously. In addition, Fibaro Roller Shutter is equipped with Power Metering.

### SPECIFICATIONS

Power Supply	110 - 230 V $\pm$ 10% 50/60Hz
Supplied motor type	Single phase, VAC
Supported limit switches type	Electronic and mechanic
Power of supplied motor	up to 1kW for 230V up to 500W for 110V
In accordance with EU standards	LVD (2006/95/EC) EMC (2004/10B/EC) R&TTE(1999/5/EC)
Circuit Temperature limit	105 °C
Operational Temperature	0 - 40 °C
For installation in boxes	$\varnothing$ $\geq$ 50mm
Radio protocol	Z-Wave
Radio Frequency	868,4 MHz EU; 908,4 MHz US; 921,4 MHz ANZ; 869,2 MHz RU;
Radio signal power	1mW
Range	up to 100m outdoors up to 30m indoors (depending on building materials used)
Dimensions (L x W x H)	42 x 37 x 17 mm
Electricity consumption	< 0,8W

### TECHNICAL INFORMATION

- Controlled by Fibaro System devices or any Z-Wave controller
- Microprocessor control
- Executive elements: relays
- The device may be operated by momentary or toggle switches, and by dedicated roller blind control switches
- Connected motor's current and historical power consumption measured



**WARNING**  
Danger of electrocution! Any work on the device regarding electrical connections may be performed only after the power supply has been disconnected.



**WARNING**  
Danger of electrocution! Even when the device is turned off, voltage may be present at it's terminals. Any work on the device regarding electrical connections may be performed only after the power supply has been disconnected.



**WARNING**  
Any maintenance work on controlled devices may be performed only after the power supply has been disconnected.



**WARNING**  
It's not recommended to operate all of the roller blinds simultaneously. For safety reasons, at least one roller blind should be controlled independently, providing safe escape route in case of emergency.



**WARNING**  
Do not connect the device to loads exceeding recommended value.



**WARNING**  
It is recommended to monitor regulary operation of Fibaro Roller shutter in all modes. In case of gate control mode device, motor limit switches, infrared barriers and emergency stop should be monitored and maintained regulary

### 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. However, a radio signal is weakened by various obstacles located in 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 signal receivers, also duplicate signal. When a direct connection path between the transmitter and the receiver cannot be established, the connection may be achieved through other intermediate devices.

Fibaro is a bi-directional wireless system. This 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, which checks whether they are active or not. Safety of the Fibaro System transmission is comparable to the safety of transmission in data bus wired systems.

Fibaro operates in the free bandwidth for data transmission. The frequency depends on radio regulations in individual countries. 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 a new technology, it has already become recognized and officially a 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](http://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.

### II. ROLLER SHUTTER INSTALLATION

- Before installation make sure the voltage supply is disconnected.
- Connect the Roller Shutter in accordance with the wiring diagram presented on Fig. 1 (roller blinds, venetian blinds) or Fig. 2 (gates).
- Place the device in a switch box.
- Arrange the antenna (tips presented below Fig.2)
- Turn on the power supply keeping the necessary safety precautions.
- Include the module into the Z-Wave network, observing pt. III description.
- If necessary, calibrate the module, observing pt. VI description.



**NOTE**  
A push button connected to S1 terminal operates the O1 output, while the push button connected to S2 terminal operates the O2 output. It's recommended to connect an UP button to S1 terminal and a wire, responsible of up movement, to O1 output terminal. Respectively, a DOWN button should be connected to S2 terminal and a wire, responsible for down movement, to O2 output terminal.



**WARNING**  
Fibaro Roller Shutter is dedicated to operate with AC powered electric motors. Connecting the device directly to DC powered motors may result in them being damaged.

#### NOTES FOR THE DIAGRAM:

L - terminal for live lead  
N - terminal for neutral lead  
S1 - terminal for key no. 1 (has the option of entering the device in learning mode)  
S2 - terminal for key no. 2  
O1 - output terminal no. 1 for shutter motor  
O2 - output terminal no. 2 for shutter motor  
B - service button (used to add or remove a device from the system)

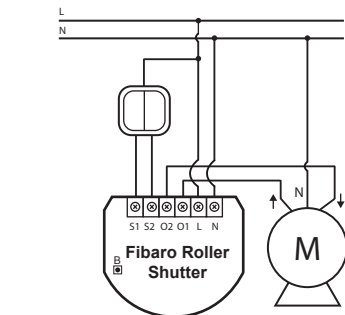


Fig. 1 Roller Shutter wiring diagram

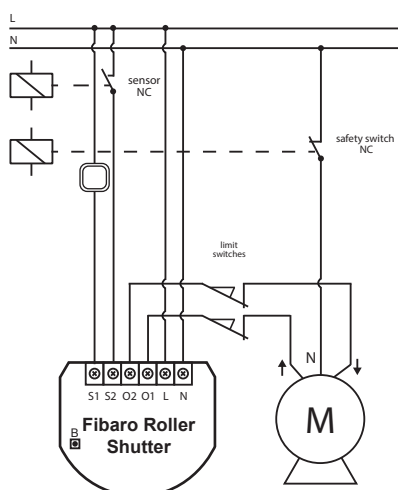


Fig. 2 Connecting Roller Shutter to GATE motor

### TIPS FOR ARRANGING THE ANTENNA

- Locate the antenna as far from metal elements as possible (connection wires, bracket rings, etc.) in order to prevent interferences.
- Metal surfaces in direct vicinity of the antenna (e.g. metal switch boxes, door frames) may impair radio signal reception!
- Do not cut or shorten the antenna. Its length is perfectly matched to the band in which the system operates.

### III. Z-WAVE NETWORK INCLUSION

Fibaro Roller Shutter may be included into the Z-Wave network via the B-button or a push button connected to the S1 terminal. In addition, the module may be included in auto inclusion mode, by simply connecting the power supply.

#### Automatic Z-Wave network inclusion:

- Make sure the power supply is disconnected and a Roller Shutter is located within a direct Z-Wave network's main controller communication range.
- Set the main controller into the learn mode (see main controllers operating manual).
- Connect the power supply to include the Roller Shutter in auto inclusion mode.
- Fibaro Roller Shutter will be automatically detected and included into the Z-Wave network.

To disable the auto inclusion mode, press the B-button briefly, after connecting the module to the power supply.

#### Manual Z-Wave network inclusion:

- Connect the power supply.
- Set the main controller into the learn mode (see main controllers operating manual).
- Triple click the B-button or a push button connected to the S1 terminal.
- Fibaro Roller Shutter will be detected and included into the Z-Wave network.



**NOTE**  
To abort the calibration process press any key (connected to S1 or S2) or send a STOP control frame through the Z-Wave network controller. In Gate Controller mode the calibration process will be aborted after disconnecting the S2 terminal.

### IV. Z-WAVE NETWORK EXCLUSION

Excluding Fibaro Roller Shutter from the Z-Wave network:

- Make sure the module is connected to the power supply.
- Set the main controller into the learn mode (see main controllers operating manual).
- Triple click the B-button or a push button connected to the S1 terminal.

### V. ROLLER SHUTTER RESET

Reset procedure clears the modules' EPROM memory, including all information about the Z-Wave network controller, calibration and power consumption data.

- Make sure the module is connected to the power supply.
- Press and hold the B-button for ca. 14 seconds.
- LED indicator will glow yellow.
- Release the B-button and press it again, briefly.
- The Roller Shutter memory is now empty.
- The module goes into the auto inclusion mode, until any button is pushed.



**NOTE**  
Memory reset does not remove the module from the Z-Wave network main controller's memory. Prior to memory reset it's recommended to exclude the module from the Z-Wave network.



**TIP**  
After memory reset, the Roller Shutter goes into the auto inclusion mode and waits to be included into the Z-Wave network. To exit the auto inclusion mode press the B-button briefly.

### VI. POSITIONING CALIBRATION

Calibration is a process during which a Roller Shutter learns the position of the limit switches and a motor characteristic. Calibration is mandatory in order for the Roller Shutter to correctly recognize a roller blind position. The procedure consists of an automatic, full movement between the limit switches (up, down, and up again). There are separate procedures of calibrating roller blind and lamellas (venetian blind) positioning. Each time the calibration requires the completion of a full cycle (up and down).

### ROLLER BLIND POSITIONING CALIBRATION

There are 5 procedures of calibrating a Fibaro Roller Shutter to choose from. Each one gives the same results and the user may choose which one to execute.

#### A. Calibration through a Fibaro Home Center 2 interface

- Make sure the module is connected to the power supply, according to Fig.1
- Include the module into the Z-Wave network, according to section III of instructions.
- In Home Center 2 interface choose Fibaro Roller Shutter's advanced settings.
- Click CALIBRATE button in the devices advanced settings tab.
- Roller Shutter performs the calibration process, completing full cycle - up, down and up again.
- Using an interface test whether the positioning works correctly.

#### B. Calibration through the Z-Wave network

- Make sure the module is connected to the power supply, according to Fig.1
- Include the module into the Z-Wave network, according to pt.III instructions.
- Set the parameter 29 value to 1.
- Roller Shutter performs the calibration process, completing full cycle - up, down and up again.
- The parameter 29 value will be automatically set to 0.
- Using an interface test whether the positioning works correctly.

#### C. Calibration through the switch keys

- Make sure the module is connected to the power supply, according to Fig.1, and to the switch keys as well (S1 and S2 inputs).
- Include the module into the Z-Wave network, according to section III of instructions.
- Press and hold the switch key connected to S1 or S2 input terminal and release it after at least 3 seconds.
- Press and hold the same switch key again, and release it after 3 seconds.
- Now press and hold the same button, for 3 seconds, for the 3rd time.
- After pressing and releasing the button for the third time, automatic calibration sequence will start.
- Roller Shutter performs the calibration process, completing full cycle - up, down and up again.

#### D. Calibration through Menu (B-button)

- Make sure the module is connected to the power supply, according to Fig.1
- Include the module into the Z-Wave network, according to section III of instructions.
- Press and hold the B-button for ca. 6 seconds.
- LED will glow blue.
- Release the B-button and press it again, briefly.
- Roller Shutter performs the calibration process, completing full cycle - up, down and up again.

E. Calibration through a Fibar Command Class control frame. It's possible to force the calibration process execution through sending a Fibar Command Class control frame through a Z-Wave network main controller (see a Fibar Command Class documentation).

### CALIBRATING LAMELLAS POSITIONING IN VENETIAN BLINDS

Apart from calibrating the roller blind position, it's possible to calibrate the position of venetian blinds lamellas. After correct calibration, in case of venetian blinds, it's possible to set the position between the limit switches, as well as the lamellas angle. By default, time of full turn of the lamellas is set to 1,5 seconds. If necessary, it can be modified following below instructions.

- Make sure the module is connected to the power supply, according to Fig.1
- Include the module into the Z-Wave network, according to section III of instructions.
- Calibrate the Roller Shutter, according to the instructions provided in sections VI.A, VI.B, VI.C, VI.D or VI.E.
- Set the parameter 10 value to 2 or choose in HG2 interface: Device Type - Venetian Blind
- Another device icon, responsible for lamellas operation, will show up in Home Center 2 interface. In case of any other Z-Wave network controllers managing the lamellas position is achieved through pressing and holding a switch key (up or down).
- By default, time of transition between extreme positions is set to 1 500 ms (1,5 seconds).
- Turn lamellas between extreme positions. If after full cycle a blind starts moving up or down, then parameter's 12 value must be modified, e.g. to 1 000ms (1 second). Correctly configured lamellas should not force the blind to move up or down.



**NOTE**  
Roller Shutter needs to be calibrated to work with any given motor.



**NOTE**  
In Venetian Blind mode, lamellas need to be calibrated to work with any given motor.



**NOTE**  
Venetian blind lamellas may be only operated by momentary switches.

### VII. OPERATING THROUGH THE Z-WAVE NETWORK

After including into the Z-Wave network, Fibaro Roller Shutter will be presented in a Home Center 2 interface as a roller blind icon (see fig. below). After choosing Venetian Blind device type, a second icon will show up, responsible for managing lamellas position.

User can choose from the following operating modes:

- Roller Blind Mode, without positioning
- Roller Blind Mode, with positioning
- Venetian Blind Mode
- Gate Mode, without positioning
- Gate Mode, with positioning

After choosing one of the above operating modes, device will be represented in Home Center 2 interface by icons shown in Fig.4. In addition, each operating mode affects certain parameters settings:

- Roller blind without positioning (parameter 10 set to 0)
- Roller blind with positioning (parameter 10 set to 1)
- Venetian blind (parameter 10 set to 2; parameter 13, set to 2)
- Gate without positioning (parameter 10 set to 3; parameter 12 set to 0; parameter 17 set to 0)
- Gate with positioning (parameter 10 set to 4; parameter 12 set to 0; parameter 17 set to 0)

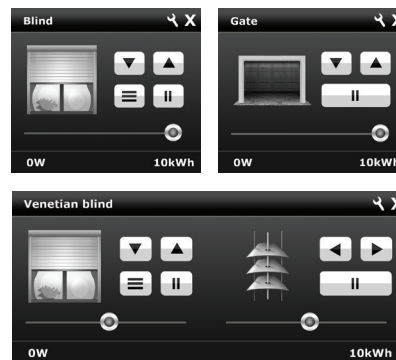


Fig. 3 Roller Shutter icons in Home Center interface



**NOTE**  
Above operating modes and their default settings are modified automatically only in Home Center 2 controller. In case of the Z-Wave network controllers from other manufacturers, these settings need to be manually adjusted (see section XV).

Opening / Closing a blind is achieved through moving a slider or pushing a button shown in fig. 3.

In Venetian Blind mode, setting lamellas angle is achieved through moving a slider or pushing a button shown in fig. 3.

### VIII. MANUAL OPERATION

Fibaro Roller Shutter allows for connecting push buttons to S1 and S2 terminals. These may be momentary or toggle switches, alternatively. Push buttons are responsible for managing the blind's movement.

Using momentary switches:

- Clicking ▲ button connected to S1 terminal, initiates up movement.
- Clicking ▼ button connected to S2 terminal, initiates down movement.

If the blind is moving, each click of any button, will stop the movement. In addition a button click sends a command frame to I-st association group devices.

In case of venetian blinds, it's possible to manage the lamellas angle. Operating Mode - Venetian Blind, or Parameter 10 value set to 2.

Holding ▲ connected to S1 terminal initiates lamellas rotation up.

Holding ▼ connected to S2 terminal initiates lamellas rotation down.

In addition a button hold sends a Fibar Command Class control frame to II-nd association group devices.

Using toggle switches:

Changing ▲ switch key position, connected to S1 terminal, initiates up movement.

Changing ▼ switch key position, connected to S2 terminal, initiates down movement.

Choosing a middle position stops the blind.

### IX. ASSOCIATIONS

Through an association Fibaro Roller Shutter may control another Z-Wave network device, e.g. another Roller Shutter, Wall Plug, Dimmer, Relay Switch, RGBW Controller.



**NOTE**  
Association allows for direct communication between Z-Wave network devices. Main controller does not take part in such communication.

Fibaro Roller Shutter provides three association groups:

I association group is triggered through a momentary switch click, or a toggle switch position change.

II association group is triggered through a momentary switch hold



**NOTE**  
II association group is inactive when toggle switches are used or in Gate Controller mode (parameter 10). In case of controlling Venetian Blinds, control commands are sent in Fibar Command Class standard.

III association group reports the module status. Only one device may be assigned to this group, main controller by default. It's not recommended to modify this group's settings.

Fibaro Roller Shutter allows for commanding other Roller Shutters, associated into I or II association group, through clicking or holding a switch key. For example, this mechanism allows for operating a Roller Shutter connected to the switch with a button click, and operating the devices associated in II association group by a button hold. In addition, when operating Venetian Blinds, it's possible to synchronize many devices.

### USING ASSOCIATIONS TO OPERATE ANOTHER ROLLER SHUTTER OR ANY OTHER Z-WAVE DEVICE.

#### I ASSOCIATION GROUP:

Clicking ▲ button, connected to S1 terminal will initiate up movement in associated Roller Shutters, or send Turn On command frame to the devices associated in I-st association group.

Clicking ▼ button, connected to S2 terminal will initiate down movement in associated Roller Shutters, or send Turn Off command frame to the devices associated in I-st association group.

#### II ASSOCIATION GROUP:

Holding ▲ button, connected to S1 terminal will move the connected roller blind up, and after 1 second delay initiate up movement in associated Roller Shutters, or send Turn On command frame to the devices associated in II-nd association group.

Holding ▼ button, connected to S2 terminal will move the connected roller blind down, and after 1 second delay initiate down movement in associated Roller Shutters, or send Turn Off command frame to the devices associated in II-nd association group.

### USING ASSOCIATIONS TO OPERATE ROLLER SHUTTERS CONNECTED TO VENETIAN BLINDS.

Using association mechanism to operating venetian blinds requires configuring both, I-st and II-nd association groups.

#### I ASSOCIATION GROUP

Clicking ▲ button, connected to S1 terminal will initiate up movement of the connected venetian blind and other devices associated in I-st association group.