Advanced User's Guide

ver. 1.06

Contents

Chapter 1

Fibaro System - General Information

Fibaro is a wireless, intelligent building automation system, based on the Z-Wave communication protocol. Thanks to MESH network topology, Fibaro has certain advantages over competitive solutions, which establish a direct connection between the signals emitter and receiver. In such a situation the radio signal is weakened by any obstacle in its way - walls, furniture etc. Each Fibaro System component serves as a signal emitter and receiver, plus also as a signal repeater. This is the main advantage of the Fibaro System - if establishing a direct connection between devices proves impossible, a connection may be established thanks to the other devices serving as a signal repeaters.

The Fibaro System uses two-way communication between system components. Communications are sent to devices and the devices send back communication confirming the signal's reception. This way each device reports its current state, so that it may be easily determined if a certain action has been performed. Data transmission security in the Fibaro System is comparable to that of wired home automation systems.

Fibaro System uses a Z-Wave certified data transmission radio frequency - e.g. 868,4 MHz in EU. Each individual network gets its own, unique identification number (home ID) which gives the possibility for two or more independent Fibaro Systems to operate in the same building without any interference. Z-Wave wireless communication serves as a certified standard, which assures compatibility for products produced by various manufacturers all over the world. Thanks to that approach Z-Wave technology offers great potential for expansion and further development.

Because Z-Wave intelligent systems work in Mesh topology, where each device (node) serves as a transmitter and receiver. Each device (node) also reports it

state, which enables the central unit to constantly monitor the networks status. Thanks to this technology the Fibaro System creates a dynamic network in which the function and location of each device is constantly monitored, in real time, from the moment the System is started.

Fibaro System modules serve as network nodes. Thanks to Mesh topology, each node not only sends and receives the radio signals, but also serves as a relay for other nodes, i.e. nodes collaborate to propagate the data within the network. Each time nodes change their location, or one of the nodes dies, the network reconfigures itself automatically. This way the Fibaro System devices communicate with each other even in the event of central unit failure, e.g. in case of fire, flooding, etc. Each of the Fibaro System modules are tested and certified for compatibility by the Z-Wave technology owner.

Chapter 2

The Z-Wave Protocol

The Z-Wave protocol uses 868,4 MHz radio frequency in Europe, 908,4 MHz in USA and 921.4 in AUS/NZ on unlicensed ISM bands. The protocol was launched with 9600 b/s data transmission but it has been raised to 40Kbps. Both versions of the protocol are compatible. Data is transmitted in 8bit blocks, in which the most important bit is always sent first. Each Z-Wave network has its unique ID called HOME ID. In addition, each device gets its own ID - Node ID. Each, newly added device gets two ID numbers - HOME ID and Node ID. Home ID is the same for all devices within the network, while Node ID is unique for a given node. If another controller (secondary master) is added to the network, it gets the same HOME ID as the main controller.

2.1 Device Types

There are two types of devices in the Z-Wave protocol: Master and Slave. There are two types of master devices: Primary and Secondary. There is always one Primary Master Controller in each Z-Wave network, to manage devices inclusion/exclusion and preserve network settings. Secondary Master Controllers copy this data from the Primary Master Controller. In the Fibaro System, the Primary Master Controller is the Home Center 2.

The Secondary Master (secondary) -e.g. remote, or any other device bearing Secondary Master's characteristic. Controllers initiate data transmission within the network. Slaves are devices serving as actors i.e. they perform tasks directed by Master Devices.

2.2 How the network works

Managing network nodes is realized through two types of operation: including/excluding nodes and associating nodes. Including device to the network means creating a new network node, while excluding device means deleting network node. Each Z-Wave network has one Primary Master Controller, able to include/exclude devices (create/delete network node). Other controllers (Secondary Master Controllers) copy the informations from the Primary Master. Adding/deleting node always starts with entering the Primary Master Controller into learning mode and then by activating the device's inclusion. The latter is done by the switch connected to the device, a specially designated switch in the device, or simply by clicking an icon in the system menu (Primary Master Controller's users interface). Once the primary master controller receives information from a new node, the node receives a Home ID (same for each node within the network) and its unique Node ID. Association is a direct link between network nodes, realised without any action from Primary Master Controller.

2.3 Routing Principles

In a typical wireless network the central controller has a direct wireless connection to all of the other networking nodes. This always requires a direct radio link. In case of disturbances the controller does not have any backup route to reach the nodes. However, Z-Wave is a wireless system that offers a very powerful mechanism to overcome this limitation. Z-Wave nodes can forward and repeat messages that are not in direct range of the controller. This gives greater flexibility as Z-Wave allows communication, even though there is no direct wireless connection or if a connection is temporarily not available, due to some change in the room or building.

Z-Wave is able to route messages via up to four repeating nodes. This is a compromise between the network size and stability, and the maximum time a message is allowed to travel in the network. Every node is able to determine which nodes are in its direct wireless range. These nodes are called neighbours. During inclusion and later on request, the node is able to inform the controller about its list of neighbours. Using this information, the controller is able to build a table that has all the information about possible communication routes in a network. The user can access the routing table. There are several software solutions, typically called installer tools, which visualise the routing table to optimize the network setup. A controller will always try first to transmit its message directly to the destination. If this is not possible it will use its routing table to find the next best way to the destination. The controller can select up to three alternative routes and will try to send the message via these routes. Only

if all three routes fail (the controller does not receive an acknowledgement from the destination) the controller will report a failure.

Chapter 3

Fibaro System Modules

3.1 Fibaro Wall Plug FGWPE/F

Figure 3.1: Fibaro Wall Plug, FGWPE

Fibaro Wall Plug is a universal, Z-Wave compatible, relay switch in the form of a socket adapter. The Plug may be used to operate any device up to 2500W power output. The Plug features power consumption measuring and uses a crystal LED ring to visualize the current load by color changing illumination. Fibaro Wall Plug may be operated using the service button located on its casing, or via any Z-Wave compatible controller.

3.1.1 Product Characteristics

- Power supply: 110-230V ±10%, 50/60Hz,

- Rated load current: 11A, 110-230V, 50/60 Hz - continuous load
  13A, 110-230V, 50/60 Hz - momentary load
- Power consumption: up to 0,8W
- Power output (For resistive load): 2,5kW at continuous load
  3,0kW at momentary load
- In accordance with EU standards: EN 55015 (noise) EN 60669-2-1 (operational safety)
- Circuits temperature limit: 105 °C
- Operational temperature: from 10 to 40 °C
- Circuit's thermal protection: 115 °CTa (Ta = ambient temperature).
- To be used with E or F type (Schuko) sockets:
  - CEE 7/16 - max load 2,5 A
  - CEE 7/17 - max load 16A
  - CEE 7/17 - max load 16A
- Radio signal power: 1mW
- Radio protocol: Z-Wave
- Radio frequency: 868,4 MHz
- Range:
  - up to 50m outdoor
  - up to 30m indoors (depending on building materials)
- Dimensions (D x H): 43x65mm

Plugs configuration window (HC2 interface) shows following parameters:

- *Device name*
- *Room* - parameter available from the list of rooms created (see 5.5 for detailed description,
- *Device kind*
- *Device type*
- *Producer*

Figure 3.2: Plugs Configuration Window

- *Version* - version of the module firmware
- *Configuration* - information if the module is configured properly in the Z-WAVE network
- *ID* - Devices number

Fibaro Plug supports power metering functionality so it displays current power and energy usage. This information are displayed at the bottom part of the module icon.

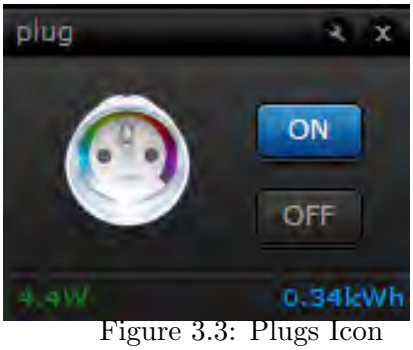


Figure 3.3: Plugs Icon

Power consumption is displayed in **green** color and energy consumption is displayed in **blue** color.

3.1.2 Example Configuration Parameters

Configuration parameters, for each module are available in the Advanced Settings tab, for each device, in the Home Center 2 interface.

NOTE *Below is a list of the most popular parameters. Complete list is available in the user manual and the list of advanced parameters.*

Parameter 1 Always on function
Once activated, Wall Plug will keep a connected device constantly ON, will stop reacting to alarm frames and B-button push. "Always on" function turns the Plug into a power and energy meter. Also, connected device will not be turned off upon receiving an alarm frame from another Z-Wave device (parameter 35 will be ignored). In "Always on" mode, connected device may be turned off only after user defined power has been exceeded (parameter 70). In such a case, connected device can be turned on again by pushing the B-button or sending a control frame. By default, overload protection is inactive.

Available settings:

0 - function activated

1 - function inactive

Default setting: 1

Parameter size: 1 [byte]

Parameter 34 Reaction to alarms.
Define Z-Wave network alarms to which the Wall Plug will respond.
Available settings: 0 - 63.

1 - general alarm,

2 - smoke alarm,

4 - CO alarm,

8 - CO2 alarm,

16 - high temperature alarm,

32 - flood alarm,

63 - device responds to all types of alarm frames.

Default setting: 63

Parameter size: 1 [byte]

Set value may be a sum of available values, e.g. set value = 5 means the Plug will respond to general alarm (1) and CO alarm (4).

Parameter 35 Wall Plug's response to alarm frames

Parameter defines how the Wall Plug will respond to alarms (device's status change)

Available settings:

0 - no reaction,

1 - turn on connected device. LED ring signals an alarm through defined time period (parameter 39) or untill the alarm is cancelled.

2 - turn off connected device. LED ring signals an alarm through defined time period (parameter 39) or untill the alarm is cancelled.

3 - cyclically change device state, each 1second.

In alarm mode Wall Plug does not report status change, power changes, ignores alarm frames. After the defined time period has passed (parameter 39) or after the alarm cancellation, connected device is set to the previous state.

Parameter size: 1[byte]

Default setting: 0

Association group 2

Status of devices added to 2nd Association Group may depend on power consumed by the connected device. For example, turning on the TV controlled by the Plug will turn off the lights in the room. User defines two thresholds: UP and DOWN, and then defines the reaction to them being exceeded (parameter 52).

Parameter 50 DOWN value

Lower power threshold, used in parameter 52.
Available settings: 0 - 25 000 (0,0W - 2 500W)

NOTE

DOWN value cannot be higher than a value specified in parameter 51.

Default setting: 300 (30 W)

Parameter: 2[byte]

Parameter 51 UP value

Upper power threshold, used in parameter 52.
Available settings: 1 - 25 000 (0,1W - 2 500W)

Default setting: 500 (50 W)

Parameter size: 2[byte]

NOTE

UP value cannot be lower than a value specified in parameter 50.

Parameter 52 Action in case of exceeding defined power values (parameters 50 and 51)

Parameter defines the way 2nd association group devices are controlled, depending on the current power load.

Available settings:

0 - function inactive,

1 - turn the associated devices on, once the power drops below DOWN value (parameter 50),

2 - turn the associated devices off, once the power drops below DOWN value (parameter 50),

3 - turn the associated devices on, once the power rises above UP value (parameter 51),

4 - turn the associated devices off, once the power rises above UP value (parameter 51),

5 - 1 and 4 combined. Turn the associated devices on, once the power drops below DOWN value (parameter 50). Turn the associated devices off, once the power rises above UP value (parameter 51).

6 - 2 and 3 combined. Turn the associated devices off, once the power drops below DOWN value (parameter 50). Turn the associated devices on, once the power rises above UP value (parameter 51).

Default setting: 6

Parameter: 1[byte]

Parameter 61 LED ring illumination colour when controlled device is on.

Available settings:

0 - LED ring illumination colour changes in predefined steps, depending on power consumption changes,

1 - LED ring illumination colour changes continuously, using full spectrum of available colorus, depending on power consumption changes.

2 - White illumination,

3 - Red illumination,

4 - Green illumination,

5 - Blue illumination,

6 - Yellow illumination,

7 - Cyan (Greenish blue) illumination,

8 - Magenta (Purplish red) illumination,

9 - illumination turned off completely.

Default value: 1

Parameter size: 1[byte]

Parameter 70 Overload safety switch

This function allows for turning off the controlled device in case of exceeding the defined power. Controlled device will be turned off even if "always on" function is active (parameter 1). Controlled device can be turned back on via B-button or sending a control frame. By default this function is inactive.

Available settings: 10 - 65 535 (1W - 6 553,5W). Value higher than 32 000 (3 200W) turns the overload safety switch off, i.e. this functionality is turned off by default.

Default setting: 65 535 (6 553,5W)

Parameter: 2[byte]

3.1.3 Associations

The Fibaro Wall Plug allows for associating 5 normal devices per single association group, out of which 1 field is always reserved for main controller.

The Fibaro Wall Plug provides three association groups:

I association group is assigned to Plugs status - On / Off. Allows for sending control command to associated devices whenever the Plug is turned On or Off.

II association group allows for sending control commands to associated devices depending on the current load. This association group is configured through the advanced parameters no. 50, 51 and 52.

III association group reports relay's status to just one device, Z-Wave network's main controller by default. It's not recommended to modify settings of this association group.

3.1.4 Current load and energy consumption

Fibaro Wall Plug allows for the current load and power consumption monitoring. Data is sent to the main controller, e.g. Home Center 2. Measuring is carried out by an independent microprocessor dedicated exclusively for this purpose, assuring maximum accuracy and precision.

Electric power - power consumed by an electric device in an instant, in Watts (W).

Electric energy - energy consumed by a device through a time period. Most commonly measured in kilowatt-hours (kWh). One kilowatt-hour is equal to one kilowatt of power consumed over a period of one hour, 1kWh = 1000 Wh.

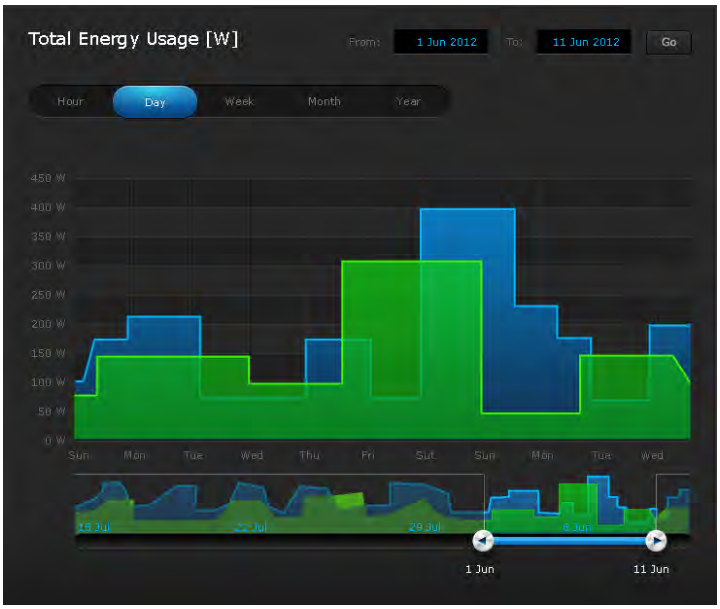


Figure 3.4: Energy usage charts in Home Center 2

3.1.5 Network range indication

The Fibaro Wall Plug features built-in network range status, in relation to the Z-Wave network main controller. To test the range:

1. Insert Plug into a mains socket,
2. Press and hold the B button for 10-15 seconds until the LED ring glows violet,
3. Release the B button,
4. Press the B button briefly.

5. LED ring signals Z-Wave network range - see below for signaling modes description.

6. To exit range testing mode press the B button briefly. Plugs relay will not change its status.

Z-Wave network range signaling modes:

LED ring pulsing green - Wall Plug tries to establish direct connection with the main controller. If direct connection cannot be established, Plug will try routing connection with the main controller which will be signaled by LED ring pulsing yellow.

LED ring glowing green - Wall Plug managed to establish a direct connection with the main controller.

LED ring pulsing yellow - Wall Plug is trying to establish routed connection with the main cotroller, via other Z-Wave devices acting as signal repeaters.

LED ring glowing yellow - Wall Plug managed to establish routed connection with the main controller. After 2 seconds the Plug will try again to establish a direct connection with the main controller, which will be signaled by LED ring pulsing green.

LED ring pulsing violet - Wall Plug is located outside the Z-Wave network's range or the network is busy. Ultimately, failure to connect with the main controller will be signalled by LED ring pulsing red. After 2 seconds the Plug will again try to establish a direct connection with the main controller which will be signalled by LED ring blinking green.

3.2 Fibaro Dimmer FGD221

Figure 3.5: Dimmer module, FGD-211

Radio controlled light dimming module, designed to work with light sources of any type. May be connected to two-wire or three-wire electric installation (with or without neutral wire). Fibaro Dimmer can switch or dim connected light source either through radio waves or through the wall switch connected directly to it. Automatically senses connected device, features automatic overload protection switch-off and soft start function. Works as a dimmer or as a connector, with two-wire or three-wire installations. In case of fluorescent light sources or certain transformers, only on/off function may be possible.

3.2.1 Product Characteristics

As at light dimmer it operates under the following loads:

- Conventional incandescent
- Halogen 230V
- Low voltage halogen 12V (with electronic transformers)
- Dimmable LED
- When used with FGB001 it may operate with any dimmable load up to 500W*

Moreover, as an electronic switch it may work with:

- Compact fluorescent lamps
- LED bulbs
- Fluorescent lamps with electronic ballast and the majority of conventional ballasts
- When used with FGB001 it may operate with any dimmable load up to 500W

3.2.2 Specifications

- Power supply: 230V ±10%, 50Hz,
- Output Power: 25-500W (for resistive loads - 230V); 10-250W (for resistive loads - 110V),
- Dimmer type: Leading-edge dimmer
- In accordance with EU standards: EN 55015 (noise) EN 60669-2-1 (operational safety), AS/NZS 3100 (general requirements for electrical products)
- Overcurrent protection: 2,5A,
- Circuit temperature limits: 105 °C,
- Ambient temperature: from 10 to 40 °C,
- For installation in boxes: ∅≥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 (H x W x D): 15 x 42 x 36 mm.
- Electricity consumption: ¡0,8W

Dimmers configuration window (HC2 interface) shows following parameters:

- *Device name*
- *Room* - parameter available from the list of rooms created (see 5.5 for detailed description,

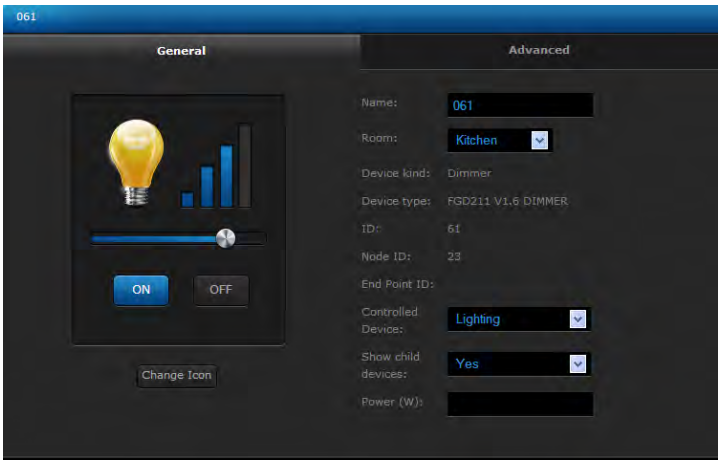


Figure 3.6: Dimmers Configuration Window

- *Device kind*
- *Device type*
- *ID* - Devices number,
- *Node ID* - Unique devices number within Z-Wave network,
- *EndPointID* - Multichannel devices number,
- *Controlled device* - Parameter taken from available devices list,
- *Show Slave Devices*
- *Power Output*

3.2.3 Example Configuration Parameters

Configuration parameters, for each module are available in the Advanced Settings tab, for each device, in the Home Center 2 interface.

Parameter 8
% change assigned to one step (automatic operation). *Default setting: 1%*

Parameter 9
Time to switch between min. / max. dimm level at manual operation. *Default setting: 0.05s*

Parameter 10
Time to switch between max. / min. dimm level at remote operation. 0 turns off smooth dimming level change.
WARNING *inductive and capacitive devices must be set to 0 to work properly (fluorescent lamps, electric motors).*

Parameter 12
Max. dimming level. *Default setting: 99%*

Parameter 13
Min. dimming level. *Default setting: 2%*
WARNING! *Max level must be always higher then min.*
NOTE *In case of fluorescent lights or non-dimmable LEDs the max. dimming level must be set at 98%; min at 99%. If settings are too low when AC powered motors are used, operation may result in motor failure.*

Parameter 14
Wall Switch type - mono-stable (press switch) or bi-stable *Default setting: mono-stable.*

Parameter 15
Double Click ON / OFF. *Default setting: ON(double click = lights set to 100%)*

Parameter 17
Stair switch function On / Off *Stair Switch Off.* **WARNING!** *Dimmer works with two bi-stable switches or infinite number of mono-stable switches.*

Parameter 18

Synchronize Dim level for associated devices On / Off. *Default setting: OFF*

3.2.4 Associations

Association lets a Dimmer trigger other Z-Wave devices, e.g. another Dimmer, Relay Switch, Roller Shutter. Triggering is performed in direct communication between devices, without contacting the Primary Master Controller (Home Center 2).

A Dimmer may associate with up to 16 ordinary devices or up to 7 multichannel devices per association group, from which 1 device is always a network controller. Recommended number of devices per association - 10. The more devices are associated, the longer time will take for association action to take effect on each associated device.

Dimmer supports two association groups - I and II:

I association group is designated for Switch Key no.1,

II association group is designated for Switch Key no.2.

NOTE The following parameter refers to II association group:

Parameter 7

GET Device State before sending steering frame assigned to key no.2. *Default Setting: GET frame sent, device state checked before sending association command.*

3.2.5 Tips and Tricks

1. *How to include a Dimmer module connected to fluorescent lamp?*

   To include a Dimmer connected to fluorescent lamp, please connect the module and fluorescent lamp observing wiring diagram (operating manual), connect power input and double click button "B" or key switch connected to S1 input. Fluorescent lamp should turn ON (Dimmer turns ON with full power). Next, complete inclusion process as described in the operating manual.

2. *How to set parameters for fluorescent lamp?*

   - Parameter 10: 0 seconds,
   - Parameter 13: 98%

3. *What kind of dimming does the Fibaro Dimmer provides?*

   The Fibaro Dimmer is a Leading-Edge type dimmer. The module is compatible with universal transformers and those designed for leading-edge type dimming (inclining sinusoid curve).

3.2.6 Wiring Diagrams - Dimmer

1. Before beginning, please make sure power supply is disconnected.
2. Connect Dimmer observing wiring diagram shown below.
3. Insert Dimmer and wall switch into connecting box.
4. While completing point 3. please take special care to lay antenna wire properly.

Symbols description:

- L - live wire,
- N - neutral wire,
- O - Dimmer output,
- Sx - power for Switch connected to the Dimmer,
- S1 - switch key 1 (also, enters Dimmer module into learning mode, see. inclusion process),
- S2 - switch key 2,
- B - service key (used for including/excluding device, see S1).

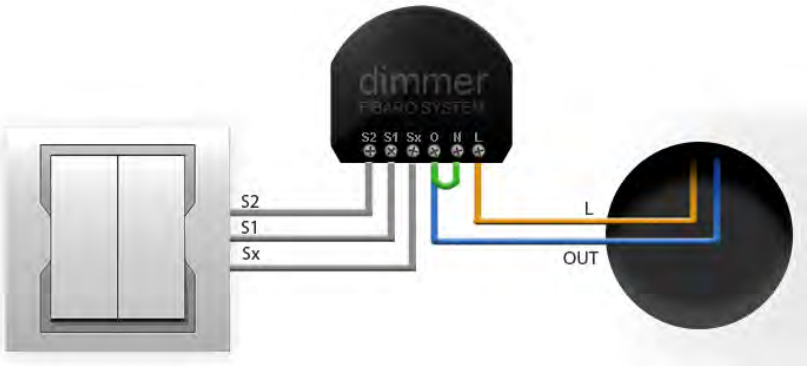


Figure 3.7: Dimmer wiring diagram

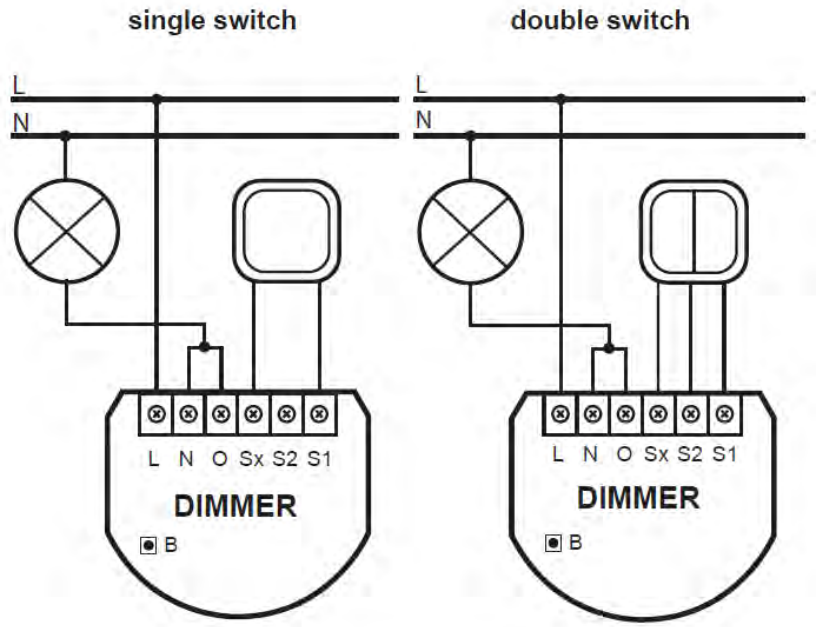


Figure 3.8: Dimmer wiring diagram - 2-wire connection

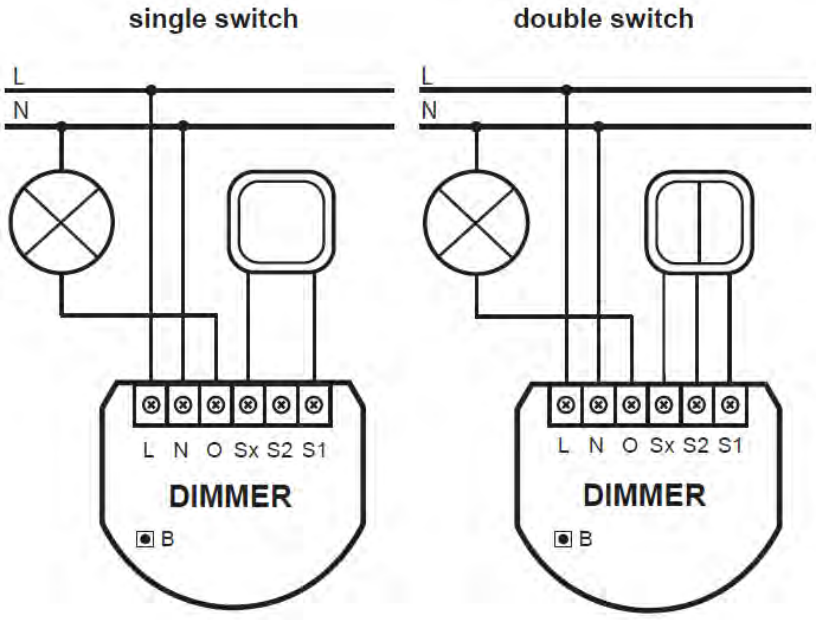


Figure 3.9: Dimmer wiring diagram - 3-wire connection

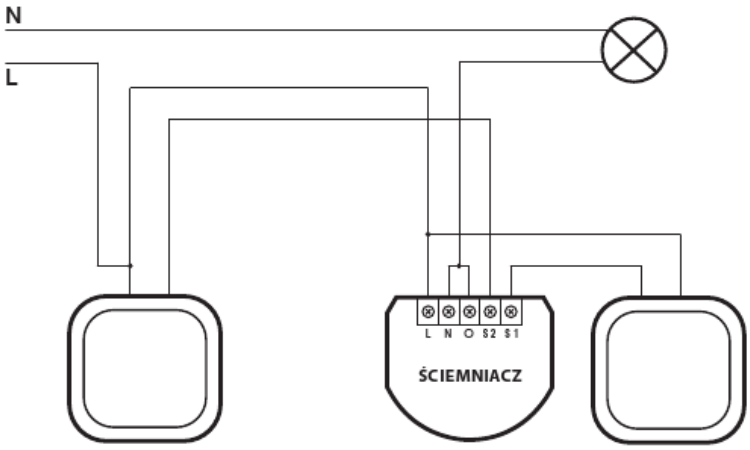


Figure 3.10: Dimmer wiring diagram - 3 way connection

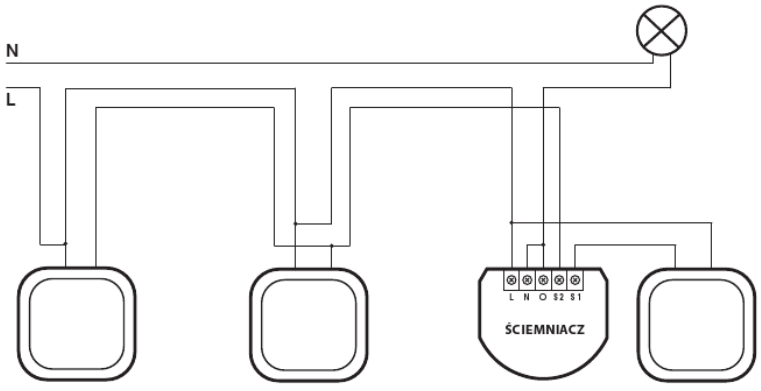


Figure 3.11: Dimmer wiring diagram - 4-way connection

3.3 Relay Switch 2x1,5kW FGS221

Figure 3.12: Fibaro Relay Switch 2x1,5kW module, FGS-221

The radio controlled Fibaro Double On/Off Relay Switch is designed to be installed in standard wall switch boxes, or anywhere else where it is necessary to operate two independent devices of 1,5kW power output each. The Fibaro Double On/Off Relay Switch can switch connected devices on or off either through radio waves or through the wall switch connected directly to it.

3.3.1 Product Characteristics

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

3.3.2 Specifications

- Power supply: 24 - 230V ±10% 50/60Hz,
- 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 standards: EN 55015; EN 60669-2-1, AS/NZS 3100
- Temperature limits: 105 °C,
- Operational temperature: from 0 to 40 °C,

- For installation in boxes: ∅≥50mm,
- Radio protocol: Z-Wave,
- Radio Frequency: 868 MHz for EU; 908 MHz for US; 921 MHz for AUS/NZ/BRA
- Range: up to 50 m outdoors, up to 30 m indoors (depending on building materials),
- Dimensions (H x W x D) 15 x 42 x 38 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.*

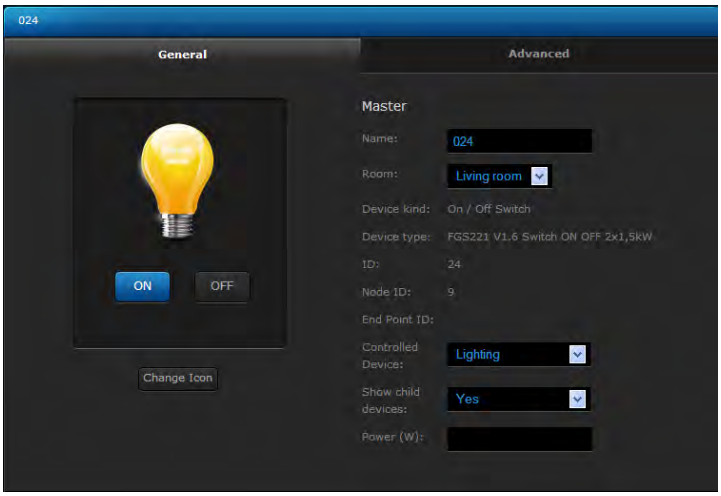


Figure 3.13: Relay Switch 2x1,5kW configuration window

Relay Switch 2x1,5kW configuration window (HC2 interface) shows the following parameters:

- *Devices name*
- *Room* - Parameter available from the list of rooms created (see 5.5 for detailed description)
- *Device kind*
- *Devices type*
- *ID* - Devices number
- *Node ID* - Unique devices number within Z-Wave network,

- *EndPointID* - Multichannel devices number
- *Controlled Device* - Parameter taken from available devices list
- *Show Slave Devices*
- *Show Slave Devices*
- *Power Output*

3.3.3 Example Configuration Parameters

Configuration parameters for each module are available in the Advanced Settings tab for each device in he Home Center 2 interface.

Parameter 3
Relay Auto OFF after specified time. *Default Setting: Auto OFF disabled.*

Parameter 4 & **5**
Relay 1 / 2 Auto OFF after specified time. *Default Setting: 0,2s*

Parameter 13
State Change (ON / OFF) for bistable switch (Parameter no.14). *Default Setting: key position change = ON or OFF.*

Parameter 14
Switch Type - mono-stable (press switch) or bistable. *Default Setting: mono-stable.*

Parameter 15
Operating associated Dimmer / Roller Shutter, enable / disable. *Default Setting: disable. (If enabled, hold or double click given key to trigger associated Dimmer / Roller Shutter).*

Parameter 16
Device On / Off after power cut. *Default setting - OFF*

3.3.4 Associations

Association lets Relay Switch 2x1,5kW trigger other Z-Wave devices, e.g. Dimmer, another Relay Switch, Roller Shutter, or a scene (only involving Home Center 2). Triggering is performed in direct communication between devices, without contacting the Home Center 2 (except for the use as a scene triggering device).

Relay Switch 2x1,5kW may associate with up to 16 ordinary devices or up to 7 multi channel devices per association group, from which 1 device is always a network controller. Recommended number of devices per association - 10. The more devices that are associated, the longer it will take for association action to take effect on each associated device.

Relay Switch 2x1,5kW supports two association groups - I and II:

I association group is designated for Switch Key no.1,

II association group is designated for Switch Key no.2.

3.3.5 Tips and Tricks

1. *What is the minimum powering voltage?*

   Relay Switch 2x1,5kW may be powered by 24V DC current.

2. *May I connect two different Live wires - one for the module, another one for the device triggered by the module?*

   Yes, a Relay Switch 2x1,5kW may be connected to two independent circuits at the same time - one powering the module, another one (even powered by a different voltage) powering the circuit triggered by the module.

3. *May I use Relay Switch 2x1,5kW in two and three wire electrical systems, just like the Dimmer?*

   The Relay Switch 2x1,5kW is designed to work on three-wire electrical system only, i.e. it needs the Neutral wire.

4. *I would like to use two Relay Switch 2x1,5kW modules to control home alarm control unit, but it is powered by 12V current.*

   In such a case another circuit, powering the Relay Switches (with 24V at least) will be necessary (see p. 2)

5. *Can I use the Relay Switch modules to operate floor heating?*

   Yes. These modules may be used to operate both electrical and hydraulic floor heating systems, in such use the modules will be used to turn electric valves ON or OFF. Heating itself will be programmed in the Heating Panel in of the HC2. For monitoring temperature we recommended the use of a DS18B20 sensor, together with a Fibaro Universal Binary Sensor.

Wiring Diagrams - Relay Switch 2x1,5kW

1. Before beginning, please make sure power supply is disconnected.

2. Connect Relay Switch 2x1,5kW observing wiring diagram shown below.

3. Insert Relay Switch 2x1,5kW and wall switch into connecting box.
4. While completing point 3. please take special care to lay antenna wire properly.

Symbol descriptions - Relay Switch 2x1.5kW :

- N - Neutral wire
- L - Live wire
- I - Output device power in
- O1 - Output 1
- O2 - Output 2
- S1 - Switch key 1 (also, enters the module into learning mode, see. inclusion process)
- S2 - Switch key 2
- B - Service key (used for including/excluding device, see S1)

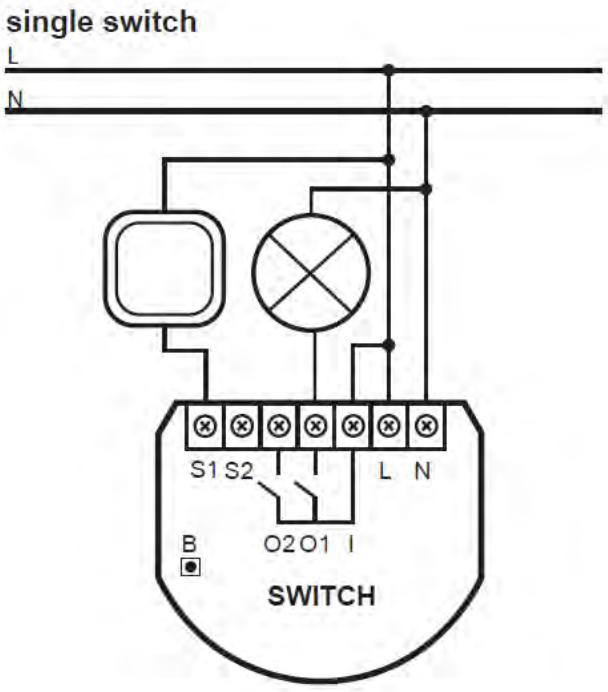


Figure 3.14: Single switch, Relay Switch 2x1,5kW connection diagram

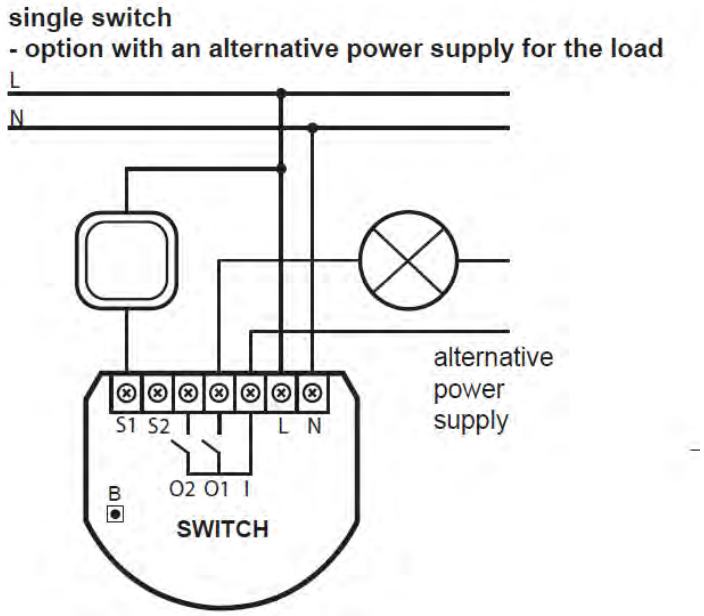


Figure 3.15: Single switch with an alternative power supply for the load

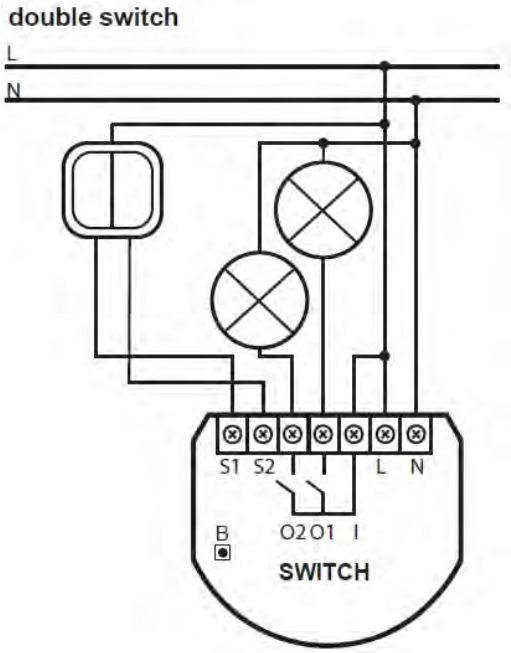


Figure 3.16: Double switch, Relay Switch 2x1,5kW connection diagram

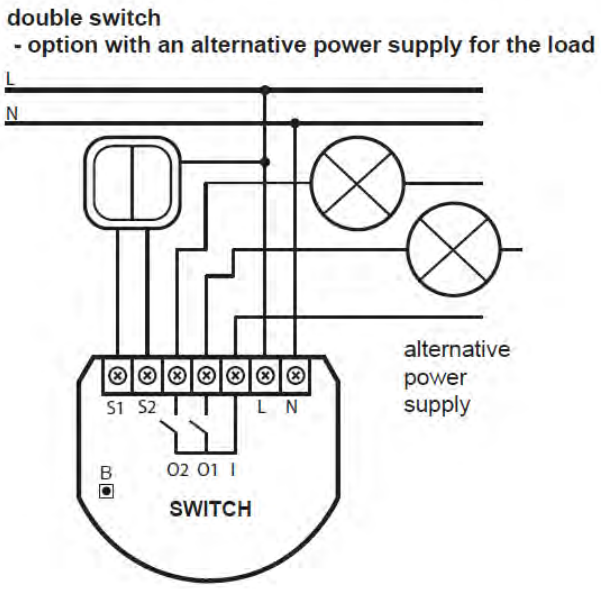


Figure 3.17: Double switch with an alternative power supply for the load

3.4 Fibaro Relay Switch 1x3kW FGS211

Figure 3.18: Relay Switch 1x3kW module, FGS-211

Radio controlled Fibaro Double On/Off Relay Switch is designed to be installed in standard wall switch boxes, or anywhere else where it is necessary to operate one single device of 3,0kW power output. Fibaro Double On/Off Relay Switch can switch connected device on or off either through radio waves or through the wall switch connected directly to it.

3.4.1 Product Characteristics

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

3.4.2 Specifications

- Power supply: 24 - 230V ±10% 50/60Hz,
- 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 standards: EN 55015; EN 60669-2-1, AS/NZS 3100
- Temperature limits: 105 °C,
- Operational temperature: from 0 to 40 °C,

- For installation in boxes: ∅≥50mm,
- Radio protocol: Z-Wave,
- Radio Frequency: 868 MHz for EU; 908 MHz for US; 921 MHz for AUS/NZ/BRA
- Range: up to 50 m outdoors, up to 30 m indoors (depending on building materials),
- Dimensions (H x W x D) 15 x 42 x 38 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.*

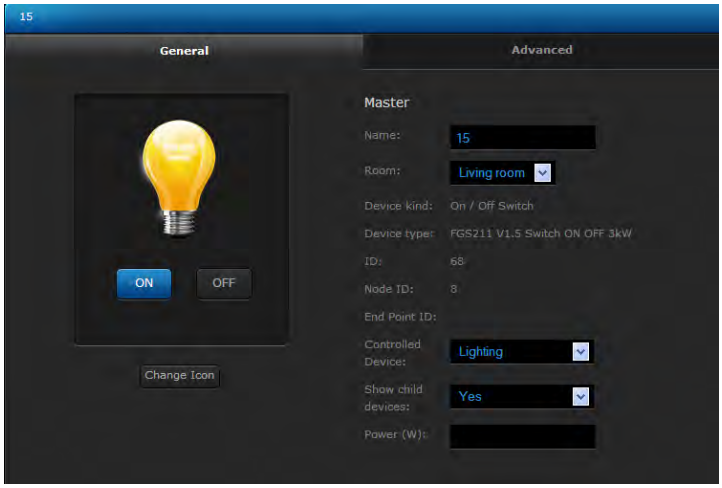


Figure 3.19: Relay Switch 1x3kW Configuration Window

Relay Switch 2x1,5kW configuration window (HC2 interface) shows following parameters:

- *Device name*
- *Room* - Parameter available from the list of rooms created (see 5.5 for detailed description)
- *Device kind*
- *Devices type*
- *ID* - Devices number
- *Node ID* - Unique devices number within Z-Wave network,

- *EndPointID* - Multichannel devices number
- *Controlled Device* - Parameter taken from available devices list
- *Show Slave devices*
- *Show Slave devices*
- *Power Output*

3.4.3 Example Configuration Parameters

Configuration parameters for each module are available in the Advanced Settings tab for each device in he Home Center 2 interface.

Parameter 3
Relay Auto OFF after specified time. *Default Setting: Auto OFF disabled.*

Parameter 4
Relay Auto OFF after specified time. *Default Setting: 0,2s*

Parameter 13
State Change (ON / OFF) for bistable switch (Parameter no.14). *Default Setting: key position change = ON or OFF.*

Parameter 14
Switch Type - mono-stable (press switch) or bistable. *Default Setting: mono-stable.*

Parameter 15
Operating associated Dimmer / Roller Shutter, enable / disable. *Default Setting: disable. (If enabled, hold or double click given key to trigger associated Dimmer / Roller Shutter).*

Parameter 16
Device On / Off after power cut. *Default setting - OFF*

3.4.4 Associations

Association lets a Relay Switch 1x3,0kW trigger other Z-Wave devices, e.g. Dimmer, another Relay Switch, Roller Shutter, or a scene (only involving Home Center 2). Triggering is performed in direct communication between devices, without contacting Home Center 2 (except for the use as a scene triggering device).

Relay Switch 1x3,0kW may associate with up to 16 ordinary devices or up to 7 multi channel devices per association group, from which 1 device is always a network controller. Recommended number of devices per association - 10. The more devices that are associated, the longer it will take for association action to take effect on each associated device

Relay Switch 1x3,0kW supports two association groups - I and II:

I association group is designated for Switch Key no.1,

II association group is designated for Switch Key no.2.

3.4.5 Wiring diagrams - Relay Switch 1x3,0kW

1. Before beginning, please make the sure power supply is disconnected.
2. Connect Relay Switch 1x3,0kW observing wiring diagram shown below.
3. Insert Relay Switch 1x3,0kW and wall switch into connecting box.
4. While completing point 3. please take special care to lay antenna wire properly.

Symbol descriptions:

- N - neutral wire
- L - live wire
- I - output device power in
- O - output
- S2 - switch key 2,
- S1 - switch key 1 (also, enters the module into learning mode, see. inclusion process),
- B - service key (used for including/excluding device, see S1)

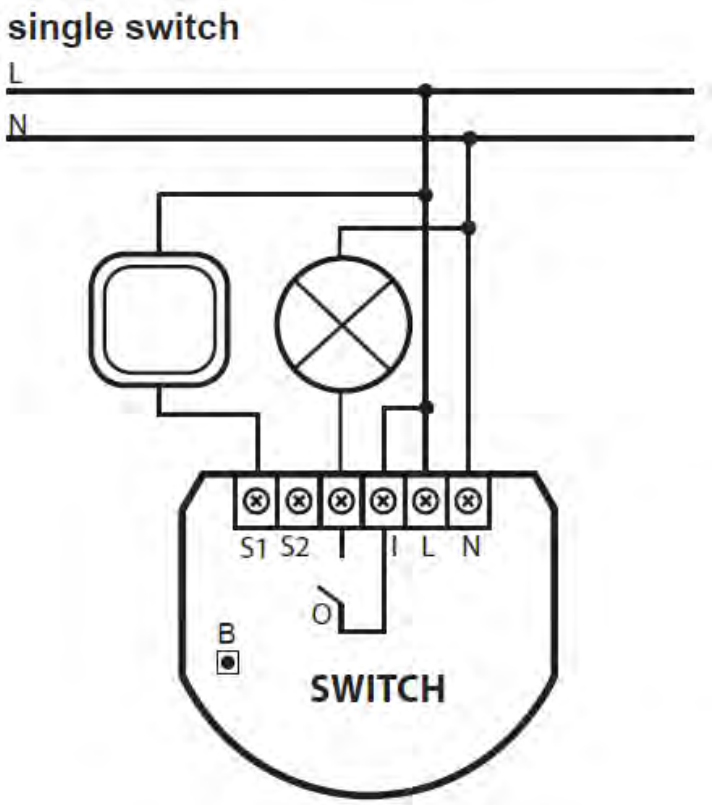


Figure 3.20: Single switch, Relay Switch 1x3kW wiring diagram

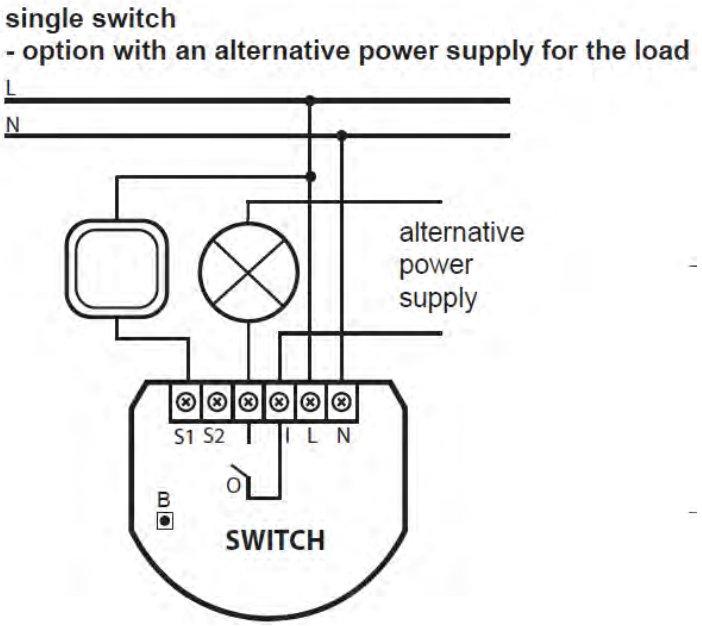


Figure 3.21: Single switch with an alternative power supply for the load

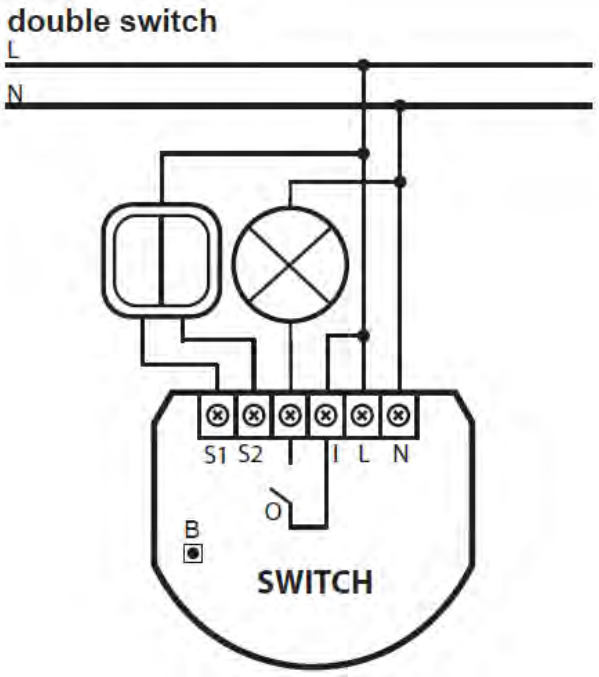


Figure 3.22: Double switch, Relay Switch 1x3kW wiring diagram

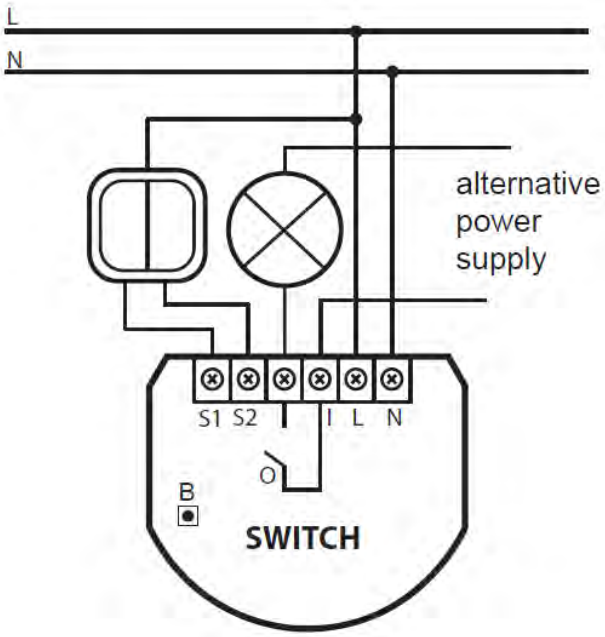


Figure 3.23: Double switch with an alternative power supply for the load

3.5 Fibaro Roller Shutter FGR221

Figure 3.24: Roller Shutter module, FGR-221

Radio controlled module, designed to work with electric motors in blinds, rollers, canopies and such. FIBARO Blind/Roller Shutter can control connected device either through radio waves or through the wall switch, connected directly to it. Equipped with unique feature of monitoring current Roller/Blind position.

3.5.1 Product Characteristics

- Controlled by FIBARO system devices or any Z-Wave controller.
- Microprocessor control.
- Executive elements: relays.
- The device may be operated by mono-stable (press switch), bi-stable push-buttons, dedicated roller blinds buttons.

NOTE *Precise roller blind positioning is possible for blind witch mechanical stop-switches. For roller blinds with electronic control, please turn OFF positioning function (parameter 10)*

3.5.2 Specifications

- Power supply: 110 - 230V ±10% 50/60Hz,
- Power of supplied motor: up to 1kW for 230V; up to 500W for 110V
- Rated motor current - 4,3A / 230V 50/60Hz
- In accordance with standards: EN 55022; EN 61000; AS/NZS 3100
- Temperature limits: 105 °C,

- Operational temperature: from 0 °C,
- For installation in boxes: ∅≥50mm,
- Radio protocol: Z-Wave,
- Radio Frequency: 868 MHz for EU; 908 MHz for US; 921 MHz for AUS/NZ/BRA.
- Range: up to 50 m outdoors, up to 30 m indoors (depending on building materials)
- Dimensions (H x W x D): 15 x 42 x 36 mm
- Electricity consumption - ¡ 0,8W

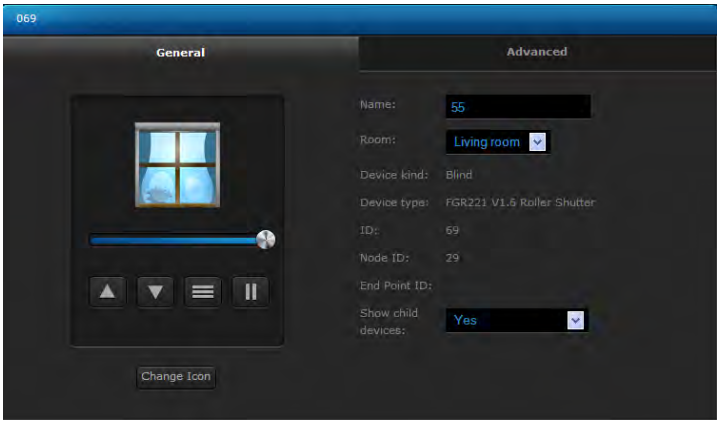


Figure 3.25: Roller Shutter configuration window

Roller Shutter configuration window (HC2 interface) shows following parameters:

- *Devices name*
- *Room* - Parameter available from the list of rooms created (see 5.5 for detailed description)
- *Device kind*
- *Device type*
- *ID* - Devices number
- *Node ID* - Unique devices number within Z-Wave network
- *EndPointID* - Multichannel devices number
- *What device controls* - Parameter taken from available devices list
- *Show slave devices*

3.5.3 Roller Shutter Calibration

After a successful inclusion process, the Roller Shutter module should be calibrated. The calibration process involves performing two complete cycles of opening/closing the roller blind. Properly completed calibration may be verified by setting required position of the roller blind using the icon e.g. 30% of roller blind opening - the actual opening should correspond to specified value/position.

3.5.4 Example Configuration Parameters

Parameter 10

Roller Blind positioning status. *Default Setting: ON*

Parameter 14

Switch Type - monostable (press switch) or bistable. *Default Setting: 16*%

3.5.5 Associations

Association lets Roller Shutter trigger other Z-Wave devices, e.g. Dimmer, Relay Switch, another Roller Shutter, or a scene (only involving Home Center 2). Triggering is realised in direct communication between devices, without contacting Home Center 2 (except for the use as a scene triggering device).

Roller Shutter supports two association groups - I and II:

I association group is triggered by single click of any Switch Key,

II association group is triggered by pressing and holding any Switch Key.

Roller Shutter may associate with up to 16 ordinary devices or up to 7 multi channel devices per association group, from which 1 device is always a network controller. Recommended number of devices per association - 10. The more devices are associated, the longer time is needed for association action to take effect on each associated device.

3.5.6 Connecting Scheme - Roller Shutter

1. Before beginning, please make sure power supply is disconnected.
2. Connect Roller Shutter observing connecting scheme shown below.
3. Insert Roller Shuttter and wall switch into connecting box.
4. While completing point 3. please take special care to lay antenna wire properly.

Symbols description

- L live wire
- N neutral wire
- S1 switch key 1 (also, enters the module into learning mode, see. inclusion process)
- S2 switch key 2
- O1 output 1
- O2 output 2
- B - service key (used for including/excluding device, see S1)

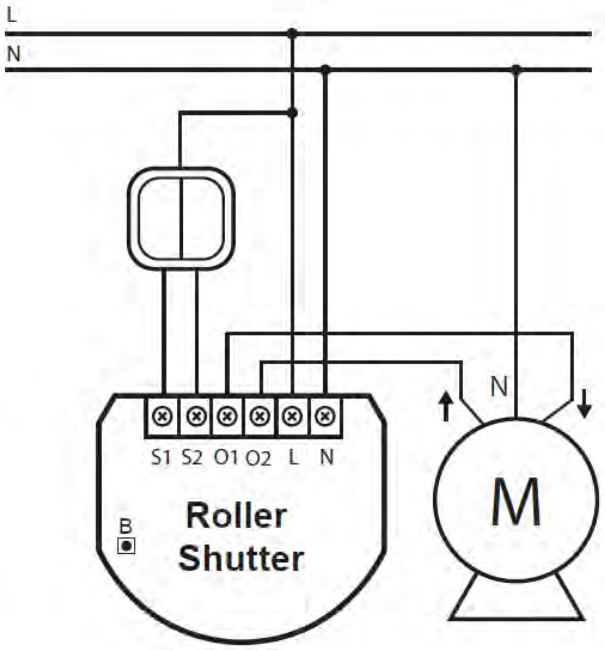


Figure 3.26: Wiring diagram - Roller Shutter

3.6 Fibaro Roller Shutter 2 FGRM222

Figure 3.27: Roller Shutter 2 module, FGRM-222

Radio controlled module, designed to work with roller blinds, awnings, venetian blinds, gates and others, single phase AC powered. 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 device is equipped with monitoring power consumption feature.

3.6.1 Product Characteristics

- Controlled by FIBARO system devices or any Z-Wave controller.
- Microprocessor control.
- Executive elements: relays.
- May be operated by momentary or toggle switches, and by dedicated roller blind control switches.
- Connected motors current and historical power consumption measured.

NOTE: *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.*

3.6.2 Specifications

- Power supply: 110 - 230V ±10% 50/60Hz,
- Power of supplied motor: up to 1kW for 230V; up to 500W for 110V
- Rated motor current - 4,3A / 230V 50/60Hz

- In accordance with standards: LVD(2006/95/EC), EMC(2004/10B/EC), RTTE(1999/5/EC)
- Temperature limits: 105 °C,
- Operational temperature: from 0 to 40 °C,
- For installation in boxes: ∅≥50mm,
- Radio protocol: Z-Wave,
- Radio Frequency: 868,4 MHz for EU; 908,4 MHz for US; 921,4 MHz for ANZ; 869,2 MHz for RU.
- 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

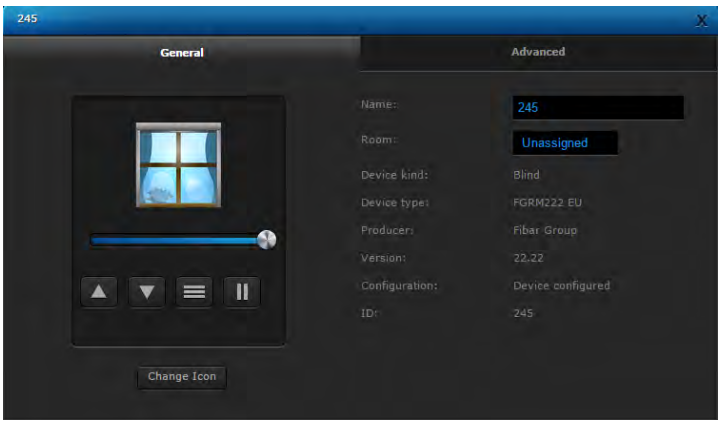


Figure 3.28: Roller Shutter 2 configuration window

Roller Shutter configuration window (HC2 interface) shows following parameters:

- *Devices name*
- *Room* - Parameter available from the list of rooms created (see 5.5 for detailed description)
- *Device kind*
- *Device type*

- *ID* - Devices number
- *Node ID* - Unique devices number within Z-Wave network
- *EndPointID* - Multichannel devices number
- *What device controls* - Parameter taken from available devices list
- *Show slave devices*

3.6.3 Roller Shutter Calibration

After a successful inclusion process, the Roller Shutter module should be calibrated. The calibration process involves performing two complete cycles of opening/closing the roller blind. Properly completed calibration may be verified by setting required position of the roller blind using the icon e.g. 30% of roller blind opening - the actual opening should correspond to specified value/position.

3.6.4 Example Configuration Parameters

Parameter 10

Roller Blind positioning status. *Default Setting: ON*

Parameter 14

Switch Type - monostable (press switch) or bistable. *Default Setting: 16*%

3.6.5 Associations

Association lets Roller Shutter trigger other Z-Wave devices, e.g. Dimmer, Relay Switch, another Roller Shutter, or a scene (only involving Home Center 2). Triggering is realised in direct communication between devices, without contacting Home Center 2 (except for the use as a scene triggering device).

Roller Shutter supports two association groups - I and II:

I association group is triggered by single click of any Switch Key,

II association group is triggered by pressing and holding any Switch Key.

Roller Shutter may associate with up to 16 ordinary devices or up to 7 multi channel devices per association group, from which 1 device is always a network controller. Recommended number of devices per association - 10. The more devices are associated, the longer time is needed for association action to take effect on each associated device.

3.6.6 Connecting Scheme - Roller Shutter

1. Before beginning, please make sure power supply is disconnected.
2. Connect Roller Shutter observing connecting scheme shown below.
3. Insert Roller Shuttter and wall switch into connecting box.
4. While completing point 3. please take special care to lay antenna wire properly.

Symbols description

- L live wire
- N neutral wire
- S1 switch key 1 (also, enters the module into learning mode, see. inclusion process)
- S2 switch key 2
- O1 output 1
- O2 output 2
- B - service key (used for including/excluding device, see S1)

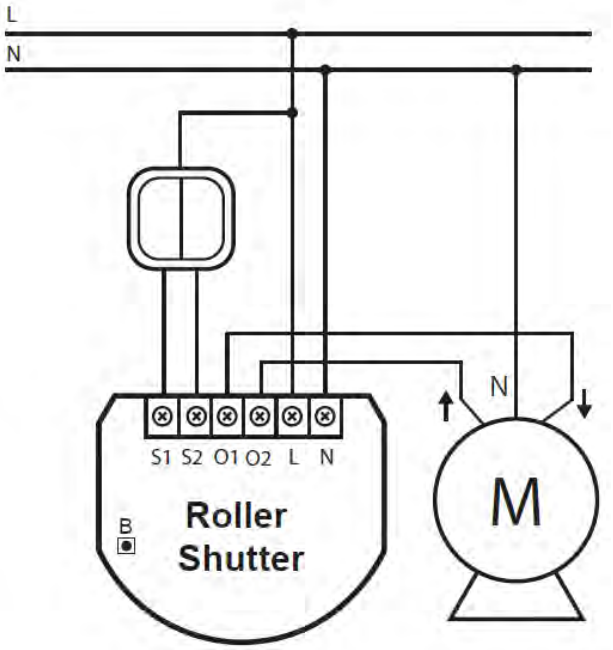


Figure 3.29: Wiring diagram - Roller Shutter

3.7 Dimmer Bypass FGB 001

Figure 3.30: Bypass module, FGB-001

Bypass Fibaro is a device complementary to Fibaro Dimmer FGD211. Its installation enables the Dimmer to dim light sources with minimum power consumption, such as e.g. single 0,5Watt LED. Please note it is possible to dim only light sources clearly marked as dimmable.

3.7.1 Specifications

- Power source: 230V ±10% 50Hz
- Temperature limits: 105 °C
- Outside dimmensions (L x W x H) - 17mm x 18mm x 8,3mm.

3.7.2 Connecting Scheme - Bypass

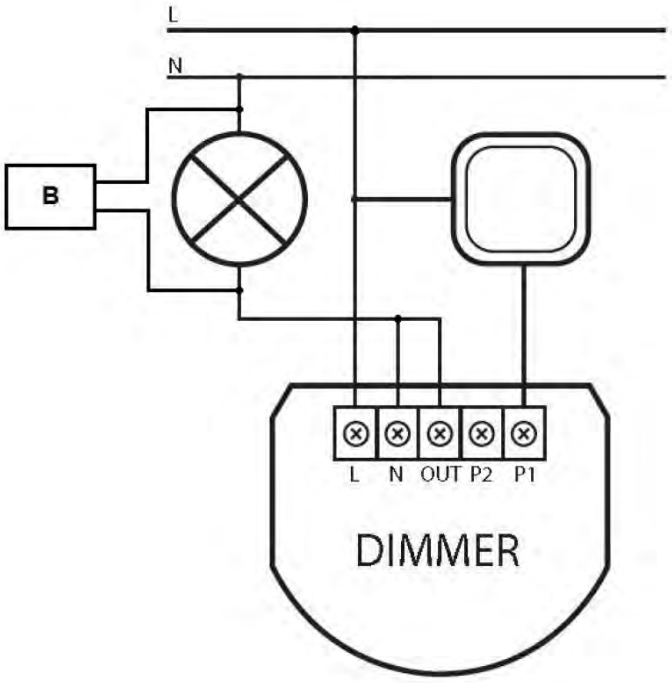


Figure 3.31: Wiring diagram - Bypass

3.8 Fibaro RGBW Controller, FGRGBWM-441

Figure 3.32: Fibaro RGBW Controller, FGRGBWM-441

Fibaro RGBW Controller is a universal, Z-Wave compatible RGB RGBW controller. Fibaro RGBW Controller uses PWM output signal, which enables it to control LED, RGB, RGBW strips, halogen lights and fans. Controlled devices may be powered by 12 or 24 VDC. In addition the device supports up to four, 0V - 10V analog sensors, such as temperature sensors, humidity sensors, wind sensors, air quality sensors, light sensors etc. All IN and OUT terminals may be user configured for LED control or 0V-10V signal readouts.

3.8.1 Specifications

- Power supply: 12VDC, 24VDC
- Rated output power: combined 12A (sum of all connected output channels); 6A for single output channel
- PWM output frequency: 244 Hz
- Electricity consumption: 0,3W
- Radio signal power: 1mW
- For installation in boxes: $\varnothing \geq 50$mm
- Max load (e.g. halogen bulbs):

  at 12V - 144W combined

  at 24V - 288W combined

  In accordance with EU standards:

  EMC 2004/108/EC

R&TTE 199/5/WE

- Radio protocol: Z-WAVE
- Radio frequency:
  - 868,4 MHz EU;
  - 908,4 MHz US;
  - 921,4 MHz AU/NZ;
- Range: up to 50m outdoors/up to 30m indoors; depending on terrain and building structure
- Operational temperature: from 0 to 40 °C,
- Dimensions (L x W x H): 42 x 37 x 17mm

3.8.2 Device applications

Fibaro RGBW Controller may control:

- 12 / 24VDC powered RGB strips
- 12 / 24VDC powered RGBW strips
- 12 / 24VDC powered LED strips, bulbs, etc.
- 12 / 24VDC powered halogen lights
- 12 / 24VDC powered low output power fans

Additional features:

- 0-10V sensors signal readouts,
- 0-10V potentiometer signal readouts, and managing outputs accordingly, controlled by momentary or toggle switches

3.8.3 Fibaro RGBW Controller operating modes

The device may be controller by momentary or toggle switches. Fibaro RGBW Controller may serve as 0-10V input module and operate with any 0-10V sensor, e.g. temperature sensors, wind speed/direction sensors, air quality sensors, light sensors, etc. Fibaro RGBW Controller offers fully configurable operating modes, described in pt. X, user defined in parameter 14. Operating mode is set during first configuration in Home Center 2 interface. Other main controllers require dedicated setting of parameter 14. Refer to p.VIII and IX for operating modes detailed description. Fibaro RGBW Controller's operating modes:

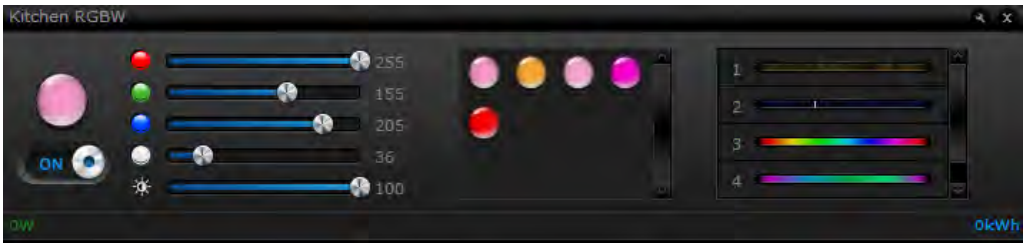


Figure 3.33: Fibaro RGBW Controller - device window

1. RGB/RGBW - controlling RGBW/RGB/LED strips or Halogen lights based on signals from switches connected to I1-I4 inputs. User may precisely set illumination colour.

2. 2) IN/OUT - all inputs and outputs may be freely configured by the user. All inputs I1 - I4 and outputs R, G, B, W may be independently configured by the user. Depending on configuration the device will be presented in Home Center 2 interface as sensors or dimmers. User defines sensor type and its operating range. If a given channel operates in OUT mode, user may control e.g. LED or Halogen lamp brightness.

All of the operating modes are described in fig. 5

3.8.4 Manual RGB/RGBW operation mode

Fibaro RGBW Controller has 4 controllable inputs I1-I4, configured by default to work with push buttons. Each input controls designated channel, i.e.:

- I1 controls R channel.
- I2 controls G channel.
- I3 controls B channel.
- I4 controls W channel.

Controlling I1-I4 inputs is achieved by connecting ground wire (GND) to specified channel (see scheme). Further, parameter's 14 settings allow for following type of manual control:

1. NORMAL mode - controlling output assigned to given input terminal. In this setting outputs will be controlled independently from one another, e.g. allowing for free adjusting each colours saturation. Double click will set a given channel's saturation to 100%. This operating mode works with momentary and toggle switches.

2. BRIGHTNESS mode - all outputs are controlled together, i.e. one switch controls brightness of all channels at the same time. This operating mode works with momentary and toggle switches.

3. RAINBOW mode - 3. mode - all outputs are controlled together giving a transition of full colours spectrum. RAINBOW mode works with momentary switches only.

3.8.5 IN/OUT mode - 0-10V inputs, PWM outputs

Fibaro RGBW Controller has 4 controllable, analog inputs I1 - I4, allowing for 0-10V analog signal interpretation. This functionality may be used in operation with analog sensors and potentiometers. What's more, in IN/OUT mode all inputs and outputs may be configured independently, e.g. I1 may be configured as 0-10V sensor input and I2-I4 may control LED strip or Halogen lamps. Another option is to configure I1 as 0-10V input and connect 0-10V potentiometer to it, and connecting Halogen lamps to R output. At the same time, other inputs may work with 0-10V sensors.

3.8.6 Wiring diagrams

Symbol description

- 12/24VDC - power supply signal
- GND - power supply ground signal
- IN1 - potential free / 0-10V input 1
- IN2 - potential free / 0-10V input 2
- IN3 - potential free / 0-10V input 3
- IN4 - potential free / 0-10V input 4
- R - output assigned to IN1
- G - output assigned to IN2
- B - output assigned to IN3
- W - output assigned to IN4

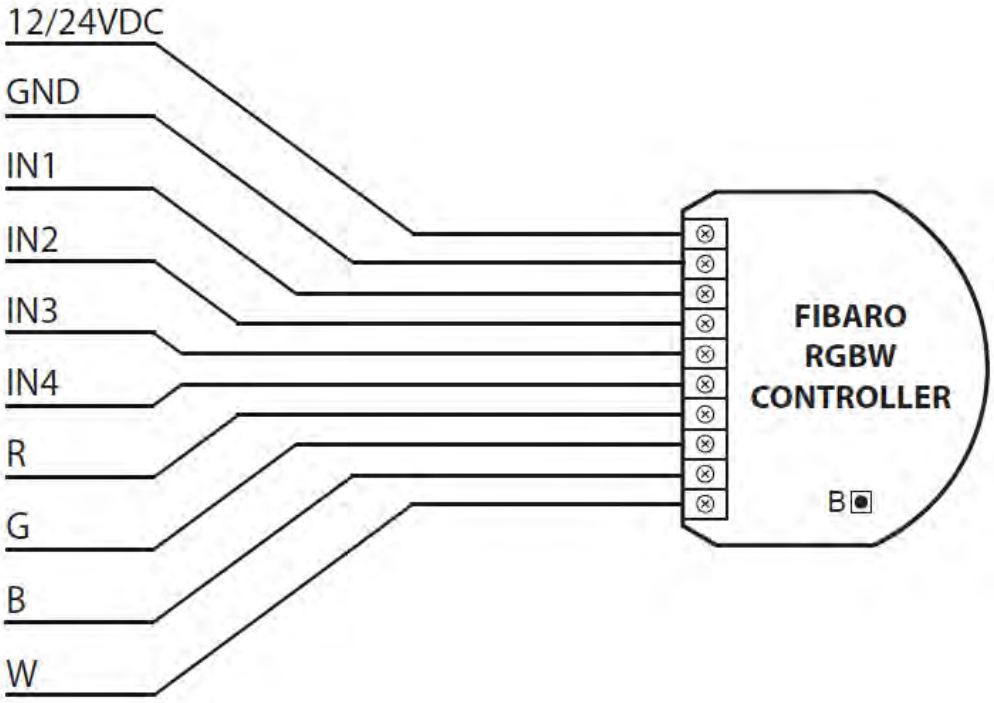


Figure 3.34: Fibaro RGBW Controller - Terminals description

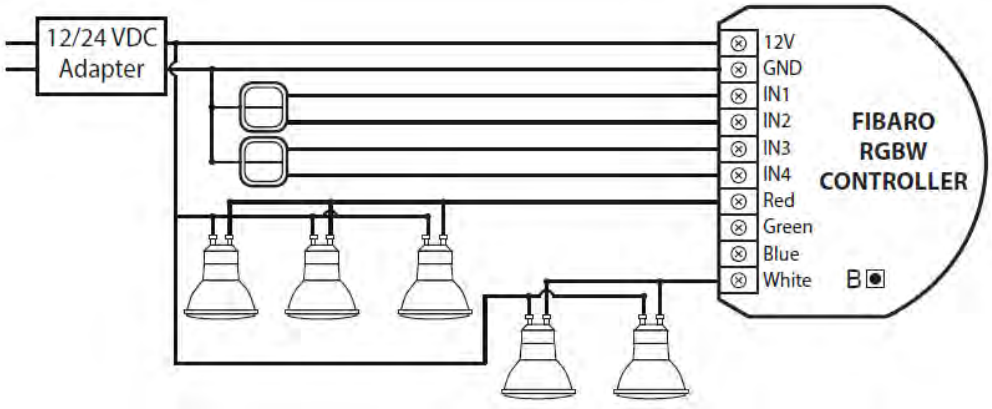


Figure 3.35: Fibaro RGBW Controller - Connecting halogen lighting

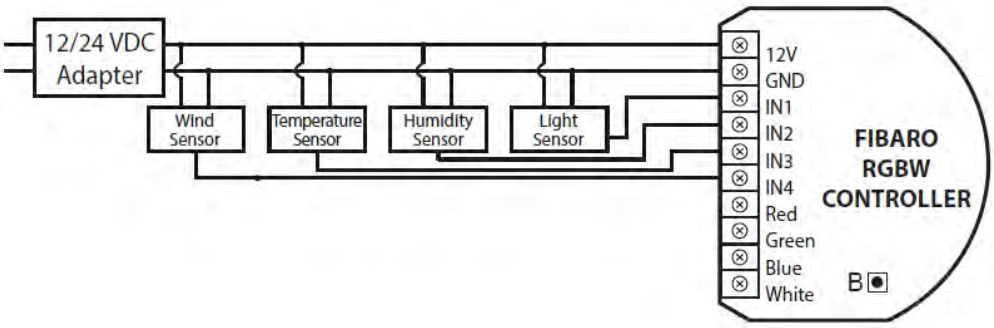


Figure 3.36: Fibaro RGBW Controller - 0-10 V sensors wiring diagram

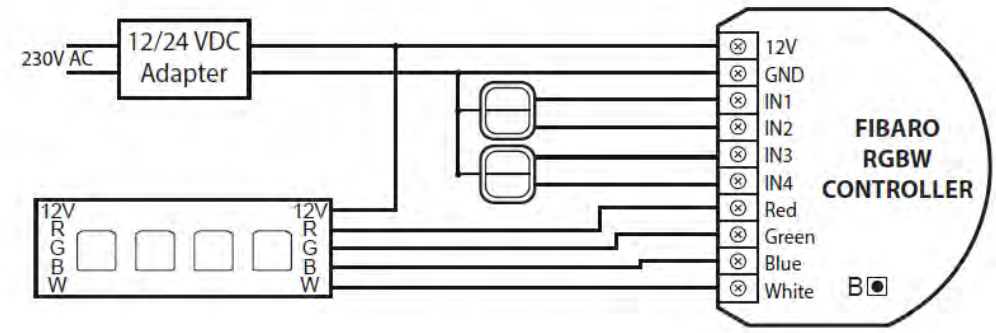


Figure 3.37: Fibaro RGBW Controller - RGBW strip wiring diagram

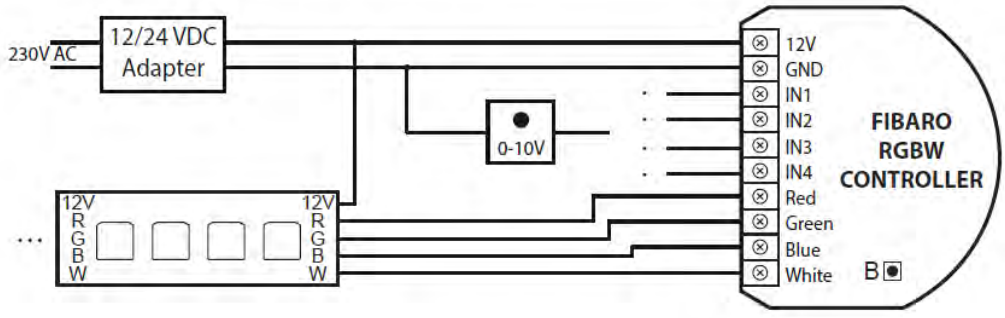


Figure 3.38: Fibaro RGBW Controller - RGBW strip 0-10V potentiometer wiring

Chapter 4

Wireless Z-Wave Sensors

The Fibaro System consists of a constantly growing range of wireless sensors. All of the sensors communicate using the Z-Wave protocol. Their main characteristic is battery power supply allowing sensors to be installed almost anywhere, within the range of Z-Wave network. The Expected maximum battery life is 2 - 3 years, and the battery state may be monitored via the Home Center 2. Z-Wave wireless sensors do not serve as mesh network signal relays. For that reason all of them should be included into system after being installed in desired places. Because of they are battery powered, wireless sensors do not communicate with the Home Center 2 on constant basis. They are referred to as "sleeping nodes", i.e. Home Center 2 communicates with them (checking their status and network presence) in certain time intervals, these are defined as the "Wake up intervals" parameter in the device's configuration. In addition to regular, interval based communication, each battery powered sensor communicates with the HC2 in case of breach, arming or a forced change of state, i.e. in the case of detecting a certain action.

4.1 Universal Binary Sensor

The Universal Binary Sensor is a wireless module designed for increasing any binary output sensor's functionality by adding possibility of wireless communication with Z-Wave network and Fibaro System. Moreover, the module enables inclusion of DS18B20 temperature sensors to the Fibaro System. A single Universal Binary Sensor supports up to two binary sensors of any type, or four DS18B20 temperature sensors. The Universal Binary Sensor is so small it can be place inside the casing of a sensor or other device that needs to be increased functionality. The Universal Binary Sensor may be used anywhere, where wireless data collection, from sensors, is needed. After the appropriate protection, the module may be used in high humidity or temperature situations. The Universal Binary Sensor was designed primarily for the use with existing wired and wireless alarm and control systems, so that they could be easily integrated with the Fibaro System. For the use with alarm system, the module is 100% transparent to parametric lines.

Figure 4.1: Universal Binary Sensor - Icons Views

Product Characteristics:

- Controlled by Fibaro System devices or any other Z-Wave controller.
- Microprocessor control.
- Compatible with standard and parametric alarm lines (may be connected to single alarm sensor with tamper button, or two alarm sensors without tampers).
- Compatible with binary sensors (may be connected to two binary outlets).
- Compatible with DS18B20 temperature sensors (supports up to four DS18B20 temperature sensors).

4.1.1 Specifications

- Power supply: 9-30V ±10% DC
- Inputs: 2 floating inputs, 1 digital input 1-wire
- Outputs: 2 floating outputs
- Max. input voltage: 36V ±5% DC
- Output carrying capacity: 150mA
- Operational temperature: from 0 °C to 40 °C
- Radio protocol: Z-WAVE
- Radio Frequency: 868 MHz for EU; 908 MHz for US; 921 MHz for AUS/NZ/BRA.
- Range: up to 50 m outdoors, up to 30 m indoors (depending on building materials)
- Number of supported DS18B20 temperature sensors: up to 4

4.1.2 Example Configuration Parameters

Configuration parameters, for each module, available in Advanced Settings tab, for each device, in Home Center 2 interface.

Parameter 1
Delayed alarm cancellation at input IN1. This option enables you to define additional time after which IN1 alarm gets cancelled after it's breach is no longer present.
Default value: 0

Parameter 2
Delayed alarm cancellation at input IN2. This option enables you to define additional time after which IN2 alarm gets cancelled after it's breach is no longer present. *Default value: 0*

Parameter 3
Input 1 type.
Default value: 1 = INPUT NC (Normal Close)
Default value: 1 = INPUT_NC (Normal Close)

Parameter 4
Input 2 type.

Default value: 1 = INPUT_NCNC (Normal Close) *Default value: 1 - INPUT NC (Normal Close)*

Parameter 5

Steering frame type for 1st association group, triggered from input IN1. Parameter enables setting alarm frame type or forces sending of steering frames (BASIC_SET).

Default value: 255 = BASIC_SET

Parameter 6

Steering frame type for 2nd association group, triggered from input IN2. Parameter enables setting alarm frame type or forces sending of steering frames (BASIC_SET).

Default value: 255 = BASIC_SET

Parameter 7

Parameter defining forced level of dimming/blinds opening in case TURN ON/OPEN commands are sent to devices of 1st association group. In case of alarms, alarm priority is defined.

Default setting enables turning device ON. In case of Dimmer this means turning to last memorized status.

Default value: 255.

Parameter 8

Parameter defining forced level of dimming/blinds opening in case TURN ON/OPEN commands are sent to devices of 2nd association group. In case of alarms, alarm priority is defined.

Default setting enables turning device ON. In case of Dimmer this means turning to last memorized status.

Default value: 255

Parameter 9

Alarm cancelling frame or turning the device off steering frame (Basic) - deactivated. Allows you to deactivate the feature off and cancel alarms for devices paired with the given input of Fibaro Sensor.

Default value: 0, for association groups 1 & 2 information is sent.

Parameter 10 The interval between temperature readings from all sensors connected to the device. NOTE: The temperature reading from the sensor does not result in sending a report to HC unit.

Default value: 20 sec.

Parameter 11

The interval between successive reports on the state of the temperature. Forced report is sent immediately after the next reading of the temperature sensor

regardless of the setting of parameter No. 12

Default value: 200 sec.

NOTE *Frequent reports on the state of the temperature make sense in the case when the sensor is placed at the point where it is exposed to rapid changes in ambient temperature. In other cases, we recommend you left the default value of the parameter.*

Parameter 12

Maximum allowed difference in temperature last reported and currently recorder by the sensor. If the difference in temperature meets or exceeds defined level, then report to device in third association group is sent. Parameter 10 defines intervals between temperature readouts.

Value set at 0 means sensor reports each change in temperature.

Default value: 8 [$0,5\,°\mathrm{C}$*]*

Parameter 13

Alarm frames or steering frames sent in broadcast mode i.e. to all devices within the device's reach.

Default vaule = 0 (broadcast mode OFF).

NOTE *Broadcast mode cancels "single cast" communication with associated devices for given channel.*

Parameter 14 Scene activation. Scene number corresponds to button pushed.

Default value = 0

4.1.3 Universal Binary Sensor - Inclusion / Exclusion

After entering Home Center 2 into learning mode (described in 5), triple click button "B".

4.1.4 Wiring Diagrams - Universal Binary Sensor

Please note:

- When using DS18B20 temperature sensors, it is recommended to use single wire cables, no longer than 30 m.
- Do not arrange DS18B20 temperature sensors cables parallel to house electrical system cables (230V AC). High voltage AC wires may induce magnetic field resulting in erroneous DS18B20 temperature sensors readouts.
- DS18B20 temperature sensors should be tested before being mounted in desired locations.

- Depending on number of the devices connected to it, the Universal Binary Sensor may be presented in HC2 interface as 3 to 7 different devices.
- In case of any changes in TP / TD line (1-wire) configuration, i.e. adding/removing DS18B20 temperature sensors, it is necessary to exclude and re-include the Universal Binary Sensor to Z-Wave network. Please note, HC2 will enter learning mode only after all connected sensors are detected, which may take up to 10 seconds.
- Do not connect sensors other than DS18B20 temperature sensor to TP / TD line (1-wire).
- Do not connect devices not supporting 1-wire protocol to TP / TD line. Lines not in use, must be isolated.

Symbol descriptions:

- Live wire - red
- GND (GROUND) - ground wire, blue
- IN1 - (INPUT 1) - input 1, yellow
- IN2 (INPUT 2) - input 2, green
- TP (TEMP_POWER) - power (3,3V) to DS18B20 temperature sensor, brown
- TD (TEMP_DATA) - signal to DS18B20 temperature sensor, white
- ANT- antenna, black
- B -service button (used for including/excluding device)
- OUT1 - output no.1, assigned to input IN1
- OUT2 - output no.2, assigned to input IN2

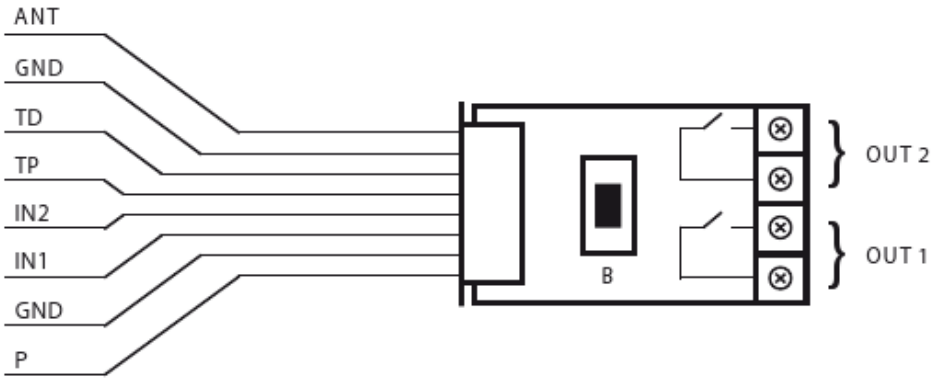


Figure 4.2: Universal Binary Sensor - connections description

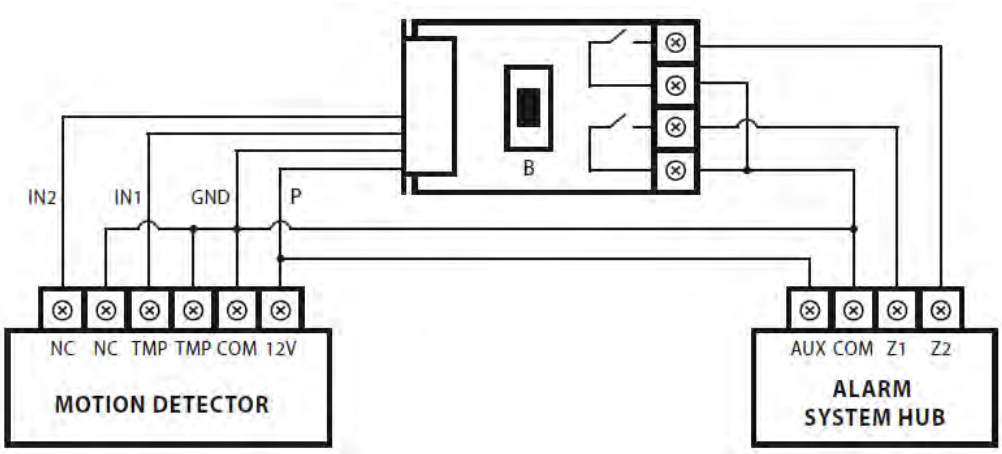


Figure 4.3: Universal Binary Sensor, standard alarm line

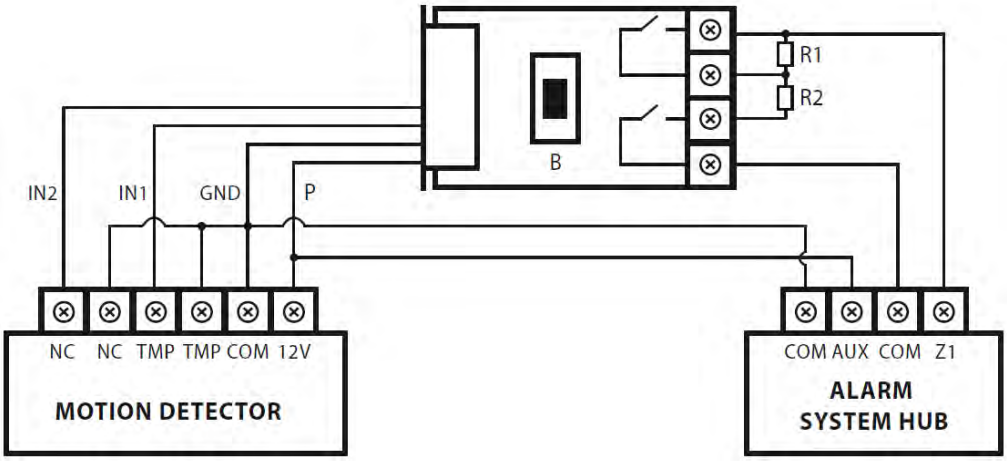


Figure 4.4: Universal Binary Sensor, parametric alarm line

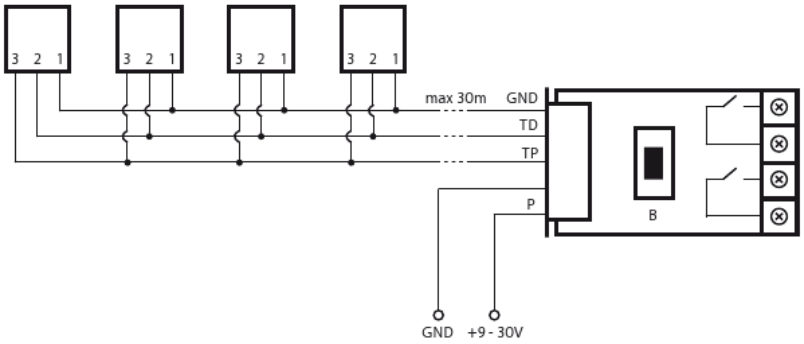


Figure 4.5: DS18B20 temperature sensors connection diagram

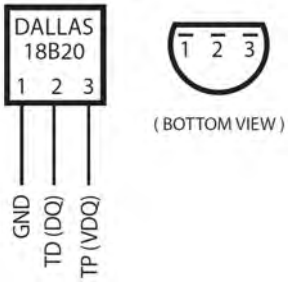


Figure 4.6: DS18B20 connections description

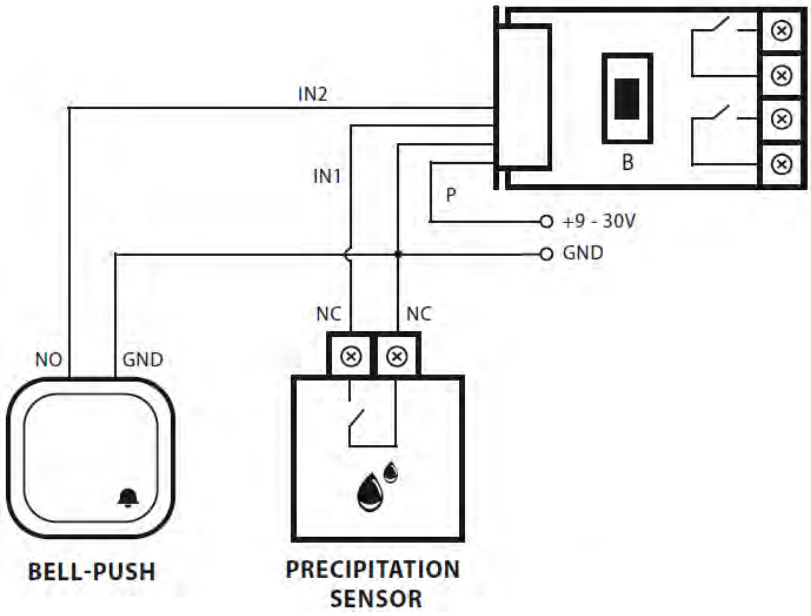


Figure 4.7: Universal Binary Sensor connection diagram

4.2 Fibaro Door/Window Sensor, FGK

Figure 4.8: Fibaro Door/Window Sensor, FGK

The Fibaro Door / Window Sensor is a wireless, battery powered, Z-Wave compatible reed sensor. Each time its two parts, i.e. the sensor's body and a magnet separate, a radio signal is sent. In addition the Fibaro Door / Window Sensor supports one DS18B20 temperature sensor and has one potential free input. The Fibaro Door / Window Sensor is designed for use with scenes in home automation systems, alarm and surveillance systems and everywhere else where information related to opening / closing of doors, windows, garage gates, etc. is needed.

Product characteristics:

- Controlled via. Fibaro System components or any other Z-Wave compatible controller.
- Door/window opening detected through Sensor's body and a magnet separation.
- Quick installation - easily mounted on doors, windows, garage gates, roller blinds, using double sided adhesive tape or screws.
- Compatible with DS18B20 temperature sensors.
- When connecting DS18B20 use single wire lead, no longer than 30 meters.
- May be connected to a switch via potential-free IN input.

4.2.1 Specifications

- Power supply: single ER14250 (1/2AA) 3,6V battery
- Inputs: single, potential-free
- Supported temperature sensors: single, DS18B20
- Operational temperature: from 10 to 40 °C
- Radio protocol: Z-Wave
- Radio frequency:
  - 868,4 MHz EU;
  - 908,4 MHz US;
  - 921,4 MHz AU/NZ;
- Range: up to 30m indoors, depending on building materials used and the building structure
- Dimensions (L x W x H): 76 x 17 x 19 mm

4.2.2 Example Configuration Parameters

Configuration parameters, for each module are available in the Advanced Settings tab, for each device, in the Home Center 2 interface.

NOTE *Below is a list of the most popular parameters. Complete list is available in the user manual and the list of advanced parameters.*

Parameter 1

Input IN alarm cancellation delay. Additional delay after an alarm from input IN has ceased. The parameter allows user to specify additional time, after which the input IN alarm is canceled once its violation has ceased.

Available parameter settings: 0 65535 s

Default value: 0

Parameter value: 2 [byte]

Parameter 3

Type of IN input.

Available parameter settings:

0 INPUT_NC Normal Close

1 INPUT_NO Normal Open

2 INPUT MONOSTABLE

3 INPUT BISTABLE

- Default value: 0
- Parameter value: 1 [byte].

Parameter 5 Type of control frame transmitted for association group 1, activated via IN input. The parameter allows you to specify the type of an alarm frame or to force control frames transmission (BASIC_SET)

Available parameter settings:

0 ALARM GENERIC frame

1 ALARM SMOKE frame

2 ALARM CO frame

3 ALARM CO2 frame

4 ALARM HEAT frame

5 ALARM WATER frame

255 Control frame BASIC_SET

Default value: 255 BASIC_SET Parameter value: 1 [byte].

Parameter 13

Sending an alarm or control frame (for IN input, depending on parameter no.5 value), and TMP button alarm frame. The frame is sent in broadcast mode, i.e. to all devices within range - information sent in this mode is not repeated by the mesh network.

Available parameter settings:

0 IN and TMP Broadcast mode inactive

1 IN broadcast mode active, TMP broadcast mode inactive

2 IN broadcast mode inactive, TMP broadcast mode active

3 IN and TMP broadcast mode active

- Default value: 0
- Parameter value: 1 [byte].

4.2.3 Door/Window Sensor - Inclusion / Exclusion

After entering Home Center 2 into learning mode (described in 5), triple click button "B".

4.2.4 Wiring diagrams - Door/Window Sensor

Symbol description

- GND (GROUND) - ground wire
- IN - (INPUT) - input
- TP (TEMP_POWER) - power (3,3V) to DS18B20 temperature sensor, brown
- TD (TEMP_DATA) - signal to DS18B20 temperature sensor, white
- TMP -service button (used for including/excluding device)

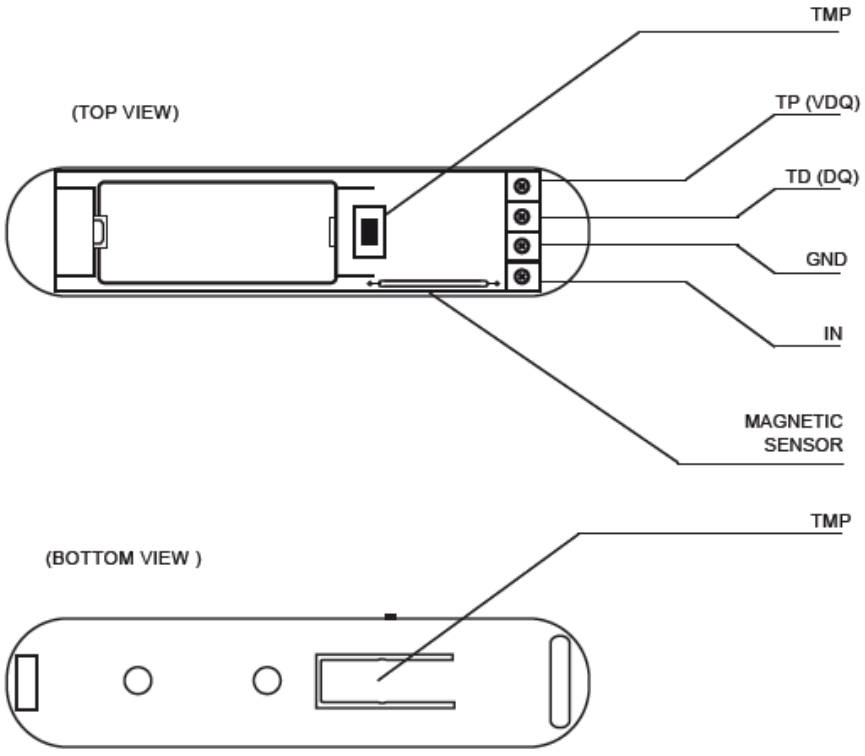


Figure 4.9: Door Window Sensor - general connections description

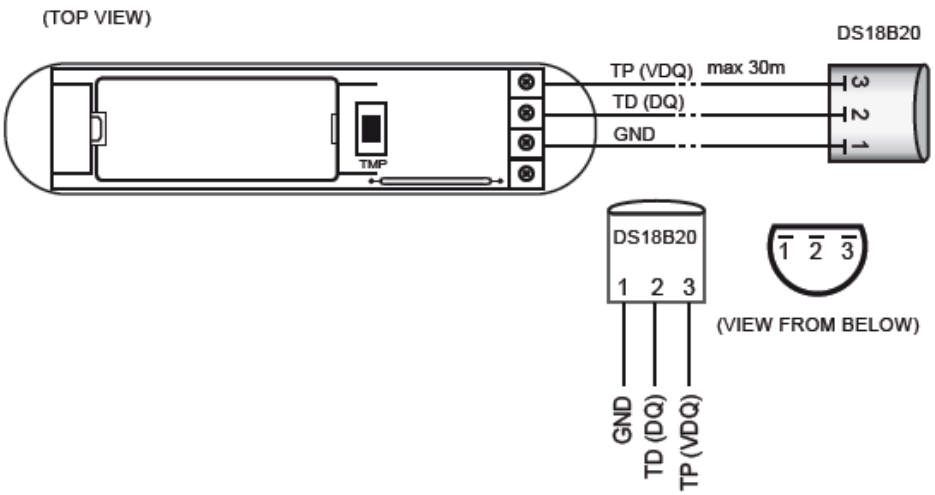


Figure 4.10: Door Window Sensor - connection to DS18B20 Sensors

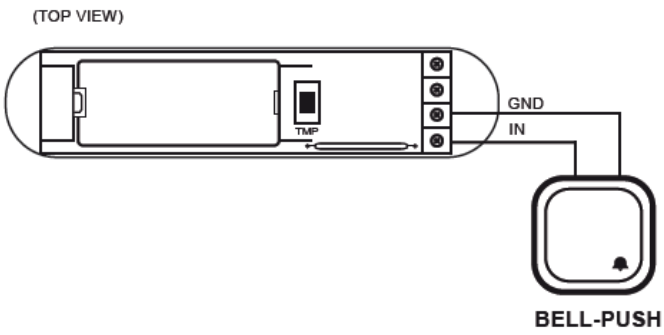


Figure 4.11: Door Window Sensor - example connection to momentary switch

4.2.5 Sensor installation

Figure 4.12: Door Window Sensor - correct positioning of the sensor and the magnet

Figure 4.13: Door Window Sensor - correct sensor installation

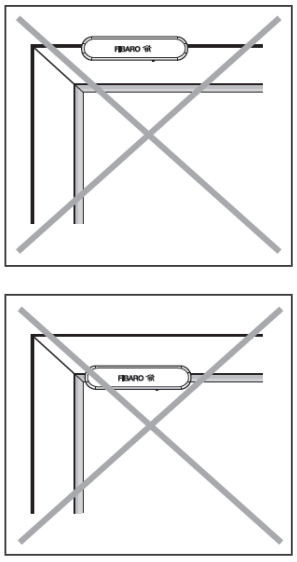


Figure 4.14: Door Window Sensor - incorrect sensor installation

4.3 Fibaro FLOOD Sensor, FGFS

Figure 4.15: Fibaro Flood Sensor, FGFS

Fibaro Flood Sensor is a universal, Z-Wave compatible, flood and temperature sensor. Device can be battery (ca. 2 years battery life) or VDC powered (12 or 24 VDC). Flood alarm is sent to the Z-Wave network devices or additionally to any alarm system controller, through opening a NC contact. The device has built in temperature sensor, monitoring temperature of e.g. floor. Fibaro Flood Sensor is designed to be placed on the floor or on a wall with a flood sensor probe extended by connected wire. The device has built in LED indicator and acoustic alarm. In addition, the sensor is equipped with a tilt sensor reporting tilt or movement to the main controller e.g. when someone has taken the Sensor from its original location. LED diode signals flood, operating mode or the Z-Wave network communication range. Fibaro Flood Sensor is sink-proof, which means it drifts on the water surface and keeps on sending alarm signal in case of substantial inundation of water.

4.3.1 Specifications

- Power Supply: 12 - 24 VDC
- Battery Type: CR123A
- Power Consumption (at VDC operation): 0,4W
- Output terminals maximum current carrying capacity (ALARM NC, TAMP NC): 25mA
- Maximum voltage at output terminals: 40V (AC or DC):
  - EMC 2004/108/EC

  - R&TTE 199/5/WE

- Radio protocol: Z - Wave
- Radio frequency:
  - 868,4 MHz EU;
  - 908,4 MHz US;
  - 921,4 MHz ANZ;
  - 869,2 MHz RU;
- Range:
  - up to 50m outdoors
  - up to 30m indoors (Depending on terrain and building structure)
- Operational temperature: from 10 to 40 °C
- Temperature measuring accuracy: 0,5 °C (within from 0 to 40 °C Dimensions (Diameter x Height): 72 x 28 mm

4.3.2 Product characteristics

- Compatible with any Z-Wave network controller,
- May be connected to any alarm system (potential free output terminal),
- Extremely easy installation - simply put on a surface prone to flooding,
- May be installed anywhere - flood sensors contacts extended with a wire,
- Battery or VDC powered. When connected to an external, VDC power source, the battery serves as an emergency power source,
- Theft protection - tilt is reported to the Z-Wave network or alarm systems main controller,
- Two operating modes - flood / temperature sensor or just a temperature sensor.

Figure 4.16: Fibaro Flood Sensor - configuration window

4.3.3 Powering mode information

There are two powering modes for the Fibaro Flood Sensor. By default its powered by a factory included battery. In addition it can work with a constant current, after connecting a 12 / 24 VDC power supply to +12 and GND terminals (see diagram no.2). Powering mode configuration is carried out automatically, while a sensor is being included into the Z-Wave network. When battery powered, a Fibaro Flood Sensor communicates with a Z-Wave network main controller periodically. Detected alarms are sent immediately, but configuration parameters and associations settings only at specified wake up intervals, or at a manual wake up (TMP triple click). In DC powering mode, configuration and associations parameters are sent when necessary, and in addition a sensor serves as a Z-Wave signal repeater.
Switching to a constant current powering mode:

- Exclude a sensor from the Z-Wave network.
- Connect constant current power source (12 / 24 VDC) to +12 and GND terminals observing wiring diagram no.2.
- Include the Fibaro Flood Sensor into the Z-Wave network.

In constant powering mode a sensor may operate without a battery. Installing a battery is recommended though, as it will serve as an emergency power source. When constant power fails, sensor will automatically shift to an emergency mode. All reports, including flood and temperature, will be sent immediately, but it will not be possible to modify the configuration or association settings until constant power returns. If a sensor served as a signal repeater for other Z-Wave devices, in emergency mode signal repeating function will be deactivated.

4.3.4 Example Configuration Parameters

Parameter 1 delays flood alarm cancelation for the device after flooding has ceased. Available settings: 0 - 3 600 (in seconds, each 1s)

- Default setting: 0 (no delay, immediate alarm cancelation)
- Parameter size: [2 bytes]

Determines time period, in seconds, by which a Flood Sensor will retain the flood state after the flooding itself, has ceased. Sensor will keep on reporting flooding to the main controller. This parameter settings do not affect acoustic and visual alarms, which turn off immediately after flooding ceases.

Parameter 5 Type of alarm frame sent to 1-st association group (FLOOD) Available settings:

0 - ALARM WATER command frame

255 - BASIC SET command frame

- Default setting: 255
- Parameter size: 1 [byte]

The parameter determines a type of command frame sent by the Sensor in case flooding has been detected or canceled.

Parameter 73 Temperature measurement compensation Available settings: -10 000 to +10 000

- Default setting: 0 (0 °C)
- Parameter size: 2 [bytes]

Parameter 74

Alarm frame sent to 2-nd Association Group activation (MOVEMENT_TAMPER BUTTON_TAMPER) (1 byte) Available settings:

- 0 - tamper alarms inactive
- 1 - button tamper alarm active
- 2 - movement tamper alarm active
- 3 - button and movement tampers alarm active
- Default setting: 2
- Parameter size: 1 [byte]

The device is able to turn on alarms resulting from sensors vibrations e.g. when the sensor is moved, or the TMP button released. 2-nd Association Group alarms are not canceled.

Parameter 77 Flood sensor functionality turned off Allows for turning of the internal flood sensor. Tamper and built in temperature sensor will remain active. Available settings:

- 0 - Default flood sensor operation (flood detection, reactions)
- 1 - Built in flood sensor TURNED OFF (doesnt change its state in the main controller, doesnt send Alarms and Basic Set frames with flood state changes. Always visible in the main controller as turned off)
- Default setting: 0
- Parameter size: 1 [byte]

Parameter stores a temperature value to be added to or deducted from the current temperature measured by internal temperature sensor in order to compensate the difference between air temperature and temperature at the floor level.

4.3.5 Associations

Fibaro Flood Sensor allows for the associations of three groups.

1. 1-st Association Group is assigned to the device status - sending the BASIC SET (default) or ALARM control frame to the associated devices.
2. 2-nd Association Group is assigned to a TMP button and tilt sensor - ALARM GENERIC control frame will be sent to the associated devices in case a TMP button is released or a tilt sensor triggered (depending on parameter 74 settings)
3. 3-rd Association Group reports the device status and allows for assigning single device only (the main controller by default - the device reports its status to the main controller).

Fibaro Flood Sensor 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.

4.3.6 Wiring diagrams

Diagram's description

+12V - 12/24 VDC positive terminal

GND - negative (ground) terminal

ALARM NC - potential-free flood sensor terminals (for wired systems)

TAMP NC - potential-free tamper terminals (for wired systems)

SENS1, SENS2 - flood sensor electrodes terminals.

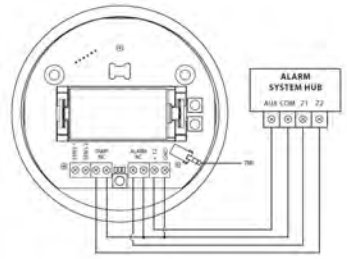


Figure 4.17: Connection with alarm system

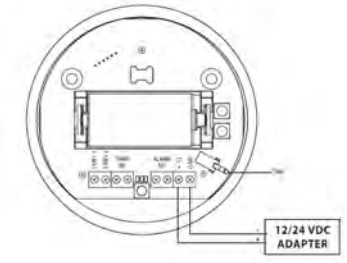


Figure 4.18: Connection to a constant power source

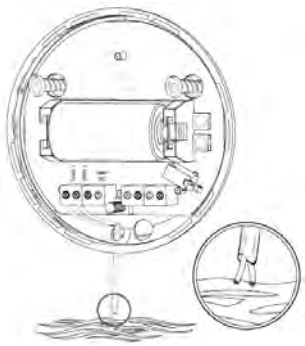


Figure 4.19: Flood sensors contacts extended with a wire

4.4 Fibaro SMOKE Sensor, FGSS

Figure 4.20: Fibaro Smoke Sensor, FGSS

The Fibaro Smoke Sensor is a universal, optical Z-Wave smoke sensor. The device can be hard wired (12 or 24 VDC) or battery operated (battery life 3 years). Smoke detection is signaled through siren and LED diode blinking. Additionally, the smoke sensor signal can be sent to an alarm system or fire alarm system hub, through a NC (normally closed) contact terminals. The optical sensor detects smoke at an early stage of fire, often before flames appear and temperature starts to rise significantly. Moreover the device has a built-in temperature sensor, which can also trigger the alarm once the specified temperatute threshold is exceeded. The Fibaro Smoke Sensor is designed to be placed on a wall or ceiling. LED indicator signals fire, operating mode and used to see if device is within the Z-Wave network. The smoke sensor is designed to operate in confined spaces, under normal conditions (lacking smoke, dust, condensed water vapor).

4.4.1 Specifications

- Power Supply: 12 - 24 VDC
- Battery Type: CR123A
- Power Consumption (at VDC operation): 0,4W
- Output terminals maximum current carrying capacity (SMOKE NC, TAMP NC): 25mA
- Maximum voltage at output terminals (SMOKE NC, TAMP NC): 40V
- EU standards compliance:
  - EMC 2004/108/EC

  - R&TTE 199/5/WE

- Radio protocol: Z - Wave
- Radio frequency:
  - 868,4 MHz EU;
  - 908,4 MHz US;
  - 921,4 MHz ANZ;
  - 869,2 MHz RU;
- Range:
  - up to 50m outdoors
  - up to 30m indoors (depending on terrain and building structure)
- Operational temperature: from 0 to 40 °C
- Measured Temperature Range: from -20 to 100 °C
- Temperature measuring accuracy: 0,5 °C (within from 0 to 40 °C
- Dimensions (Diameter x Height): 65 x 28 mm

4.4.2 Product characteristics

- Compatible with any Z-Wave network controller,
- May be connected to any alarm or fire prevention system by hard wiring NC output
- Extremely easy installation - simply install it in location prone to fire.
- Battery or VDC powered.
- Built-in tamper switch.
- Alarm is signaled by sound and LED diode.
- Fire detection through air temperature measuring.
- Can trigger alarm just by exceeding temperature threshold.
- 3 levels of sensors sensitivity.
- Automatic efficiency test performed every 5 seconds.
- Built-in black box allows the device to report and record smoke and temperature readouts.

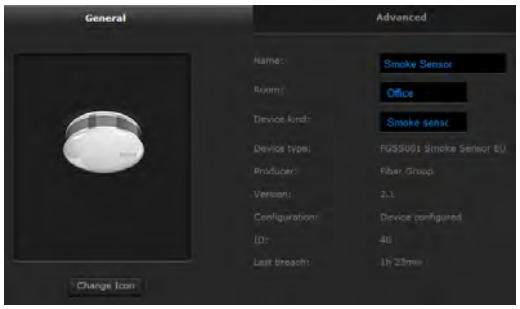


Figure 4.21: Fibaro Smoke Sensor - configuration window

4.4.3 Powering mode information

There are two powering modes for the Fibaro Smoke Sensor. By default its powered by a factory included battery. Alternatively it can work with a constant current, after connecting a 12 / 24 VDC power source to +12/24 and GND terminals. Powering mode configuration is carried out automatically, while sensor is being included into the Z-Wave network. When battery powered, a Fibaro Smoke Sensor communicates with the Z-Wave network main controller periodically. Smoke detection is sent immediately. Configuration parameters and association settings are sent periodically at specified wake up intervals, or at a manual wake up (triple click B-button). In DC powering mode, configuration and association parameters are sent when necessary, and additionally the smoke sensor serves as a Z-Wave signal repeater. Switching to a constant current powering mode:

- Exclude a sensor from the Z-Wave network.
- Disconnect the battery,
- Install the constant power connecting terminal.
- Connect the constant current power to the power terminal (12 / 24 VDC) to +12 and GND terminals observing wiring diagram.
- Include Fibaro Smoke Sensor into the Z-Wave network.

Its not possible to power the device from a battery and VDC power source simultaneously. When using a VDC power souce its recommended to use another kind of power back up.

4.4.4 Example Configuration Parameters

Parameter 1 Smoke alarm cancellation delay
Available settings: 0 17280, 65535 (5s multiplier) [5s-24h]

- 0 - no delay, immediate cancellation
- 65535 - alarm cancellation inactive - Smoke Sensor will keep indicating smoke alarm after the smoke will have disappeared. The smoke alarm can be only ceased manually, by entering 2nd menu level
- Default setting: 0
- Parameter size: [2 bytes]

Determines the time between when the smoke disappears and the Fibaro Smoke Sensor stops sending the alarm signal.

Parameter 5 Type of alarm frame sent to 1-st association group (smoke alarm). Available settings:

0 - ALARM SENSOR (SMOKE) command frame

255 - BASIC SET command frame

- Default setting: 255
- Parameter size: 1 [byte]

The parameter allows for choosing a command class used in 1-st Association Group.

Parameter 10 Time interval between consecutive temperature reports. The parameter is relevant for the battery powering mode only. Longer time interval means less frequent communication and thus a longer battery life.
Available settings: 117280, 0 (multiply by 5 seconds) [5s-24h]

- Default setting: 0 (Reports inactive)
- Parameter size: 2 [bytes]

Report is sent when new temperature value is different from the one previously reported. Temperature reports can be also sent as a result of polling.

Parameter 73 Temperature measurement compensation Available settings: -1000 to +1000

- Default setting: 0 (0 °C)
- Parameter size: 2 [bytes]

Parameter 81 Fibaro Smoke Sensor sensitivity. There are 3 levels of sensitivity to smoke presence. Level 1 means the highest sensitivity. Available settings: 1-3

- 1 - HIGH Sensitivity

- 2 - MEDIUM Sensitivity
- 3 - LOW Sensitivity
- Default setting: 2
- Parameter size: 1 [byte]

Parameter 86 Time interval in which lack of the Z-Wave network alarm, if detected, is repeated using visual and acoustic alarms.
Available settings: 1 - 17280 (5s multiplier) [5s-24h]

- Available settings: 1 - 17280 (5s multiplier) [5s-24h]
- Default setting: 360 (30min)
- Parameter size: 2 [bytes]

Parameter 87 Time interval in which low battery alarm, if detected, is repeated using visual and acoustic alarms.

- Available settings: 1 - 17280 (5s multiplier) [5s-24h]
- Default setting: 360 (30min)
- Parameter size: 2 [bytes]

4.4.5 Associations

Fibaro Smoke Sensor allows for the associations of three groups.

1. 1-st Association Group is assigned to the device status - sending the BASIC SET (default) or ALARM control frame to the associated devices having detected fire. The type of alarm frame sent may be modified in advanced configuration parameters.
2. 2-nd Association Group is assigned to the TMP button and the malfunction alarm. Alarm frame will be sent to the associated devices once tampering or malfunction are detected.
3. 3-rd Association Group reports the device status and allows for assigning a single device only (the main controller by default - the device reports its status to the main controller). Its not recommended to modify this association group

Fibaro Smoke Sensor 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.

4.4.6 Wiring diagrams

Diagram's description

+12V - constant power supply terminal, 12/24VDC

GND - ground terminal

SMOKE NC - potential free, smoke sensor connecting terminals (for wired systems)

TAMP NC - potential free, tamper connecting terminals (for wired systems).

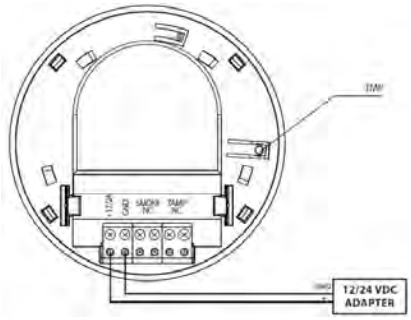


Figure 4.22: DC Power adapter connection

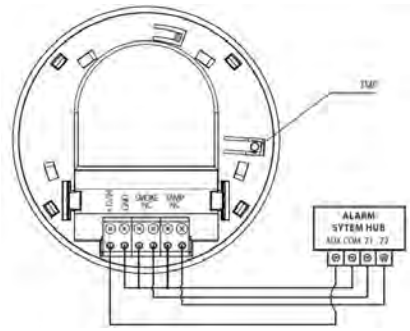


Figure 4.23: Alarm system hub connection

4.5 Fibaro MOTION Sensor, FGMS

Figure 4.24: Fibaro Motion Sensor, FGSS

The Fibaro Motion Sensor is a universal Z-Wave multi-sensor. Along with detecting motion the device measures the temperature and light intensity. The sensor has a built-in accelerometer to detect any tampering of the device. The Fibaro Motion Sensor is battery powered device and designed to be installed quickly and easily on any surface. The LED indicator signals motion, temperature level, operating mode and can be used to see if device is within the Z-Wave network. The motion sensor can be used for lighting scenes and security monitoring systems.

4.5.1 Specifications

- Power Supply: CR123A battery, 3.6 VDC
- EU directive compliance:
  - LVD 2006/95/WE
  - EMC 2004/108/EC
  - R&TTE 199/5/WE
  - RoHS II
- Recommended installation height: 2,4m
- Operational Temperature: from 0 to 40 °C
- Measured Temperature Range: from -20 to 100 °C
- Temperature measuring accuracy: 0, 5 °C (within from 0 to 40 °C
- Light Intensity Measuring Range: 0-32000 LUX
- Radio Protocol: Z-Wave
- Radio frequency:

  - 868,4 MHz EU;
  - 908,4 MHz US;
  - 921,4 MHz ANZ;
  - 869,2 MHz RU;

- Range:
  - up to 50m outdoors
  - up to 30m indoors (depending on terrain and building structure)

4.5.2 Product characteristics

- Compatible with any Z-Wave network controller,
- Detects motion using a passive IR sensor.
- Measures the temperature.
- Measures the light intensity.
- Easy installation on a wall or any surface.
- Protected against tampering and theft - once vibrations are detected, the notification is sent to the main controller.
- Alarms of movement and temperature are signaled by LED diode blinking.
- Simple earthquake detector mode.

Figure 4.25: Fibaro Motion Sensor - configuration window

4.5.3 Detection area and working conditions

Fibaro Motion Sensor has to be installed in a corner of the room or perpendicularly to the doors. Actual range of the sensor can be influenced by environment conditions.Fibaro Motion Sensor cannot be pointed at any source of heat (e.g. radiators, fireplaces, cookers, etc.) or at any source of light (direct sunlight, lamps).If the device keeps on reporting false alarms, despite eliminating all of the above-mentioned factors, install the device in another place. Fibaro Motion Sensors detection area is shown in diagrams below.

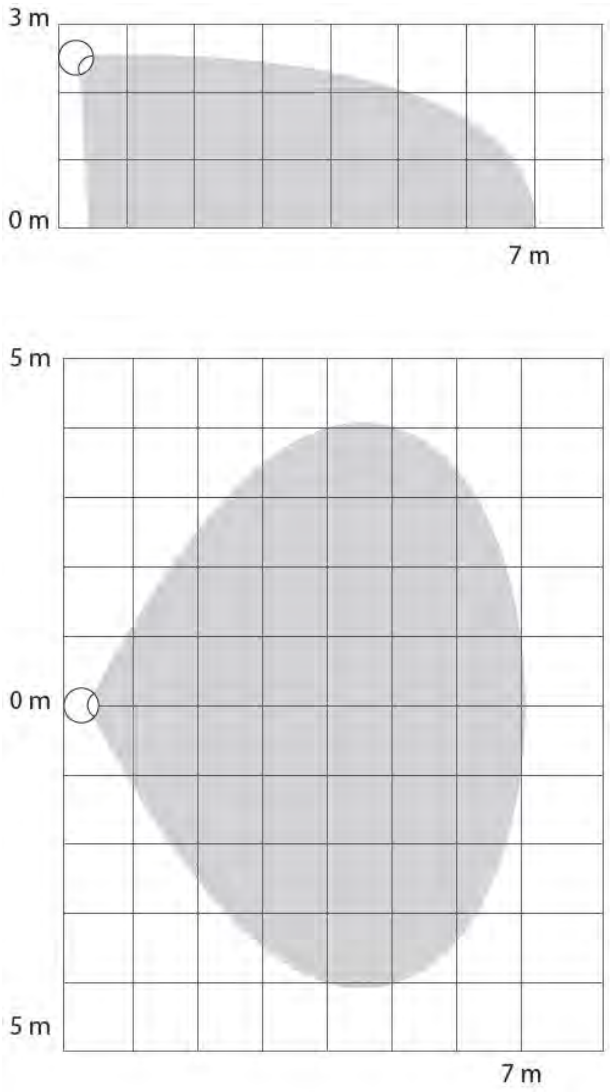


Figure 4.26: Fibaro Motion Sensors motion detection area

4.5.4 Example Configuration Parameters

Parameter 1 Motion Sensor's sensitivity
The lower the value, the more sensitive the PIR sensor.

- Available settings: 8 - 255
- Default setting: 10
- Parameter size: 1 [byte]

Parameter 6 Motion alarm cancellation delay
Motion alarm will be cancelled in the main controller and the associated devices after the period of time set in this parameter. Any motion detected during the cancellation delay time countdown will result in the countdown being restarted. In case of small values, below 10 seconds, the value of parameter 2 must be modified (PIR sensors Blind Time).

- Available settings: 1-65535
- Default setting: 30 (30 seconds)
- Parameter size: 2 [bytes]

Parameter 20 Tamper sensitivity
The parameter determines the changes in forces acting on the Fibaro Motion Sensor resulting in tamper alarm being reported - g-force acceleration.

- Available settigs: 0 - 122 (0.08 - 2g; multiply by 0.016g; 0 = tamper inactive)
- Default setting: 15 (0.224g)
- Parameter size: 1 [byte]

Parameter 40 Illumination report threshold
The parameter determines the change in light intensity level resulting in illumination report being sent to the main controller.

- Available settings: 0 - 65535 (1 - 65535 lux; 0 = reports are not sent)
- Default setting: 200 (200 lux)
- Parameter size: 2 [bytes]

Parameter 60 Temperature report threshold
The parameter determines the change in level of temperature resulting in temperature report being sent to the main controller.

- Available settings: 0 - 255 (0.1 - 25.5oC; 0 = reports are not sent)

- Default setting: 10 (1 °C)
- Parameter size: 1 [byte]

Parameter 66 Temperature offset
The value to be added to the actual temperature, measured by the sensor (temperature compensation).

- Available settings: 0 - 100 (0 to 100 °C) or 64536 - 65535 (-100 to −0.1 °C)
- Default setting: 0
- Parameter size: 2 [bytes]

4.5.5 Associations

Fibaro Motion Sensor allows for the associations of three groups.

1. 1-st Association Group is assigned to the device status - sending the BASIC SET control frame to the associated devices having detected motion.
2. 2-nd Association Group is assigned to the tamper alarm. Alarm frame will be sent to the associated devices once tampering is detected.
3. 3-rd Association Group reports the device status and allows for assigning a single device only (the main controller by default - the device reports its status to the main controller). Its not recommended to modify this association group.

Fibaro Motion Sensor 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.

4.6 Danfoss Living Connect Electronic Thermostat

Figure 4.27: Electronic Thermostat Danfoss Living Connect

The Danfoss living connect is an electronic radiator thermostat, which communicates with the Fibaro System through the Z-Wave wireless protocol. Desired temperature is set by the simple click of a button or through Heating Panel in HC2, and then Danfoss Living Connect opens/closes the radiator's valve with an electromechanical actuator. The thermostat features an open-window function, which closes the valve if the temperature in the room is falling dramatically.

Figure 4.28: Danfoss Thermostat - Parameters Modification Window

Danfoss Thermostat configuration window (HC2 interface) shows following parameters:

- *Devices name*
- *Room* - Parameter available from the list of rooms created (see 5.5 for detailed description)
- *Device kind*
- *Device type*
- *ID* - Devices number

Figure 4.29: Danfoss Electronic Thermostat - configuration window

- *Node ID* - Unique device number within the Z-Wave network,
- *EndPointID* - Multichannel devices number
- *Wake up interval* - Time interval for HC2 to communicate with the thermosat (60 seconds at the minimum)

4.6.1 Specifications

- Radio frequency: 868.42MHz
- Actuator type: Electromechanical
- Recommended use: Household
- Mechanical strength: 70N
- Max. water temperature: 90 °C
- Estimated battery life: 2 years
- Temperature measurement cycle: every 60 seconds
- Power supply: 2x1,5V AA battery
- Power consumption: 3mW in standby, 1,2W when active,
- Ambient temperature: from 0 °C to 40 °C
- Available temperature settings: from 4 °C to 28 °C
- IP 20 - should not be used in hazardous installations or in places where it will be exposed to water

4.6.2 Danfoss Thermostat Inclusion/Exclusion

After setting the HC2 to learning mode (Chapter 5) press the middle button once on the thermostat body. The same sequence must be performed to exclude the device from the Z-Wave network. Because of the Z-Wave system properties, the Danfoss thermostats communicate with the HC2 through one intermediate module only. This is why they should be included into the Z-Wave network after being installed in the desired locations. A single Home Center 2 unit supports up to 20 Danfoss Living Connect electronic thermostats.

4.6.3 Adapters

The Danfoss Living Connect is supplied with adapters for Danfoss RA valves and valves with M30X1.5 (K) connections.

The device is designed to be installed on:

- Danfoss **RA-N** valves
- Other valves with **M30x1,5** connections
- Older Danfoss **RTD-N** valves

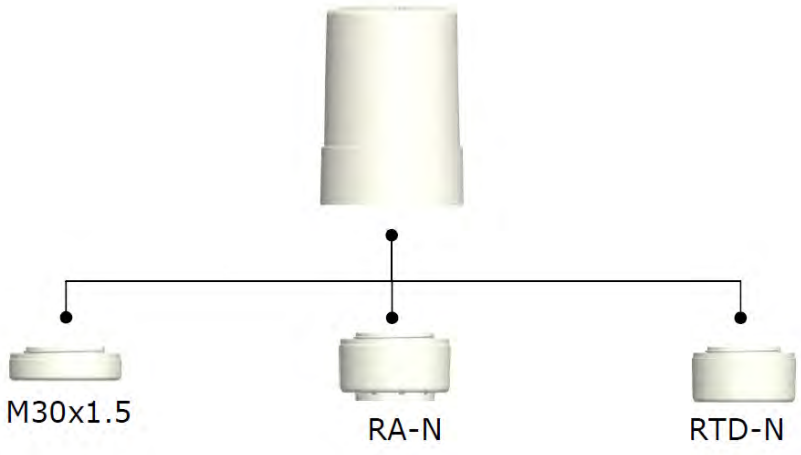


Figure 4.30: Danfoss Thermostat - available adapters

Chapter 5

Home Center 2

The Home Center 2 is an electronic device which manages the Fibaro System. The HC2 communicates with the system components (sensors, Fibaro modules) located in user's house using wireless radio communication. The Home Center 2 contains certified Z-Wave communication module allowing for support of up to 230 devices, integrated within a Mesh network. The Home Center 2 uses a simple, user friendly interface for the Fibaro system. The device enables it's user to manage and control the house using any mobile or stationery device, with internet access, from anywhere in the world.

5.1 Home Center Lite

The new FIBARO Home Center Lite (HCL) is a complete Z-Wave home automation gateway. Don't let its tiny size fool you - Home Center Lite is all you need to run your entire home - communicating with sensors, activating lights, appliances and heating, and even alerting you if it detects threats such as fire, flood

or break-in. The Fibaro HCL is tiny - measuring just 90 x 90 x 33mm. It uses a new ARM Cortex-A8 processor to deliver high-speed performance while using very little power. HCL is the smallest Z-Wave controller available and still packs a punch big enough to manage any Z-Wave system with up to 230 devices.

5.2 The differences between Fibaro Z-Wave Controllers - HC2 and HCL

The Fibaro Home Center Lite (HCL) is a very powerful Z-Wave controller packed into a tiny size. It is capable of running your entire home, but does have some import ant differences compared to the Home Center 2 (HC2). The main differences between the Fibaro HCL and the HC2 are:

- Plastic casing (HC2's has an Alloy Case)
- No LUA
- No LiLi
- No VoIP
- No Satel integration

5.3 HC2 Finder

In a typical configuration, the Home Center 2 should be connected directly to a router. This way the DHCP server will set the HC2 a dedicated dynamic IP. For the greatest ease of use we have provided designated software, the Home Center Finder, so that the user can find his/her HC2 IP within the local network. Home Center Finder scans the local network and displays the IP and MAC addresses of all available HC2 units.

5.4 Your House

Your house tab is the Home Center 2 interface main window. It displays all devices available within a given Fibaro System, such as modules, sensors and virtual devices. Elements are divided into groups, depending on the device type and location in certain room.

Figure 5.1: Your Home tab

5.5 Rooms

The *Rooms* tab is designed for previewing states and adding rooms and sections, i.e. single rooms, room groups, floors, or any user-defined locations. To add a section, first enter it's name and click Add. The new section will be created and it's name will be displayed on left-hand list. After a new section has been created, new room within the section may be created. To do so, the room name must be entered, the desired section chosen, and the "Add" button clicked.

The *Rooms* tab allows to preview states and values of devices and sensors. Also it is possible to control group of the light devices, roller shutters and alarms in each rooms by clicking on the device icon on the room icon. Room icon also shows the temperature and humidity level and the state of door/window and movement sensor. If the room will not be equipped in such type of the device each icon will be blanked (ref. 5.3)

Figure 5.2: Room tab preview

Figure 5.3: Particular room icon

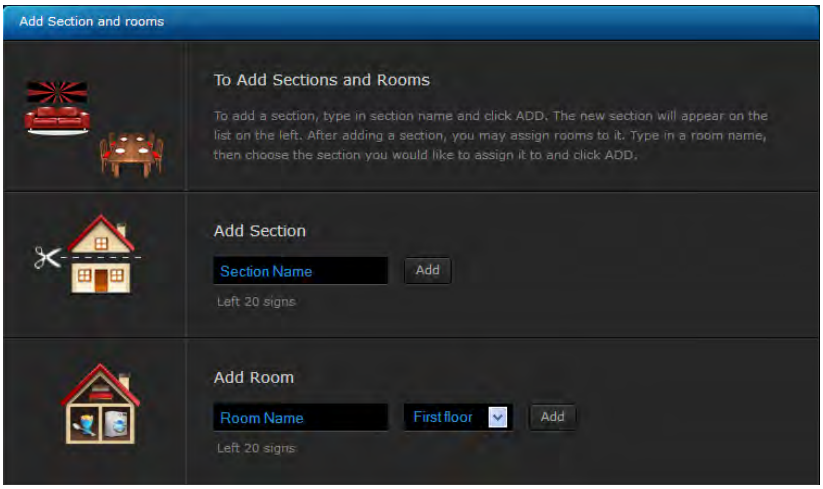


Figure 5.4: Adding Rooms / Sections Window

5.6 Devices

5.6.1 Z-Wave Devices Inclusion

The *Devices* tab enables management of devices included in the Fibaro System. Devices are Fibaro modules, Fibaro system compatible sensors, IP cameras and virtual devices.

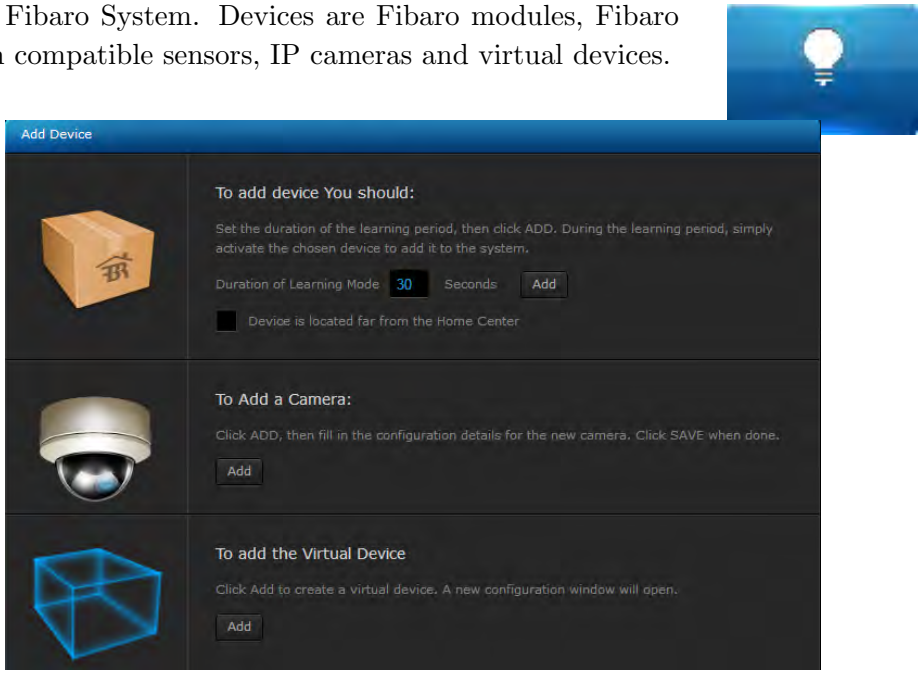


Figure 5.5: Adding Devices Window

To add a Z-Wave device click Add. Once the system sets itself into learning mode (ref. 5.6), Perform the tasks described in the manuals (see chapters 3 and 4).

In case of Fibaro modules please perform following steps:

1. Turn on the learning mode
2. Wait few seconds
3. Click 3 times on B or TMP button on the Fibaro modules (as described in chapters 3 and 4).
4. Home Center will start to configure the Z-Wave module.
5. New added devices should be visible in *Your House* tab.

NOTE! In case of battery operated device it is sometimes necessary to wake up the device by 3-times click during configure procedure. It will be indicated in the learning mode window.

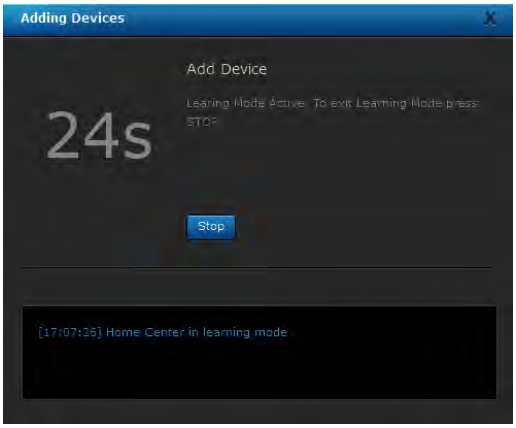


Figure 5.6: Learning mode window

5.6.2 IP Camera Inclusion

Fibaro System is fully compatibile with MJPEG IP cameras. User can add unlimited number of the IP cameras to the Home Center 2 system. Then cameras image can be previewed in the configuration and mobile interface.

To add new IP camera, click Add. A new window will pop up, in which all camera configuration options will be available. After completing the camera configuration, click Save on the top of the screen.

When including new IP camera, following options need to be configured:

- Camera name
- Room in which the camera will be presented in the interface
- Camera model - May be picked from the list
- Camera access - User's login and password
- IP Address of the camera
- JPG path - JPG picture is used in remote access. All the necessary information should be available in the camera's user manual
- MJPG path - MJPG stream path is used in local access.
- If the camera can be rotated - paths for each movement direction (specified in camera's user manual)

NOTICE! Only MJPEG and JPEG streams are supported in Home Center 2.

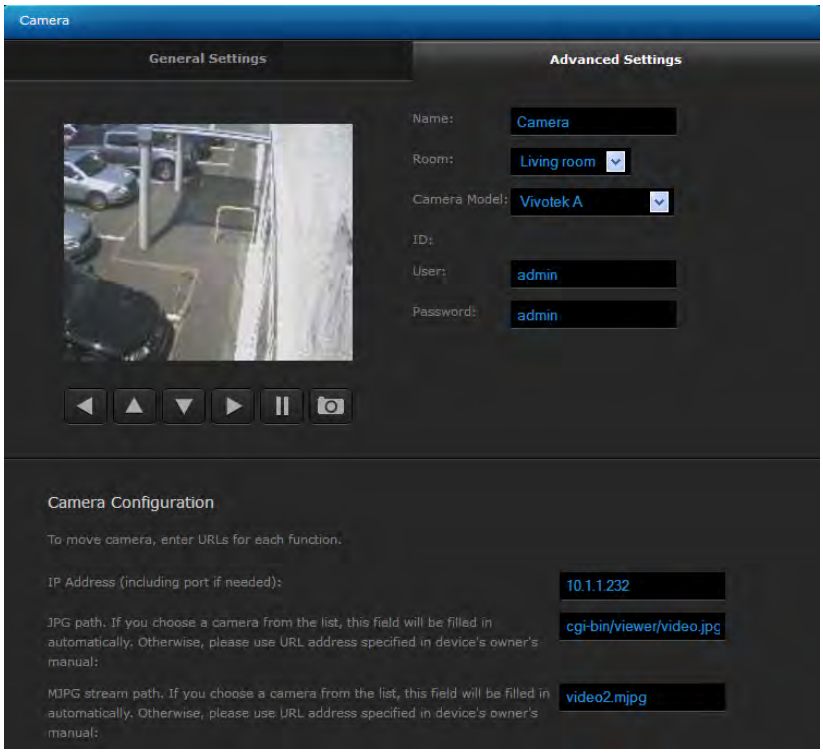


Figure 5.7: Adding IP Camera window

5.6.3 Creating Virtual Devices

Virtual devices were designed to control complicated devices such as boilers, air conditioning units and home appliances (kitchen, audio and video appliances). These kinds of devices may be managed through multiple component communication protocol, and the use of RS232 and Ethernet ports. The Fibaro System makes it possible to create new device types and create designated communication protocols.

First of all it is needed to define design and button distribution in new created virtual device. Each button set can be add by clicking *Add set* and *Save* button.

There are three types of virtual elements that can be used as an element of the virtual device

- Button - the basic button. Can be used as a trigger of the scene or as a trigger of sending the string command.
- Label - dynamic text-based message. Can be used as dynamic feedback with devices states or any other network based text content.
- Slider

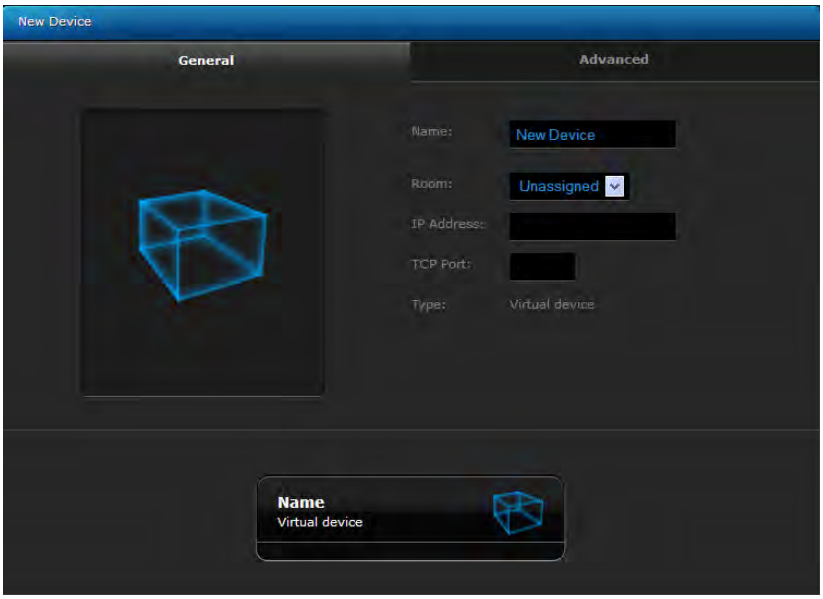


Figure 5.8: Adding Virtual Device Window

Figure 5.9: Virtual devices button composition

After setting proper composition of the buttons please add proper setting for specific buttons. Each button can be configured separately. It is possibile to configure the button only for sending the strings codes or implementing the LUA code.

Moreover each button can be configured with following settings:

- Label - defines description of the specific button (for ex. ON, OFF)
- ID - defines unique ID for using in LUA codes
- Empty - allows to hide particular button
- Main - particular button will be visible in the Your house tab

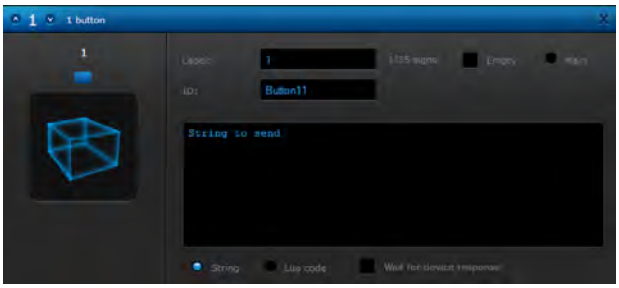


Figure 5.10: Virtual device - Setting string

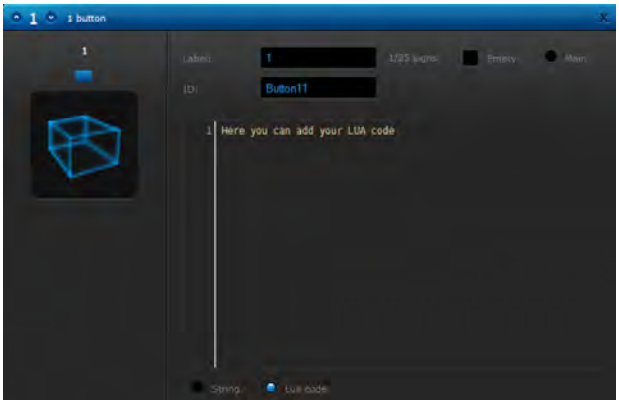


Figure 5.11: Virtual devices - Setting LUA code

The lower part of the window contains *Main loop* functionality. In main loop LUA code can be entered to be executed each second.

Figure 5.12: Virtual devices - Main loop

Managing virtual devices is performed with TCP/IP protocols - Target IP and TCP communication ports must be defined.

Next, the user defines a designated button, and defines the communication to be sent after the button is used. The system supports ***string*** communicates (text data type). For example, turn ON command line for Toshiba projector will be as follows:

```
GET /cgi-bin/webrc.cgi?P_ON=OK HTTP/1.10x0D0x0A0x0D0x0A
```

Another option is to create "value slider".

***NOTE** If the device confirm communication receipt please choose "wait for device's response" option*

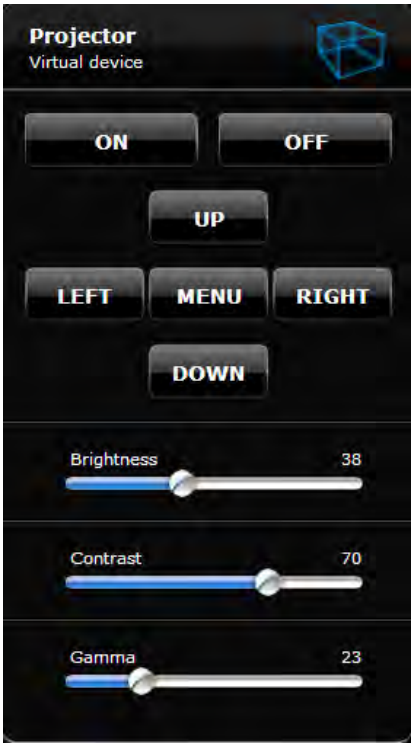


Figure 5.13: Virtual Device Example Icon

5.6.4 Deleting Devices

To delete device, simply click Delete. Device may be successfully deleted after the HC2 enters the learning mode (please refer to Chapters 3 and 4).

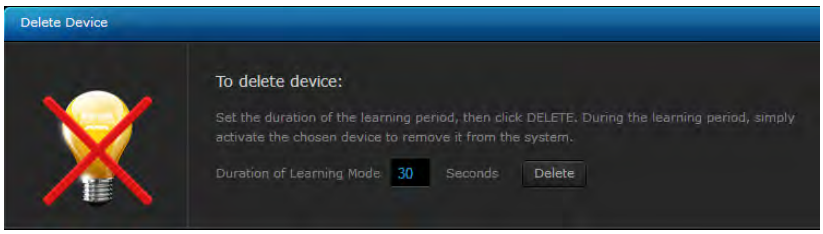


Figure 5.14: Deleting Device Window

5.7 Scenes

The*Scenes* tab lets the user program complicated functions between multiple devices included in the system. Scenes may be initiated by weather condition, a series of intuitive timers or various sensor/module state.

A Scene is a group of commands sent to user defined group of devices, e.g. "open the blinds 50%; and set the lights to 30% brightness". Scenes may be triggered by clicking the "Run scene" button. Scene may be also triggered by user defined actions, e.g. "run the scene if the motion sensor is tripped or the room temperature exceeds 27 degrees". Another option is to define the scene triggering timers, e.g. "run the scene each day at 8:30, and on Monday at 12:15".

To open a new scene window click Add. The new scene must me named and assigned to certain room for easier configuration. After general parameters have been set, The Scene "Advanced" tab should be opened.

There are two ways to create the scenes in Home Center 2 interface. First option is to make scene based on graphical, block interface. Such scenes are more intuitive to built but it can not possible to implement all functionalities in such algorithms. The second option is create the scene based on LUA engine. Such scene require basic programming skills but it has not limited possibilities.

This is the tab in which the scene actions are programmed.

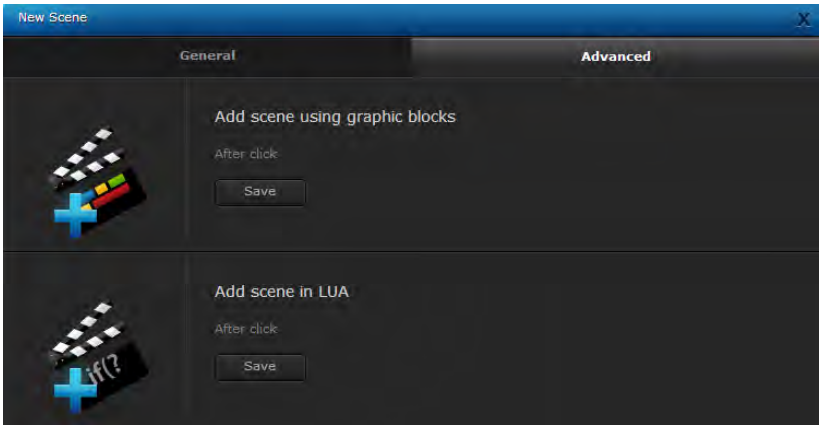


Figure 5.15: New Scene Creation Window

Scenes based on the graphic blocks can be also translate to LUA code

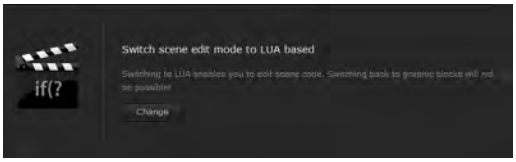
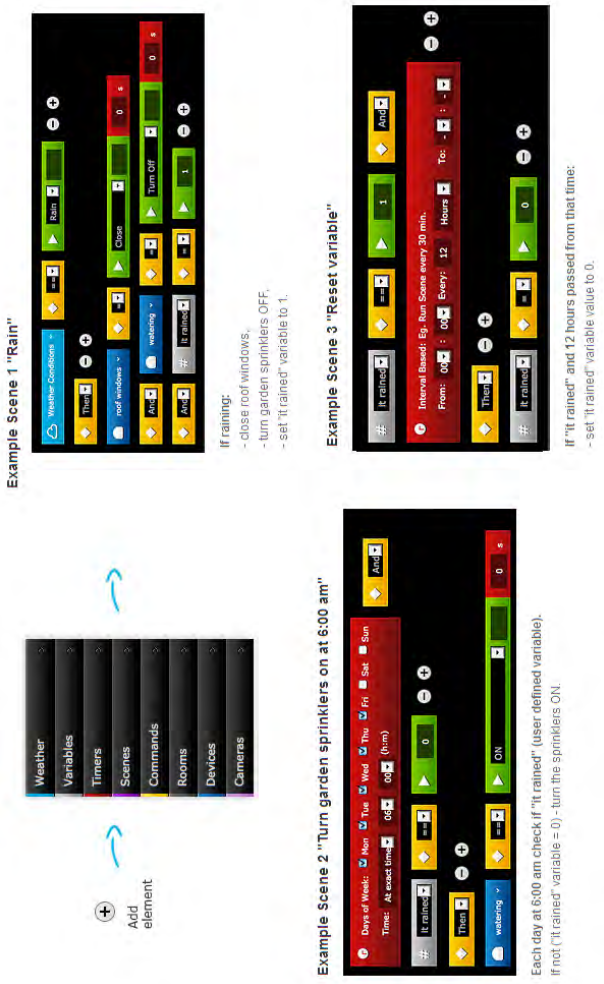


Figure 5.16: Switching graphic scene to LUA

5.7.1 Example Scenes



5.8 Energy

Energy panel is designed for monitoring the energy level based on Z-WAVE devices reports.

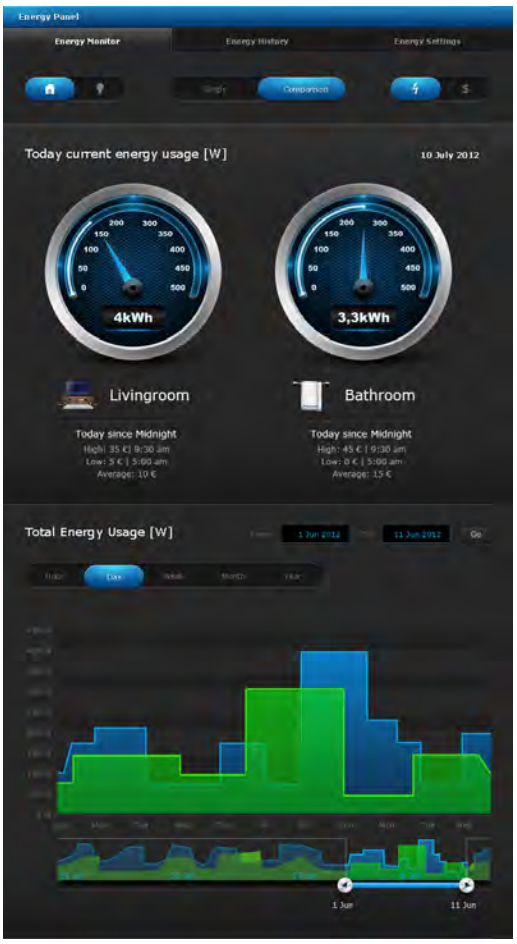


Figure 5.17: Example energy panel window

There are three modes of energy monitoring visualization:

- rooms or devices visualization
- summary or comparison mode
- energy or costs preview

Energy monitoring preview can be perform in following steps:

1. Choose rooms or devices visualization mode
2. Choose room or particular devices

3. Choose summary or comparison mode
4. Choose energy or costs preview

The energy panel visualize four types of the data:

- Current energy use
- Periodic energy use chart
- Periodic energy use wheel chart
- Periodic TOP 5 Energy usage

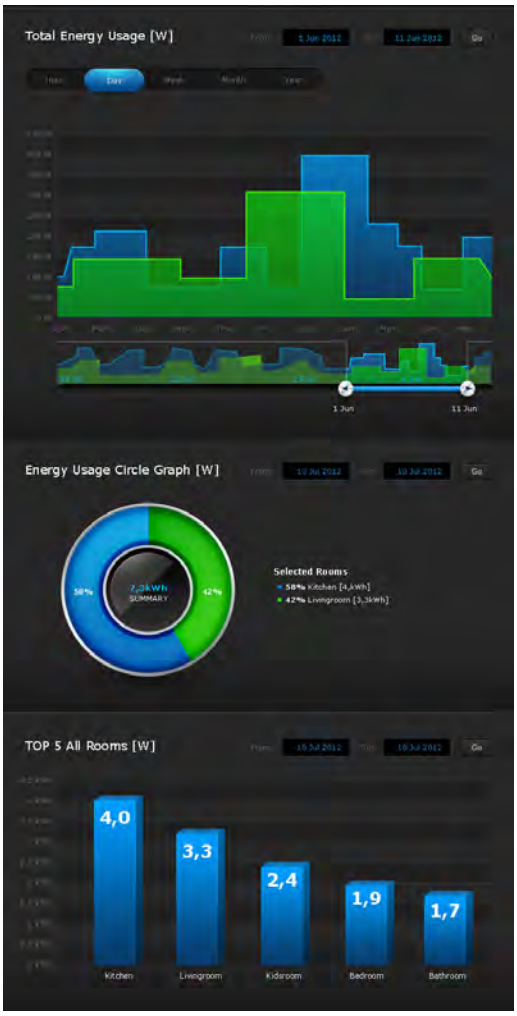


Figure 5.18: Example energy panel charts

5.9 Panels

Panels simplify managing groups of related devices serving the same functionality, such as heating, air conditioning, or watering the garden. Using Panels, you can easily program the devices' schedule for the entire week.

5.9.1 SMS Panel

SMS Home Management is available in selected countries and allows you to stay in control of your home even when you don't have a viable internet connection. SMS Panel lets you define SMS communications sent by the system, define the list of telephone numbers allowed to manage the house and top-up the return messages account, used for the confirmation messages sent from sensors etc.

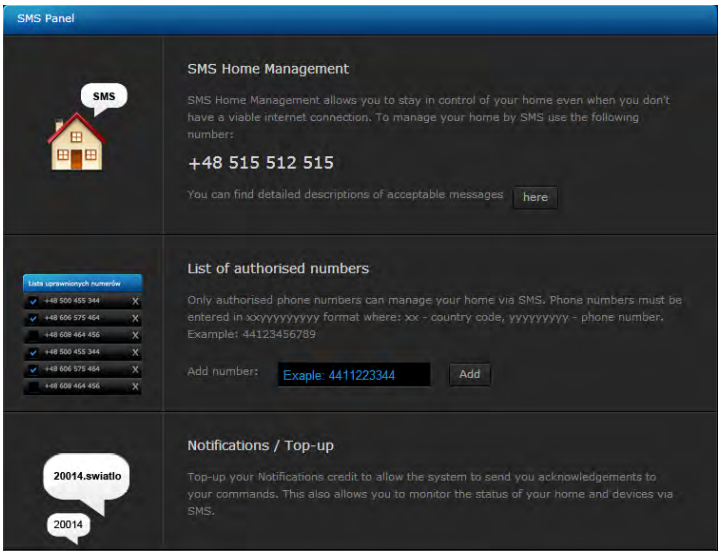


Figure 5.19: SMS Panel window

Example messages:

- `HC2-000417.lights.livingroom.on` -turns on all the lights in livingroom.
- `HC2-000417.lights.livingroom.off` - turns off all the lights in livingroom.
- `HC2-000417.lights.house.status` - sends the message informing of the status of all devices named "light" in the house. If, for example in the living room any light is on, an excerpt from the return message will appear as follows: `livingroom: on`. If all of the lights in the room are off, excerpt

from a return message will appear as follows: `livingroom: off`. To use the functionality, return messages pool must be bought.

5.9.2 Alarm Panel

The Alarm Panel is designed to manage the alarm control unit, integrated into the Fibaro System.

Figure 5.20: Fibaro Alarms Panel

There are three types of alarms in Fibaro system:

- Fibaro Alarm - allows to configure alarm system to respond to conditions of individual sensors and view events filtered by sensors.
- Modular Alarm - allows to manage a simple alarm system based on 3 Z-Wave modules. Support will be deleted soon.
- Satel control panel - based on Satel alarm integration

Fibaro Alarm

Fibaro Alarm is one of three type alarm functionalities in the Home Center 2 system. It allows to control alarm by states of selected motion and door/window sensors. Each Armed and Breached sensor will turn on the alarm.

User can use filter for specyfic rooms, and use only selected sensors.

The next step of configuring Fibaro alarm is setting predefined scenes for handle each events. There are following options available:

- PANIC SCENE - Switch on selected lights, close selected blinds, send selected cameras screens and selected notifications.
- LIGHTS ON SCENE - Switch on selected lights or all lights in the house.

Figure 5.21: Fibaro Alarm

- BLINDS CLOSE - Close selected blinds or all blinds in the house.
- EMERGENCY LIGHTS - Switch selected lights or all lights in the house to emergency mode.
- SEND SCREENS - Send screens from selected cameras or all cameras in the house.
- SEND NOTIFICATIONS - Send selected or all notifications defined in the system

Figure 5.22: Fibaro Alarm - Room filter

- ADD ACTION - user can choose his own scene for alarm reaction

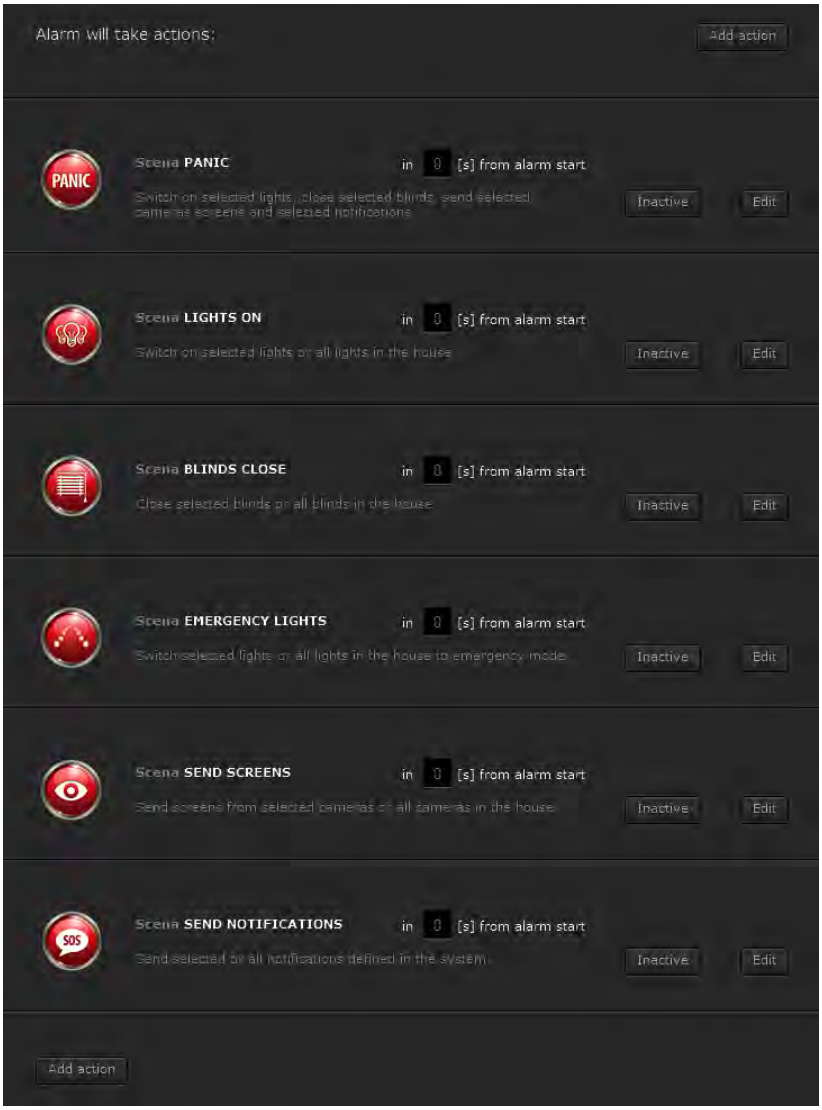


Figure 5.23: Fibaro Alarm - Predefined scenes

Modular Alarm

For integrating the alarm system into Fibaro System, two Relay Switch 2x1,5kW or one Relay Switch 2x1,5kW and Universal Binary Sensor modules may be used.

In the Alarm Panel, the following devices need to be present:

- *Controlling Module* - arming / disarming alarm
- *Status Module* - informing about zone status (armed / disarmed)
- *Alarming Module* - indicating armed zone breach

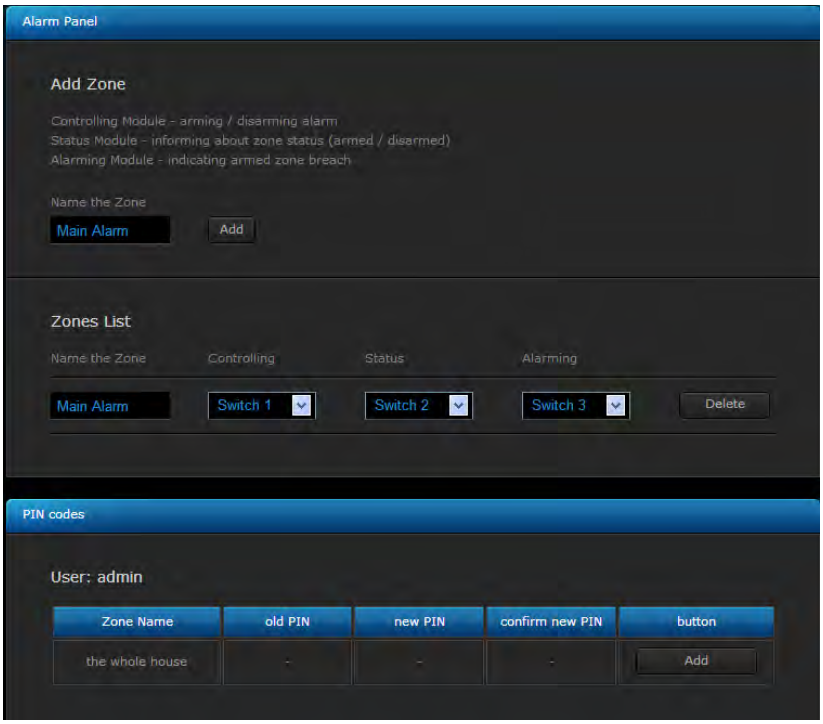


Figure 5.24: Modular Alarm Panel

- Connect Arming/Disarming input of the alarm control unit to **O1** of the Relay Switch 2x1,5kW
- Connect Status, i.e. Armed / Disarmed output of the alarm control unit to **S1** input of the Relay Switch 2x1,5kW or IN1 of Universal Binary Sensor
- connect Alarming input of the alarm control unit (Breach / No Breach) to Relay Switch inputs *S2* or *IN2* of the Universal Binary Sensor

5.9.3 Heating Panel

The Heating Panel allows you to schedule heating programs at predetermined times. After the heating zones have been created and rooms are added to it, all devices responsible for maintaining the desired temperature will work in accordance with schedule.

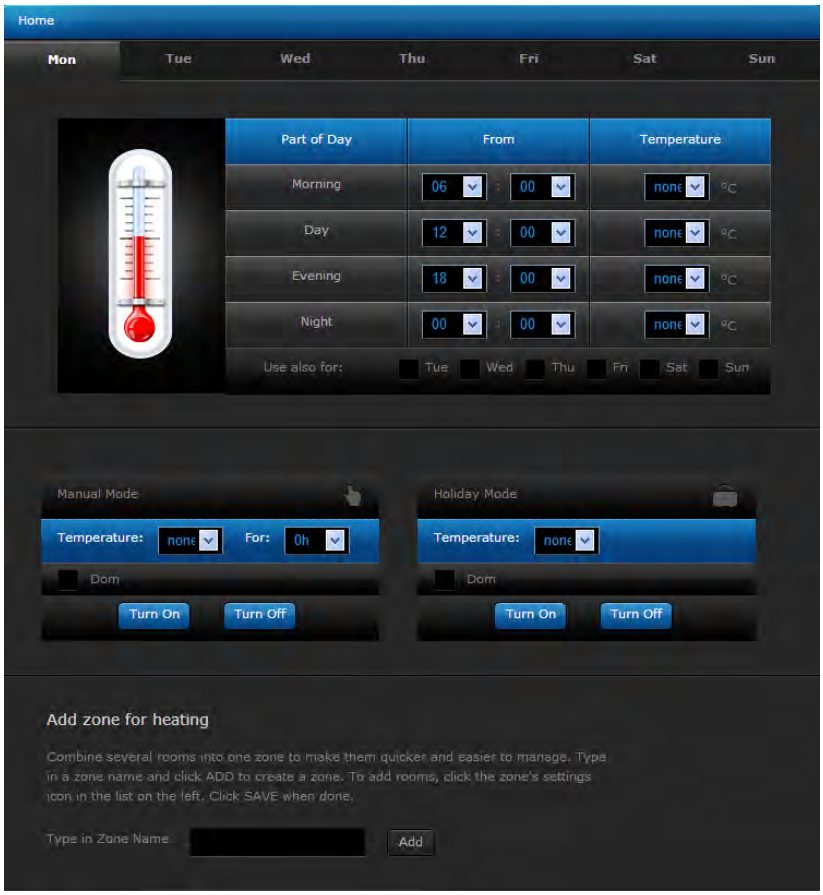


Figure 5.25: Heating panel window

5.9.4 AC Panel

The Cooling Panel allows you to schedule cooling programs at predetermined times. After the cooling zones have been created and rooms are added to it, all devices responsible for maintaining the desired temperature will work in accordance with schedule.

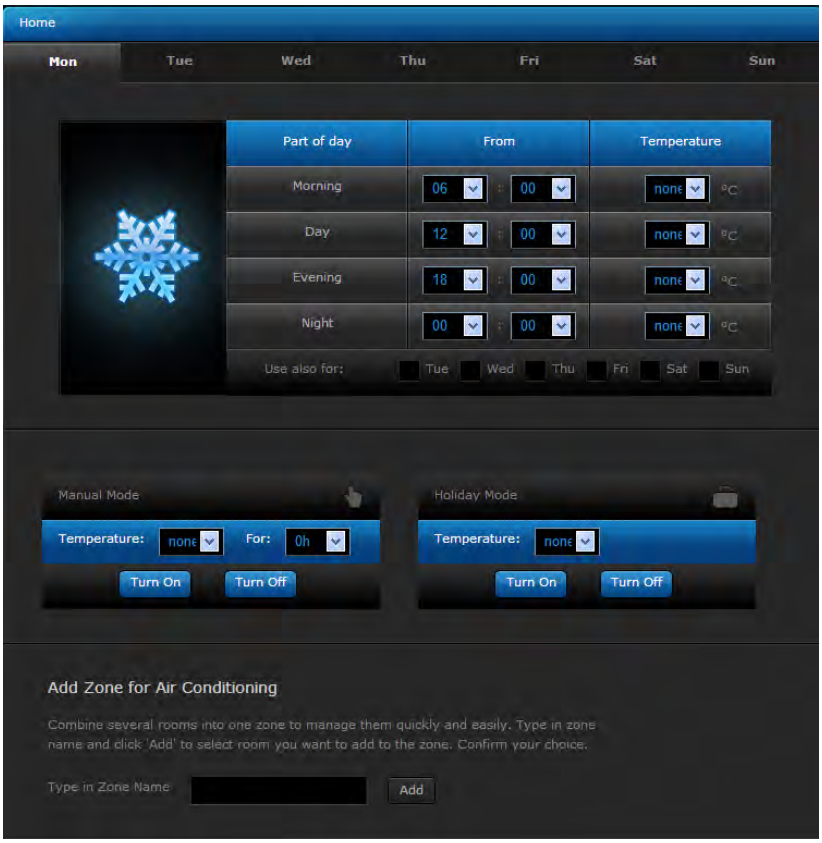


Figure 5.26: Air Conditioning panel window

5.9.5 Humidity Panel

The Humidity Panel allows you to schedule cooling programs at predetermined times. After the cooling zones have been created and rooms are added to it, all devices responsible for maintaining the desired temperature will work in accordance with schedule.

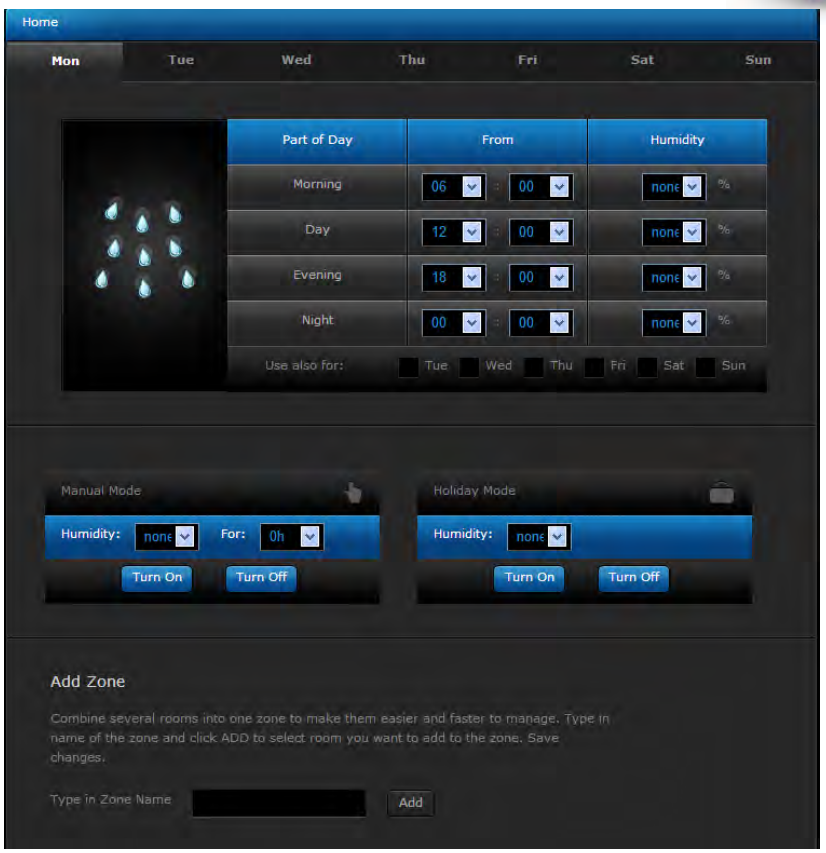


Figure 5.27: Humidity panel window

5.9.6 Sprinklers Panel

Sprinkler panel is designed to control sprinkler Relay Switches modules.

Figure 5.28: Sprinkler panel

Sprinkler panel can be configured in the following steps

1. Choose relay switch modules that will control sprinklers
2. Adjust additional water (as percent)
3. Adjust rain delay if needed
4. Choose number of cycles per day
5. Choose days of each sprinkler program
6. Set sprinkler mode to AUTO
7. Choose start hour of every cycle

Also it is possible to manual start of each sprinkler for specific time (in minutes).

5.9.7 Event Panel

The History Panel is a register of all of the activities taking place in a given Fibaro System. The panel lets the user monitor changes in status of all devices and filter them depending on the devices type and the time they occurred.

Figure 5.29: Sprinkler panel

5.9.8 Access Control

The Users Panel is configured to manage the accounts of the users of a certain HC2 unit. It allows you to grant/block access to the devices, e.g. cameras; scenes and system settings. From the Users Panel it is also possible to grant/block access using the hotel mode for a given mobile application, or set a perion for reporting GPS locations from a certain iPhone device. Also, the Users Panel gives an option to define mobile devices which will receive Push Notifications.

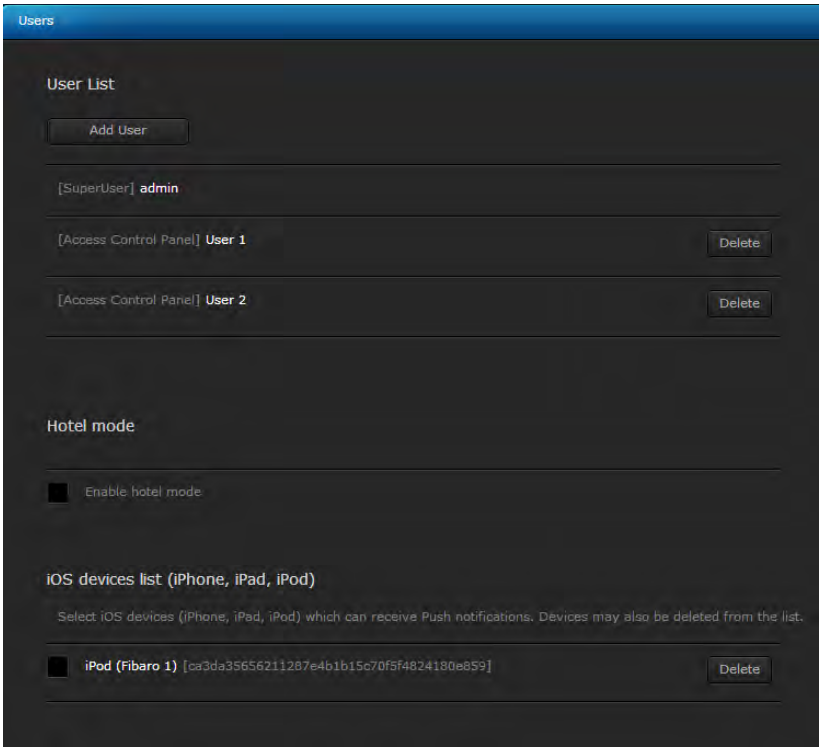


Figure 5.30: Access Control Panel

After clicking the user's name, the Users Panel shows the window shown in fig 5.31.

- Login
- Password (at least 4 characters. The system will ask for password confirmation)
- E-mail address (all notifications will be sent to this e-mail)
- If the user is receive the notification massages

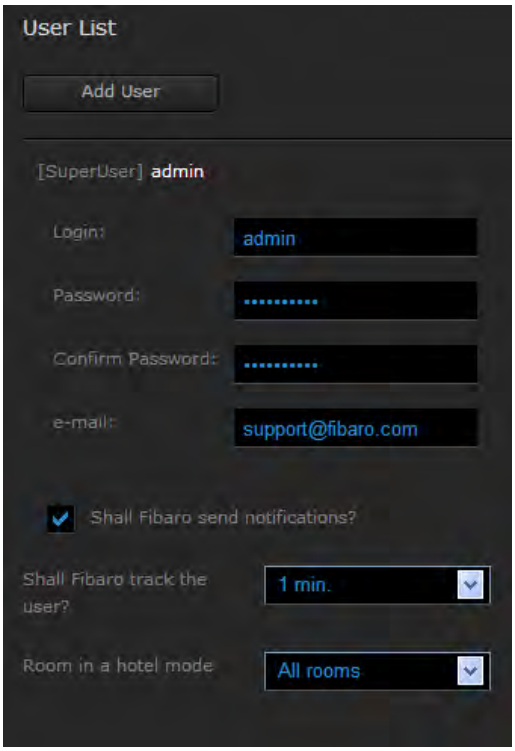


Figure 5.31: User configuration window

- If the user is to be tracked - how frequently GPS position from the user's iPhone will be collected. The shorter collection time, the more frequent readouts, resulting in more accurate positioning.
- Hotel mode - which rooms should be included in hotel mode for the user

Hotel Mode

Hotel mode is designed for defining a single room, that a given user will be able to manage through the iPhone interface. For example, if there is *USER 1* in the system, and the room *ROOM 1* assigned to the user, the person will be able to manage this single room only through his iPhone application.

Users Rights Management

.

Users Panel gives the possibility for advanced control over users rights. It is possible to grant or block an access to:

- Devices - rights to operate certain devices
- Cameras - rights to check the image from certain IP cameras

- Scenes - rights to use certain scenes
- System - rights to manage certain system sections

List of iOS devices

This enables you to determine which of the users using iOs applications are to receive Push notifications. If the user is allowed to remotely access to the system, his iPhone must be marked on the list.

5.9.9 Notifications Panel

Notifications panel gives the ability to create messages to be used for informing the user of certain events taking place in the house.

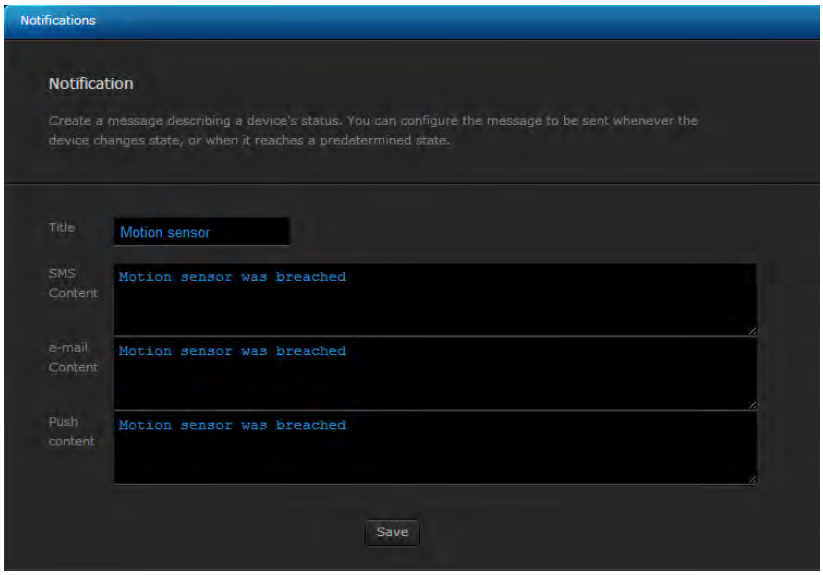


Figure 5.32: Notification Panel

5.9.10 Localization Panel

Localization Panel uses user defined GPS points to activate GPS scenes. There are two ways of defining GPS points - choosing on a map, or entering certain GPS coordinates. Each user may enter indefinite number of GPS points.

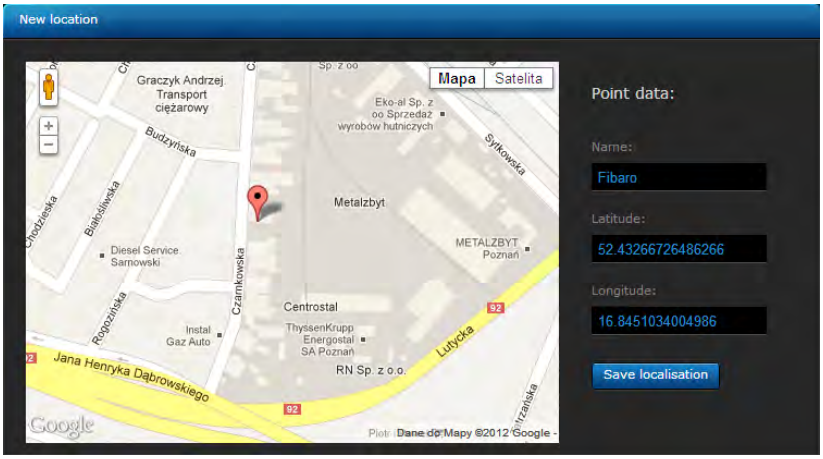


Figure 5.33: Localization Panel

Usage example: *USER 1* defines two *GPS* points *HOME* and *WORK*. Now it is possible to create scene turning OFF all the lights in the house once the user leaves the *HOME* location, and arms the alarm at home once the user enters *WORK* location.

5.9.11 Linked Devices

Linked Devices combine several devices into one device. Using this function will result in controlling the group of related devices as if they were one single device. The group will be presented in the HC2 interface as a single device.

The Home Center 2 offers four different Linked Devices panels:

- Heating
- Air Conditioning
- Humidity
- Video gate

Linked Devices - Heating

Heating linked devices was designed to enable link between Relay Switch module and temperature sensor. This linked may be used in control of boilers, floor heating, jacuzzis, swimming pools etc. After creating the linked devices, managing and scheduling is done by the use of Heating Panel.

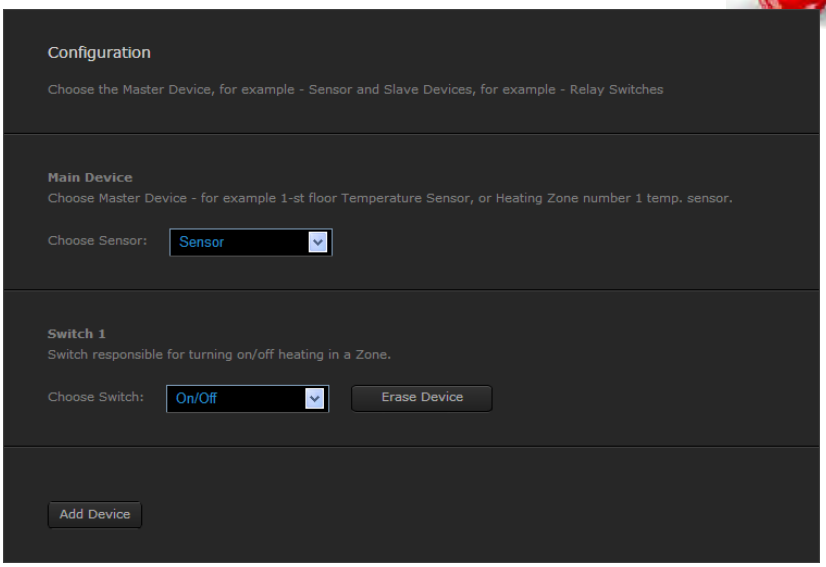


Figure 5.34: Linked Devices Heating Window

Linked Devices - Air Conditioning

Air conditioning linked devices are based on the same principle as Heating Linked Devices. It is possible to add multiple switches turning several air conditioning devices ON / OFF, so that air conditioning in multiple rooms or sections may be operated as a single device. After air conditioning liked devices has been created, managing and scheduling is done by the use of the Air Conditioning panel.

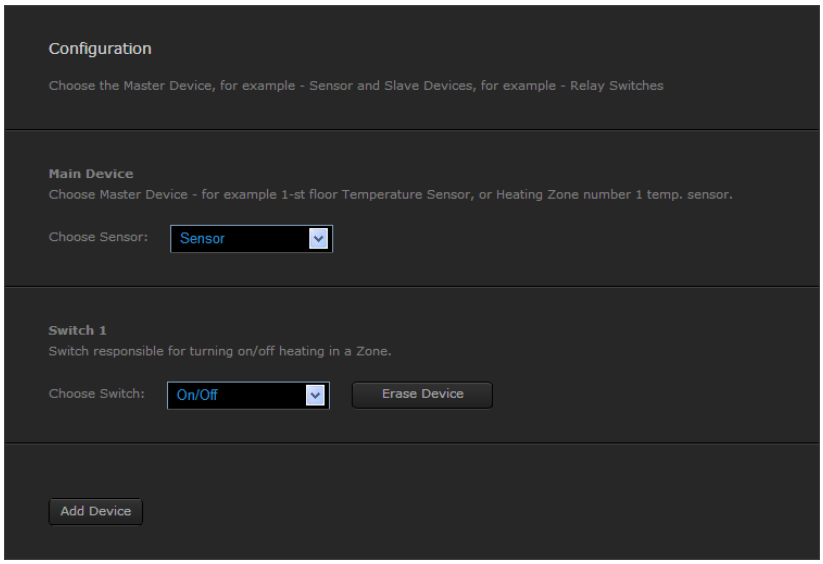


Figure 5.35: Linked Devices Air Conditioning Window

Linked Devices - Humidity

Humidity linked devices uses the principle described in 5.6.1/2. After Humidity linked devices have been created, managing and scheduling of the new devices is done through the Humidity Panel.

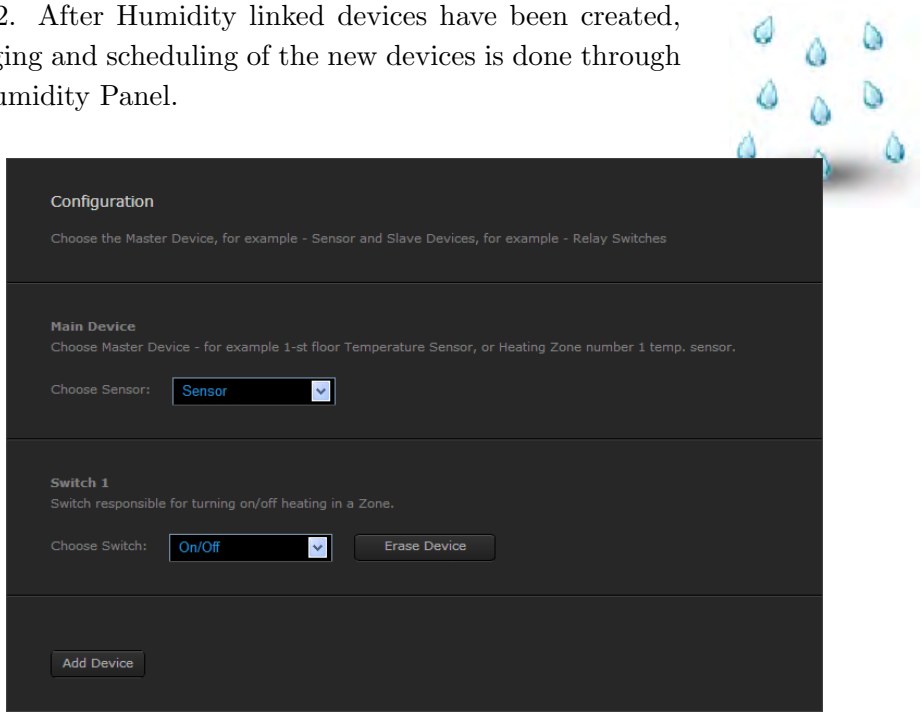


Figure 5.36: Linked Devices humidity window

Video Gate

The Video gate is a link between three devices - an IP camera, the module responsible for opening the gate and the module responsible for triggering the doorbell. After the link has been created, the video gate may be controlled via an iPhone. To create the video gate, three devices must be added to the link: an IP camera overlooking the gate, a Relay Switch used to open the gate and a Relay Switch connected to the doorbell.

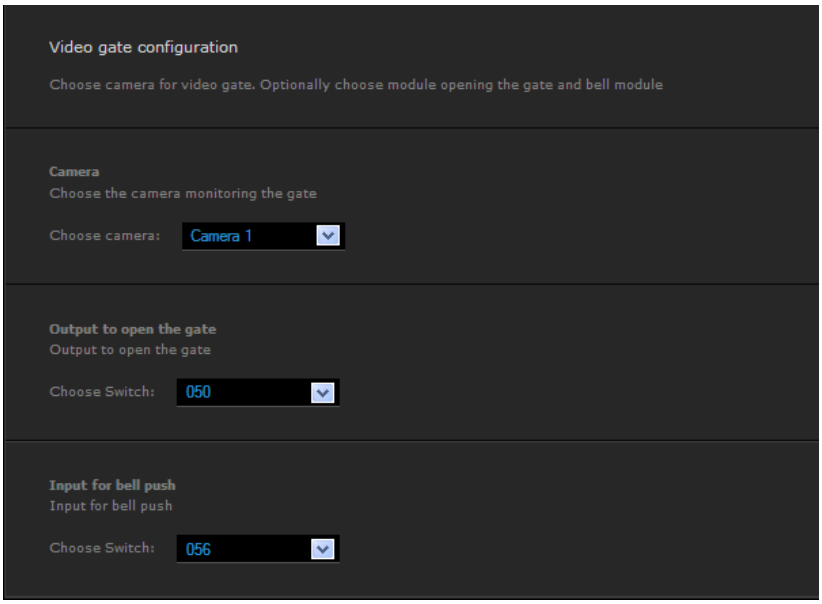


Figure 5.37: Linked Devices Video-gate Window

5.9.12 VoIP Panel

New functionality added is the ability to set HC2 as a VoIP server. VoIP Server allows you to configure any number of clients to support voice and video calls.

To properly configure the VoIP server HC2:

STEP 1 First, configure the VoIP client for HC2

STEP 2 Create a name, enter ANY VoIP number (the number will be assigned to our VoIP client), and specify the display name of the VOIP client. Then you can assign any password for particular client.

STEP 3 Next step is configuring the VoIP client - it can be any software or hardware VoIP client.

User name is our previously created user VoIP number, password is the password created on the VoIP Panel, Domain and Proxy is a Home Center 2 address in the local network.

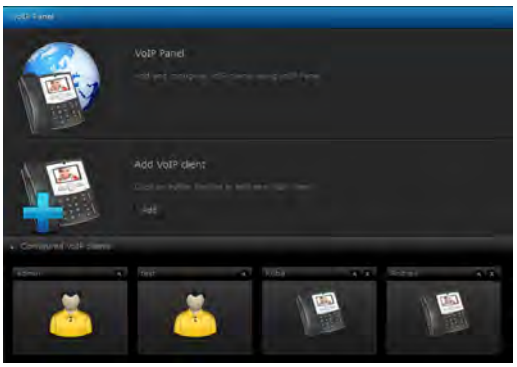


Figure 5.38: Voip Window

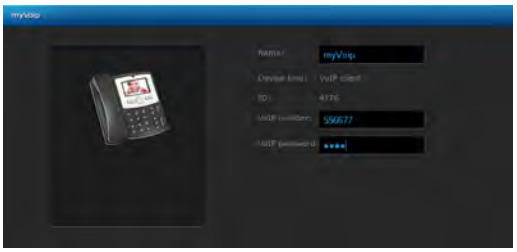


Figure 5.39: Voip user configuring

You can similarly create a client on the other device and VoIP application can call on the numbers.

EXAMPLE

In HC2 you can create myVoip1 user with number 123 and myVoip2 user with number 456. Now you can launch the myVoip1 client application (for example Linphone) and dial the number 456 - to connect to the myVoip2 user.

The HC2 panel, you can create any number of VoIP users.

5.10 Configuration

The Home Center 2 configuration options are divided into the following categories:

- General
- LAN settings
- Location
- Z-Wave Network
- Backup

Figure 5.40: Voip client configuring

5.10.1 General

Basic information about the Home Center 2, including:

- Serial no.
- MAC address
- Current software version
- Time and date last system backup file was created
- Server status

Also there are three sensors settings. This sensors can be choose for iPad application as main home sensors.

- The main temperature sensor
- The main humidity sensor
- The main light sensor

Next two parameters allows to define notification of fire and freeze. This notification will be sent once to admin user (to defined e-mail and added mobile phone).

General information window also allows for performing following actions:

- Restart - Home Center 2 soft restart, i.e. system shut down and started again
- Force the update - manual option for download the latest stable software version.
- Reload Lili database - manual option for reloading Lili database. It is recommend to use this option after every changes in Your house settings (device names, rooms, Lili commands for specyfic devices) and also after every updates.

The final option of General is choosing the Home Center 2 language.

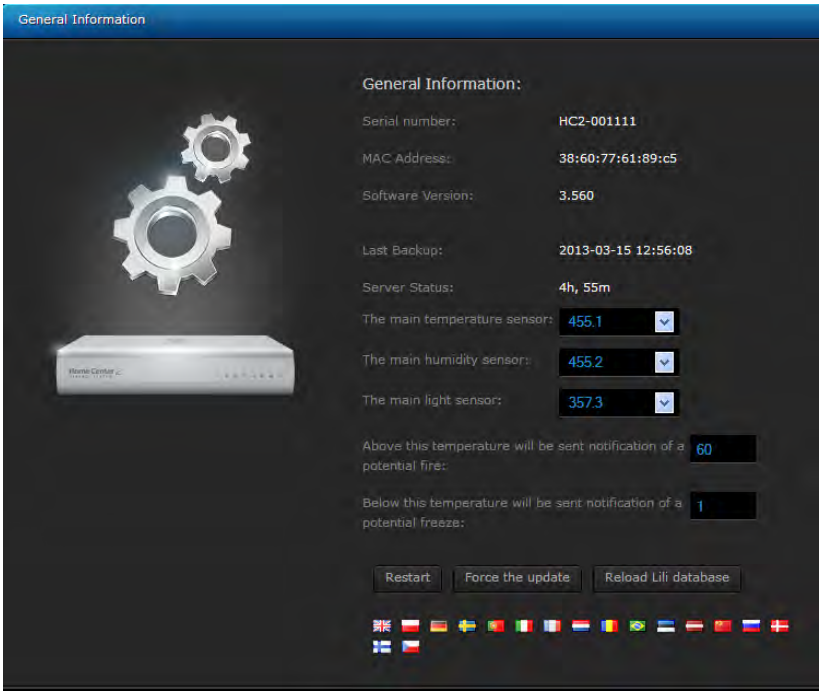


Figure 5.41: Configuration Panel - General

5.10.2 LAN Settings

There are two basic options available: DHCP or Static IP.

Following parameters may be defined:

- Home Center 2 IP address
- Subnet mask
- Default gateway IP, used by HC2 to connect the web
- DNS server address
- Remote access enabling

Figure 5.42: Configuration Panel - LAN settings

Important information on LAN settings

By default, the HC2 expects to be connected to a DHCP server. In this mode, HC2 IP address may be obtained with the use of the HC2 Finder (see *HC2 Finder*). Another option is to set Static IP. Static IP may be set from the LAN settings tab, or manually, by holding the Recovery button (back side of the HC2 casing) after the device has been connected to power supply. In this case, the HC2 will have following settings:

- IP Address: 192.168.81.1
- Subnet Mask: 255.255.255.0
- Gateway address: 192.168.81.1

When static IP has been set, it is possible to connect HC2 directly to Ethernet port of a PC, however PC network settings must be set to match those of HC2:

- PC/MAC IP: 192.168.81.5
- Subnet mask:: 255.255.255.0
- Gateway address: 192.168.81.1

NOTICE *After setting a static IP for the HC2 by pressing and holding the Recovery button, please enter LAN settings to change connection type to DHCP, when the HC2 is connected to the PC.*

5.10.3 Location

Location settings include time zone location, within which HC2 is installed. Additionally, it is possible to enter the longitude and latitude used for monitoring weather conditions (also used in scenes).

Figure 5.43: Configuration Panel - Location info

5.10.4 Z-Wave network

In this window the Z-Wave network settings and parameters are displayed. It is recommend to change this option only for advanced users.

Z-Wave network configuration displays following options:

- Z-Wave Version
- Devices polling time interval - this parameters defines polling time interval of each Z-WAVE device added to the Home Center 2 network. Also there are recommended values for specific number of the devices.

  Warning Polling time interval is main Z-WAVE network parameter. Low values may negatively affect to Z-WAVE stability. **NOTICE** Value 0 will turn off polling functionality. This value is recommended for network based on old type Z-WAVE battery operated devices.

- Polling dead devices - this option allows to turn off polling dead devices.

  NOTICE It is recommend to turn on this option only in the networks with random marked dead nodes.

- Auto configurations of battery operated devices - this option is turned off as default. It it only recommend to turn on this option only in networks with battery operated devices with latest Z-WAVE libraries.

WARNING It is not recommend to turn on this parameter for networks with Everspring, Danfoss and Aeon Labs devices.

- Do not mark nodes as dead - this option allows to turn off marking dead devices
- Configure all devices again - Force re-configure all non battery operated devices
- Reset energy metering - Energy meters in devices(kWh) are reset to 0. Historical data remain in the system and will only be displayed in the energy panel.
- Z-Wave network reset - All of the system devices will be removed from HC2 Z-Wave chip memory, i.e. all of the device will have to be re-added to the system

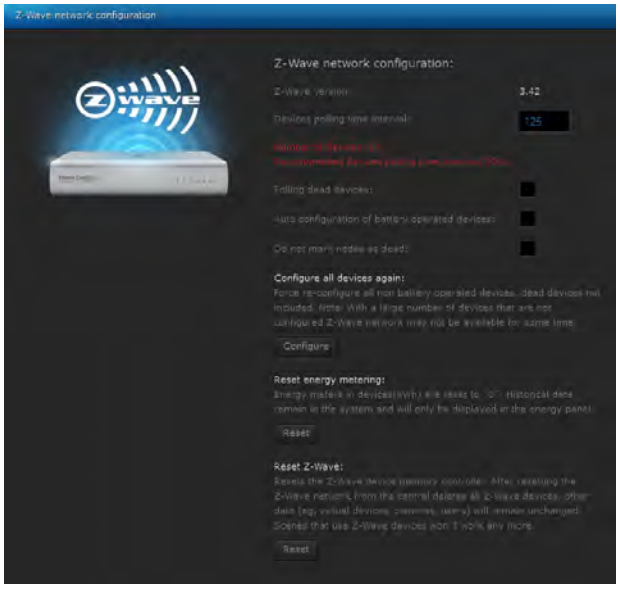


Figure 5.44: Configuration Panel - Z-Wave Settings Window

5.10.5 Backup

In this section the list of created backup files is displayed. Backup file is a copy of a file containing the information's about all devices added to the system and all of their settings, users individual settings and the HC2 operating system. Retrieving data from backup file means going back to all of the systems settings that had been saved.

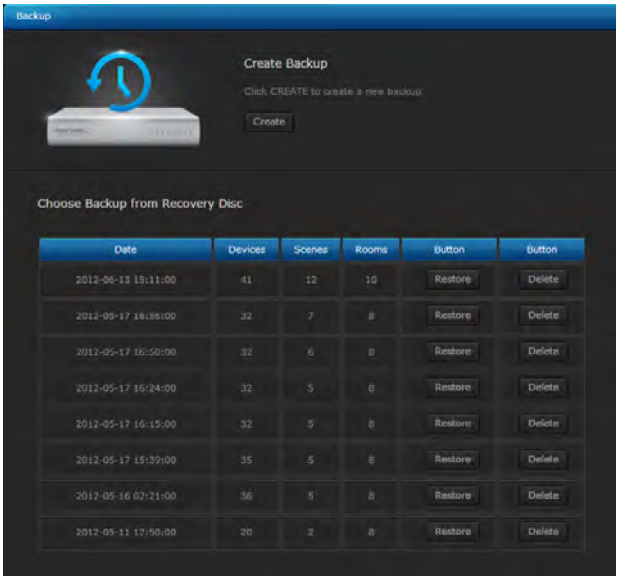


Figure 5.45: Configuration Panel - Backup Creation Window

5.11 Recovery Mode

Recovery Mode is a special panel, designed for retrieving the HC2 operating system in case of technical problems, e.g. when it is not possible to log into the user's panel. Using recovery mode the Home Center 2 will be brought back to the factory installed software version, i.e. 1.009. To access Recovery mode:

1. Turn the Home Center 2 OFF
2. When turning the Home Center 2 ON again, hold Recovery button in the back of HC2 casing - diodes will turn ON sequentially, starting from the left hand side
3. Entering Recovery Mode is signaled with a control diode

   NOTE! if you press and hold the recovery button for too long, the HC2 will set to static IP and network connection will be lost (see 5.10.2)

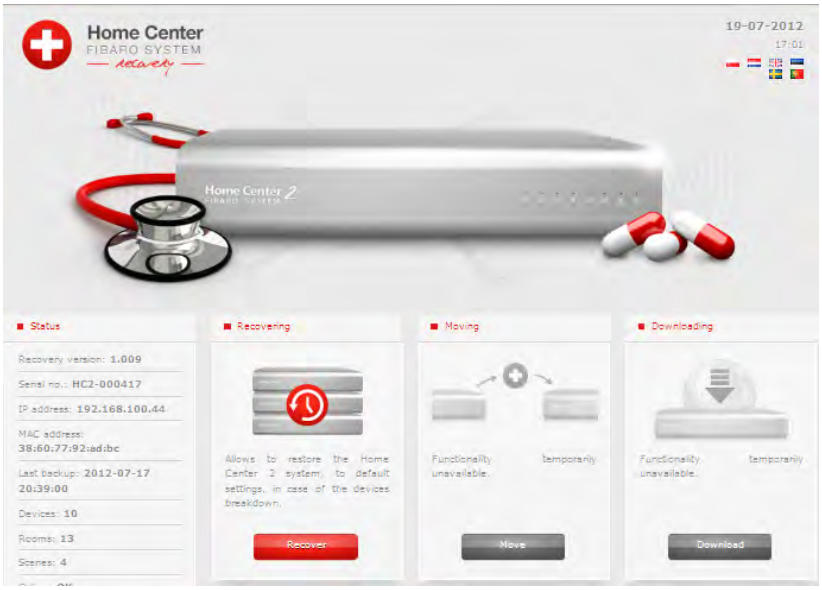


Figure 5.46: Recovery Mode View

The left hand menu displays the following information:

- *Recovery version*
- *HC2 serial no*
- *IP Address* - IP address, visible in local network
- *MAC address* - Module name and software version

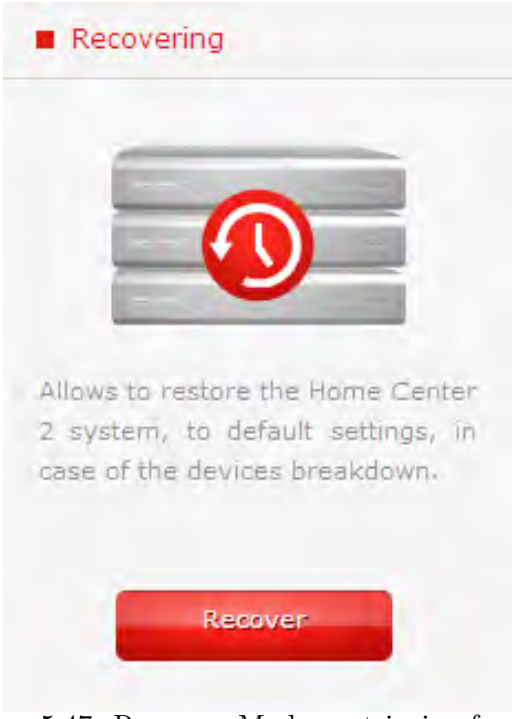


Figure 5.47: Recovery Mode - retrieving from backup

- *Last backup* - The date and time when last backup file was created
- *Devices* - The Number of devices saved in last backup file
- *Rooms* - The Number of rooms saved in last backup
- *Scenes* - The Number of scenes saved in last backup file
- *Online* - The HC2 internet access

5.12 Dashboard

Dashboard is a control panel that can be customize by the user to show general information about the system.

Figure 5.48: Example dashboard panel

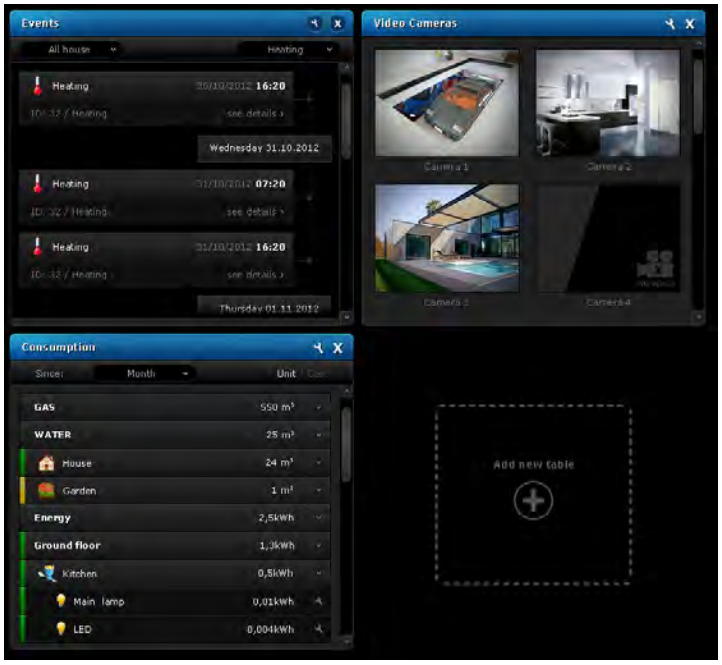
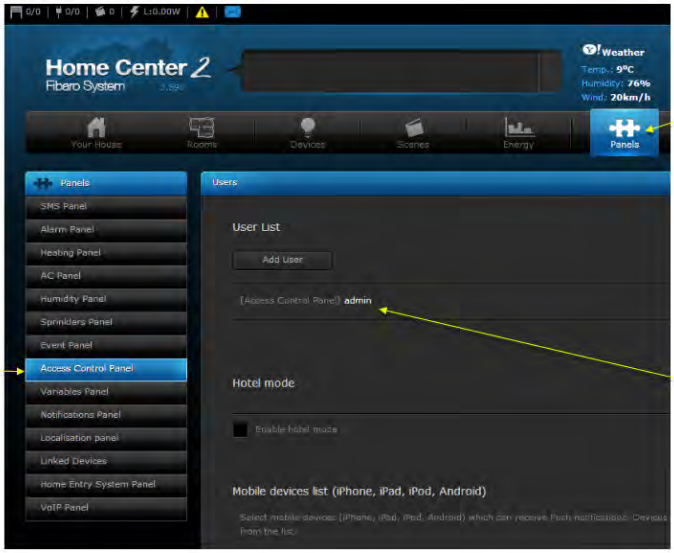


Figure 5.49: Example dashboard panel

Appendices

Fibaro Alarm Guide

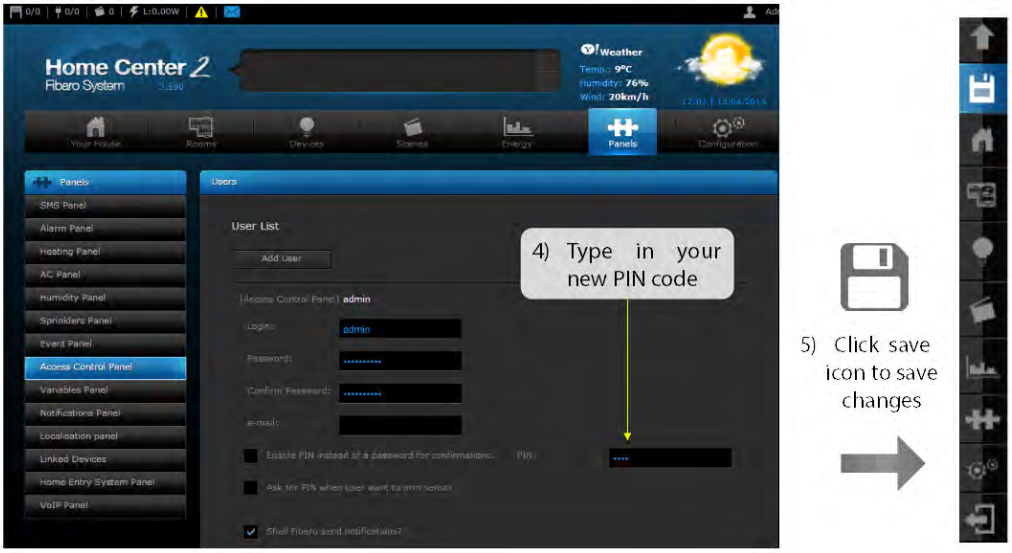
How can I set my PIN code?



1) Go to „Panels" tab to edit your PIN code

2) Select „Access Control Panel"

3) Open user's options clicking the nickname

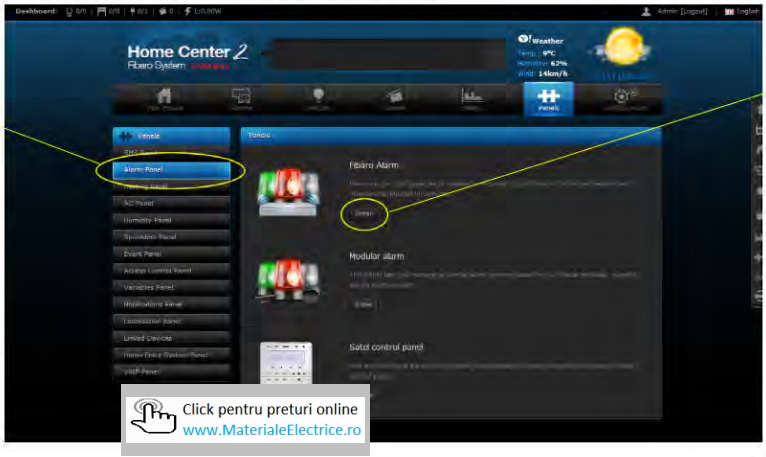


4) Type in your new PIN code

5) Click save icon to save changes

Using the **Fibaro Alarm** from **Alarm Panel**, you can configure alarm system to respond to **conditions** of individual sensors and view **events** filtered by **sensors**.

Select the „Alarm Panel"



Click „Enter" to open Event Panel

Event Panel management

As you open the Event Panel, you will see the alarm status icon.

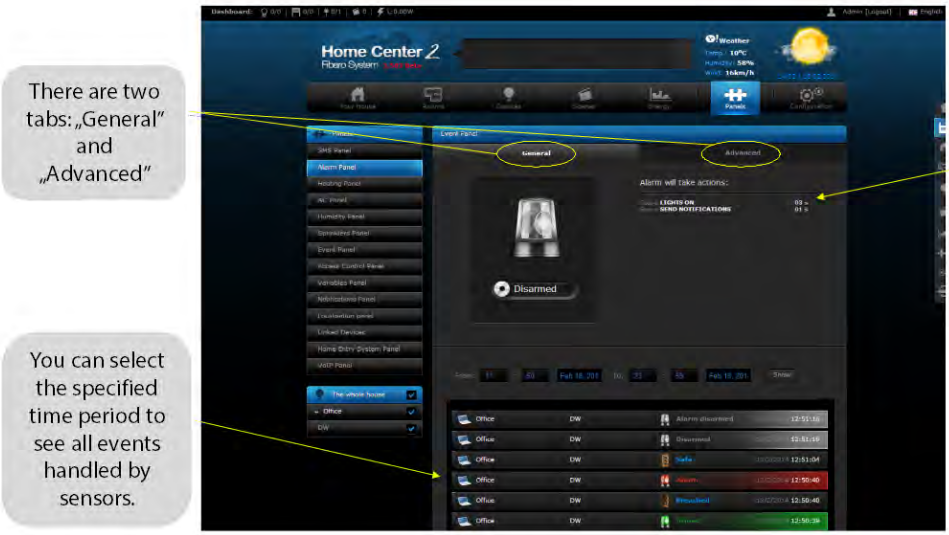
Its color indicates one of four states:

Disarmed

Partially Armed

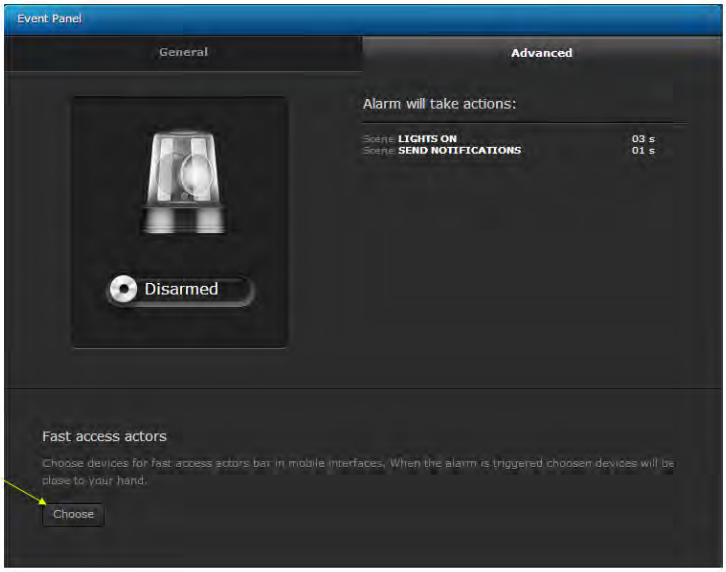
Armed

Alarm

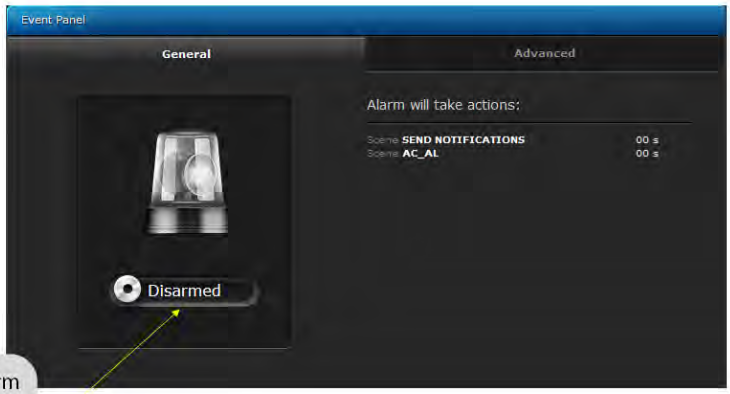


In our example:

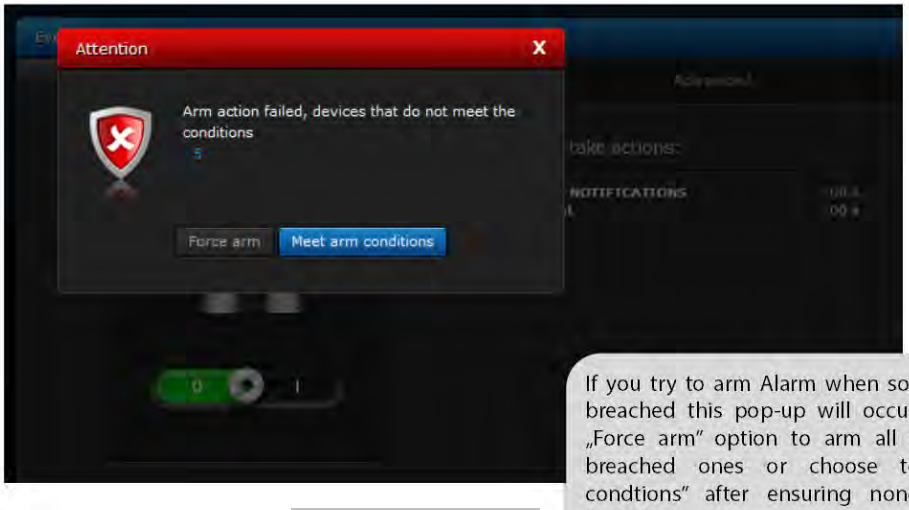
- Notifications are send in one second after alarm starts
- Lights are switched on in three seconds from alarm start



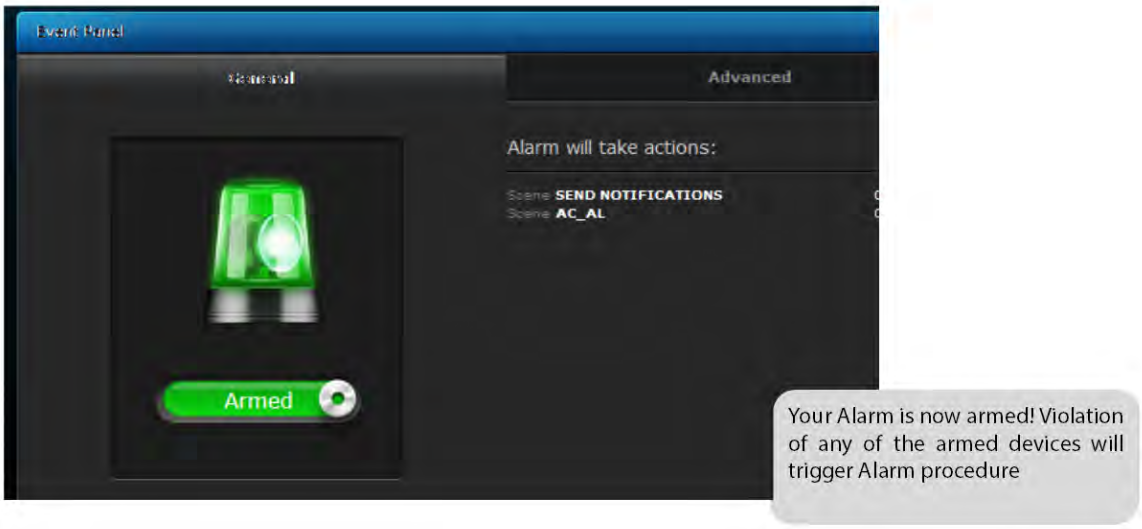
If you use Fibaro interface on mobile devices, it's useful to choose actors for fast access bar.

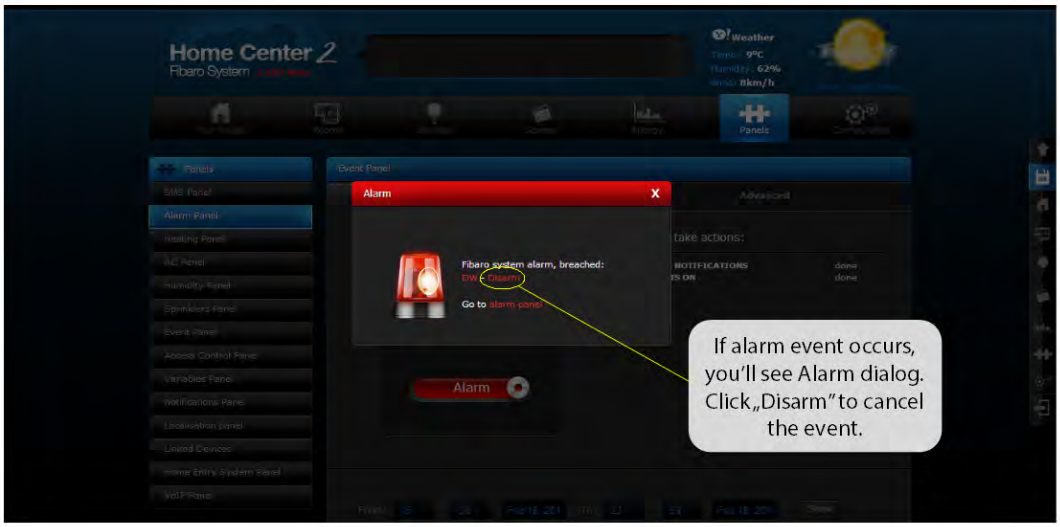


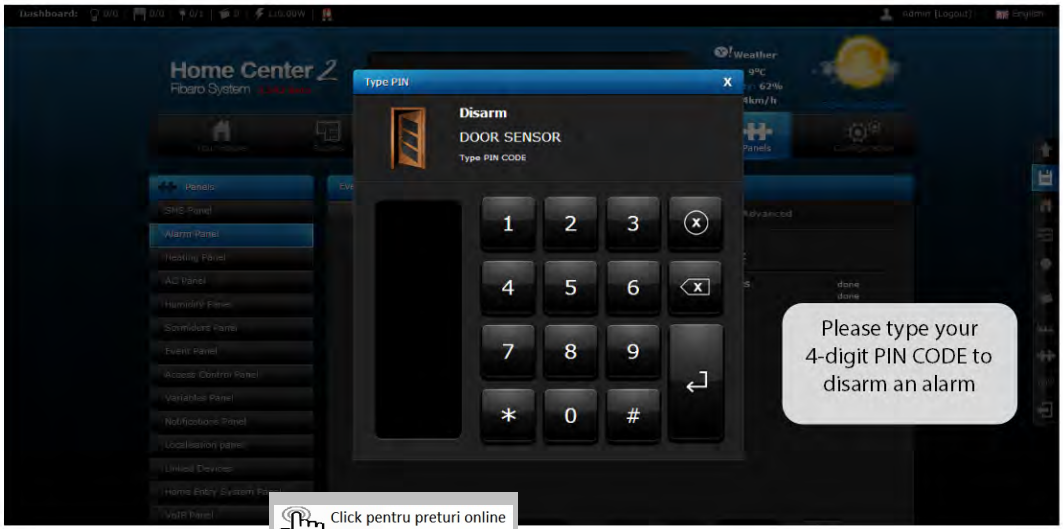
You can now arm Alarm by clicking on the slider



If you try to arm Alarm when some sensors are breached this pop-up will occur. You can use „Force arm" option to arm all sensors except breached ones or choose to „Meet arm condtions" after ensuring none of them is breached.



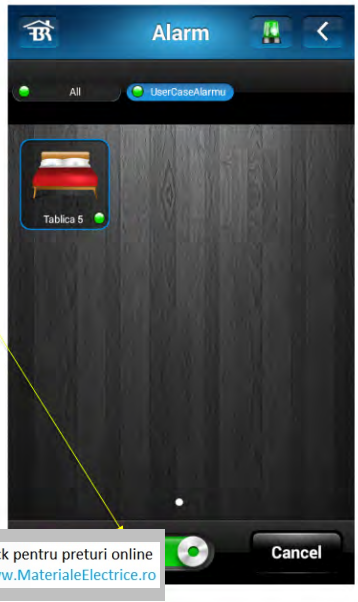




You can also control Alarm with Android device, just enter the Alarm section

Click„Set Alarm" button

Room is now armed!



You can also enter each room to arm particular devices

Here you can view more deteails of configuration

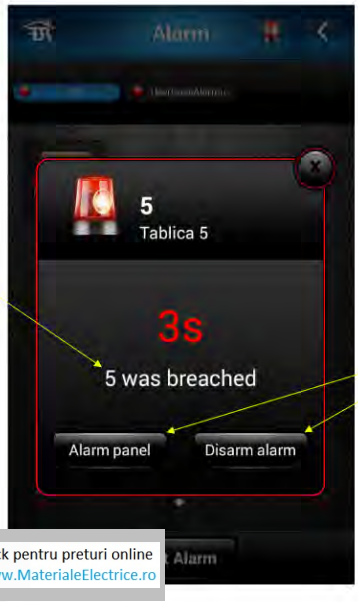
This panel indicates state of Alarm and contains history of actions. Swipe left or right for more options

Here you can see actions that will be taken when alarm occurs

Here are listed actors that were added in advanced Alarm configuration

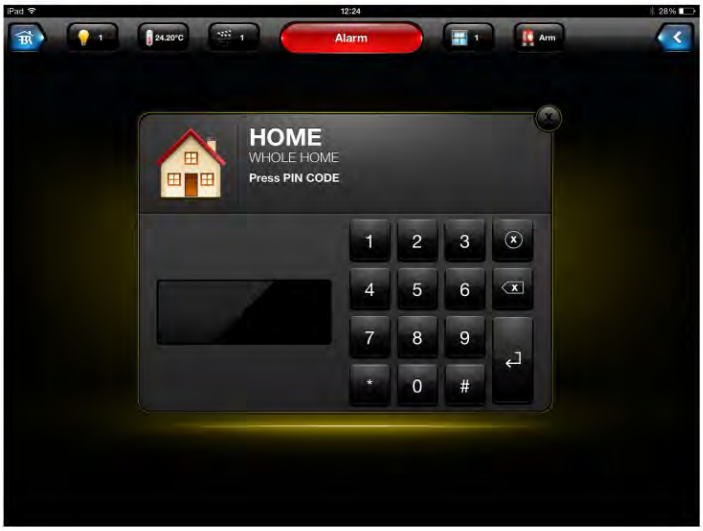
When triggered, Alarm will show a pop-up that contains the name of breached device

You can either go to Alarm panel to contol selected actors or just disarm Alarm



When breached, Alarm will take actions that were activated in its configuration

Touch the slider to disarm all sensors



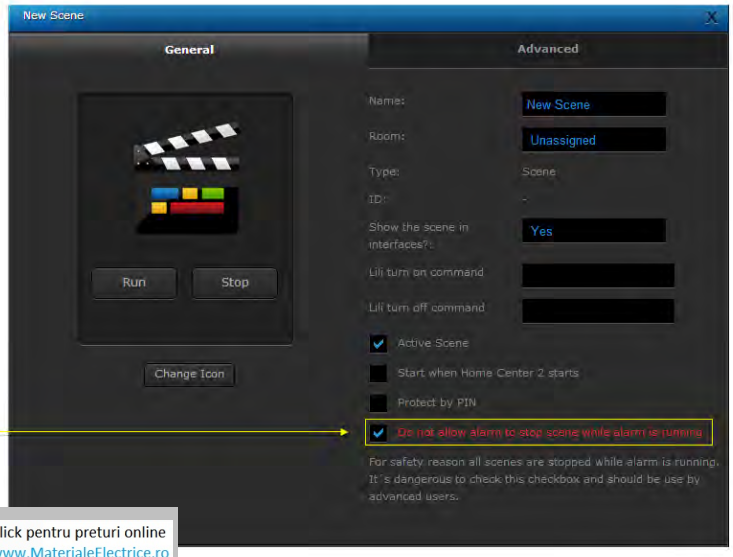
Enter PIN code to disarm the Alarm

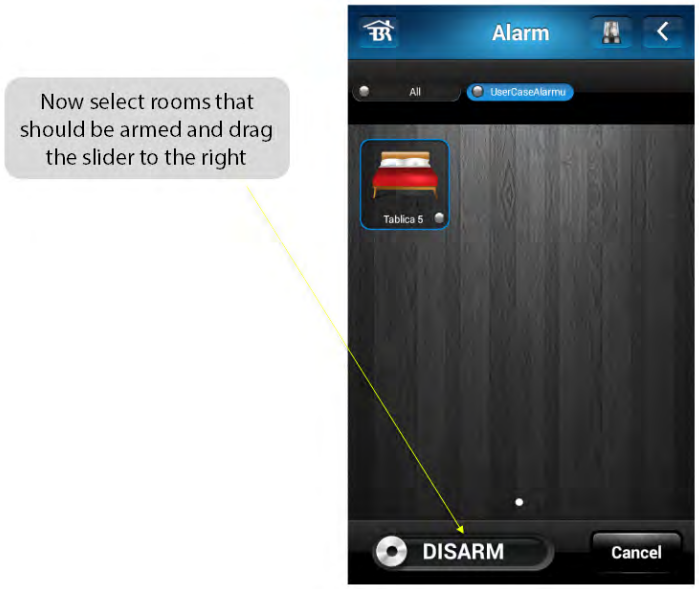
If you want to arm just some of the sensors or rooms you can do it here

Alarm is partially armed now

You can also control all the lights and blinds in house from Alarm panel

If you would like to stop scene while Fibaro alarm is running, please uncheck this box





SUMMARY

- FIBARO gives you complete control over how the alarm system communicates with you and how your home or building responds to the alarm.
- Its not a problem if you forget to turn on the alarm when you leave home since the alarm can be enabled from anywhere in the world via your mobile.
- Here are a few of the activities FIBARO can perform when an alarm event occurs:
  - Ask your security cameras to take pictures and email these to you.
  - Send an instant notification of the alarm to your smartphone via push notification.
  - Instruct any of the automated devices at home to perform a set of actions.
- The response to an alarm can be any scene or a set of operations that you wish your system to perform. For example turning all your lights on and opening all the blinds.The possibilities are endless.

List of Figures