

# Technical Manual

## Sensor / Switch actuator



Sensor / Switch actuator  
SA-M-8.8.1 (6241/8.1)

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# 1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property, and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you pass the device on, also pass on this manual along with it.

If you require additional information or have questions about the device, please contact ABB STOTZ-KONTAKT GmbH or visit our Internet site at:

[www.abb.com/freeathome](http://www.abb.com/freeathome)

## 2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

ABB STOTZ-KONTAKT GmbH accepts no liability for failure to observe the safety instructions.

### 2.1 Symbols used

The following symbols point to particular hazards involved in the use of the device or provide practical instructions.

#### Note ...

A notice indicates useful information or references to additional topics.  
This is not a signal word for a dangerous situation.

#### Examples

Examples for application, installation and programming

#### Important

This safety notice is used as soon as there is the danger of malfunction without the risk of damage to property or risk of injury.

#### Caution

This safety notice is used as soon as there is the danger of malfunction without the risk of damage to property or risk of injury.



#### Danger

This safety notice is used as soon as there is a threat to life and limb due to improper handling.



#### Danger

This safety notice is used as soon as there is a serious threat to life due to improper handling.

## 2.2 Intended use

The device must only be operated within the specified technical data.

The binary inputs of the device serve as interface for operating free@home systems via conventional push-buttons or for coupling message contacts. The switching channels of the device can be used for switching electric circuits (up to 16 A).

### Note ...

The device must only be installed in dry indoor rooms. The currently valid regulations must be adhered to.

## 2.3 Improper use

The device is dangerous if used improperly. Any non-intended use is deemed improper use. The manufacturer is not liable for damages resulting from such improper use. The associated risk is borne exclusively by the user/operator.

The device must never be used outdoors or in bathroom areas. Do not push objects through the openings in the device. Only the available options for connection are to be used in accordance with the technical data.

## 2.4 Target group/Qualifications of personnel

Installation, commissioning and maintenance of the product must only be carried out by trained and properly qualified electrical installers. The electrical installer must have read and understood the manual and follow the instructions provided. The operator must adhere to the valid national regulations in his country governing the installation, functional test, repair and maintenance of electrical products.

## 2.5 Liability and warranty

Improper use, non-observance of this manual, the use of inadequately qualified personnel, as well as unauthorized modification excludes the liability of the manufacturer for the damages caused. It voids the warranty of the manufacturer.

### 3 Environment

Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2006/96/EC, 2004/108/EC and 2011/65/EC RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

## 4 Product description

The device is designed for installing on a mounting rail. The device has eight binary inputs as well as eight switching outputs. The binary inputs can be used as interface for the convenient operation of free@home systems via floating push-buttons or for reading out technical binary signals. After activating the bus voltage the switching outputs can be switched independent of each other in dependence of other sensors connected to the bus (e.g. via push-buttons coupled to binary inputs).

### Advantages:

- » Eight binary inputs in the one device
- » Eight switching channels in the one device
- » Support of floating contacts
- » Variable wiring via 6 mm terminals with combi-head screw

### Note ...

Basic information about system integration is contained in the system manual. It is available for downloading at [www.abb.com/freeathome](http://www.abb.com/freeathome).

### 4.1 Scope of supply

The scope of supply contains the device including bus terminal for coupling to the free@home bus.

### 4.2 Overview of types


Type	Product name	Sensor / switching channels	Device
SA-M-8.8.1	Sensor / switch actuator	8 / 8	

Table 1: Overview of types

### 4.3 Function overview

The following table provides an overview of the possible functions and applications of the device:

Icon of the operating surface	Information
 Rocker	<b>Name:</b> Sensor (rocker) Control element for the control of free@home functions
 Movement detect...	<b>Name:</b> Movement detector Sensor for movement- and brightness-dependent control of free@home functions
 Window sensor	<b>Name:</b> Window sensor Signals an open window (Application: Automatic deactivation of the heating when the window is open)
 Frost alarm	<b>Name:</b> Frost alarm Triggers a frost alarm (Application: Automatic retraction of the blinds and roller blinds or awnings)
 Rain alarm	<b>Name:</b> Rain alarm For detecting a rain alarm (Application: Automatic retraction of the blinds and roller blinds or awnings)
 Wind Alarm	<b>Name:</b> Wind alarm For detecting a wind alarm (Application: Automatic retraction of the blinds and roller blinds or awnings)
 Switchover heati...	<b>Name:</b> Switchover heating/cooling Is used for the switchover of heating/cooling in two-pipe heating/cooling systems
 Light	<b>Name:</b> Light <b>Function:</b> Switches connected electric light circuits





 Switch actuator	<b>Name:</b> Switch actuator <b>Function:</b> Switches connected electric load circuits
 Socket Outlet	<b>Name:</b> Socket outlet <b>Function:</b> Switches connected electric socket outlet circuits

Table 2: Function overview

## 4.4 Description of functions

### 4.4.1 Rocker

The rocker function is to be used if push-buttons or switches are connected to the binary inputs. Depending on whether single or double push-buttons are used, this must be set in "Device configuration" in the main menu of the System Access Point. Here the sensor / switch actuator is to be selected and then the coupling of the input channels (binary inputs) is to be configured in the "Channel selection" field.

#### Note ...

Channels can only be coupled as long as they have not been allocated to other free@home devices in menu "Placement" of the System Access Point.

Input channels are indicated by means of lower-case letters and output channels by means of upper-case letters.

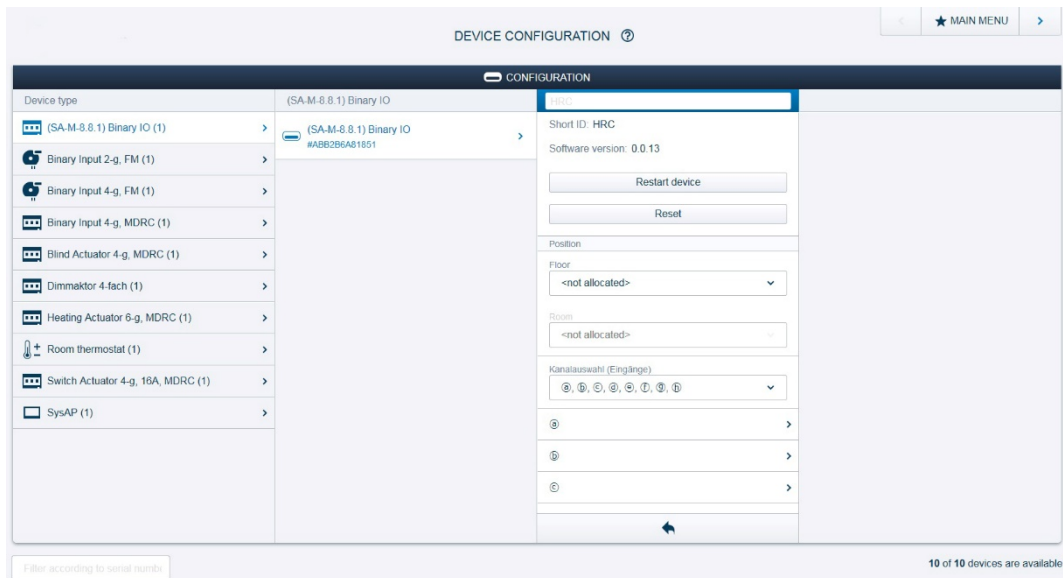


Fig. 1: Coupling the input channels (binary inputs) for the connection of double push-buttons

### Switching of (light) electric circuits

If the rocker function is used in connection with a switch actuator or switching channel of the device, for switching a lamp, for example, the "Control element" function is to be selected. When a single push-button is connected to a binary input, it alternately switches an assigned switching channel on and off when it is actuated. When a double push-button is connected, a rocker connected to channel a, c, e or g, switches the assigned switching channel on. A rocker connected to channel b, d, f or h (binary input), switches the assigned switching channel off. If a switch is used instead of a push-button, it is to be configured according to section 7.2.1. The "Contact type" parameter has no effect on a configured switch. A switch alternately switches the assigned switching channel on or off.

### Switching and dimming of lamps

If a single or double push-button connected to a binary input is to be used together with a dimmer to dim a lamp, the "Dimming sensor" function is to be selected for the binary input (compare section 7.2). For a single push-button, dimming brighter or darker is carried out with an alternating long press of the push-button rocker. A brief press switches the lamp on or off. With a double push-button the long press of the rocker(s) connected to channel a, c, e or g (coupling channels a+b, c+d, e+f or g+h) causes the light to become brighter. A brief press is used to switch the lamp on. Dimming darker is carried out with a long press of the rocker(s) connected to channel b, d, f or g. A brief press of these rockers is used to switch the lamp off (compare the previous section).

### Operating blinds

The operation of blinds can be carried out via single or double push-buttons. For this the channels must be configured the same as in section 4.4.1. When using a single push-button, long button actuations lead alternately to an upward or downward movement of the blind, the roller blind or the awning. A brief press of the push-button during a movement leads to a stop. After a movement has been stopped, further brief presses of the push-button cause the slats to be adjusted opposite to the direction of the previous movement. When using double push-buttons, a long press of the rocker(s) connected to channel a, c, e or g (coupling of channels a+b, c+d, e+f or g+h) causes the blind(s) to move up, and a brief press to a stop and the upward movement of the slats. The downward movement or adjustment of the slats in a downward direction is carried out analogous with the rocker(s) connected to channel b, d, f or h.

**Staircase lighting**

If a push-button connected to a binary input is to be used for switching staircase lighting, the "Staircase lighting sensor" function is to be selected (compare section 7.2). The "Switch-off delay" can be configured in the configuration of the associated switch actuator or switching channel of the device (to which the lamps of the staircase are connected). The switch-off delay indicates how long a channel of a switch actuator or a switching channel of the device remains in the ON state after being switch on. If the staircase lighting has already been switched on with the press of a push-button, the switch-off delay can be restarted (retriggered) with a renewed press of the push-button.

If several switching channels are to be activated via the binary output, the respective channels of the binary input (to which the staircase push-buttons are connected) are to be linked with the channels of the switch actuator (to which the staircase lamps are connected). Each channel of a switch actuator can be programmed with its own switch-off delay. This allows pre-warning prior to the switch-off to be implemented, in which part of the lighting group is programmed with a shorter switch-off delay and thus switches off earlier.

**Force-position sensor On/Off**

If several binary inputs are connected to a switching channel, this channel can initially be operated from all binary inputs. After configuring a channel of the linked binary input with the "Force-position sensor ON/OFF" function, the force-position of the sensor for the switching channel can be activated or deactivated with a press of the push-button of the rocker connected to this channel. After the activation, the operation of the affected switching channel is blocked by all other devices. In the parameter settings of the binary input the forced behavior can be configured, and it can be specified whether the channel of the switch actuator concerned is to be switched on (Force-position ON) or off (Force-position OFF).

### Blind force-position

This function makes possible a forced behaviour of blinds via the blind actuator. The forced behaviour can be configured in the parameter settings of a binary input: The associated blind(s) (and roller blinds or awnings) can be moved to the top end position (Force-position top) or to the bottom end position (Force-position bottom).

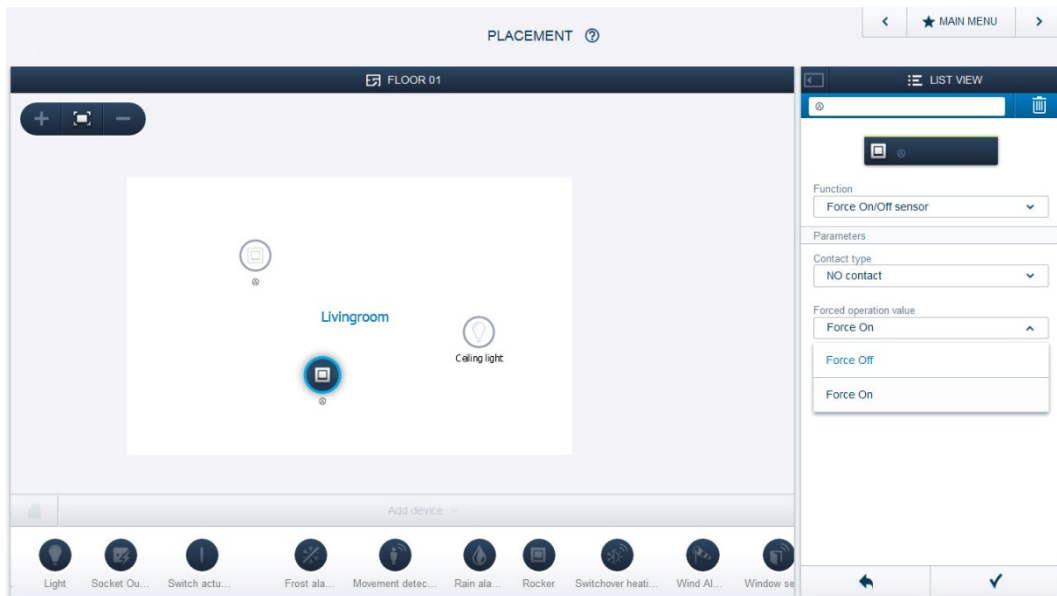


Fig. 2: Configuration of force-position ON/OFF

#### 4.4.2 Movement detector sensor

This function is to be selected if a movement detector is connected to a binary input for light control. If the binary input is linked with a switching channel, the duration of the light of the lamps connected to the switch actuator can be set via parameter "Switch-off delay" in the parameter settings of menu "Placement" of the System Access Point. The duration of the light extends again automatically by the switch-off delay if persons continue to be detected by the movement detector.

#### 4.4.3 Window contact

The window contact function is to be selected if a window contact is connected to a binary input. If the associated channel of the binary input is connected with the room temperature controller, the room temperature controller switches to "Frost protection" mode when an open window is detected and reduces the set-point temperature for the respective room by 7 K, to prevent unnecessary loss of energy.

#### 4.4.4 Frost, rain and wind alarm

These functions are to be selected when connecting the relevant sensors, to protect blinds or roller blinds from damage. The channel (binary input) configured with this function is to be linked with one or several channels of a blind actuator (blind and roller blind or awning). During a frost alarm the respective channel of the blind actuator is blocked to make movement impossible. During rain or wind alarm the blind is moved to the top end position and then the associated channel of the blind actuator is blocked. Operating the blind with further free@home devices or Venetian blind switches is then impossible.

#### 4.4.5 Switchover heating/cooling

This function is to be selected if there is to be a manual switchover between heating and cooling modes via a connected switch. If the associated heating/cooling system offers a corresponding binary output for heating/cooling, it can be connected to one of the binary inputs.

#### 4.4.6 Light, switch actuator, socket outlet

These functions are not different physically, they merely serve for the visual differentiation of connected loads in the graphic surface of the System Access Point. These functions are to be configured for the respective switching channel that is being used. The loads can, for example, be switched via buttons coupled to binary inputs, and also other free@home participants. Depending on the configuration of the binary inputs connected to the switching channel, the following functions are supported. During a bus voltage failure of the sensor / switch actuator the position of the relay always remains unchanged, only an activated forced operation is deactivated.

**Force-position**

The free@home sensors which support this function (e.g. binary inputs), make possible the acceptance of a pre-defined switching state (configurable in the sensor) of one or several switching channels (depending on the configuration of the sensors) and the simultaneous blockage of the operation of other free@home devices. The force-position can be used for protective applications.

**Staircase lighting**

Each switching channel of the device supports the staircase lighting function and makes it possible to limit the ON period of the associated channel via the "Switch-off delay" parameter. This guarantees that the staircase lighting is switched off automatically after a specific period. A renewed press of the associated staircase lighting button extends the switch-off delay by the actual switch-off delay (retrigger), and so extends the ON period of the staircase lighting.

**Light scenes and group switching**

Each switching channel of the device supports light scenes and group switching. They can be configured in menu "Linking" in the main menu of the System Access Point.

**4.4.7 Scene function**

Each switching channel can be integrated in up to ten scenes.

#### 4.5 Device overview of sensor/switch actuator SA-M-8.8.1

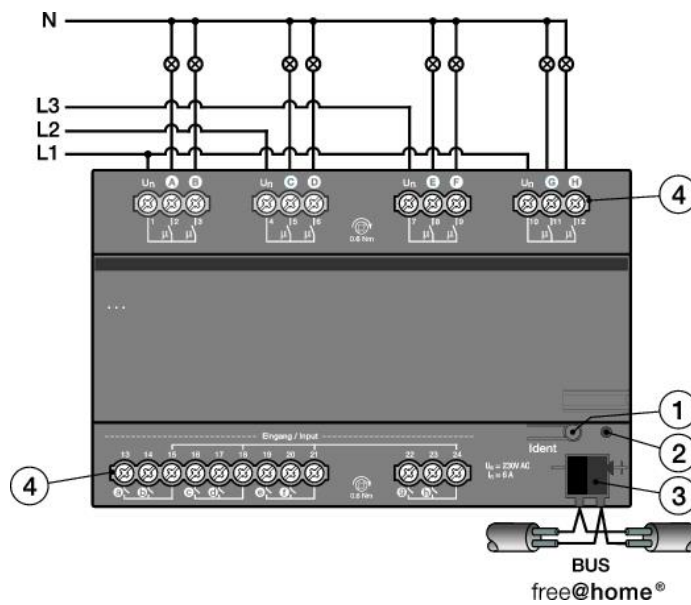


Fig. 3: Device overview of flush-mounted 2gang binary input

- [1] Device identification during commissioning
- [2] Identification LED
- [3] Bus connection terminal
- [4] Connecting terminals



## 5 Technical data

### 5.1 Overview of SA-M-8.8.1

Parameter	Value	
Power Supply	24 V DC (via the bus)	
Bus subscribers	1 (12 mA)	
Connection (free@home)	Bus connection terminal: 0.4 - 0.8 mm	
Line type	J-Y(St)Y, 2 x 2 x 0.8 mm	
Inputs	Quantity	8
	Polling voltage	32 V DC (pulsed)
	Polling current	0.1 mA
	Max. cable length	≤ 100 m at cable cross-section of 1.5 mm <sup>2</sup>
	Polling current $I_n$ during activation	Maximum 355 mA
A connecting cable to a binary input of the device must not be routed to a switching channel of the device in a joint cable (e.g. 5 x 1.5 mm <sup>2</sup> ).		
Outputs	Times	8
Switching capacity	AC1 operation ( $\cos \varphi = 0.8$ ) according to DIN EN 60 947-4-1	6 A, 230 V AC
	AC3 operation ( $\cos \varphi = 0.45$ ) according to DIN EN 60 947-4-1	6 A, 230 V AC
	Fluorescent lamp load according to DIN EN 60 669-1	6 A/250 V AC (35 $\mu$ F) <sup>1)</sup>
	Minimum switching capacity	20 mA/5 V AC 10 mA/12 V AC 7 mA/24 V AC
	Direct current switching capacity (resistive load)	6 A/24 V DC
	Max. switch-on current $I_p$ (150 $\mu$ s)	200 A
	Max. switch-on current $I_p$ (250 $\mu$ s)	160 A
	Max. switch-on current $I_p$ (600 $\mu$ s)	100 A
Output service life	Mechanical service life	> 10 <sup>7</sup>
	Electrical service life according to DIN IEC 60 947-4-1	
	AC1 (240 V/ $\cos \varphi = 0.8$ )	> 10 <sup>5</sup>
	AC3 (240 V/ $\cos \varphi = 0.45$ )	> 1.5 x 10 <sup>4</sup>
	AC5a (240 V/ $\cos \varphi = 0.45$ )	> 1.5 x 10 <sup>4</sup>
Ambient temperature	Operation	-5°C - +45°C
	Storage	-20°C - +55°C
	Transport	-20°C - +70°C

Environmental characteristics	Maximum humidity	93%, no dew permissible
Protection type	IP 20 (EN 60 529) in an installed state	
Protection class	II	
Mounting	On mounting rail 35 mm according to DIN EN 60 715	
Design	Rail mounting device (MDRC)	
	Housing, colour	Plastic, basalt grey (RAL 7012)
Dimensions	90 x 144 x 64.5 mm (W x H x D)	
Weight	0.3 kg	
CE marking	According to EMC and low-voltage guidelines	

Table 3: Technical data SA-M-8.8.1

<sup>1)</sup> The maximum switch-on current must not be exceeded.

5.2 Dimensions of sensor / switch actuator SA-M-8.8.1

Note ...
All dimensions are in mm.

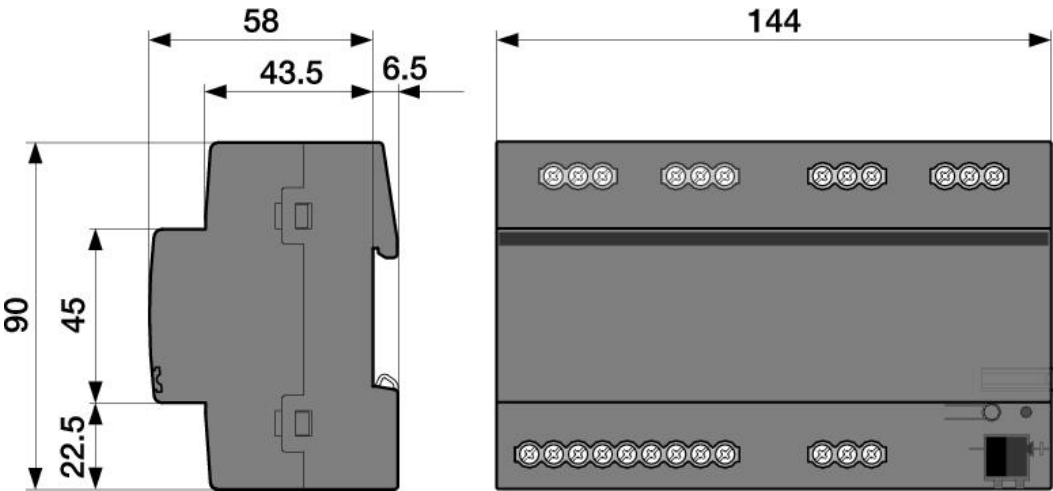


Fig. 4: Dimensions SA-M-8.8.1

5.3 Circuit diagram Sensor / switch actuator SA-M-8.8.1

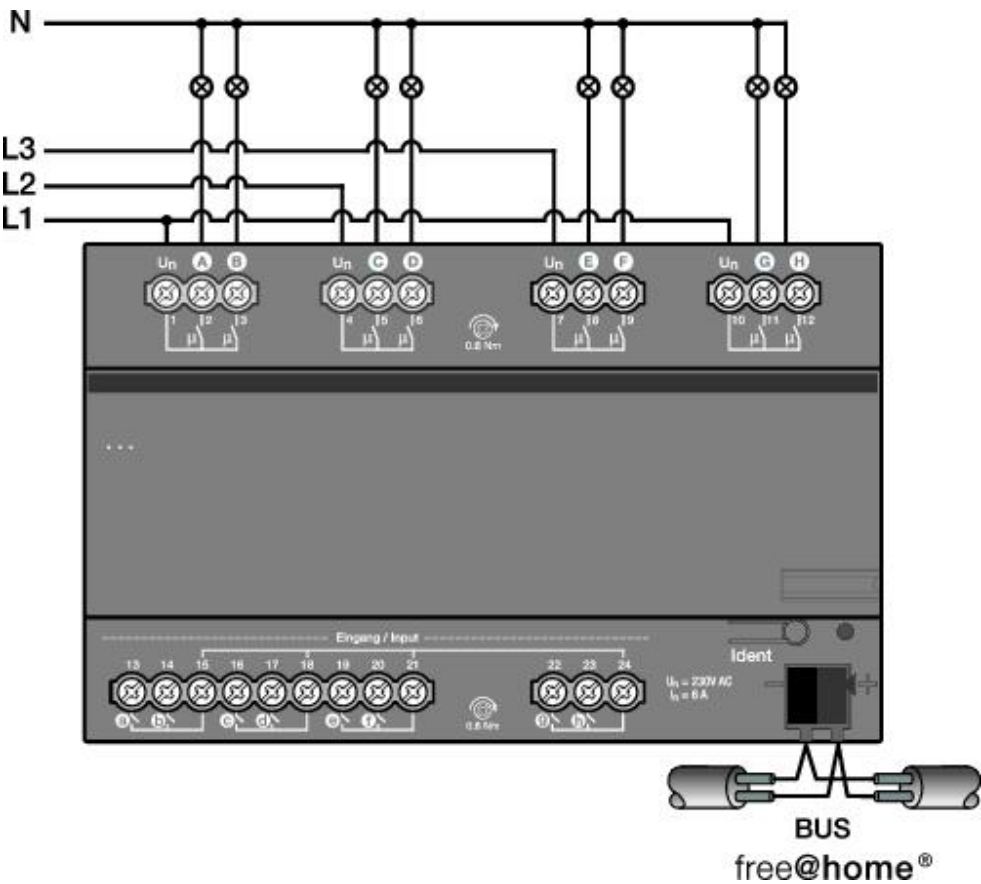


Fig. 5: Electrical connection SA-M-8.8.1

## 6 Mounting

### 6.1 Safety instructions for mounting



#### **Danger**

##### **Risk of death due to electrical voltage**

Dangerous currents flow through the body when coming into direct or indirect contact with live components. This results in electric shock, burns or even death.

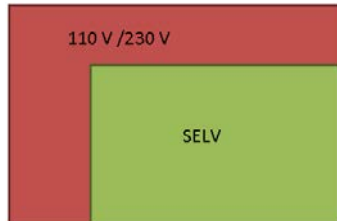
Work improperly carried out on electrical systems is a hazard to one's own life and that of the user. Also fires and serious damage to property can result.

- » Observe the relevant standards.
- » Apply at least the "five safety rules" (DIN VDE 0105, EN 50 110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts
- » Install the device only if you have the necessary electrical engineering knowledge and experience (see chapter 2.4).
- » Use suitable personal protective clothing.
- » Use only suitable tools and measuring devices.
- » Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

**Danger****Risk of death due to short-circuit**

Risk of death due to electrical voltage of 230 V during short-circuit in the low-voltage line.

- » During mounting observe the spatial division (> 10 mm) of SELV electric circuits to other electric circuits.
- » Observe the spatial division of SELV electric circuits and other electric circuits. Otherwise short-circuits can occur.



- » If the minimum distance is insufficient, use electronic boxes or insulating tubes.
- » Observe the correct polarity.

## 6.2 Installation/mounting

The device is a rail mounting device for installing in distributors for easy installation on 35 mm mounting rails according to DIN EN 60 715.

The device can be mounted in any position.

The stick-on label is to be removed and glued into the list (see system manual System Access Point).

Wires not required are to be insulated.

The bus connection is established by means of the enclosed bus connection terminal.

The device is ready for operation after the bus voltage has been applied.

The description of the terminals is found on the housing.

Access to the device must be guaranteed for operation, testing, inspection, maintenance and repairs according to DIN VDE 0100-520.

### 6.3 Electrical connection

- » The electrical connection is made via screw terminals. The bus connection is established by means of the enclosed bus connection terminal. The terminal designation is located on the housing.
- » The device is ready for operation after the bus voltage has been applied.
- » The line routing to the binary inputs and switching outputs must be established via separate wires, to prevent cross interferences.

Mounting and commissioning must only be carried out by qualified electrical installers. When planning and setting up electrical systems and security-related systems for the detection of intrusion and of fires, the relevant standards, guidelines, rules and regulations of the respective country are to be observed.

- » Protect the device against humidity, dirt and damage during transport, storage and operation!
- » Operate the device only within the specified technical data!
- » Operate the device only in a closed housing (distributor)!
- » Prior to performing installation work the device is to be deactivated.



#### **Danger**

##### **Danger to life**

To prevent dangerous contact currents due to feedback from different external conductors, an all-pole deactivation is to be carried out when extending or changing the electric connection.

### 6.4 Dismantling

Dismantling is carried out in the reverse order.



## 7 Commissioning

Commissioning is always carried out via the Web-based surface of the System Access Point.

The System Access Point establishes the connection between the free@home® participants and the smartphone, tablet or PC. It is used to identify and program the participants during commissioning.

Devices which are physically connected to the free@home® bus, log themselves automatically into the System Access Point. They transmit information about their type and supported functions (see Table 2: Function overview, chapter 4.3).

During initial commissioning all devices are given a generic name (e.g. switch actuator 1, etc.). The user must change this name to a name practical for the system (Example: "Living room light" for an actuator in the living room).

The devices must be parameterised for the use of additional functions.

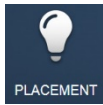
Commissioning of the sensor / switch actuator is described in the following chapters. Here it is assumed that the basic commissioning steps of the overall system have already been carried out. General knowledge about the Web-based commissioning software of the System Access Point is assumed.

### Note ...

General information about commissioning and parameterization is available in the system manual and the online Help of the "System Access Point" ([www.abb.com/freeathome](http://www.abb.com/freeathome)).

## 7.1 Allocation of devices and specifying channels

The devices connected to the system must be identified, i.e. they are allocated to a room according to their function and are given a descriptive name.



The allocation is made via the allocation function of the Web-based user interface of the System Access Point.

### Device selection

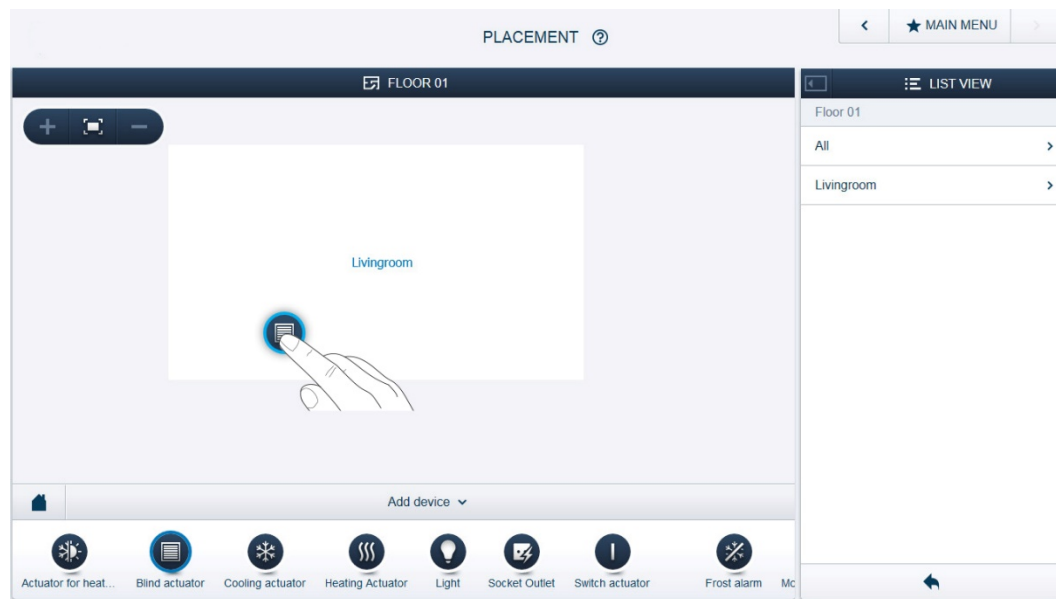


Fig. 6: Allocating devices

- » In the "Add device" bar select the desired application and pull it via drag-and-drop onto the floor plan in the working area.

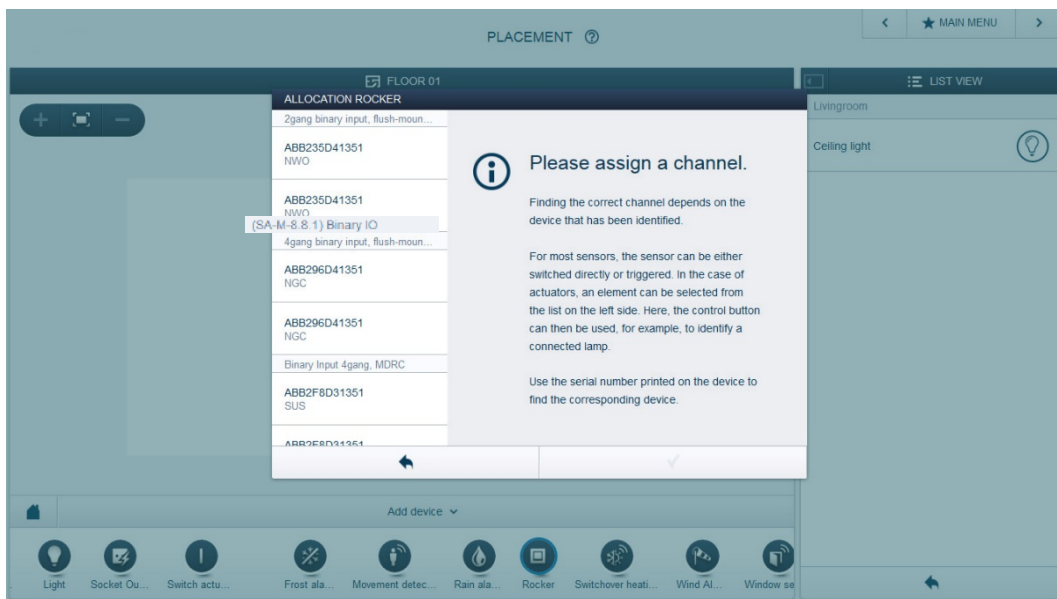


Fig. 7: Allocation

- A pop-up window opens automatically which lists all the devices suitable for the application selected.

The desired device can now be identified.

### Identification via serial number

ALLOCATION ROCKER	
2gang binary input, flush-moun...	
ABB235D41351 NWO	
ABB235D41351 NWO	
(SA-M-8.8.1) Binary IO	
ABB296D41351 NGC	
ABB296D41351 NGC	
Binary Input 4gang, MDRC	
ABB2F8D31351 SUS	
ABB2F8D31351	

Sensor			
Floor			
Room			
Name			
Serial number			
Short ID			
	Switch light livingroom		
Sensor			
Name			

Fig. 8: Identification via serial number

- » Compare the short 3-digit number of the identification label with the numbers in the list and in this way identify the device you are searching for and, if necessary, also the channel.

### Identification by pressing the "Identification button"

- » Press the identification button on the device you wish to add.
- The desired device is faded in automatically.
- » Select the desired channel.

**Assigning a name**

ALLOCATION ROCKER	
2gang binary input, flush-moun...	
ABB235D41351 NWO	
ABB235D41351 NWO	
(SA-M-8.8.1) Binary IO	
ABB296D41351 NGC	
ABB296D41351 NGC	
Binary Input 4gang, MDRC	
ABB2F8D31351 SUS	
ABB2F8D31351	

Sensor	
Floor	Floor 01
Room	Livingroom
Name	Binary Input 4gang, MDRC
Serial number	ABB2F8D31351
Short ID	SUS

Sensor	<input type="checkbox"/> Switch light living...
Name	light livingroom

--	--

Fig. 9: Assigning a name

- » Enter a name that is easy to understand and under which the application is to be displayed later (e.g. "Living room light switch").
- » Press the tick at the bottom right to take over the entry.

**Note ...**

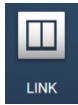
The settings of the device can be adjusted via the Web-based user interface of the System Access Point.

For pre-programmed devices the default settings can be adjusted. This allows the channel selection to be influenced.

These settings, however, can only be made with a fitter access (see online Help of the System Access Point). The parameter settings remain as described above.

## 7.2 Setting options per channel

General settings and parameter settings can be made for each channel.



The settings are made via the allocation function of the Web-based user interface of the System Access Point.

### Device selection

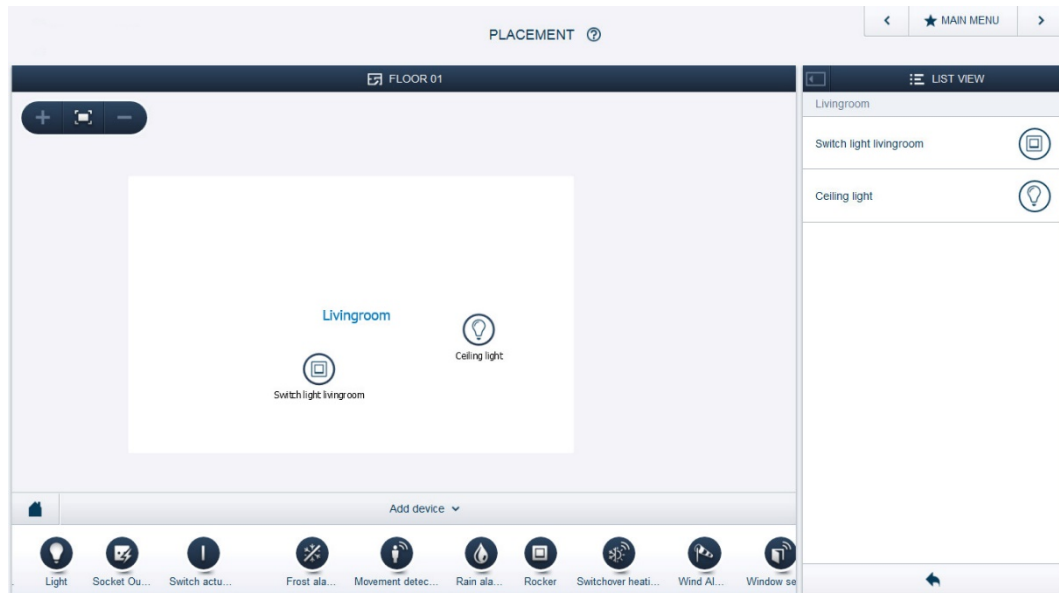


Fig. 10: Device selection

- » Select the device icon in the floor plan of the working area view.
- All setting options for the respective channel are displayed in the list view.  
For rockers (sensors) the corresponding rocker must be selected.

The following settings are available.

### 7.2.1 Binary input settings

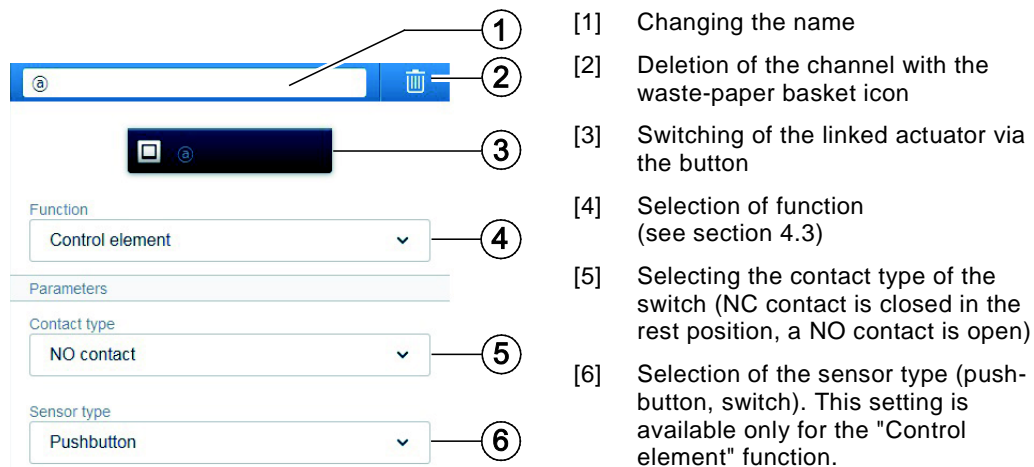


Fig. 11: Settings for the binary inputs of the sensor / switch actuator

### 7.2.2 Settings of switching channels

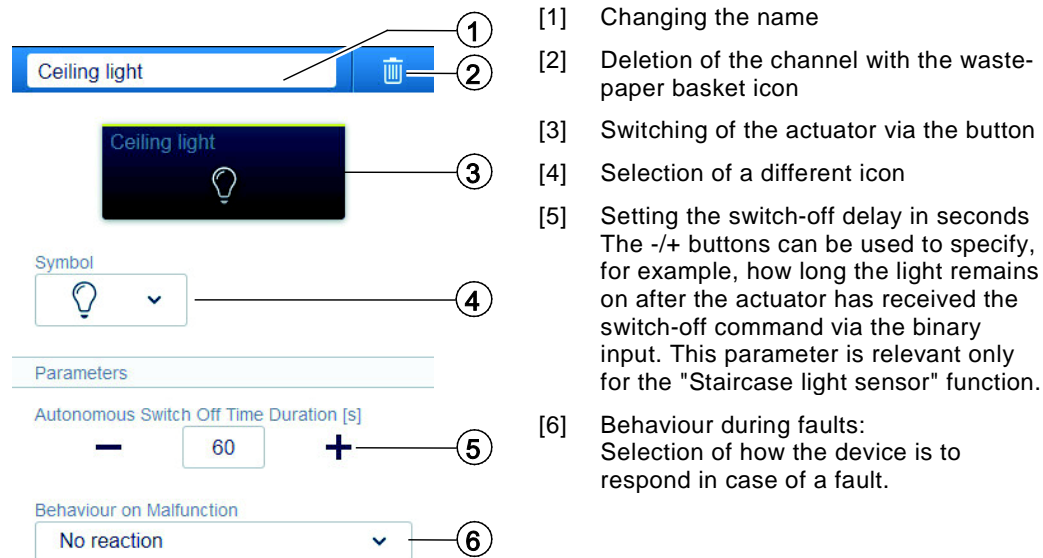


Fig. 12: Settings for the switching channels of the sensor / switch actuator

### 7.2.3 Settings of binary inputs linked with scenes

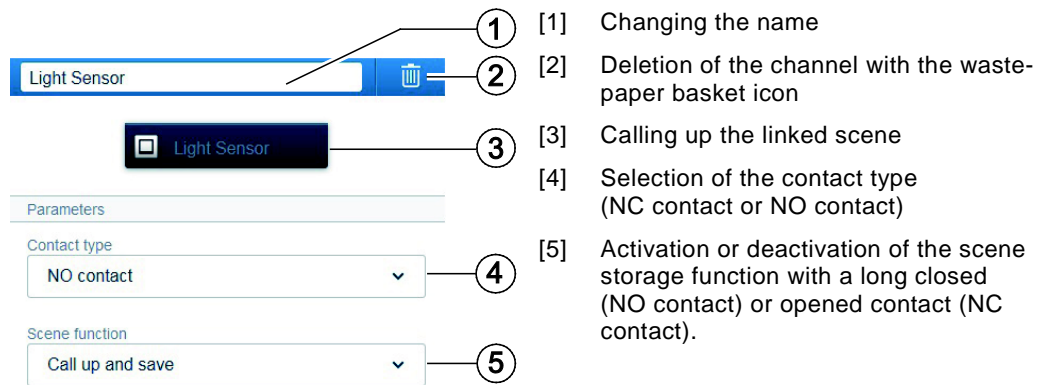
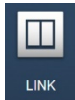


Fig. 13: Settings of binary inputs linked with scenes



### 7.3 Linking

The binary inputs created via the allocation function can now be linked with a second device, e.g. switch actuator or switching channels of the separate device. This allows simple ON/OFF circuits or two-way circuits to be implemented.



The linking in the list view is then made via the linking function of the Web-based user interface of the System Access Point.

#### Example: Linking binary inputs with switching outputs

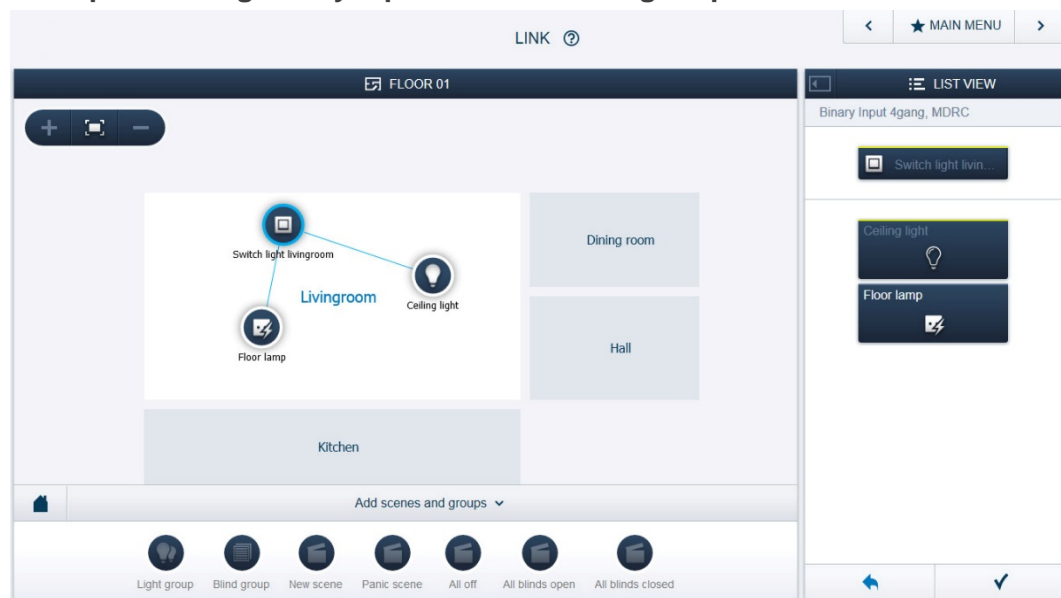


Fig. 14: Linking binary input and actuator

- » To link a binary input with a switching channel, first click on the desired binary input and then on the desired switching channel.
- A blue connecting line appears between the two devices to indicate the link.
- » To link the binary input with an additional switching channel, click again on the desired binary input and then on the switching channel to be linked.
- After the link has been completed the push-button or sensor can be operated directly locally.

#### Note ...

The links can be changed manually at all times.

## 7.4 Light scenes and light groups

A light scene means calling up a preset light situation (e.g. preset dimming value) via a single push-button. For a light group, a group of lamps is switched simultaneously by means of a single push-button. This function, for example, replaces two-way circuits or intermediate switches of conventional electrical installations.

Light scenes and light groups can be configured in menu "Linking" in the main menu of the System Access Point. There the corresponding "Light scene" or "Light group" function is to be added and linked with the corresponding binary input (to which a push-button is connected for calling up light scenes), as well as the corresponding switching channels (to which the lamps that are included in the light scene are connected). In the list view (see Fig. 15) the light scene can be configured and stored by clicking on the respective lamps. Light scenes are generally called up with a brief press of the rocker of a single push-button. A longer press (5 s) stores the current light situation and stores the light scene on top. If double push-buttons are used, the channels are not to be coupled. Each of the two rockers can be used to call up a specific light scene.

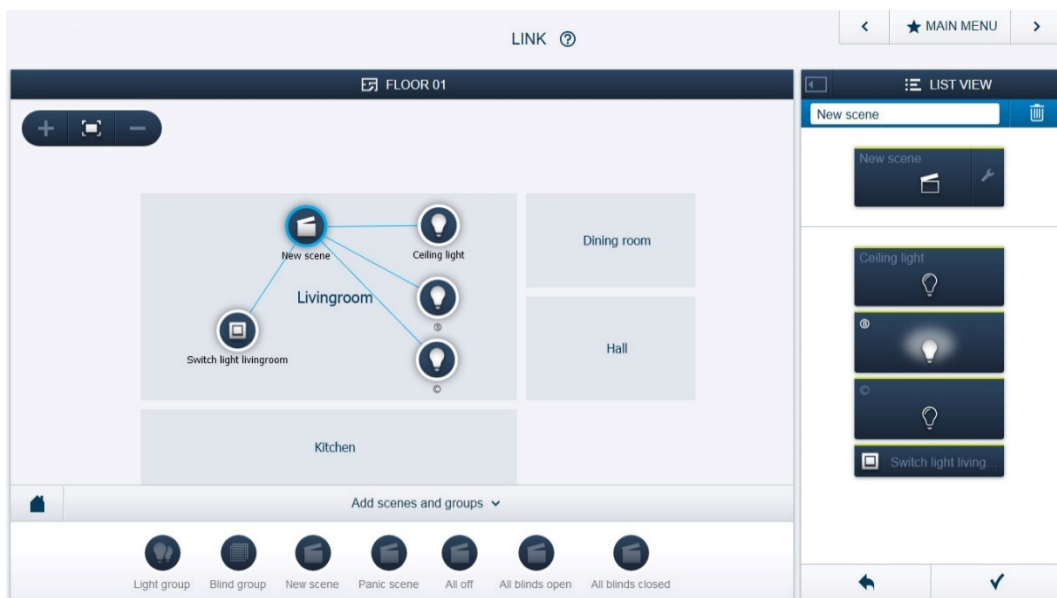


Fig. 15: Configuration of light scenes and light groups

## 7.5 Calling up scenes via binary sensors

Binary sensors are sensors which have a contact on the output side which they close or open as soon as an adjustable threshold value on the sensor drops below or exceeds the measured variable. An example here is the brightness sensor, which closes the contact when a specific brightness has been reached. Binary sensors can be evaluated and linked with a scene via the free@home binary inputs (BI-F-2.0.1, BI-F-4.0.1 and BI-M-4.0.1) as well as sensor / switch actuator SA-M-8.8.1. This, for example, allows a blind to be moved to a defined position via a scene when a certain brightness value has been exceeded. Prerequisite here is that after the scene has been linked with a channel of a binary input or a binary channel of the SA-M-8.8.1, the scene storage function (compare 7.2.3) is deactivated.

## 8 Updating options

A firmware update is carried out via the Web-based user interface of the System Access Point. For this, visit the free@home website [www.abb.com/freeathome](http://www.abb.com/freeathome).

## 9 Maintenance

The devices are maintenance-free. In case of damage (e.g., during transport or storage), do not perform repairs. Once the device is opened, the warranty is void!

Access to the device must be guaranteed for operation, testing, inspection, maintenance and repairs (according to DIN VDE 0100-520).

### 9.1 Cleaning

Dirty devices can be cleaned with a dry cloth. If this is not sufficient, a cloth slightly moistened with a soap solution can be used. Caustic cleaning agents or solvents must not be used.

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**Further information and contacts:**

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