

Product manual | 01.08.2023

ABB-free@home®

BA-M-x.230.1.1

Blind Actuator, 4-, 8-fold, MDRC



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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 include this manual along with it.

ABB accepts no liability for any failure to observe the instructions in this manual.

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

<https://new.abb.com/en>

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 accepts no liability for any failure to observe the safety instructions.

2.1 Information and symbols used

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



Danger

Risk of death / serious damage to health

- The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.



Warning

Serious damage to health

- The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.



Caution

Damage to health

- The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (reversible) injuries.



Attention

Damage to property

- This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.



NOTE

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.



This symbol alerts to electric voltage.

2.2 Intended use

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

The device is a rail mounting device with a module width of 4 or 8 module widths for the installation in distributors. The device serves for the activation of motors (230 V AC / 24 V AC) for sun protection products, such as Venetian blinds, roller blinds, exterior blinds, awnings, shades, curtains, vertical blinds, etc.

The integrated bus coupler makes possible the connection to the free@home bus.

The connection to the ABB-free@home® is made at the front via a bus connection terminal.

2.3 Improper use

Each use not listed in Chapter 2.2 "Intended use" on page 5 is deemed improper use and can lead to personal injury and damage to property.

ABB is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- Outdoor use
- The use in bathroom areas
- Insert with an additional bus coupler

2.4 Target group / Qualifications of personnel

Installation, commissioning and maintenance of the device 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 electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

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

2.5 Safety instructions



Danger - Electric voltage!

Electric voltage! Risk of death and fire due to electric voltage of 100 ... 240 V. Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 100 ... 240 V supply system may only be performed by authorised and qualified electricians.
- Disconnect the mains power supply before installation or dismantling.
- Never use the device with damaged connecting cables.
- Do not open covers firmly bolted to the housing of the device.
- Use the device only in a technically faultless state.
- Do not make changes to or perform repairs on the device, on its components or its accessories.

2.6 Environment



Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

- The device contains valuable raw materials which can be recycled.
Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. 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 2012/19/EU WEEE and 2011/65/EU RoHS)

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

3 Setup and function

The device is a blind actuator for installing on a mounting rail. Depending on the model, the device has four or eight channels and serves as actuator for the activation of blinds, roller blinds or awnings.

The switching relays of the individual channels are locked against each other via software.

Advantages:

- 4/8 eight channels for the activation of 4/8 blinds, roller blinds or awnings
- Drives of 24 V AC to 230 V AC are supported.
- Two channels can always be protected with a common circuit breaker.



Notice

Basic information about system integration is contained in the system manual. It is available for downloading at www.abb.com/freeathome.

3.1 Scope of supply

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

3.2 Overview of types

Article no.	Product name	Actuator channels	
BA-M-4.230.1.1	Blind Actuator, 4-fold, MDRC	4	
BA-M-8.230.1.1	Blind Actuator, 8-fold, MDRC	8	

Table 1: Overview of types

3.3 Functions

3.3.1 Function overview

The following table provides an overview of the possible functions of the device. Applications. For a detailed description, see “Description of functions“ on page 10.

Icon of the user interface	Information
	Blind actuator (Roller blind actuator, roof window actuator, awning actuator)

Table 2: Overview of functions

“Functions in connection with a sensor“ on page 11

3.3.2 Description of functions

Blind actuator functions

Blind actuators are used for numerous applications. They can, for example, control a roller blind motor, a motorized roof window or an awning. Each channel of a free@home blind actuator can be optimized for one of these applications via the "Function" parameter [4].

Depending on the type of actuator selected, a distinction is made between the displayed icon and the behaviour during alarms, forced positions and in connection with open windows.

Event		Behavior			
		Roller blind actuator	Blind actuator	Roof window actuator	Awning actuator
Wind alarm	Occurrence	Move up and lock	Move up and lock	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Rain alarm	Occurrence	Move down and lock	Move up and lock	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Frost alarm	Occurrence	Move and block	Move and block	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Force-position (in actions)	Occurrence	Selectable (up/down)	Selectable (up/down)	Selectable (up/down)	Selectable (up/down)
	Cancel	Back to position	Back to position	Back to position	Back to position
Window contact	Window tilted	During movement in any direction, move to the top and block. Without movement, block immediately.	During movement in any direction, move to the top and block. Without movement, block immediately.	–	–
	Window open	During movement in any direction, move to the top and block. Without movement, block immediately.	During movement in any direction, move to the top and block. Without movement, block immediately.	–	–
	Window closed	Retain position	Retain position	–	–

Table 3: Blind actuator functions

¹ Icon "Arrow down" on rocker

² Icon "Arrow up" on rocker

Scene function

Each of the four channels can be integrated in up to sixteen scenes.

Functions in connection with a sensor

Functions in connection with a sensor are used to operate blinds, roller blinds or awnings and roof windows via push-buttons coupled to binary inputs, for example. The operation of blinds can be carried out via single or double push-buttons (please observe the product manual of the respective binary inputs). When using single push-buttons, long button actuations lead alternately to upward or downward movement of the blind, the roller blind or the awning. Brief push-button actuations cause the blind to stop, or alternately to an upward or downward movement of the slats (if a roller blind or awning is operated on the blind actuator, the parameter "Total slat movement time [ms]" must be set on 0 in the parameter settings of the blind actuator, and brief push-button actuations serve exclusively for stopping. When using a double push-button, a long press of the left rocker causes the blind to move up and a brief press to the upward movement of the slats. Downward movements are carried out analogous via the right rocker.

Disable blind

The blind actuator supports the ABB-free@home® protective function "Blind force-position". This function can be triggered by a connected ABB-free@home® device (which supports this function) or by the ABB-free@home® App Next für . In the triggering ABB-free@home® device it can be specified whether the blind is to move to the upper (parameter "Force-position top") or the bottom end position (parameter "Force-position bottom") when this function is activated.

For example:

By means of a push-button connected to a binary input the "Disable blind" function is triggered with the configuration "Force-position top". The blind then moves to the top end position and can then not be controlled by other control elements or push-buttons until the force-position is deactivated with a renewed press of the push-button connected to the binary input.

Frost, rain and wind alarm

This function is to be selected if sensors are used for the detection of frost, rain and wind and are coupled with the bus via a binary input. These functions are supported automatically by the blind actuator as soon as the respective sensor has been linked in menu "Linking" in the main menu of the System Access Point with the protective channel of the blind actuator.

If a frost alarm is detected, the movement of the blind (and roller blind, awning or roof window) connected to the corresponding channel of the blind actuator is blocked to prevent damage. If at the time of the frost alarm a movement command is being carried out, this is terminated before the blockage. During a wind or rain alarm the blind (and roller blind or awning) moves immediately to the top end position to prevent damage. The alarm message is carried out as long as rain, wind or frost is detected. After a rain or wind alarm is finished, the blind (roller blind or awning) automatically moves back to the position at which the alarm was triggered.

3.4 Device overview

BA-M-4.230.1.1

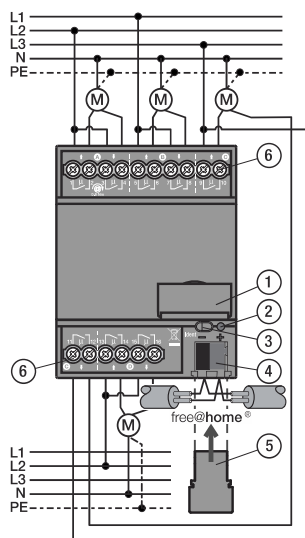


Fig 1: Device overview of 4gang blind actuator MDRC

- [1] Label holder
- [2] Identification LED
- [3] Device identification during commissioning
- [4] Bus connection terminal
- [5] Cover cap
- [6] Load current circuit, per 4 screw-type terminals

BA-M-8.230.1.1

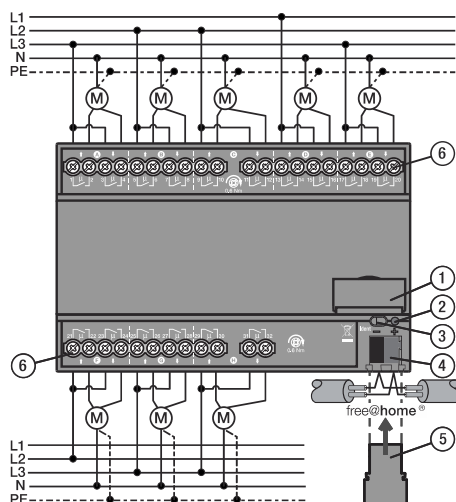


Fig 2: Device overview of 8gang blind actuator MDRC

- [1] Label holder
- [2] Identification LED
- [3] Device identification during commissioning
- [4] Bus connection terminal
- [5] Cover cap
- [6] Load current circuit, per 4 screw-type terminals

4 Technical data

Designation	Value
Power	21 - 31 VDC
Bus subscribers	1 (12 mA)
Power loss P_{16A} [A] BA-M-4.230.1.1 [B] BA-M-8.230.1.1	1.5 W 3.0 W
Module widths [A] BA-M-4.230.1.1 [B] BA-M-8.230.1.1	4 MW (70 mm) 8 MW (140 mm)
Bus connection	Bus connecting terminal, screwless
Line type	J-Y(St)Y, 2 x 2 x 0.8 mm
Nominal voltage	230 V AC, 50/60 Hz
Nominal current per output	6 A (AC1/AC3) at 230 V AC
Maximum load per output	Ⓜ: 1380 W
Wiring terminal Output	Combi-head screw-type terminal (PZ 1) 0.75 - 4 mm ² fine-wire 0.75 - 4 mm ² single-wire
Protection type	IP 20
Protection class	II
Overvoltage category	III
Pollution degree	2
Air pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above NN)
Ambient temperature	-5 °C - +45 °C
Storage temperature	-20 °C - +70 °C

Table 4: Technical data

4.1 Dimensional drawings

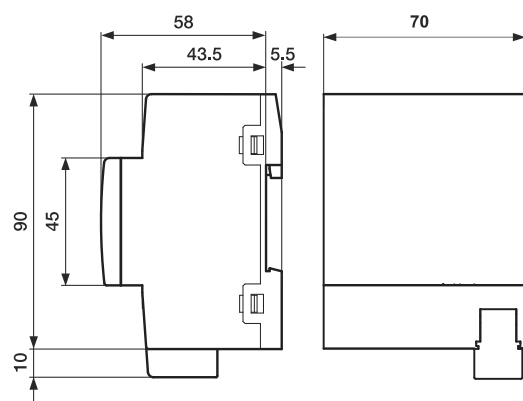


Fig. 3: Dimensions of 4gang blind actuator MDRC (specifications in mm)

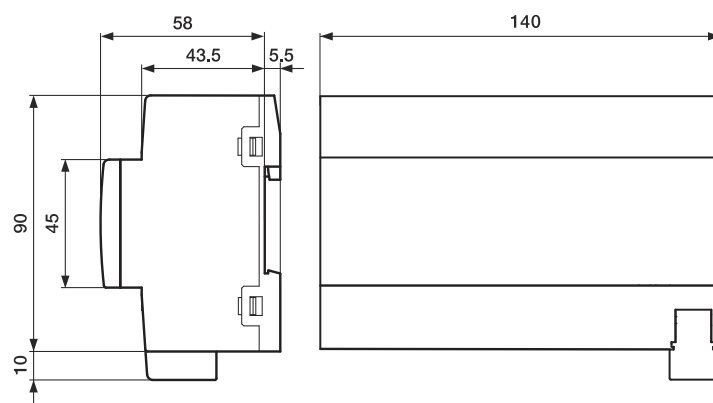


Fig. 4: Dimensions of 8gang blind actuator MDRC (specifications in mm)

5 Connection, installation / mounting

5.1 Planning instructions



Note

Planning and application instructions for the system are available in system manual for ABB-free@home®. This can be downloaded via www.abb.com/freeathome.

5.2 Safety instructions



Danger - Electric shock due to short-circuit!

Risk of death due to electrical voltage of 100 to 240 V during short-circuit in the low-voltage line.

- Low-voltage and 100 - 240 V lines must not be installed together in a flush-mounted box!
- Observe the spatial division during installation (> 10 mm) of SELV electric circuits to other electric circuits.
- If the minimum distance is insufficient, use electronic boxes and insulating tubes.
- Observe the correct polarity.
- Observe the relevant standards.



Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the users of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
 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.
- 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.).
- Observe the correct polarity.

5.3 Circuit diagrams

BA-M-4.230.1.1

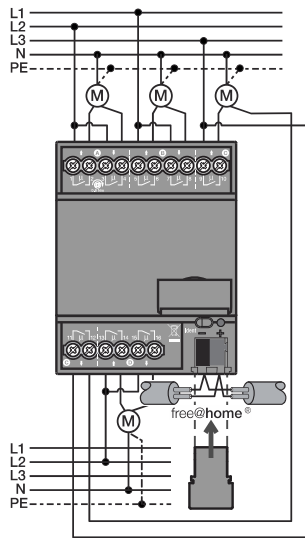


Fig. 5: Electrical connection of 4gang blind actuator MDRC

BA-M-8.230.1.1

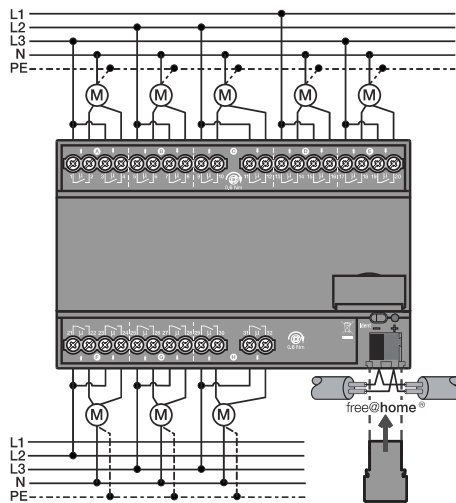


Fig. 6: Electrical connection of 8gang blind actuator MDRC

5.4 Mounting / dismantling

- 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 adhesive label is to be removed and glued into the list (see system manual System Access Point).
- 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 switching relays of the individual channels are locked against each other via software.
- The description of the terminals is located on the housing.
- Access to the device must be guaranteed for operation, testing, inspection, for maintenance and repairs according to DIN VDE 0100-520.

Installation

To install the device, perform the following steps:

- Latch the modular DIN rail component onto the mounting rail.

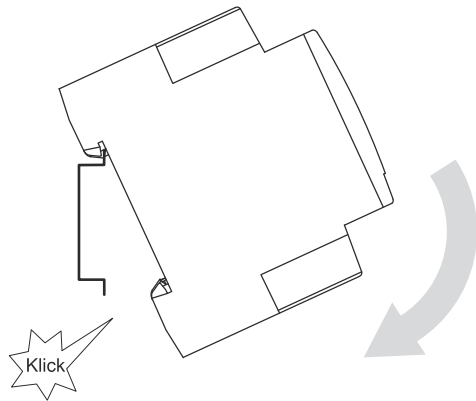


Fig. 7: Installation on mounting rails

Dismantling

To dismantle the device, perform the following steps:

- Press the device down [1] and then fold it toward the front [2].

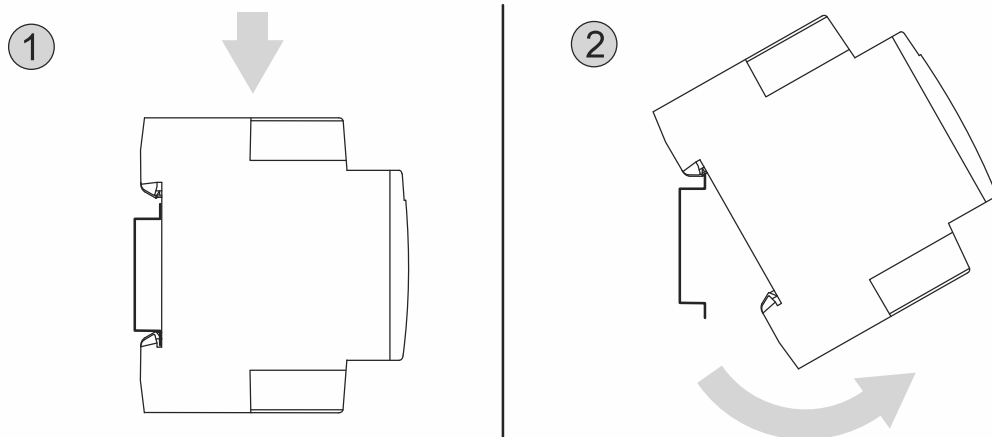


Fig. 8: Removal from the mounting rails

6 Commissioning

Commissioning of the device is carried out via the web-based surface of the System Access Point ABB-free@home® App Next. It is assumed that the basic commissioning steps of the overall system have already been carried out. Knowledge about the basic functions of the commissioning software of the System Access Point is assumed.

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

Devices which are physically connected to the free@home Bus- bus, log themselves automatically into the System Access Point. They transmit information about their type and supported functions (See "Functions" on page 9).

During initial commissioning all devices are given a universal name, e.g. "Sensor/switch actuator 1/1gang". The installer should assign names that are practical and specific for the system, e.g. "Living room ceiling light".



Notice

General information about commissioning and parameterization is available in the ABB-free@home® system manual.

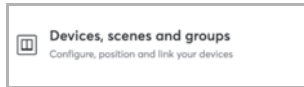
6.1 Allocation of devices and definition of channels

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

The allocation is carried out via the web-based user interface of the System Access Point or the ABB-free@home® App Next.

6.1.1 Add device

Configuring, positioning and linking of the devices is carried out via button "Devices, scenes and groups" (switch icon) in the user interface of the System Access Point.



If you do not enter via the main menu, the switch icon may only be visible on the left (see arrow).

1. Tap on button "Devices, scenes & groups" (or switch icon).
 - The "Building plan" view opens.

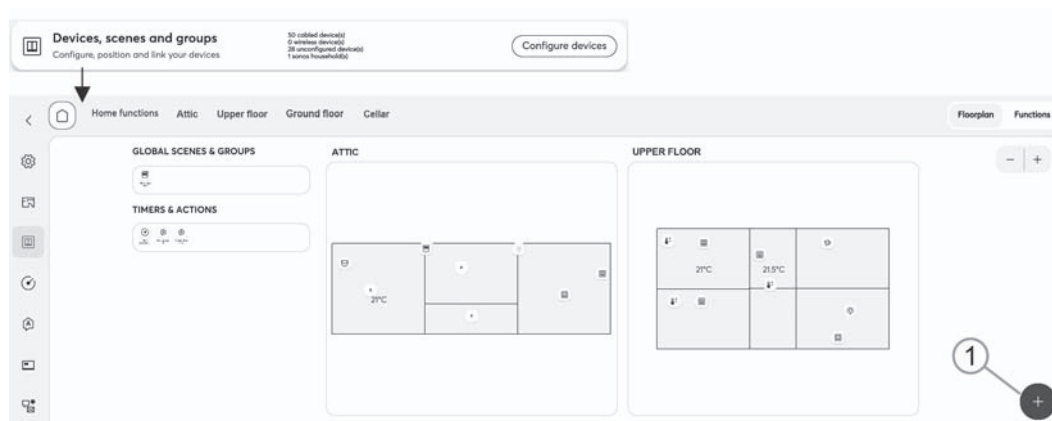


Fig. 9: Opening the building plan and list of components (example illustration)

2. Tap on the round plus icon [1] at the bottom right.
 - Menu "Select component" opens.
3. Tap on the desired characteristic in the list of components.
 - The menu with the available devices, functions and actuators opens.
4. Select the desired device and pull it into the building plan via drag-and-drop.

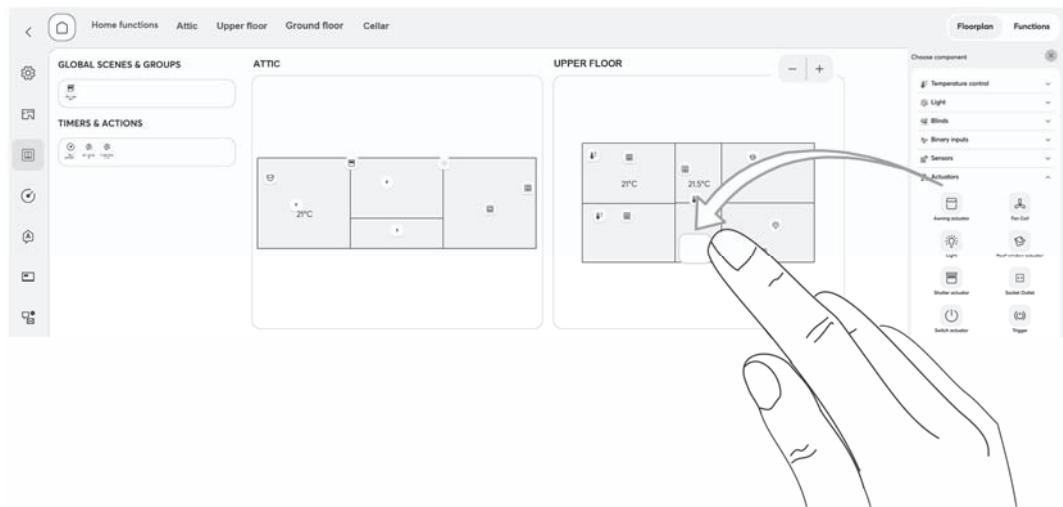


Fig. 10: Pulling the device out of the menu bar (example illustration)



Notice for operation via a mobile phone

The building plan/floor plan is not available in the app for mobile phones.

- Use the list view of the device configuration here for the location of the device ("Open overview of devices " on page 26).

The device can be identified via the serial number or via switching.

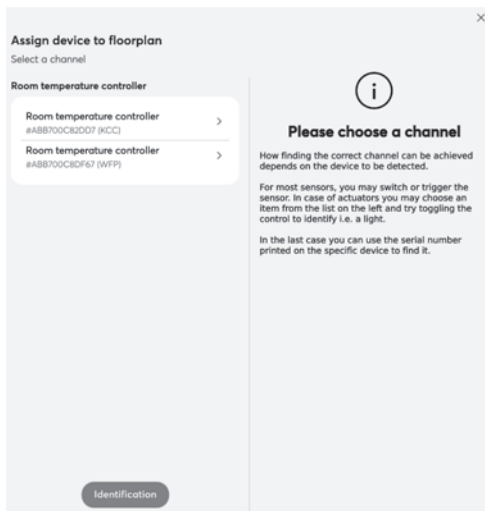


Fig. 11: Allocation of devices

A window opens which lists all the devices suitable for the application selected.

Identification via serial number

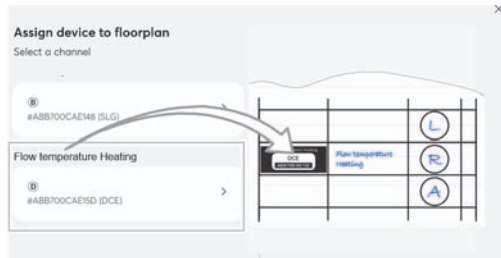


Fig. 12: Identification via serial number

5. Compare the serial number and the short ID of the identification label printed on the device with the numbers and IDs in the list. This is how the searched for device and possibly the searched for channel are identified.
The specifications of the identification label should also be transmitted to the device plan.

Identification via switching

If several devices are listed in the device list, you can identify them by switching the actual device.

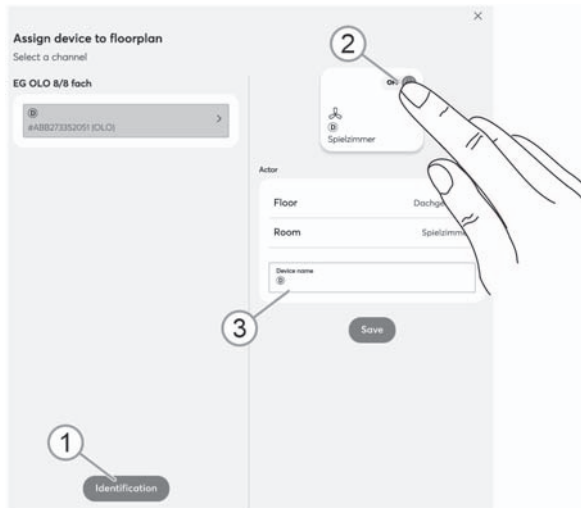


Fig. 13: Identification via switching (example illustration)

1. Open the device list.
2. Press the "Identification" button [1] and then switch the actual device.
Or, as alternative, press only button [2] in the web interface.
 - The connected load is switched.
 - The device is then selected automatically in the device list.

Assigning a name

Assign device to floorplan

Select a channel

Weather station

Weather station
a48b58d1f5a (TFC)

Weather station
OG Flur

Sensor

Floor Obergeschoss

Room OG Flur

Device name
Weather station

Save

Identification

Fig. 14: Assigning a name (example illustration)

3. Enter a name that is easy to understand and under which the application is to be displayed later, e.g. "South-wall weather station".
4. Tap the "Save" button to take over the adjustments.
 - This takes over the entry.

6.2 Setting options per channel

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

The settings are made via the web-based user interface of the System Access Point or the ABB-free@home® App Next.

Select device

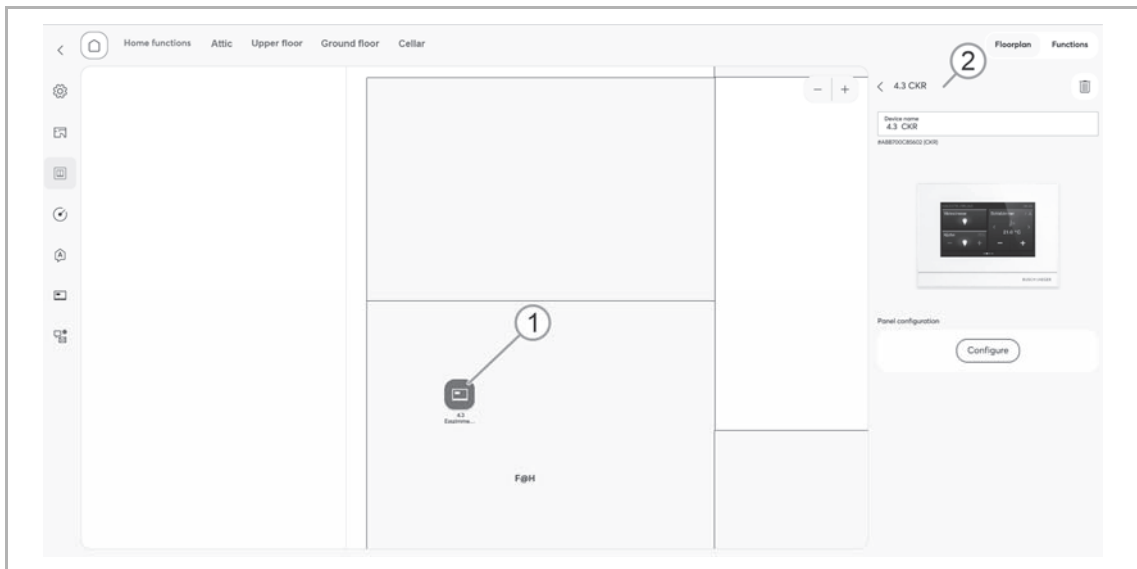


Fig. 15: Selecting device

1. Select the device icon [1] in the floor plan of the working area view.
 - All setting options for the respective channel are displayed in the list view [2].

Open overview of devices

1. In the main menu select "Devices, scenes & groups" (toothed-wheel icon) [1].
If you do not enter via the main menu, click on the icon [2].

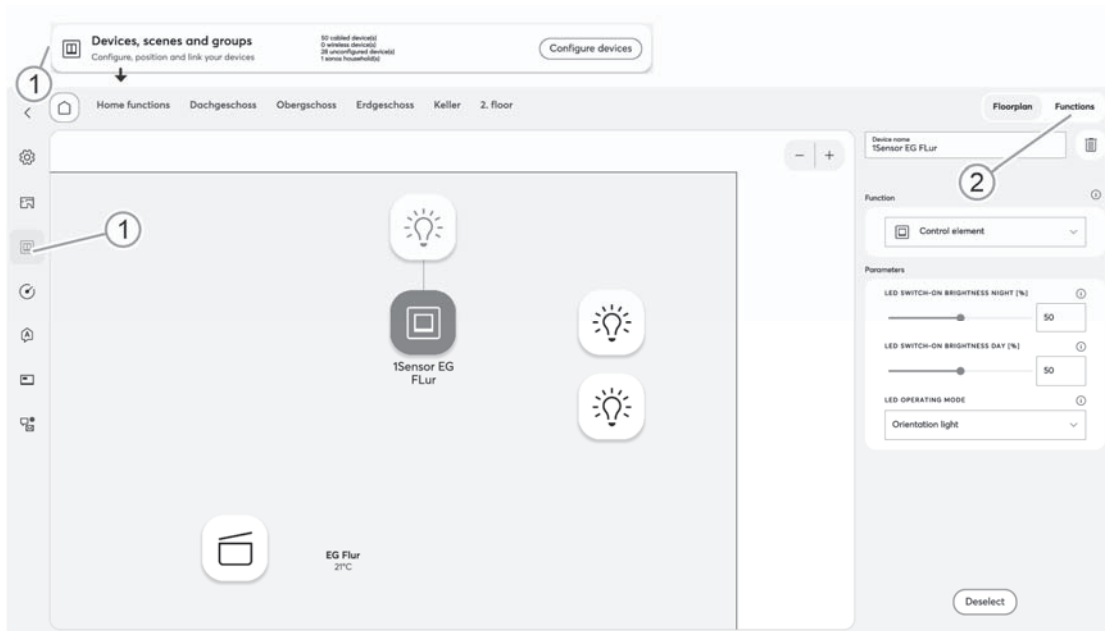


Fig. 16: Open overview of devices (example illustration)

2. Select the "Functions" button [3].
 - The overview of devices opens.
 - Here you can view all devices that are located in the free@home system. The overview page displays information about the device name and the position of the respective device.

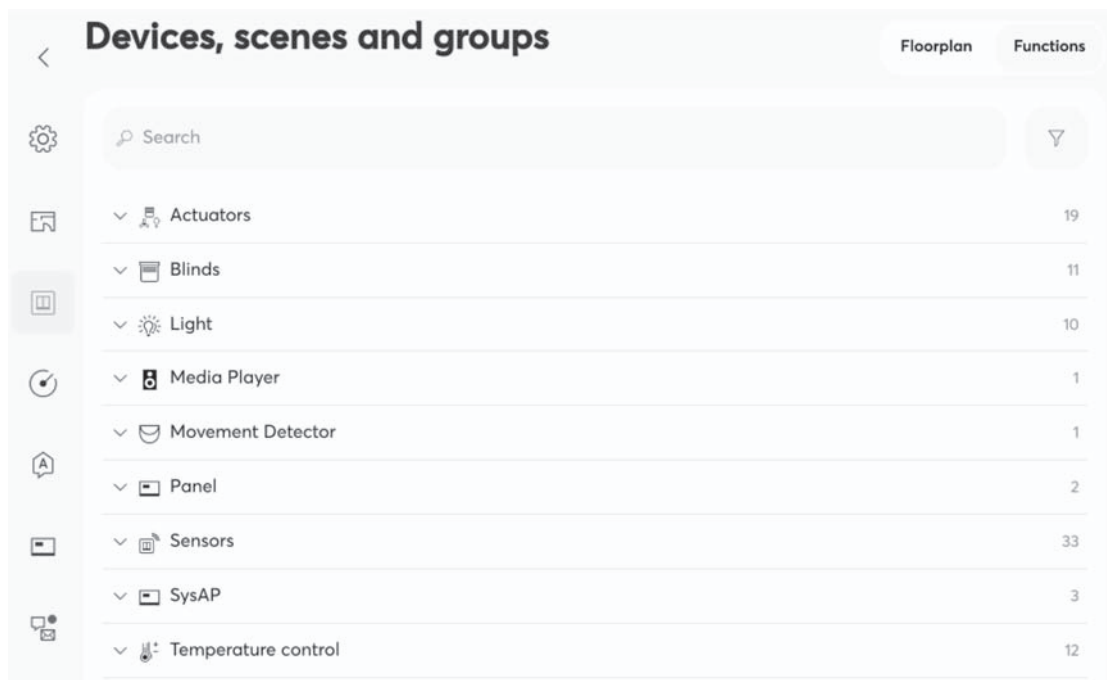


Fig. 17: Overview of devices (example illustration)

3. Tap on a device category.
 - The list of available devices opens.
4. Tap on the device whose information you want to edit.
 - A new window with information about the respective device opens.

6.3 Parameters

6.3.1 Blind

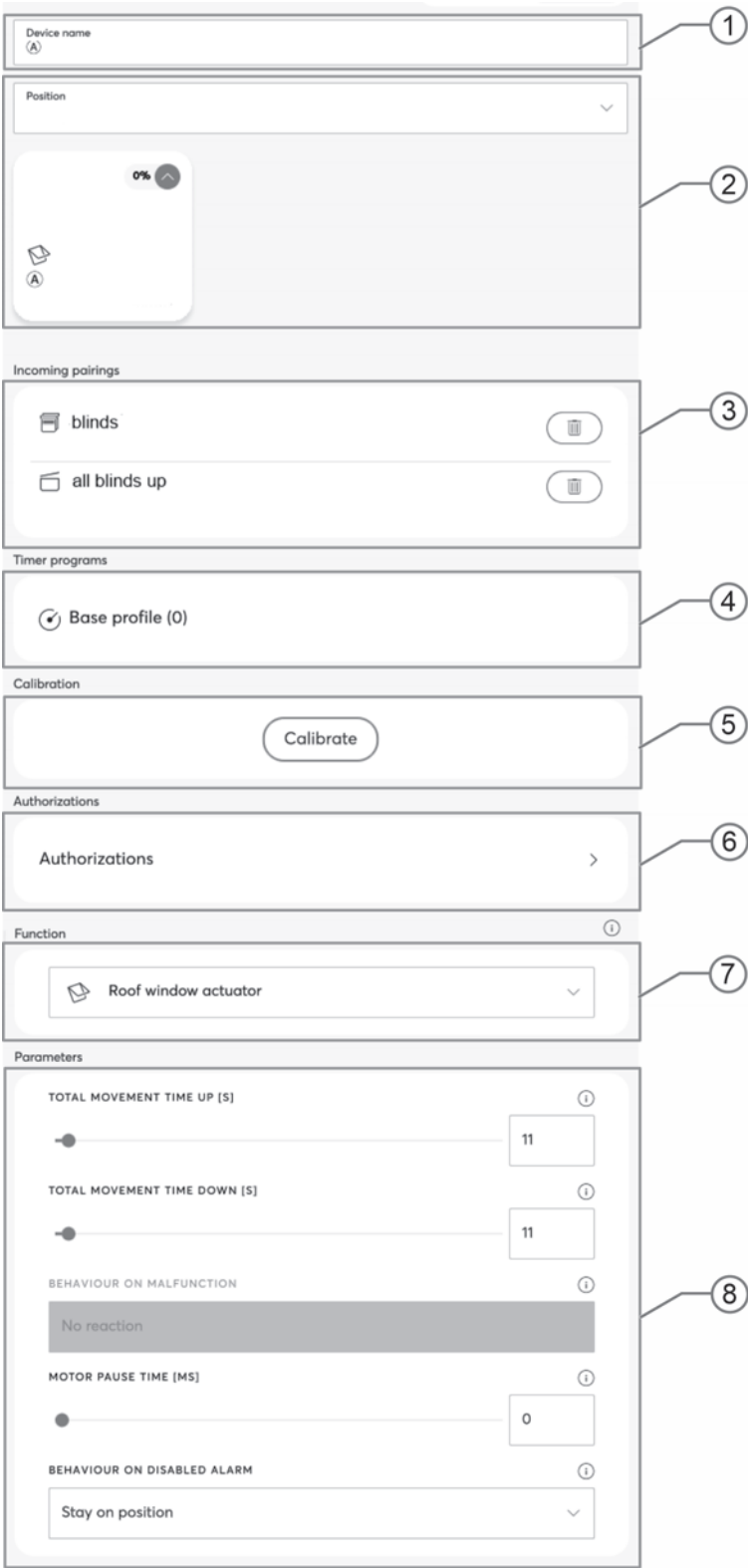


Fig. 18: Actuator parameters

Under the actuator settings you can configure the settings described in the following.

Pos.	Description
[1]	Device name An independent designation for the device can be allocated via the text field.
[2]	Position By tapping on the drop-down menu you can assign a position to the device in the building structure you defined (e.g. assignment to a room on a certain floor).
[3]	Links Via this function you can also see for which devices a link has been created. ▪ The pairing can be deleted again by tapping on the dustbin icon.
[4]	Time programs This overview displays all previously created time programs. The number after a time program indicates how often the actuator is used in this time profile. Select a time program for adding it to the actuator.
[5]	Calibration The blind is calibrated via menu item Calibration. The total "Up", "Down" movement times, the adjustment times of the slats and the pause time of the motor are determined with the calibration.
[6]	Authorizations Menu item "Authorizations" is used to specify whether a user with installer authorization is required for the reconfiguration of the actuator. In addition, you can nevertheless assign users with read rights the authorization to switch this actuator.
[7]	Function The current function of the actuator is displayed via menu item "Function". You can change the function if necessary. ▪ Blind actuator ▪ Roller blind actuator ▪ Roof window actuator ▪ Awning actuator
[8]	Icon The "Icon" menu item can be used to specify an icon with which the actuator is portrayed.

[8]	Parameters	
	Total time of upward movement [s]	Setting the upward movement time in seconds via the sliding controller or by entry in the text field.
	Total time of downward movement [s]	Setting the downward movement time in seconds via the sliding controller or by entry in the text field.
	Total duration of slats movement [ms]	Setting the time in milliseconds via the sliding controller or by entry in the text field, which the slats require for a complete change in direction of their angle. The time for an individual step is fixed at 200 ms and cannot be changed.
	Behaviour during faults	Display of information only. No settings are possible.
	Motor pause time [ms]	Setting the motor pause time in milliseconds via the sliding controller or by entry in the text field. ▪ This value is required for the setting of the slats. ▪ Check the operating manual of the blind motor for specifying the correct pause time of the motor (period between switching the actuator and start-up of the motor).
	Behaviour at cancelling of alarms	Behaviour at cancelling of alarms is set via the menu item: ▪ Remain on the position ▪ Back to the position

Blind actuator functions

Blind actuators are used for numerous applications. They can, for example, control a roller blind motor, a motorized roof window or an awning. Each channel of a free@home Bus blind actuator can be optimized for one of these applications via the "Function" parameter [7].

Depending on the type of actuator selected, a distinction is made between the displayed icon and the behaviour during alarms, forced positions and in connection with open windows.

Event		Behavior			
		Roller blind actuator	Blind actuator	Roof window actuator	Awning actuator
Wind alarm	Occurrence	Move up and lock	Move up and lock	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Rain alarm	Occurrence	Move down and lock	Move up and lock	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Frost alarm	Occurrence	Move and block	Move and block	Close and lock (v) ¹	Retract and lock (^) ²
	Cancel	Selectable	Selectable	Selectable	Selectable
Force-position (in actions)	Occurrence	Selectable (up/down)	Selectable (up/down)	Selectable (up/down)	Selectable (up/down)
	Cancel	Back to position	Back to position	Back to position	Back to position
Window contact (only available with ABB-free@home®)	Window tilted	During movement in any direction, move to the top and block. Without movement, block immediately.	During movement in any direction, move to the top and block. Without movement, block immediately.	–	–
	Window open	During movement in any direction, move to the top and block. Without movement, block immediately.	During movement in any direction, move to the top and block. Without movement, block immediately.	–	–
	Window closed	Retain position	Retain position	–	–

Table 5: Blind actuator functions

¹ Icon "Arrow down" on rocker

² Icon "Arrow up" on rocker

Alarm priorities:

Force-position > Wind alarm > Window contact > Frost alarm > Rain alarm.

The following methods can be selected for cancelling an alarm:

- Remain on the position.
- Go back to the previous position.

This method is not specified for every alarm type, but once for all alarm types of the blind actuator channel.

7 Update

A firmware update is made available via the System Access Point

8 Maintenance

The device is 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).

8.1 Cleaning



Caution! - Risk of damaging the device!

- When spraying on cleaning agents, these can enter the device through crevices.
 - Do not spray cleaning agents directly onto the device.
- Aggressive cleaning agents can damage the surface of the device.
 - Never use caustic agents, abrasive agents or solvents.

Clean dirty devices with a soft dry cloth.

- If this is insufficient, the cloth can be moistened slightly with a soap solution.

9 Notes

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