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Product manual

ABB-free@home®

SAP/S.3



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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.

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:

www.BUSCH-JAEGER.com

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 System Access Point 2.0 is a central control and commissioning device. It connects the free@home participants with smartphone, tablet or computer. It is used to identify and configure devices during installation. In addition, the device executes time and astro programs and serves as an intermediary to switch functions using the free@home app. Only one System Access Point may be active on a network at any time.

The device is intended for the following:

- Operation according to the listed technical data and types of loads
- Installation in dry interior rooms
- Use with the connecting option available on the device

The intended use also includes adherence to all specification in this manual.



Note

Observe also the details on cyber security, see chapter 2.5 “Cyber-security” on page 8.

2.3 Improper use

Each use not listed in Chapter 2.2 “Intended use” on page 6 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 Cyber-security

Industry faces intensifying cyber security risks. In order to increase stability, security and robustness of its solutions, ABB has formally established cyber security robustness testing as part of the product development process.

In addition, the following measures are prerequisites for the safe operation of your free@home system.

Prevention of access to the different media

The careful isolation of the system against unauthorised access is the basis for each protective concept. In the case of a free@home system, only authorised persons may have physical access to the free@home system, as well as the System Access Point. During planning and installation all free@home media (cable and wireless) and all components prone to cyber attacks, must be protected as best as possible.

Sub-distributors with free@home devices should be either locked, or located in room to which only authorized persons have access.

Twisted Pair cabling

- The cable ends of the free@home Twisted Pair cable should not be visible or project out from the wall, neither inside nor outside the building.
- Bus lines in outdoor areas or in areas with limited protection represent an increased risk. Here the physical access to the free@home Twisted Pair cable should be made exceptionally difficult.

IP cabling within the building

The local network serves as a sensitive component for secure communication. Therefore, unauthorized access to the local network must be prevented. As a result, the usual security mechanisms for IP networks must be applied. These are, for example:

- Secure encryption of wireless networks.
- Use of complex passwords and protection of these against unauthorized persons.
- Physical access to network interfaces (Ethernet interfaces) should only be permitted in protected areas.
- MAC filter

Connection to the Internet

To prevent malpractice, no router ports from the Internet to the home network may be opened for free@home components. For secure remote access a VPN tunnel or the myBUSCH-JAEGER Portal / MyBuildings Portal can be used.

2.6 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.



Caution! - Risk of damaging the device due to external factors!

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

3 Information on protection of the environment

3.1 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).

4 Setup and function

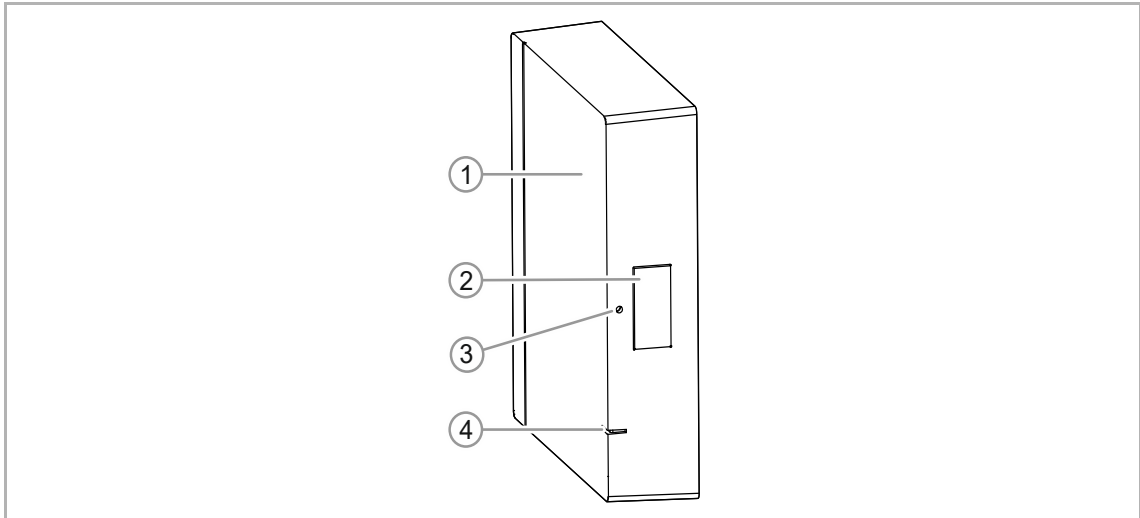


Abb. 1: Product overview

- [1] Top side of device
- [2] Access Point mode LED
- [3] Reset button
- [4] Status LED

This device is a central control and commissioning device for surface mounting at a fixed location. 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. It also executes time and astro programs and serves as exchange to switch functions via the free@home app.

The web-based user interface of the System Access Point can be called up and operated simultaneously by several participants (computers and / or mobile devices) via the free@home app. This can, depending on the changes made, lead to losses in performance. This results in longer periods for implementing changes. Therefore, it is recommended to operate the user interface with only 4 participants at the same time.

After activating the bus voltage the System Access Point automatically detects all devices in the system, provided they have been connected correctly. The integrated bus coupler makes possible the connection to the free@home bus line.

When energized, a wireless device that has not been programmed is in programming mode for 30 minutes and can be logged into the system. Programmed devices share information about their type and supported functions with the System Access Point.

Also the System Access Point counts as a participant of the system.

Additional product features:

- LED as status indication

4.1 System features

Radio frequency	2.4 GHz
Funkprotokoll	free@home wireless
Verschlüsselung	AES-128
Reichweite im Gebäude	Typically 15 - 20 m (can vary greatly depending on structural conditions)
Teilnehmer in einem System	max. 150

Tab.1: System features

- All free@home devices support the well-known free@home functions.
- Robust communication through "mesh network".
- Einfacher Austausch von vorhandenen Schaltern dank kombinierter „Sensor / Aktor“-Geräte.
- Immediate function without programming (devices are pre-configured).
- A system can include wireless and wired devices.

4.2 Scope of supply

The following items are contained in the scope of supply:

- System Access Point 2.0
- mounting base
- 2 wall screws
- 2 wall anchors
- 1 free@home wired bus connection terminal (red / black)
- 1 power supply connection terminal (yellow / white)
- 1 plug power supply with adapter
- 1 strain-relief bracket with 2 screws

Optional accessories:

- external antenna
- SAP-A1.1 DIN Rail Adapter

5 Technical data

Designation	Value
SAP/S.3	
External Wall Plug Power Supply (enclosed, SELV)	24 VDC / 300 mA
* Alternative DIN Rail Power Supply Operating Voltage	24 VDC / 300 mA (SELV) NEC Class 2 (LPS) - Connection terminal: 0.8 - 1.0 mm (AWG 18 - AWG 20) - Line type: J-Y(St)Y, 2 x 2 x 0.8 mm - Wire stripping: 6 - 7 mm
free@home Wired Bus Voltage	24 VDC via separate power supply (sold separately)
free@home Wired Bus Connection	- Bus connection terminal: 0.8 - 1.0 mm (AWG 18 - AWG 20) - Line type: J-Y(St)Y, 2 x 2 x 0.8 mm - Wire stripping: 6 - 7 mm
Processor	1 GHz Dual Core Processor
Ethernet	RJ45
Protection Rating	IP20
Operating Temperature	-5° C - +45° C
Storage Temperature	-40° C - 70° C
USB-Port	2.0 (High Speed) Total USB current: 500 mA
Wireless (WL)	
Transmission protocol	free@home wireless
Transmission frequency	2.400 - 2.483 GHz
Maximum transmission power WL (wireless)	< 14 dBm
WLAN	
WLAN standard	IEEE 802.11 a/b/g/n/ac
WLAN frequency range	2.400 - 2.483 GHz 5.100 - 5.725 GHz
Maximum transmission power, WLAN	< 20 dBm

5.1 Dimensional drawings

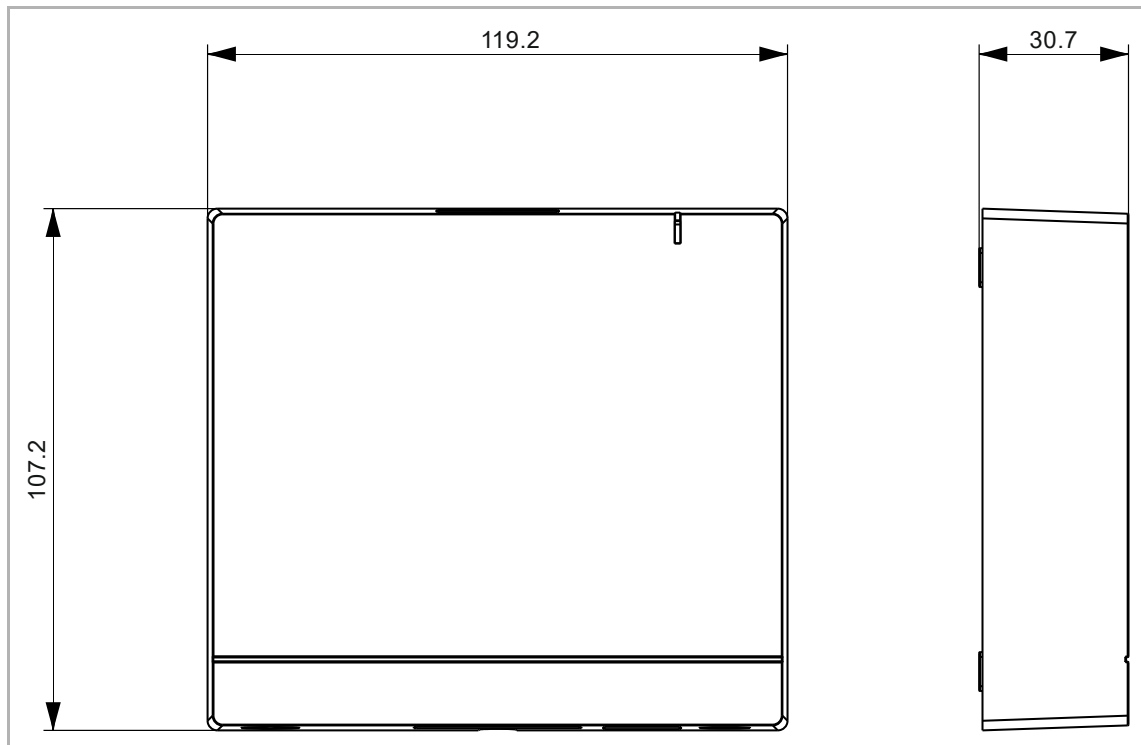


Fig. 2: Dimensions (all dimensions are in mm)

6 Connection, installation / mounting

6.1 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.



Note

Transmitter and receiver communicate via radio control. The transmission range depends on the structural conditions. Walls and ceilings, especially steel reinforcements or metal claddings, reduce the transmission range. The distance of components to each other and to other transmitters that also emit high-frequency signals (e.g. computers, audio and video systems) should be at least 1 m.

6.2 Safety instructions



Danger - Electric shock due to short-circuit!

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

- Low-voltage and 100 ... 240 V conduits 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.

6.3 Circuit diagrams

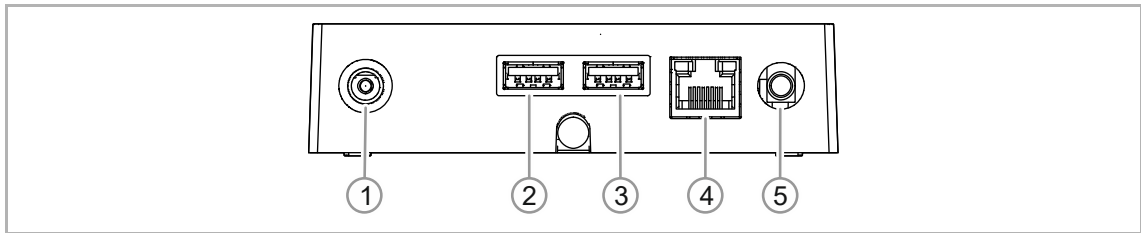
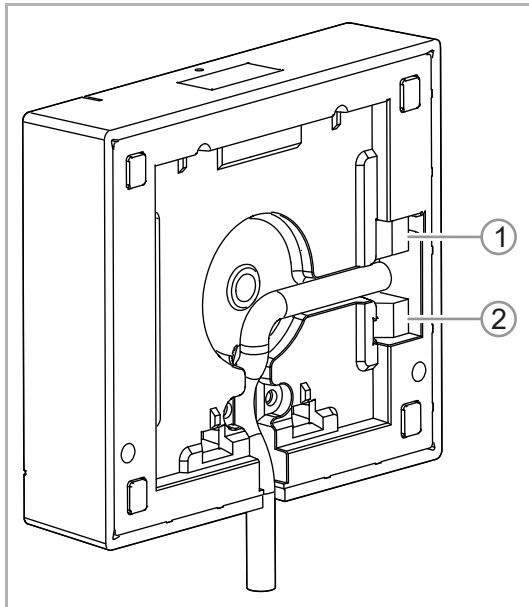


Fig. 3: Electrical connection

- [1] DC power jack
- [2] USB-Port (for future functional enhancements)
- [3] USB-Port (for future functional enhancements)
- [4] RJ connector (RJ45)
- [5] External antenna



- [1] Wired free@home bus
- [2] Alternative power input

Fig. 4: Backside of device

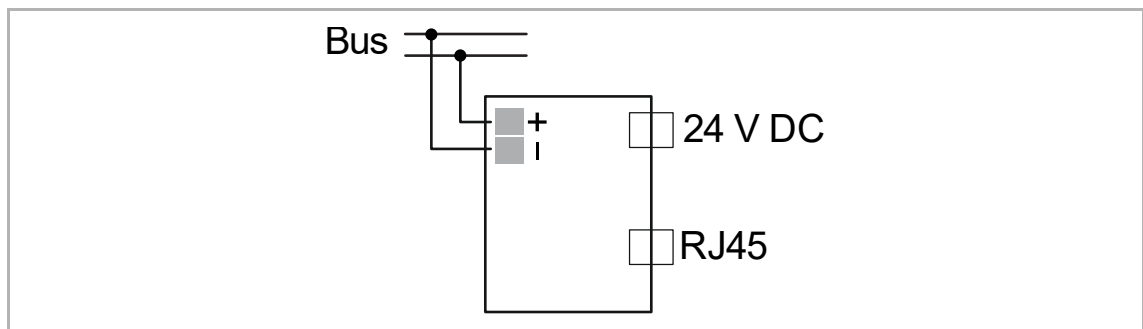


Fig. 5: Electrical connection

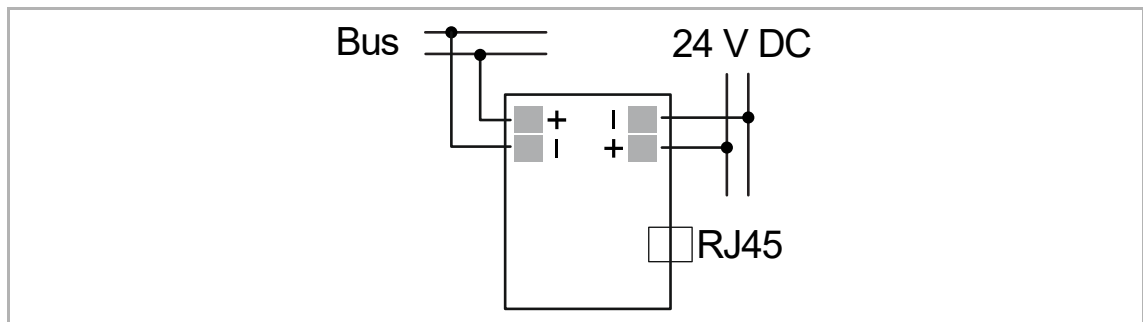


Fig. 6: Electrical connection: Alternative power input

6.4 Mounting



Attention - Short-circuit and corrosion

Short-circuit and corrosion due to penetrating rain water.

- Use the supplied washers for fixing the wall bracket.
- Break out the water drainage [9] in the base plate.

The transmitter and receiver communicate via RF signals. The transmission range depends on the structural conditions. Walls, ceilings, and electrical equipment can affect wireless communication, especially steel reinforcements or other large metal objects. Electrical devices that send high-frequency signals (such as computers, wireless routers, audio systems, and video systems) should be at least 3-feet from this device.

- If the System Access Point is installed within a closed metallic housing (i.e. breaker box), the external antenna should be connected for WL operation and fed outside the box.
- Stationary surface-mounting in interior, dry rooms only. Observe all state and local regulations for installation.

There are three ways to mount the System Access Point.

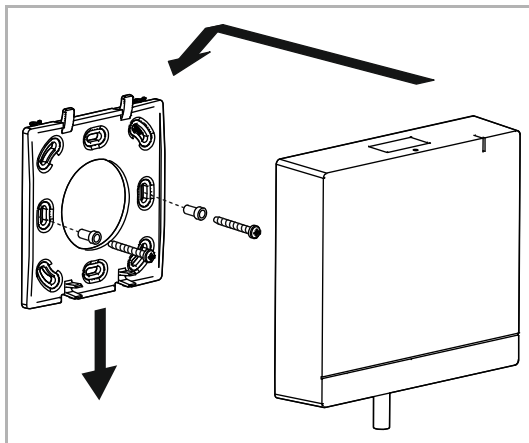


Fig. 7: Wall

Option A

1. Screw the mounting base directly onto the wall.
2. Set the System Access Point on top and push it downwards.

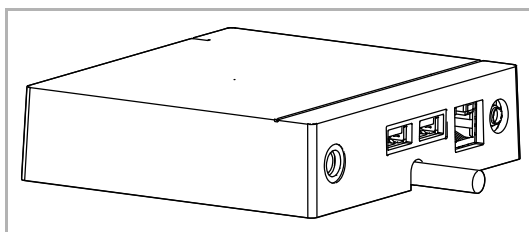


Fig. 8: Flat Surface

Option B

1. Place the System Access Point on a flat surface (i.e. on a table).

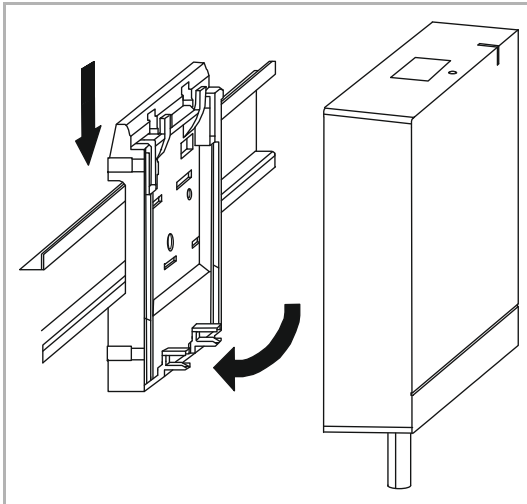


Fig. 9: DIN Rail

Option C

1. Attach the DIN Rail adapter to the DIN rail in the distributor.
2. Lock the System Access Point in place by placing it on top of the adapter and pressing it downwards.

6.5 Electrical connection

- Cat5 or Cat6 wires are connected directly via the Ethernet port.
IMPORTANT: Use only shielded Cat5 or 6 wires.
- For installations with a plug-in connection, the socket outlet must be mounted close to the SysAP and be easy to access.

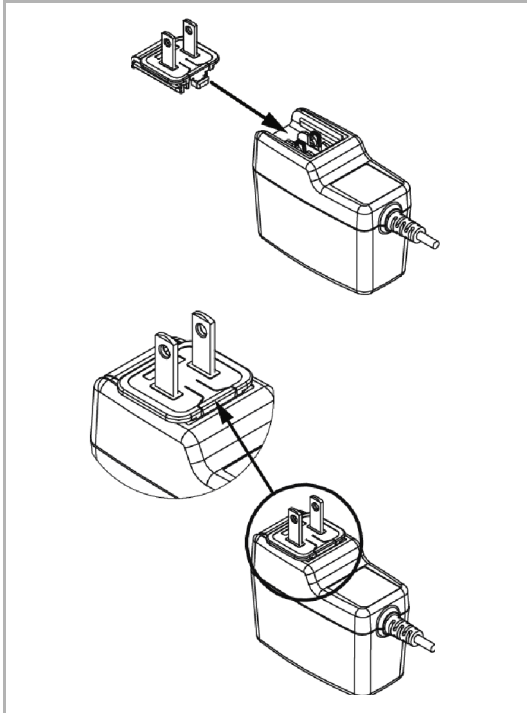


Fig. 10: Connecting the power adapter

Use the enclosed power supply with the correct adapter to power the SysAP.

1. To connect the adapter to the power supply, simply slide it down the rails on the power supply until it locks in place (the figure of the adapter serves as an example).

- All other devices on the network (free@home wired bus) must be powered by a separate NEC Class 2 (LPS) power supply.



Hinweis

When operating more than 64 devices, a second power supply must be used.

- Alternative: 24 V power cord, supplied by the DIN Rail Power Supply (See mounting diagram) instead of enclosed power supply.

**Warning – Short-circuit hazard**

- Ensure that the SELV circuits are spatially separated (> 10 mm) from other circuits.
- If the distance lies below the minimum distance, e. g. use electronic sockets / insulating hoses.

**Warning**

Do not attempt to power the device using both the DC power jack and the alternative DC power connection.

- Use only a single connection.

7 Commissioning

Commissioning of the device is always carried out via the Web-based surface of the System Access Point. It is assumed that the basic commissioning steps of the overall system have already been carried out. Knowledge about the Web-based commissioning software of the System Access Point is assumed.

The System Access Point establishes the connection between the free@home 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, log themselves automatically into the System Access Point. They transmit information about their type and supported functions ().

When energized, wireless devices that have not been programmed are in programming mode for 30 minutes and can be logged into the system. Programmed devices share information about their type and supported functions with the System Access Point.

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

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

**Note**

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

7.1 Prerequisites

7.1.1 User interface

To open the web-based user interface of the System Access Point, you require a computer with LAN or WLAN network adapter and a installed internet browser.

The recommended browsers are:

- Firefox (from version 9)
- Google Chrome
- Safari

7.1.2 free@home app

For the installation of the free@home app you require a smartphone or tablet with an Android (from 4.2) or iOS (from iOS 7) operating system.

7.1.3 Home network

To be able to access the free@home app and Internet services (e.g. e-mail) at the same time during standard operation, the System Access Point must be integrated into the existing home network after commissioning. For this, a router with Ethernet or WLAN interface is required.

7.2 Network connection

The System Access Point makes available its own WLAN during commissioning. This allows it to be comfortably programmed in mobile mode, even when no network infrastructure is available.

However, in the final state the System Access Point should be set up as participant within the available network infrastructure.

The System Access Point can be connected to the available network infrastructure of the apartment either via the installed Ethernet port or the installed WLAN antenna.

Connection via WLAN

If the System Access Point cannot be connected to the Internet router via cable, it can be logged into the existing WLAN network via WLAN as client.

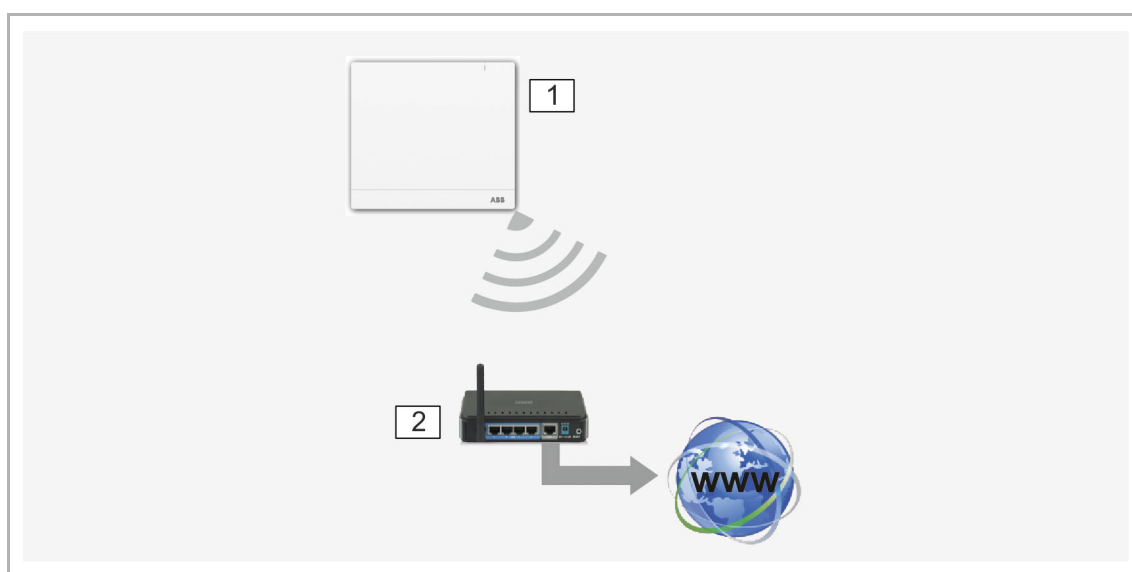


Fig. 11: Connection via WLAN

01 – System Access Point

02 – IP router

Connection via patch cable

If the System Access Point and Internet router are installed side by side, they can be connected via a patch cable.

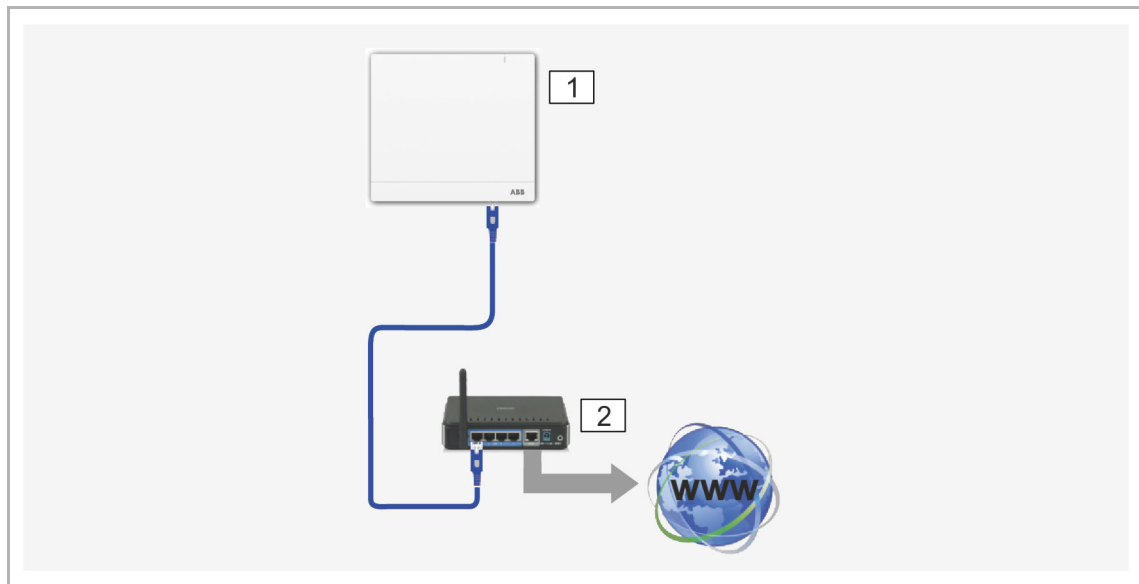


Fig. 12: Connection via patch cable

01 – System Access Point

02 – IP router

Connection via installation cable in case of structured cabling

If the System Access Point is connected via a CAT installation cable, the CAT cable can be connected via the RJ-45 socket with an LSA adapter.

**Notice**

The System Access Point switches over automatically to cable operation when a cable is plugged in.

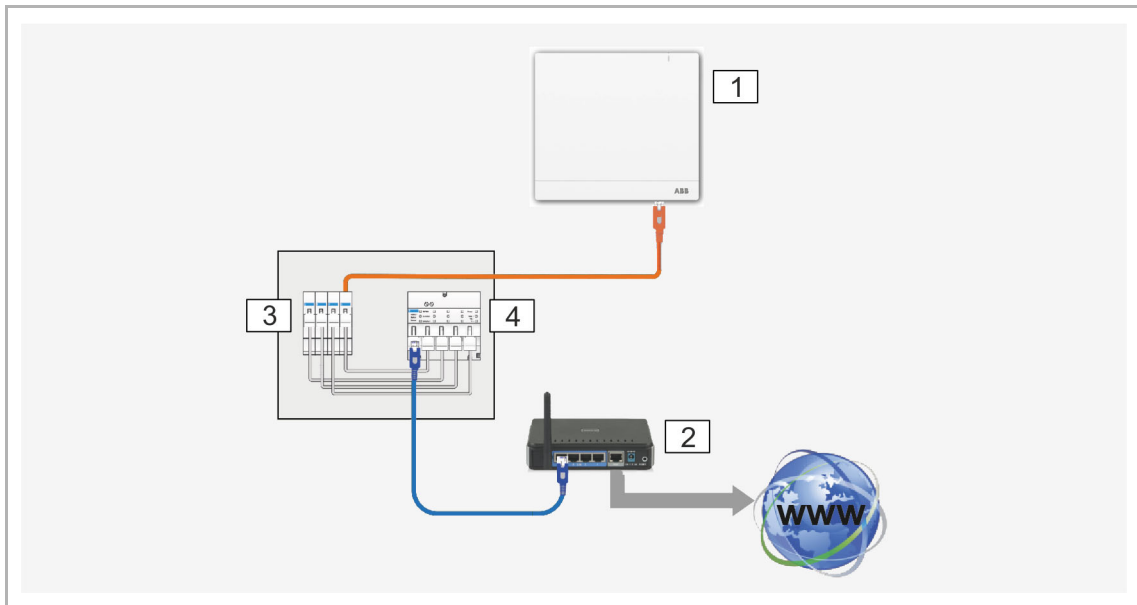


Fig. 13: Connection via installation cable in case of structured cabling

01 – System Access Point

02 – IP router

03 – Ethernet Patch-Terminal

04 – Switch

7.3 Establishing the connection to user interface of the System Access Point

Use one of the following options to open the user interface of the System Access Point:

Option A: Establishing the connection with smartphone or tablet

1. Install the free free@home app for Android or iOS.
2. Energize the System Access Point. Ensure that the access point mode has been activated (LED button lights up blue). If not, press the access point button to activate it.
3. Connect the terminal device with the WLAN of the System Access Point (SSID: SysAPXXXX).
Enter the password (see text on the rear side of the System Access Point).

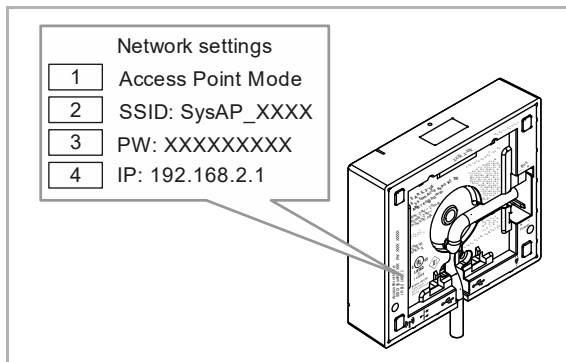


Fig. 14: Text on the interior side of the System Access Point

- 01 - Access point mode
- 02 - WLAN password (SSID)
- 03 - Password
- 04 - IP Device address

4. Start the app.
5. The app establishes a connection to the System Access Point automatically.

Option B: Establishing the connection with the PC via WLAN

1. Energize the System Access Point. Ensure that the access point mode has been activated (LED button lights up blue). If not, press the access point button to activate it.
2. Connect the PC with the WLAN of the System Access Point (SSID: SysAPXXXX). Enter the password (see text on the rear side of the System Access Point, see Page **Fehler! Textmarke nicht definiert.**).
3. Start your Internet browser. Enter the IP address "192.168.2.1" in the address line of your browser and confirm it.
4. The connection to the System Access Point has been established.

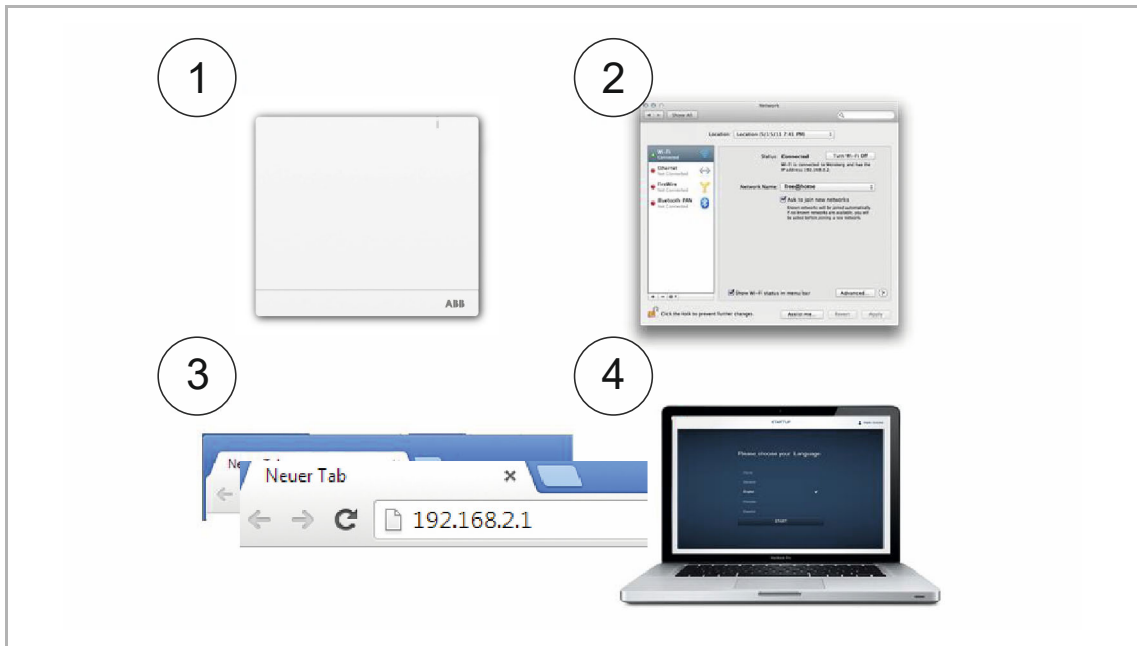


Fig. 15: Connection with PC via WLAN

Option C: Establishing the connection with the PC via patch cable and router

1. Connect the System Access Point and the PC with the router.
2. Energize the System Access Point. Ensure that the access point mode has not been activated. If it is activated, press the Access Point button to deactivate it.

**Notice**

The System Access Point now operates as "DHCP Client", this means that it can only be reached under the IP address that is assigned to it automatically by the router.

3. Call up the user interface of the System Access Point. For this there are two options:
 - [A] Open the Windows Explorer of your PC. The System Access Point is displayed as device under "Network". Double click on the device to open the user interface (prerequisite: the computer must support UPnP).
 - [B] Enter the IP address that is automatically assigned by the router in the address line of your browser. You find the assigned IP in the user interface of your router.
4. The connection to the System Access Point has been established.

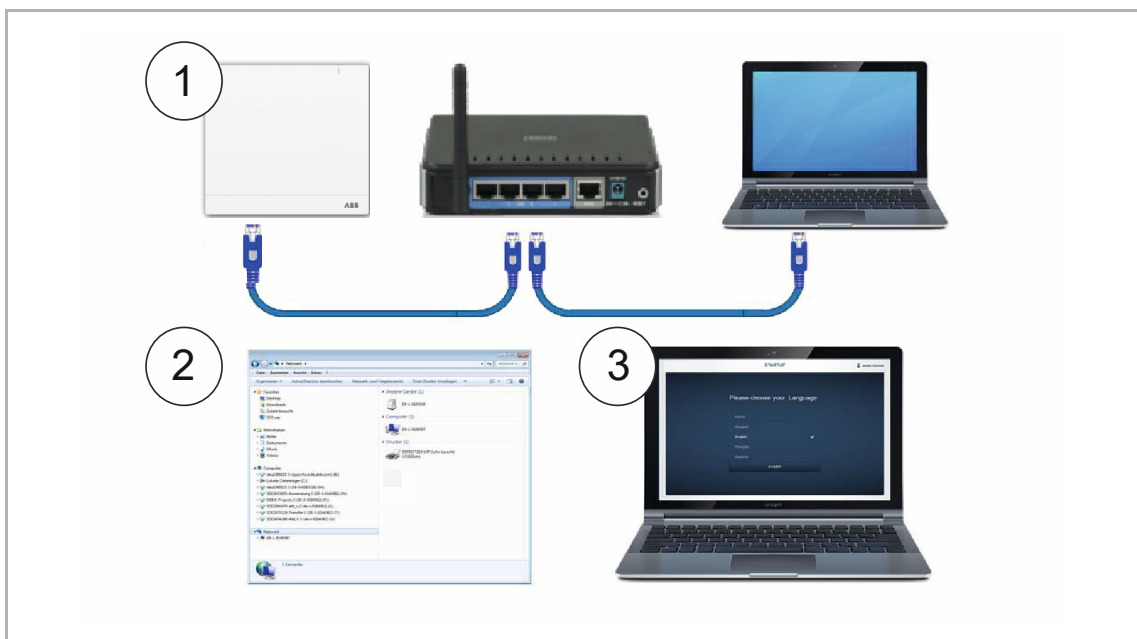


Fig. 16: Connection via patch cable and router

**Notice**

Description of LED signals, see chapter "Control elements" on page 51.

Option D: Establishing the connection with the PC via patch cable and without router

(Available from System Access Point Firmware Version 2.0)

1. Connect the System Access Point and the PC with a patch cable (no special crossover cable is required)
2. Energize the System Access Point. Ensure that the access point mode has not been activated. If it is activated, press the Access Point button to deactivate it.



Notice

The System Access Point now operates as "DHCP Client", this means that it can only be reached under the IP address that is assigned to it automatically by the PC.

3. Call up the user interface of the System Access Point.

Open the Windows Explorer of your PC. The System Access Point is displayed as device under "Network". Double click on the device to open the user interface (prerequisite: the computer must support UPnP).

4. The connection to the System Access Point has been established.

7.4 Basic settings



Note

Detailed descriptions are available via the interactive Help. When you require Help or information:

1. Press the Help button on the current user interface.
2. Select one of the highlighted elements.
 - The Help information for this element is displayed.
3. Click on any position of the user interface to end the interactive Help mode.



During initial commissioning you will be asked to supply the following basic data:

Language

Selects the language of the display text. The following languages are available:

German	French	Portuguese	Turkish
Danish	Italian	Russian	Czech
English	Norwegian	Swedish	
Spanish	Dutch	Chinese	
Finnish	Polish	Greek	

Table 2: Languages

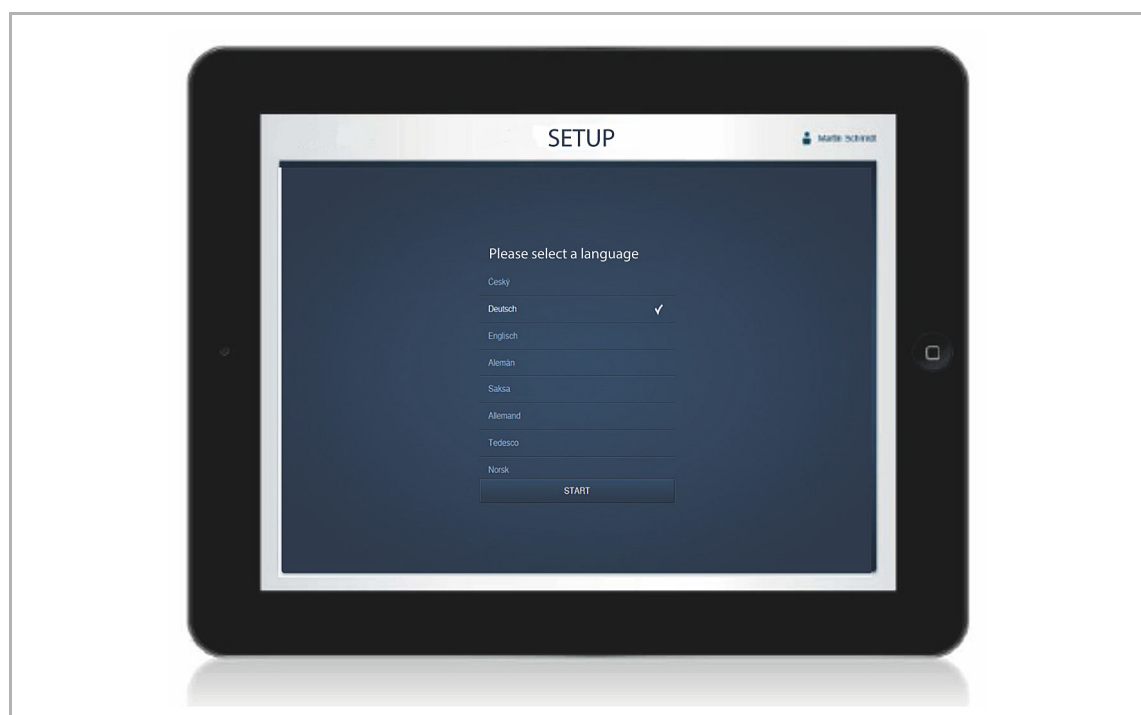


Fig. 17: Basic settings

Site

Basis for the astro function.

Time/Date

Sets the system time (the time will be synchronized automatically when the connection to the Internet is established).

User name / Password

Ensures protection of the settings against faulty configuration (additional users can be added later).

**Note**

The password must consist of at least 4 characters.

Name of installation

Display name of device within the IP network.

The data are saved on the System Access Point. The entry of the data can be skipped, which, however, can lead to the restriction of functions.

However, the data can also be entered at a later point in time.

7.5 Setup of the main menu

The main menu is the starting base for all the steps to follow.

Located in the central area are the menu items that are to be processed step by step (from left to right) for the configuration.

Since the steps follow each other consecutively, they remain deactivated until the preceding step has been executed.

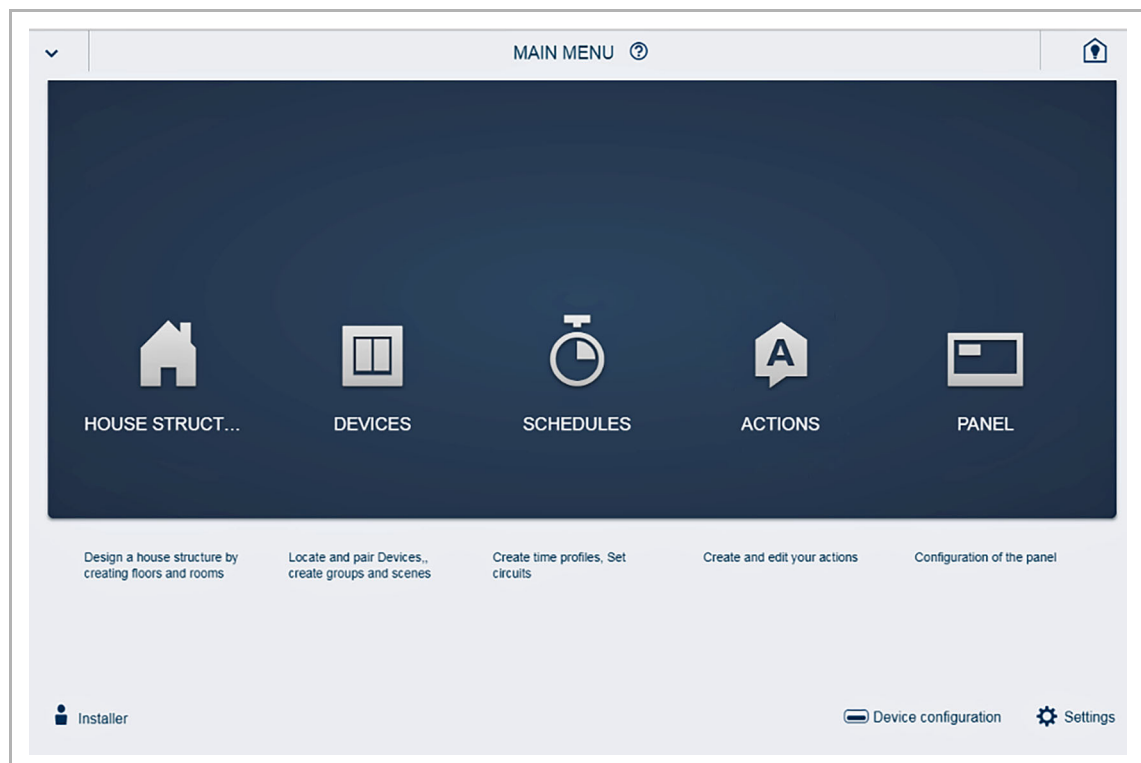


Fig. 18: Setup of the main menu

7.6 Setup of the working area

The working area of menu items "House structure" and "Devices" is divided into two areas: the floor plan (working area) on the left side and the list view on the right side.

- Each area can be enlarged or reduced via the title bar.
- All actions can be carried out both in the floor plan and in the list view.
- When a change is made in the floor plan, this change is also made in the list view and in reverse.
- Both areas represent different views of the same configuration.
- While the floor plan represents the graphical view and allows operation via drag and drop, the list view offers a clear tabular view.

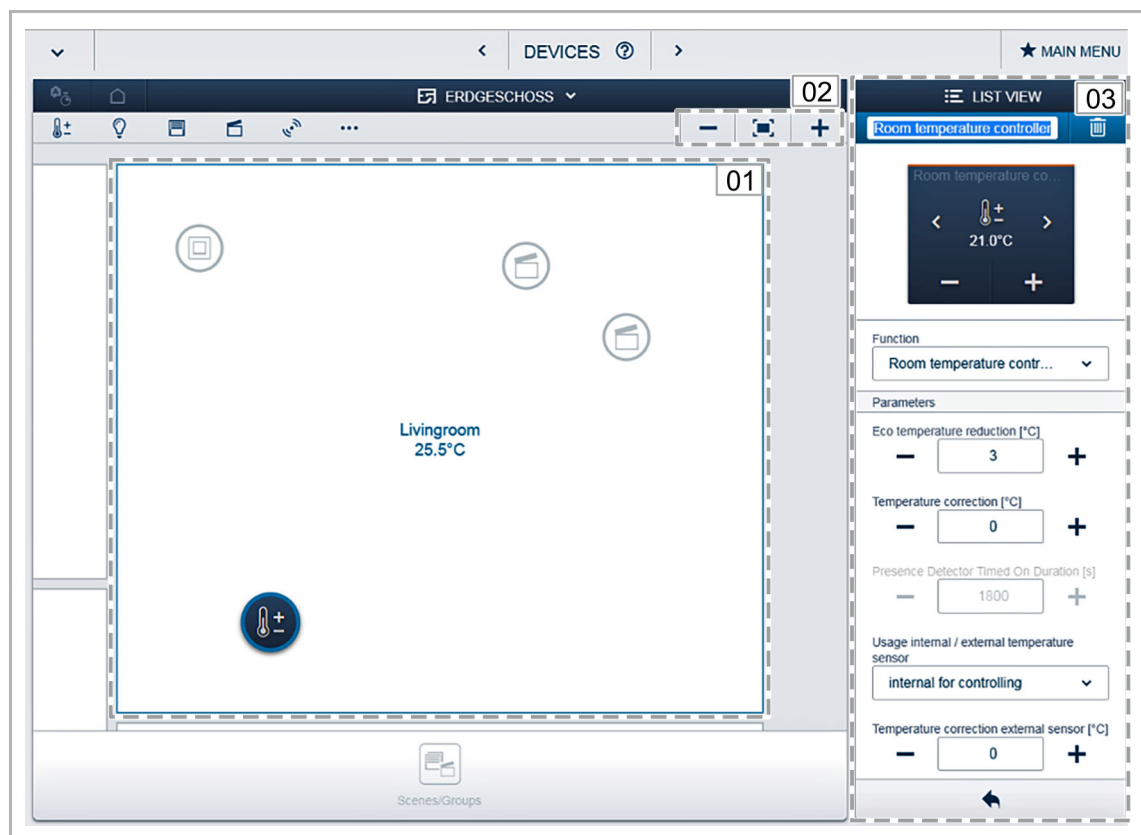


Fig. 19: Setup of the working area

01 - Floor plan

02 - Enlarge/Reduce

03 - List view

7.7 Creating the house structure

The first step of the configuration is the creation of the house structure. Here a digital image of the apartment or the house with all its floors and rooms is created.

This information is used during the next step to allocate the devices available in the house to a function and to their mounting position. After commissioning has been completed the created floor plan is also used for the visualization of the installation and as orientation for the switchable loads.

To allocate devices in the outdoor area, e.g. lights on the terrace or in the garden, create a "Terrace" or "Garden" room.

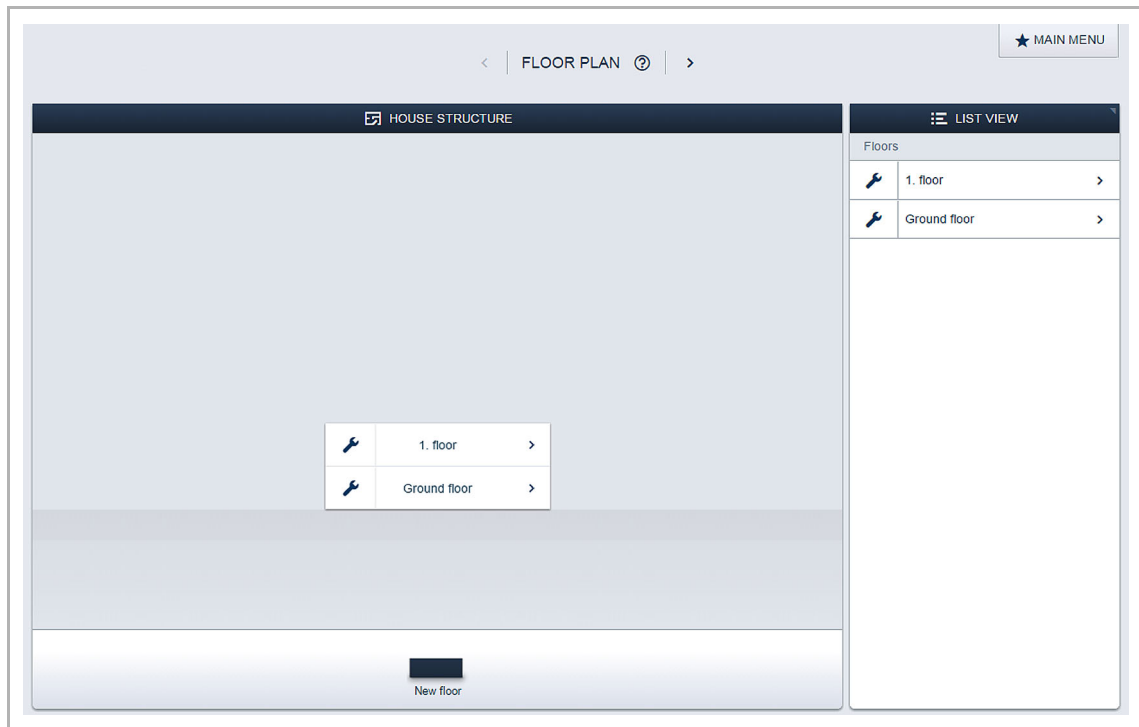


Fig. 20: Creating the house structure - View of all floors

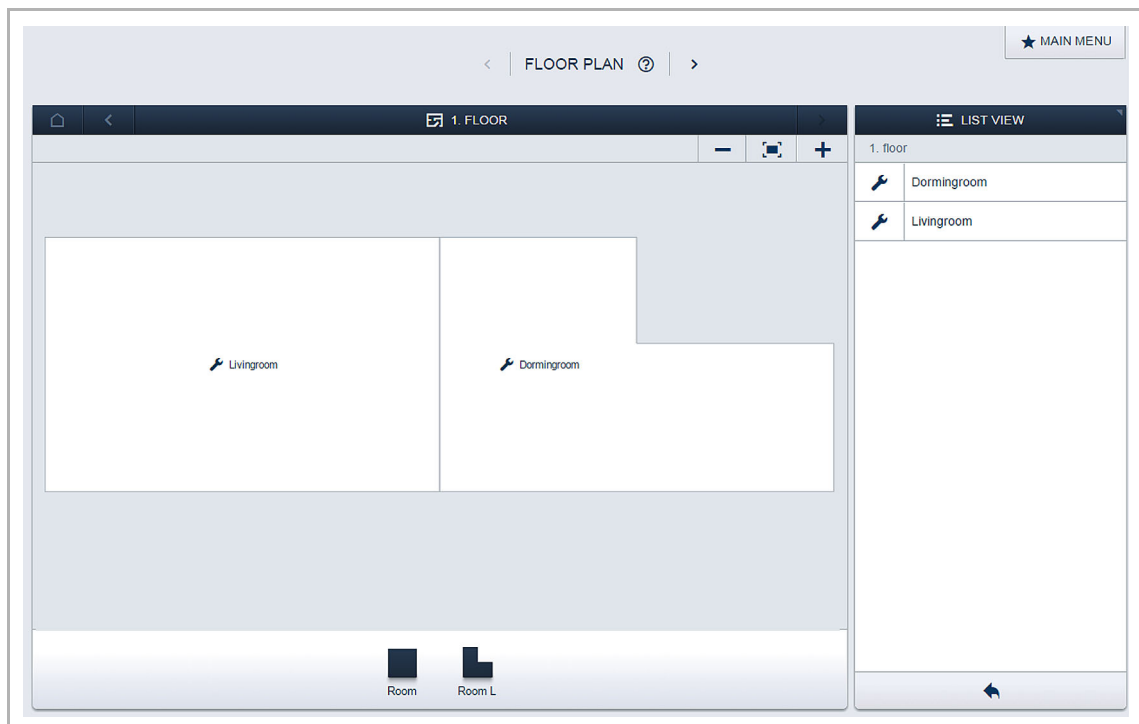


Fig. 21: Creating the house structure - View of one floor

7.8 Explanations about network functions

Access point mode

The access point mode is intended for commissioning of the system. The System Access Point establishes its own WLAN and acts as DHCP server (devices which connect themselves as client with the WLAN receive an IP address automatically).

Advantage: The system can be made operational and operated without a router (e.g. FRITZ!Box).

Disadvantage: In access point mode the System Access Point cannot be simultaneously connected to an Internet router. For continuous operation the System Access Point should therefore be configured as LAN or WLAN client. This allows the users to both surf on the Internet with their devices and operate the free@home system without having to change between different WLAN networks.

To activate or deactivate the access point mode:

1. Press the access point button.

During initial commissioning the access point mode is automatically activated.

The network name (SSID), the WLAN password and the IP address of the System Access Point are located on a label in the interior of the device (power adaptor).

LAN/WLAN client mode

If a router is already available it is recommended to connect the System Access Point with this network via LAN or WLAN as client.

The following three options are available to activate the client mode:

- A: Connect the System Access Point via LAN with the router before commissioning.
- When the cable is plugged in, it is recognized automatically and the access point mode is deactivated.
 - The System Access Point receives an IP address from the router automatically.
 - During the attempt to connect, the connection display flashes.
 - After the connection has been successfully established the connection display lights up permanently.
- B: Connect the System Access Point via LAN with the router after commissioning.
- For this connection the access point mode must be deactivated manually. This can be carried out with a press of the button on the device itself or in the network settings of the user interface.
 - The System Access Point receives an IP address from the router automatically.
 - During the attempt to connect, the connection display flashes.
 - After the connection has been successfully established the connection display lights up permanently.

C: Connect the System Access Point via WLAN with the router after commissioning.

- This connection must be carried out via the network settings of the user interface. There select the name of the network with which you want to connect the System Access Point and enter the network key.



NOTE

The list of recommended network names (SSIDs) is created during the boot-up process of the System Access Point. The WLAN networks that cannot be reached at this point will not be shown in the list of recommendations.

- The System Access Point receives an IP address from the router automatically.
- During the attempt to connect, the connection display flashes.
- After the connection has been successfully established the connection display lights up permanently.

The access point mode can be activated again at any time. If the access point mode is deactivated, the LAN client or (if it has been configured) the WLAN client mode is activated.

7.9 Coupling of wireless devices with the System Access Point

free@home wireless devices must first be coupled with the System Access Point before they can be used in a project. The devices exchange a security key during the coupling process.

Communication between devices is carried out encrypted after coupling and they are firmly connected with the System Access Point. Coupled devices cannot be connected with a different System Access Point. They must first be reset to the factory settings.

Carry out the following steps to couple one or several devices with the system.

1. Install the free@home wireless device(s).
2. Use your smartphone, tablet or PC to call up the user interface of the System Access Point that is ready for use.
3. Switch on the mains power supply of the free@home wireless devices.

The devices are now in programming mode for 30 minutes.

4. In the user interface of the System Access Point select "System settings" > "free@home-Wireless" > "Search".

The System Access Point consecutively scans all free@home wireless devices. Devices that are in programming mode are integrated automatically into the system. The scanning process ends 10 minutes after the last device has been integrated.

Integrated devices are listed in the "Device list" of the user interface.

5. Use the serial numbers to check whether all installed devices have been found. If a device has not been found, reset it to the factory settings and start a new scanning process.

Possible reasons for not finding devices:

- The device is not in programming mode.
- The 30-minute programming time has expired.
- The device has already been coupled with a different system.

7.10 Allocating devices to rooms

In the next step the devices connected to the system must be identified. For this they are allocated to a room according to their function and are given a descriptive name.

A table with all available applications is located in Chapter 4 "Setup and function" on page 11. The application that is actually available depends on the devices connected to the system.

In the "Add device" bar only the devices/functions that are connected with the system are displayed. They remain in the bar until they are shifted onto the floor plan. This means that the list keeps getting shorter as the devices are being positioned.

- In the "Add devices" bar select the desired application and pull it via drag and drop onto the floor plan, see fig. "Fig. 22:" on page 41.
 - A pop-up window opens which lists all the devices that are connected to the bus and suitable for the selected application (e.g. all blind actuators, if the blind application has been selected, see fig. "Fig. 23:" on page 42).

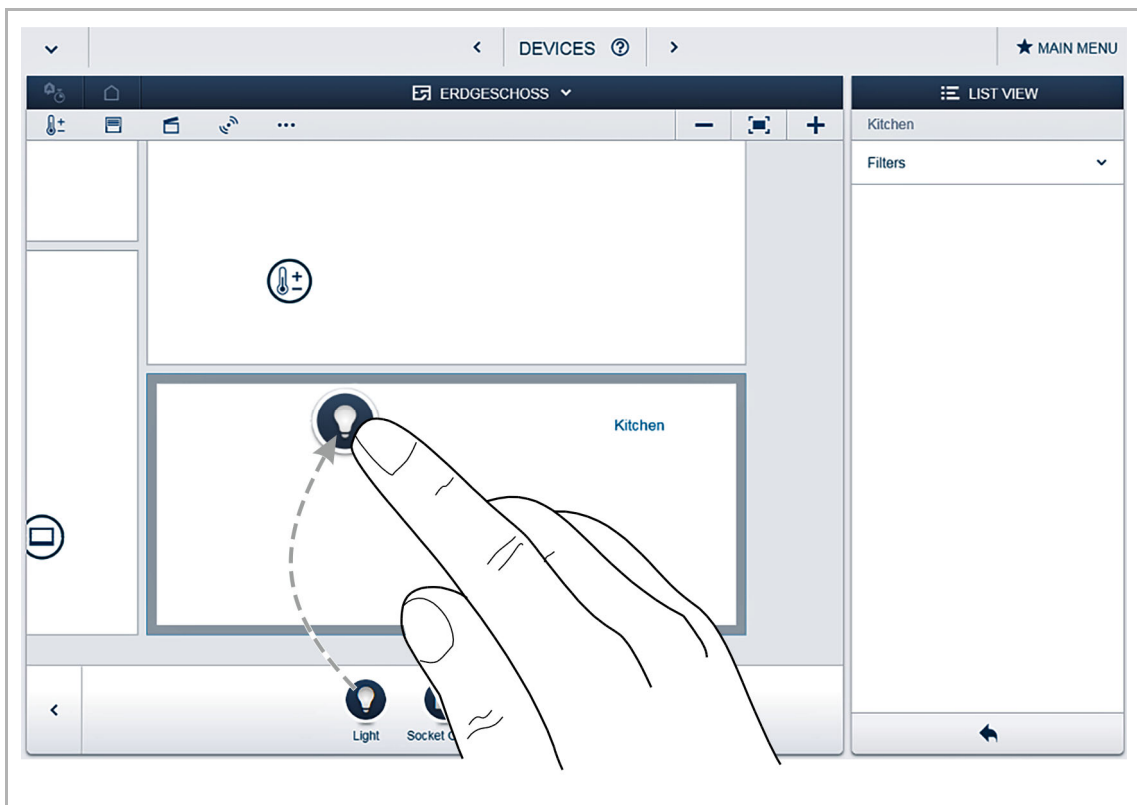


Fig. 22: Dragging the application from the add bar

ALLOCATION LIGHT

Sensor/Dim actuator 2/1gang
ABB700000003 EVU
ABB700000021 KMM
Sensor/Dimmaktor 2/1-fach
ABB700000004 BXF
Sensor/ Switch actuator 1/1gang
ABB700000006 SFH



Please assign a channel.

Finding the correct channel depends on the device that has been identified.

For most sensors, the sensor can be either switched directly or triggered. In the case of actuators, an element can be selected from the list on the left side. Here, the control button can then be used, for example, to identify a connected lamp.

Fig. 23: Pop-up window with the suitable devices

7.10.1 Identification

If after positioning on the floor plan there are several possible devices in the pop-up window for selection, the device which switches the desired function must now be selected.

Identification via serial number

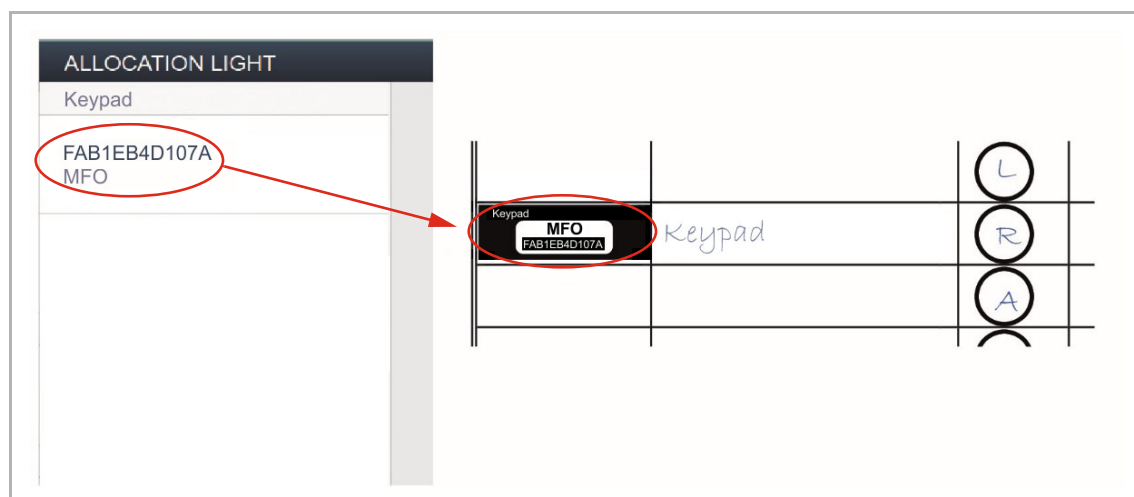


Fig. 24: Identification via serial number

1. Compare the three-digit character code and the serial number of the identification label on your device plan, or on the device with the numbers in the list, and in this way identify the device you are searching for and, if necessary, also the channel.

Identification via switching (only suitable for actuators)

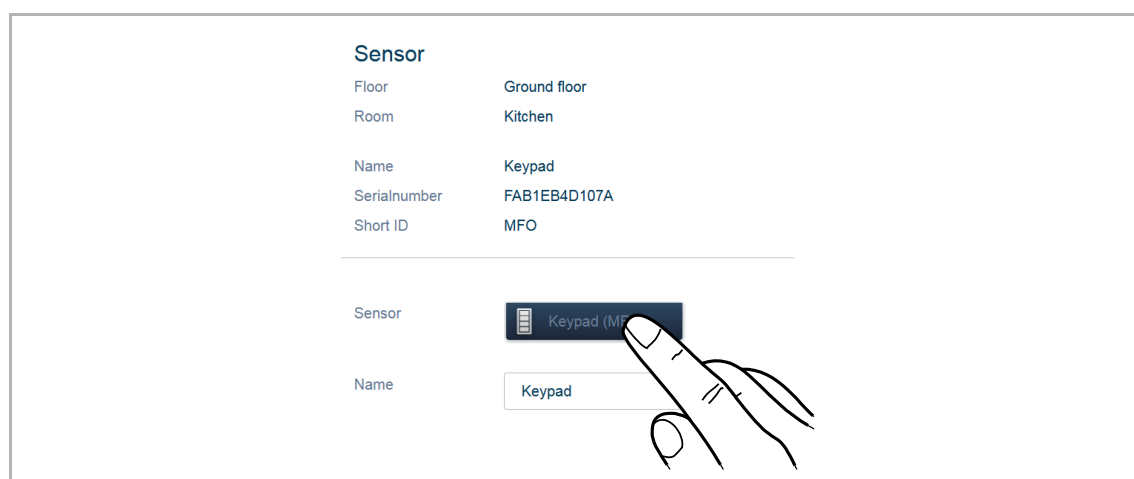


Fig. 25: Identification via switching

1. Select a device and a channel from the list.
2. Press the button in the detailed view of the device.
 - The connected load is switched.
3. Repeat steps 1 and 2 until you have located the searched for device.

7.10.2 Specifying a name

- When the device has been found, enter a name that is easy to understand and under which the application is to be displayed later (e.g. "Ceiling light").
- Press the tick at the bottom right to take over the entries.

The screenshot shows a commissioning interface with a list of devices on the left and a configuration area on the right. The device list includes:

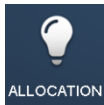
- ABB700000006 SFH
- ABB700000016 WDG
- Movement detector/actuator 1g...

The 'Name' field is currently set to 'Ceiling light'. At the bottom, there are two buttons: a back arrow on the left and a checkmark on the right.

Fig. 26: Specifying a name

7.11 Setting options per channel

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



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

Select device

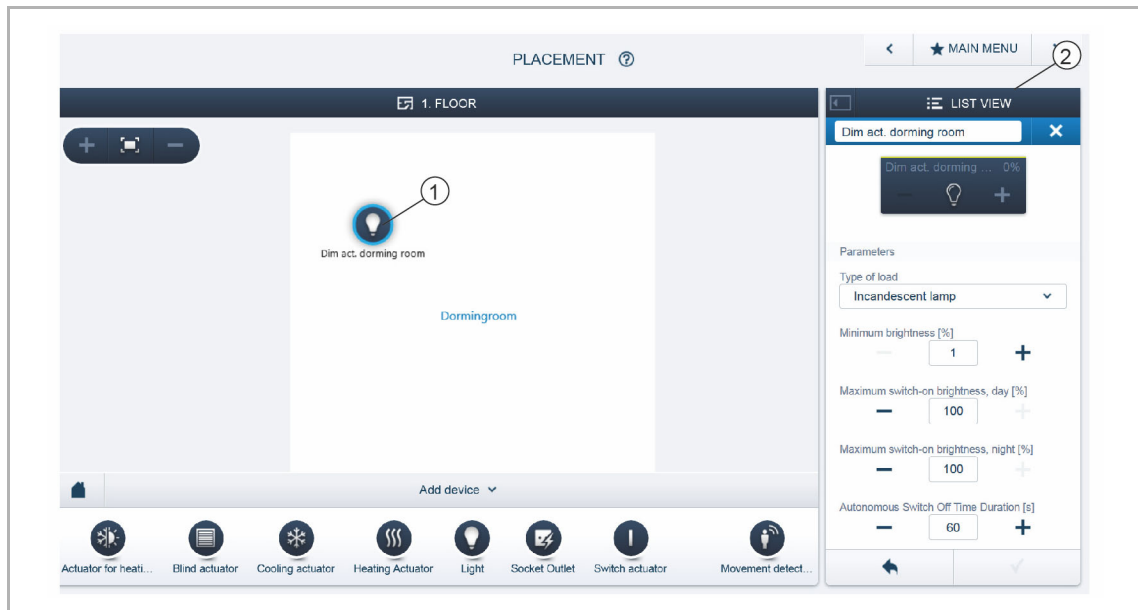


Fig. 27: Select device

- 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]. For push-buttons (sensors) the corresponding push-button must be selected.

The following settings are available:

7.12 Links

7.12.1 Linking actuator and sensor

The sensors and actuators created in step "Devices" can now be linked to implement simple On/Off circuits, two-way circuits, scenes, etc.

1. First click/tap on the desired sensor [1] which is to operate the actuator and then on the actuator [2].
 - A blue connecting line indicates the link between the two devices.
2. Press the tick at the bottom right to take over the entries.

The configuration is transmitted automatically to the devices. The transmission can, depending on the number of affected devices, take a number of seconds. During the transmission a progress bar is displayed around the devices affected.

After the transmission has been completed, the sensor can be operated directly locally.

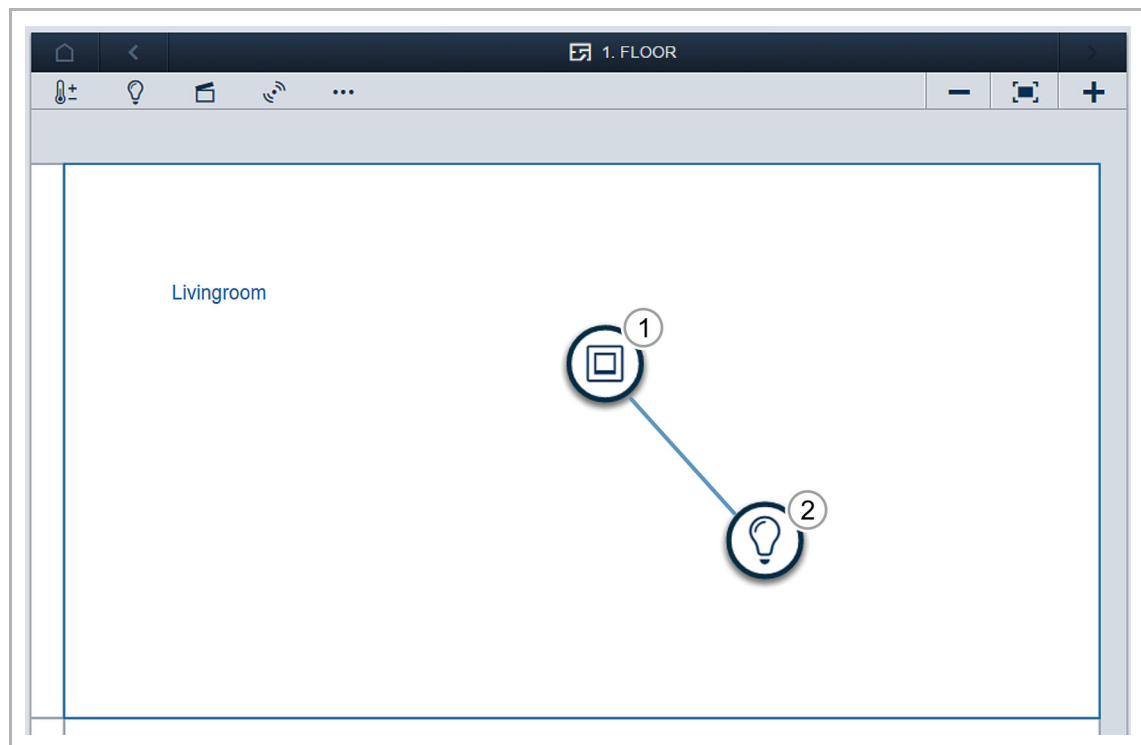


Fig. 28: "Devices" window

7.12.2 Switching options

Two-way circuit [01]

An actuator is connected with one or several sensors.

Group circuit [02]

Several actuators of the same type (e.g. all the lights in a corridor, all roller blinds of a room) are combined in a group. The group acts like a single actuator and can be connected with sensors or integrated into scenes (At "ON" all actuators of the group switch on. At "OFF" all actuators of the group switch off).

Scene [03]

A scene creates a state that can be defined by the user. This, for example, allows the user to create a "TV" scene that dims the living room light, switches off the lights in the corridor and dips the blinds. Scenes cannot be switched on or off. When a scene is called up, always the same, predefined state is established.

The states of the participants in a scene can be defined when the scene is created.

To switch a local scene, it can be linked with a sensor.

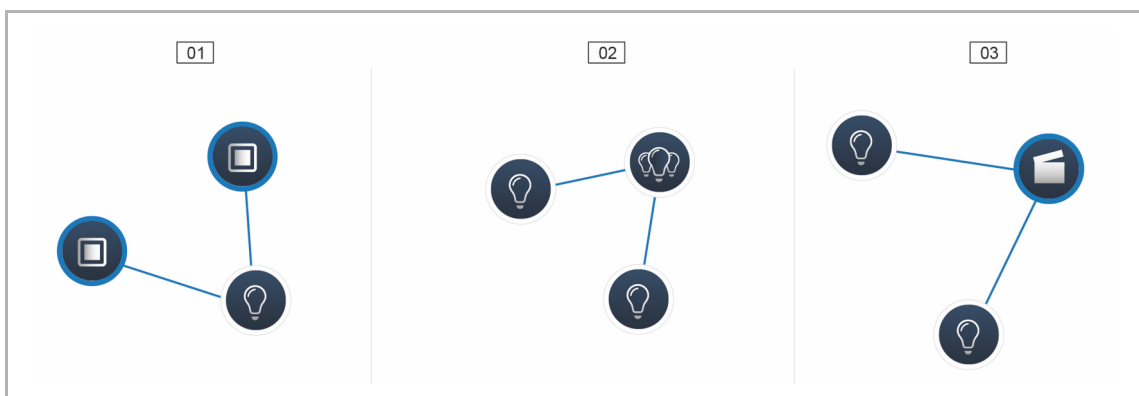


Fig. 29: Switching options

01 – Two-way circuit

02 – Group circuit

03 – Scene

7.13 General settings

System information

Information about the current software version status.

Network

Here the network settings of the System Access Point can be programmed. Possible settings:

- LAN client - Used when the System Access Point is connected to the Internet router via network cable.
 - This LAN client mode is activated automatically when the access point mode is deactivated (LED of the left button is off).
- WLAN client - Used when the System Access Point is connected to the Internet router via WLAN.

User

Here additional users can be created, deleted or access rights changed. The system differentiates between 3 types of users with different access rights:

- User "Fitter"
 - Has all access rights (Master reset, creation of data protection).
- User "Configuration"
 - Cannot make changes critical to the system (changing settings related to the bundling of channels for dimmers, re-configuring of binary inputs).
- User "Operation"
 - Cannot make changes to the system, but only operate the devices.

General

Here the setting of the system name, the system language, the location and the time is carried out.

Data backup

The data backup stores all the settings made. It is first backed up on the internal memory of the System Access Point, but it can also be exported. The data back-up is created automatically at regular intervals, but it can also be created manually. Data backups that have been created by user type "Fitter", can be restored by other users, but cannot be deleted by them.

Service

Loads the current firmware to the free@home devices. This is only necessary if the update of the devices was rejected during the update dialogue (see chapter "Update" on page 50).

Master reset

Resets all free@home devices connected to the bus to the factory settings. All data backups, user data, floor plans and time programs are retained.

Reset database

Resets the System Access point completely or partly to the factory settings. The selection of the parameters to be reset is made in the pop-up window.

8 Update

A firmware update is carried out via the Web-based user interface of the System Access Point.

A firmware update is carried out via the device settings of the Web-based user in-terface of the System Access Point.

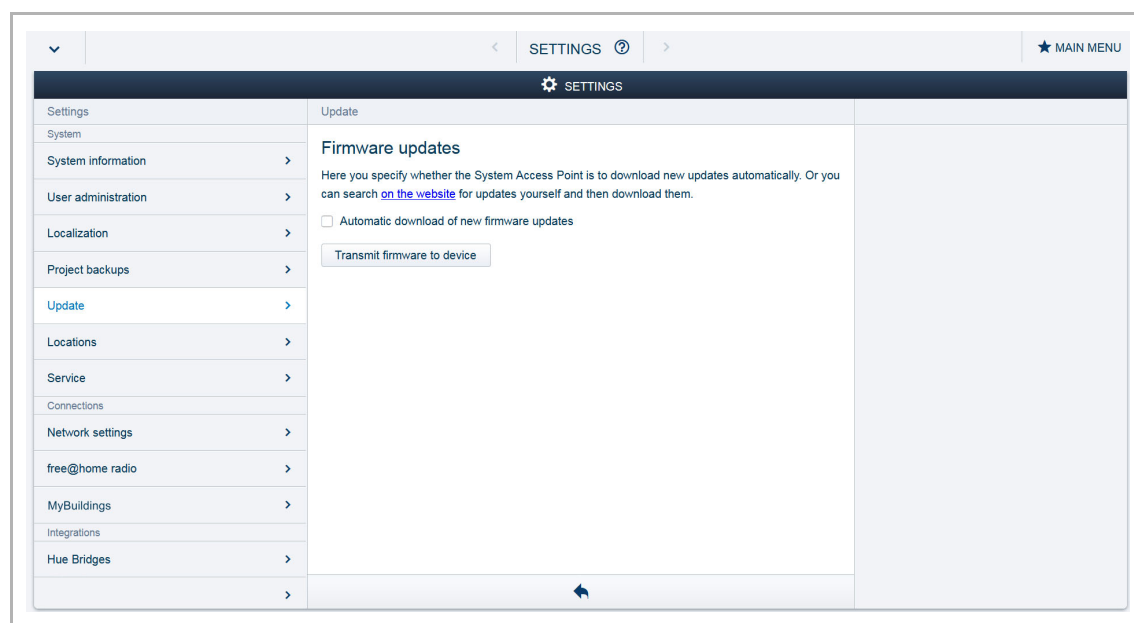


Fig. 30: Firmware update

Upload firmware

A firmware update of the System Access Point and the free@home devices is carried out by pressing button "Upload firmware". The update file contains both the updates of the System Access Point as well as the updates for all system de-vices. The update consists of four steps:

- [1] Upload of the firmware to the System Access Point - takes place automatically after the update file has been selected.
- [2] Processing the firmware - takes place automatically after the successful update. The process can take a few minutes.
- [3] Installing the firmware - takes place after confirming the update dialogue. The update takes a few minutes. After the update has been carried out suc-cessfully, the System Access Point restarts. This could lead to the website in the Internet browser continuing to indicate an ongoing update process. An update of the website (F5 key) rectifies the problem.
- [4] Firmware update of all free@home devices connected to the bus - after confirming the update dialogue all free@home devices connected to the bus are updated automatically. The update is always carried out simultane-ously on two devices and can be recognized by the mutual flashing of the LEDs. The process takes approximately 2 minutes for each device. The system can be operated as usual during the update.

9 Operation

9.1 Control elements

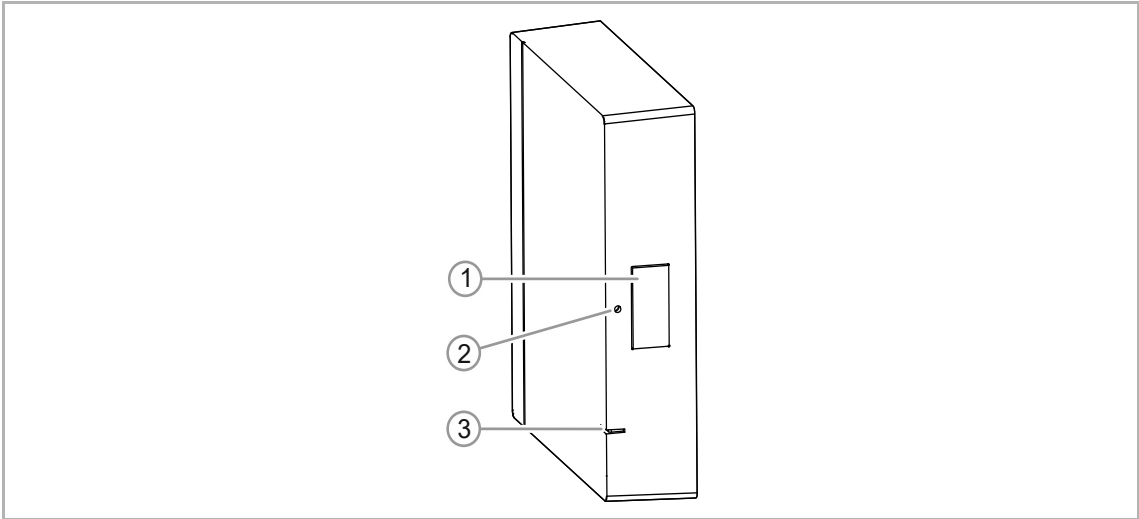


Fig. 31: Control and display elements

- [1] Access Point button
- [2] Reset button
- [3] LED Light

Element	Description	
Access point button	Button operation activates / deactivates the Access Point mode	
Reset button	By using a pin, press down and hold for 40 seconds or longer	
LED Light	LED green (brief)	voltage supplied
	LED orange (flashing)	Device is booting
	LED white	Device is ready for operation
	LED blue	Access Point mode (WLAN)
	LED red (flashing 2x)	Failed to join the network
	LED red / white (flashing)	No connection to myABB
	LED off	No power

9.2 RESET (Resetting the device)

**Note**

During a master reset, without access to the web interface of the System Access Point, all user data, floor plans and time programs are permanently deleted.

To perform a master reset:

1. Press the reset button by using a pin and hold the button for at least 40 seconds.
 - The System Access Point starts the boot process and is back in its default state.

10 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).

10.1 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.

11 Notes

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Busch-Jaeger Elektro GmbH
A member of the ABB Group

PO box
58505 Lüdenscheid

Freisenbergstraße 2
58513 Lüdenscheid

www.BUSCH-JAEGER.com
info.bje@de.abb.com

Central sales service:
Tel.: +49 2351 956-1600
Fax: +49 2351 956-1700