1473-1-9198 / 2CKA001473B9198 | 23.11.2016

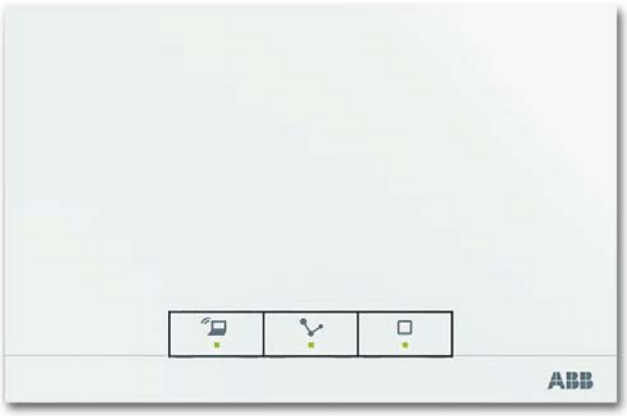
Technical Reference Manual

ABB-free@home®

System Access Point

SAP-S-2

SAP-S-127.2



Power and productivity
for a better world™

Table of contents

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

This device is a central control and commissioning device for surface mounting at a fixed location. Only one System Access Point per system is permitted to be installed.

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 options available on the device

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

NOTE

Observe also the details on cyber security, see QR code in the supplement to the device or at www.busch-jaeger-catalogue.com.

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.

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.

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

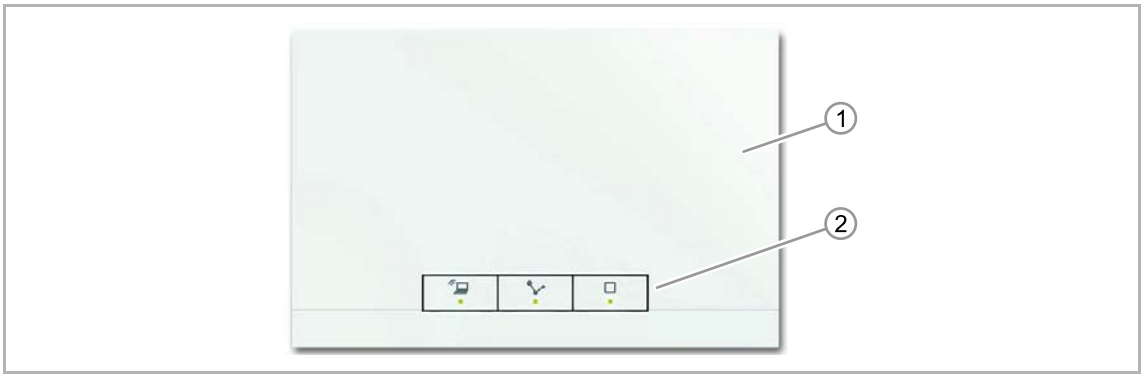


Fig. 1: Product overview

[1] Front of device

[2] Operating buttons and status LEDs

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 additionally 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. It then takes longer to implement changes. That is why it is recommended to operate the user interface with only four participants at the same time.

After activating the bus voltage / 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:

- Green LEDs as status indication

3.1.1 System features

Radio frequency	2.4 GHz
Radio protocol	free@home wireless
Encryption	AES-128
Transmission range in the building	Typically 15 - 20 m (can vary greatly depending on structural conditions)
Participants in the one system	Max. 64 wireless and 64 wired

Table 1: System features

- All free@home devices support the well-known free@home functions.
- Robust communication through "mesh network".
- Simple replacement of existing switches thanks to combined "sensor/actuator" devices.
- Immediate function without programming (devices are pre-configured).
- A system can include wireless and wired devices.
- Integration in the switch ranges future® linear, solo®, carat®, Busch-axcent®, Busch-balance® SI, Busch-dynasty®, pure stainless steel and basic55®.

3.2 Scope of supply

The device including bus connection terminal is contained in the scope of supply.

Adapter cables are not included in the scope of supply.

3.3 Overview of types

Article number	Product name	Power Supply
SAP-S-2	System Access Point	230 V AC, 70 mA, 50/60 Hz
SAP-S-127.2	System Access Point	127 V AC, 120 mA, 50/60 Hz

Table 2: Overview of types

4 Technical data

Designation		Value
Power Supply	SAP-S-2	230 V AC, 70 mA, 50/60 Hz;
	SAP-S-127.2	127 V AC, 120 mA, 50/60 Hz
	Screw terminals:	2 x 2.5 mm^2 rigid 2 x 1.5 mm^2 flexible
Bus voltage		24 V DC via separate power supply PS-M-64.1.1
Bus subscribers		1 (12mA)
Connection		Bus connection terminal: 0.4 - 0.8 mm
Line type		J-Y(St)Y, 2 x 2 x 0.8 mm
Wire stripping		6 - 7 mm
RJ connector		RJ-45
Protection		IP20
Ambient temperature		-5°C - +45°C
Storage temperature		-20°C - +70°C
Wireless (WL)		
Transmission protocol		free@home wireless
Transmission frequency		2.400 - 2.483 GHz
Maximum transmission power WL (wireless)		< 15 dBm
WLAN		
WLAN standard		IEEE 802.11 b/g/n
WLAN frequency range		2.400 - 2.483 GHz
Maximum transmission power, WLAN		< 20 dBm

Table 3: Technical data

4.1 Dimensional drawings

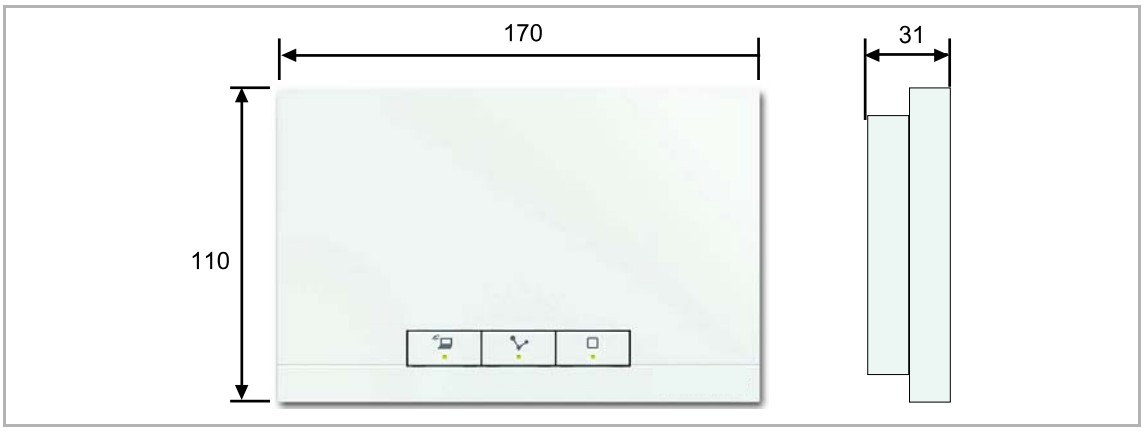
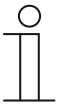


Fig. 2: Dimensions (all dimensions are in mm)

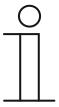
5 Connection, installation / mounting

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.



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.

5.2 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.

5.3 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.

6 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 technical reference manual and the online Help of the System Access Point.

6.1 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.

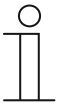
   Possible reasons for not finding devices:
   - The device is not in programming mode.
   - The 30-minute programming time has expired.
   - The device has already been coupled with a different system.

Resetting the wireless device to the factory settings

1. De-energize the free@home wireless device.
2. Keep the button at the bottom left pressed.
3. Re-energize the device.

   The LED flashes slowly for 10 seconds, then fast for 5 seconds and then goes out.

   The factory settings are restored and the device can now be programmed again.



NOTE
Devices which are already in factory settings are not reset again. The LED remains out in step 3.

6.2 Allocation of devices and definition of 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 practical name.

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

6.3 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

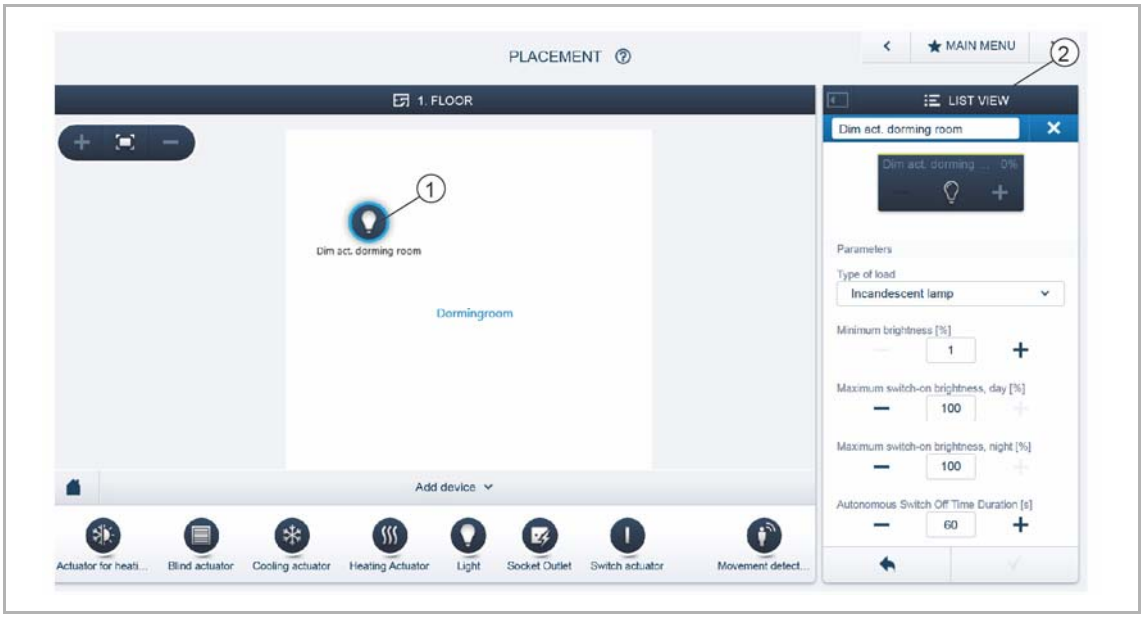


Fig. 3: Select device

- 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:

Select unit

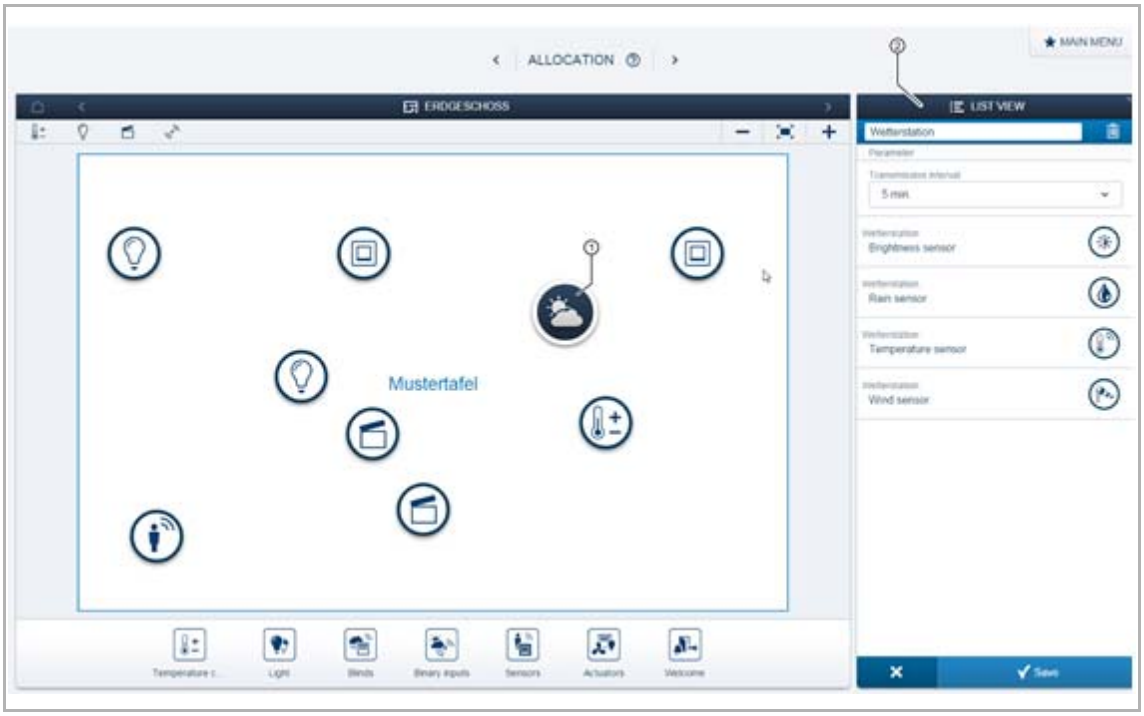


Fig. 4: Select device

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].

The settings in the following section are available.

6.4 Links

6.4.1 Linking actuator and sensor

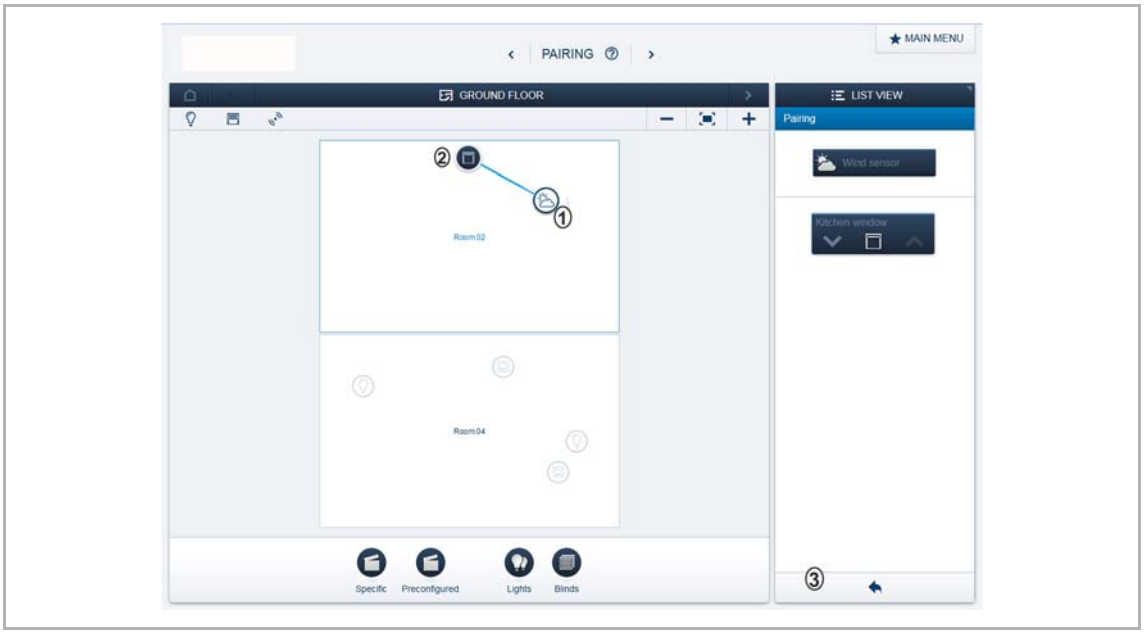


Fig. 5: Linking actuator and sensor

1. On the working area select the sensor [1] that is to be linked with the actuator. Now a selection list opens next to the icon of the weather station. Here all sensors of the weather station are listed.
2. Select a sensor. The corresponding sensor is displayed in the list view.
3. Select the actuator [2] that is to be served by the sensor.
4. Press the arrow [3] at the bottom right to take over the entries.

A blue connecting line indicates the link between the two devices. The configuration is now 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.

NOTE

A sensor can be linked with several actuators.

A sensor can additionally be linked with scenes.

7 Update

A firmware update is carried out via the Web-based user interface of 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

10 Index

A member of the ABB Group

Busch-Jaeger Elektro GmbH
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

Technical Reference Manual 1473-1-9198 / 2CKA001473B9198