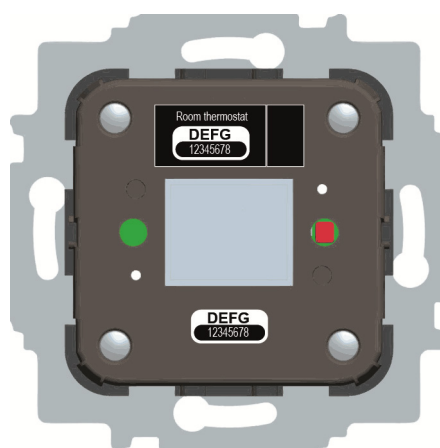


Technical Manual

Room temperature controller



RTC-F-1

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1 Notes on the instruction manual

Please read this manual through carefully and adhere to the information contained therein. This will assist you in preventing damage to persons and property and ensure reliable operation and long service life of the device.

Please keep this manual in a safe place.

If you pass the device on, also include this manual.

Busch-Jaeger accepts no liability for failure to observe the instructions in this manual.

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

www.BUSCH-JAEGER.com

www.abb.com/freeathome

2 Safety

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

However, residual hazards remain. Read and adhere to the safety instructions to prevent such hazards.

Busch-Jaeger accepts no liability for failure to observe the safety instructions.

2.1 Used symbols

The following symbols point to dangers involved in the use of the device and provide practical instructions.



Warning

This symbol in connection with the signal word "Warning" indicates a dangerous situation which could lead to immediate death or to serious injury.



Attention - damage to property

This symbol indicates a possibly damaging situation for the product. Non-observance can lead to damage or destruction of the product.



Note...

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



This symbol indicates information on the protection of the environment.

The following symbols are used in the manual to draw attention to special dangers:



This symbol indicates a dangerous situation due to electric current. If such a sign is ignored, it can lead to serious injuries or even death.

2.2 Intended use

This device is a room temperature controller for decentralized flush-mounted installation.

The room temperature controller (with bus coupler) is suitable for the control of conventional heating and cooling systems.

The device is intended for the following:

- » operation according to the listed technical data,
- » installation in dry interior rooms and suitable flush-mounted boxes,
- » use with the connecting options available on the device.

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

2.3 Improper use

Each use not listed in chapter 2.2 is deemed improper use and can lead to personal injury and damage to property.

Busch-Jaeger 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,
- » use outdoors or in bathroom areas,
- » use with an additional bus coupler.

2.4 Target group / qualification of personnel

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installers must have read and understood the manual and follow the instructions provided.

The electrical installers must adhere to the valid national regulations in their country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installers must be familiar with and correctly apply the "Five safety regulations" (DIN VDE 0105, EN 50110):

1. Disconnect from power;
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



Warning

Electric voltage! Risk of death and fire due to electrical voltage of 230 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 230 V supply system may only be performed by authorised and qualified electricians.
- » Disconnect the mains power supply before installation / disassembly.
- » 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.
- » Keep the device away from water and wet surroundings.



Attention - damage to property

Risk of damaging the device due to external factors.

Moisture and contamination can damage or destroy the device.

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

3 Information on protection of the environment

All packaging materials and devices bear the markings and test seals for proper disposal.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance (EU Directive 2002/96/EG WEEE and 2002/95/EG RoHS), (EU-REACH Directive and Law for the Execution of the Directive (EG) No.1907/2006).



The device contains valuable raw materials which can be recycled. Used electric and electronic devices must not be disposed of with domestic waste.

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

4 Product description

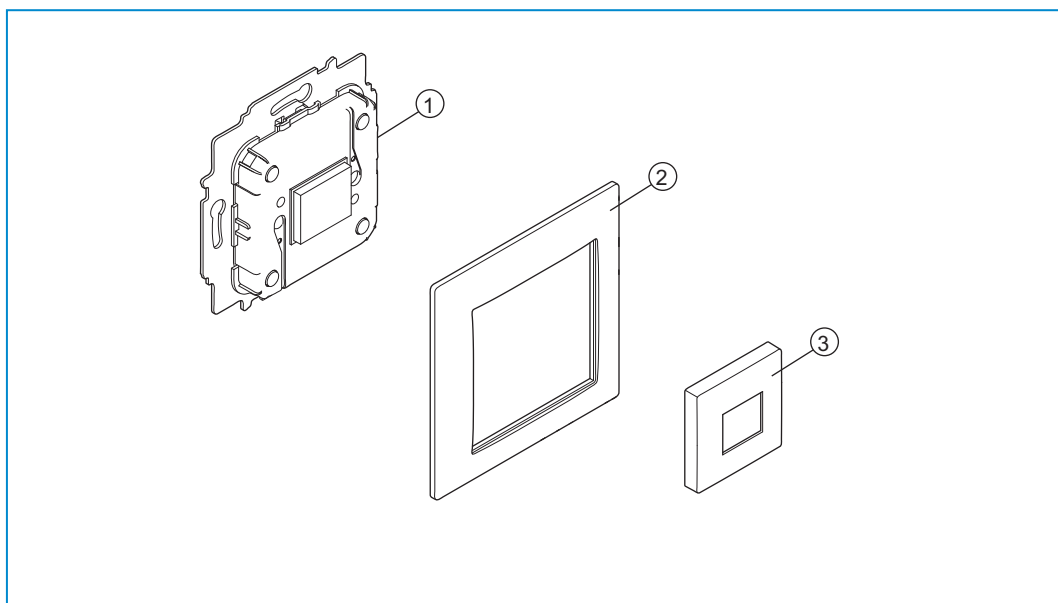


Fig. 1: Product overview

- [1] Flush-mounted insert
- [2] Cover frame (not included in scope of delivery)
- [3] Cover plate (not included in scope of delivery)

This device is a room temperature controller for decentralized flush-mounted installation.

The room temperature controller (with bus coupler) is suitable for the control of conventional heating and cooling systems.

The devices are not pre-programmed. The devices must be parameterised for the use of the functions.

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

4.1 Scope of supply

The scope of supply only contains the flush-mounted insert [1]. It must still be completed with a cover frame [2] and a cover plate [3].



Note...

Additional information about the switch ranges is available in the electronic catalogue (www.busch-jaeger-catalogue.com).

4.2 Type overview

Article no.	Product name	Sensor channels	
RTC-F-1	Room temperature controller	1	

Table 1: Overview of types

4.3 Function overview

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

Icon of the operating surface	Information
	Name: Room temperature controller Type: Actuator Made available by: Room temperature controller Function: Controls free@home heating actuators

Table 2: Function overview



Note...

The room temperature controller operates as PI controller and in time adjusts its control value also to the response of the room.

4.4 Device overview of room temperature controller

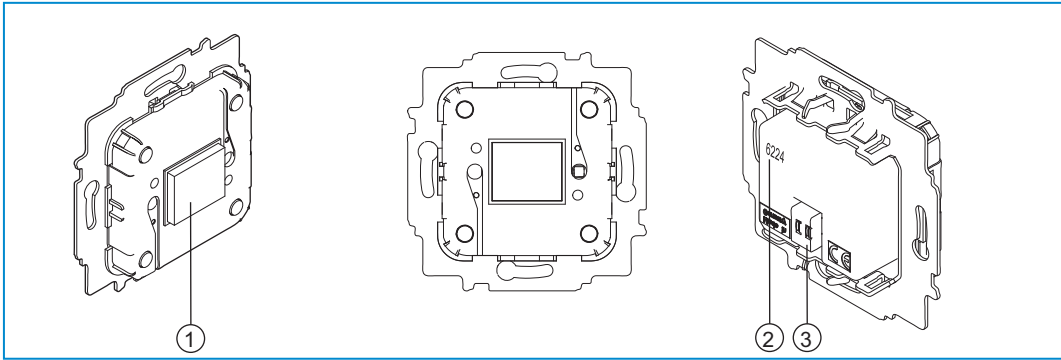


Fig. 2: Device overview of room temperature controller

- [1] Display
- [2] Type plate
- [3] Bus connection terminal

5 Technical data

5.1 Main overview

Parameters	Value
Power supply	24 V DC (via bus line)
Bus subscribers	1 (12mA)
Connection	Bus connection terminal: 0.4-0.8 mm Cable type: J-Y(St)Y, 2x2x0.8 mm Wire stripping: 6-7 mm
Protection	IP20
Ambient temperature	-5 °C – +45 °C
Storage T°	-20 °C – +70 °C

Table 3: Technical data

5.2 Dimensions

 **Note...**
All dimensions are in mm.

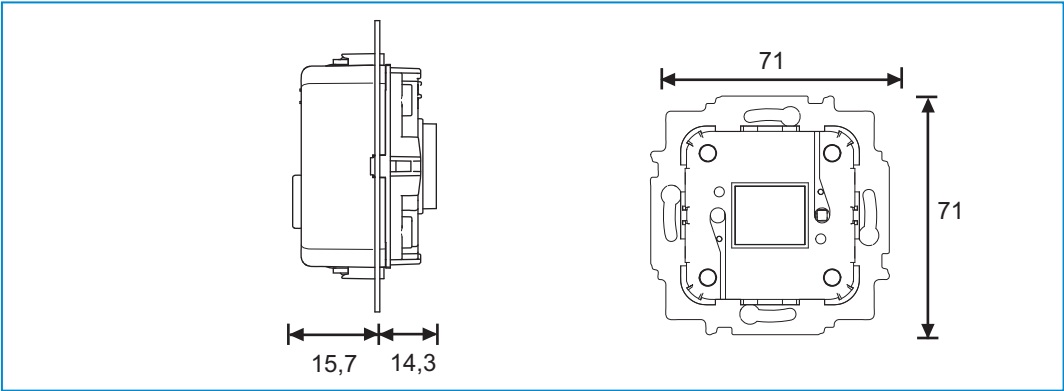


Fig. 3: Dimensions

5.3 Circuit diagrams

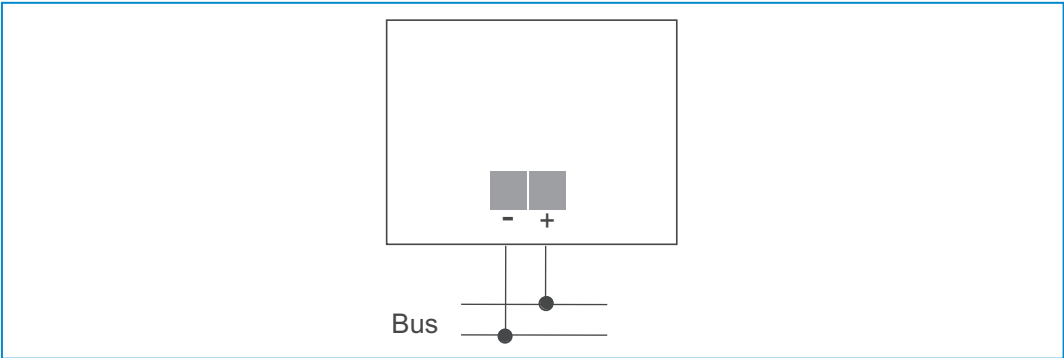


Fig. 4: Electrical connection

6 Mounting

6.1 Planning instructions



Note...

Planning and application instructions for the system are available in the free@home system manual. They can be downloaded at www.abb.com/freeathome.

6.2 Safety instructions for mounting



Warning - Risk of death due to electrical voltage

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

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

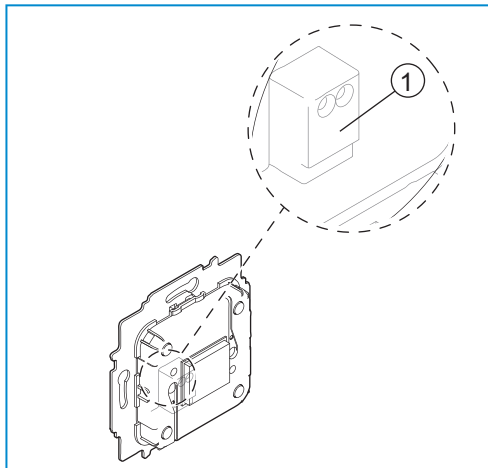
- » Install the device only if you have the necessary electrical engineering knowledge and experience (see chapter 2.4).
- » Use suitable personal protective clothing.
- » Use suitable tools and measuring devices.
- » Check the supply network type (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).
- » Observe the correct polarity.

6.3 Mounting / Installation

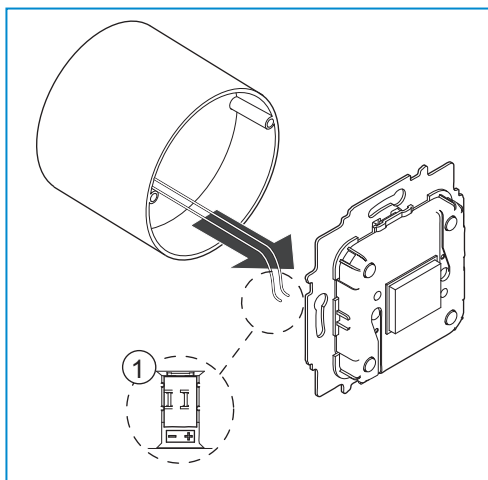


Note...

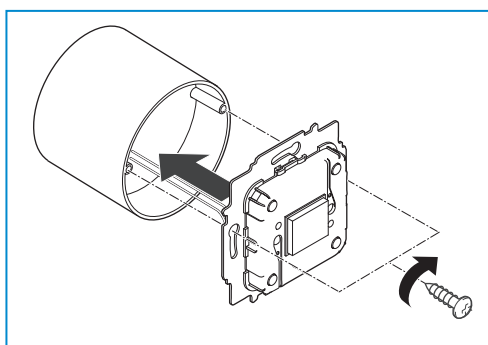
The devices with integrated bus coupler have been prepared for installing in flush-mounted boxes in connection with the corresponding mounting plate. The device insert has already been inserted in the mounting plate.



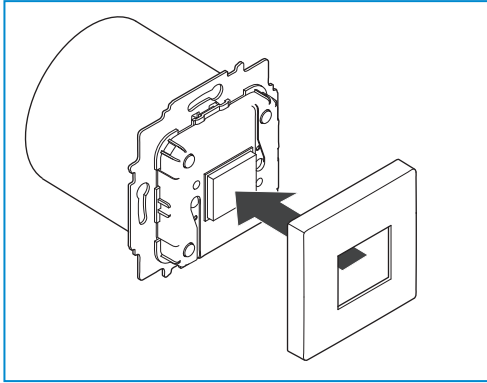
- » Turn the device into the correct installation position.
- The bus connection terminal must be at the rear at the bottom.



- » Connect the free@home bus line with the bus connection terminal [1].
Observe the correct polarity!



- » Insert the device into the flush-mounted box and screw it on.



- » In case the cover plate has not been pre-mounted or if it has been pulled off, attach it to the device insert.

7 Commissioning

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

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

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

During initial commissioning all devices are given a generic name (e.g. room temperature controller1, etc.). The user must change this name to a name practical for the system (Example: "Room temperature controller living room").

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

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

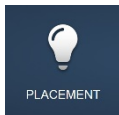


Note...

General information about commissioning and parameterization is available in the technical reference manual and the online Help of the System Access Point.

7.1 Allocation of devices and specifying channels

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



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

7.1.1 Adding device

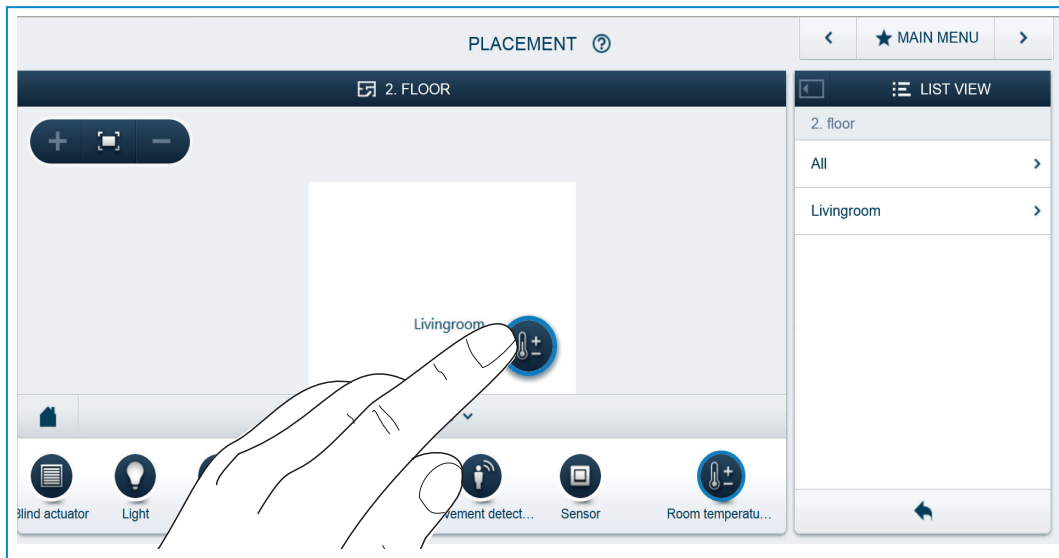


Fig. 5: Adding device

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

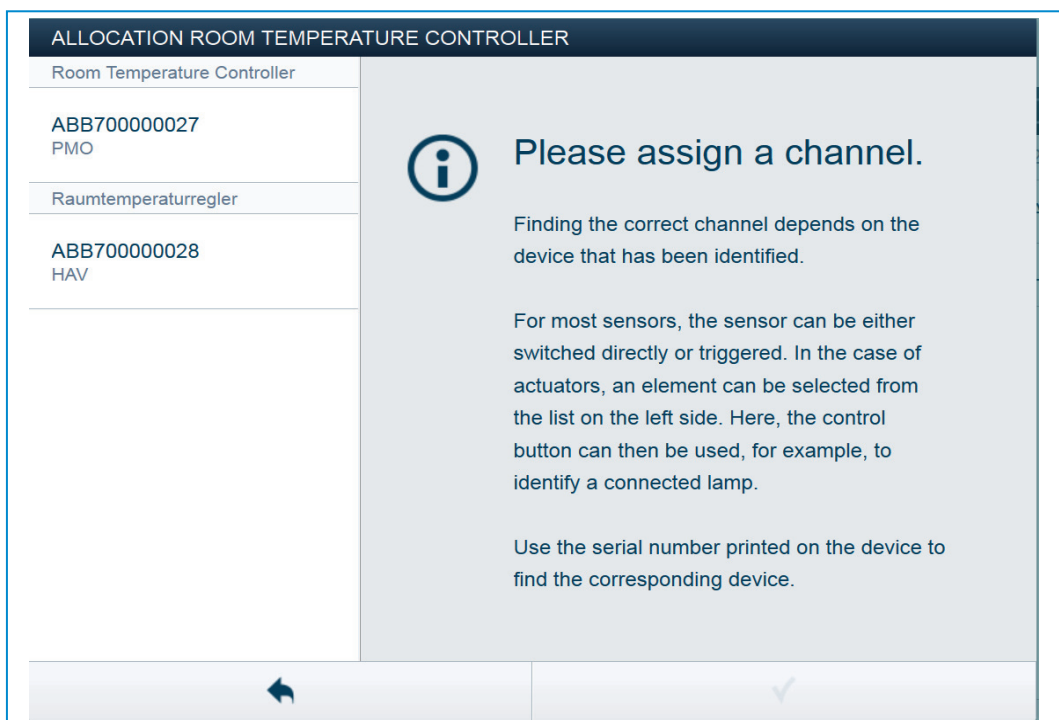


Fig. 6: Allocation

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

The desired device can be identified in 2 ways.

Identification via serial number

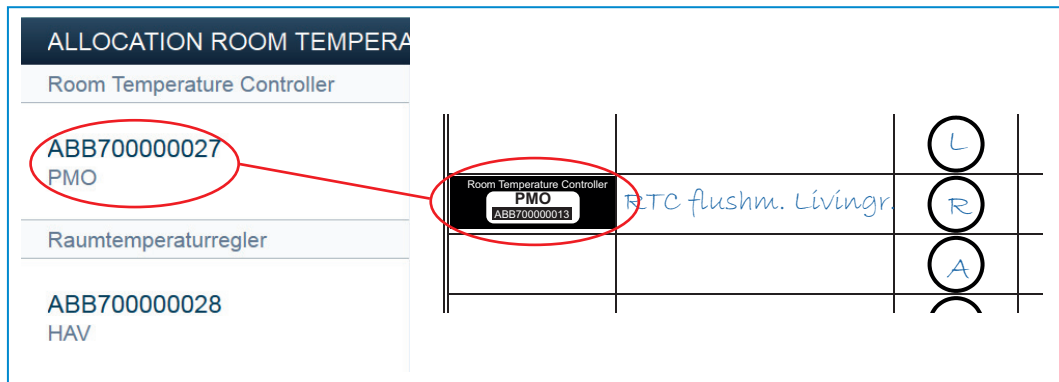


Fig. 7 Identification via serial number

- » Compare the short 3-digit number of the identity label, which should be glued to the device plan, 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)

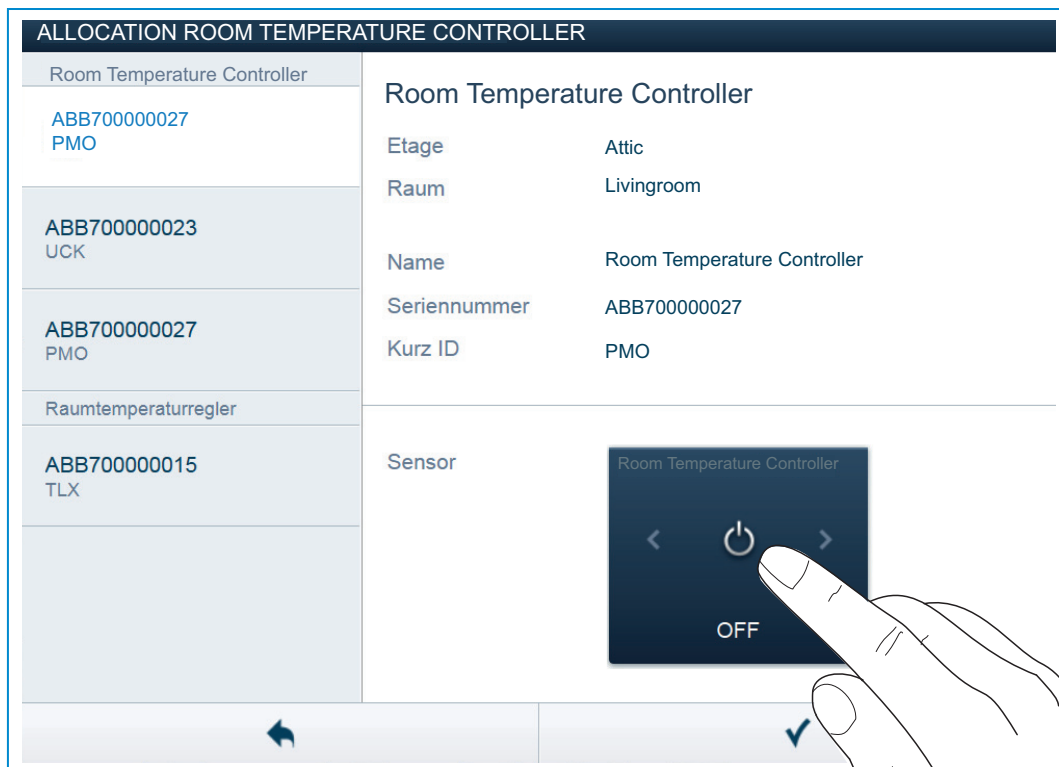
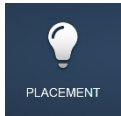


Fig. 8 Identification via switching

- » Select a device and a channel from the list.
- » Press the button in the detailed view of the device.
- The connected load is switched.
- » Continue until you have found the device you are looking for.

7.2 Setting options per channel

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



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

Device selection

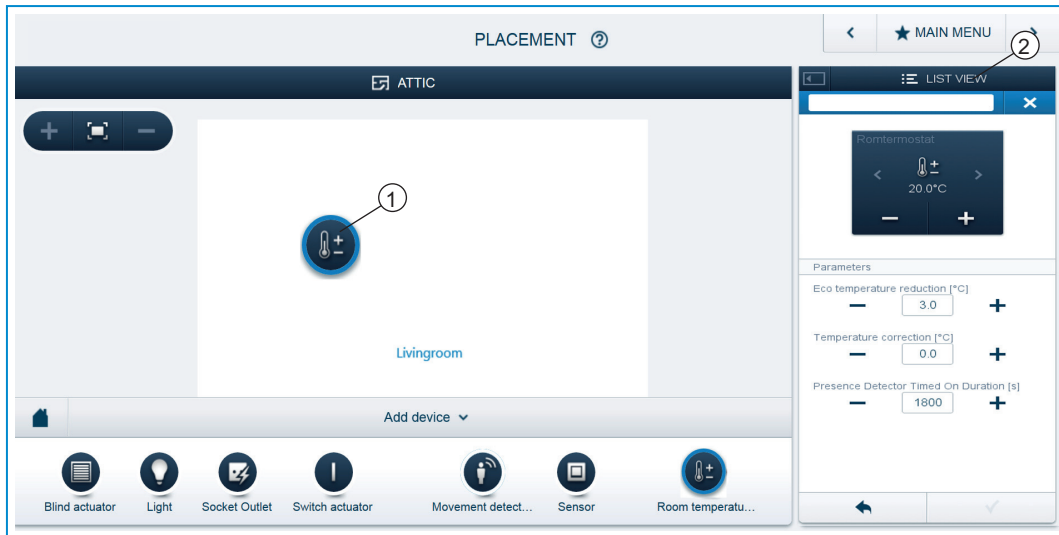
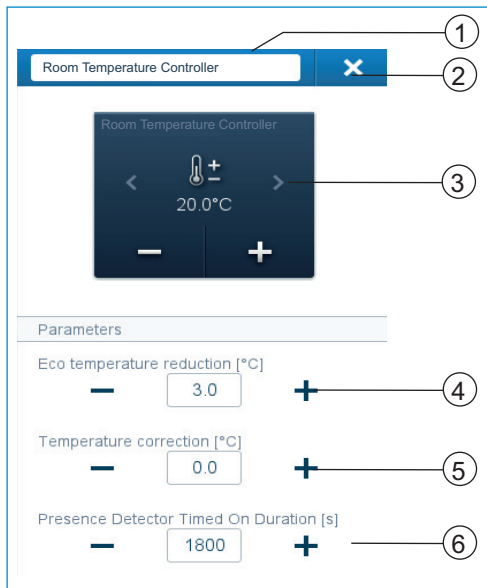


Fig. 9: Device selection

- » 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 following settings are available.

7.2.1 Settings of the room temperature controller

Actuator settings



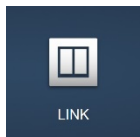
- [1] Changing the name
- [2] Deleting the channel via 'X'
- [3] Switching of the actuator via the button
- [4] Setting the ECO temperature reduction in °C - Specifying the value to which the temperature is reduced after the ECO mode is activated.
- [5] Setting the temperature correction in °C - Manual increase/reduction of the temperature value if the temperature is repeatedly not reached automatically.
- [6] Setting the switch-off delay in seconds during absence
If the ECO mode is deactivated by a movement detector, the switch-off delay can be specified here when the ECO mode is to be re-activated after the room is exited.

Other settings

Extension unit operation - The room temperature controller can be configured in the device settings as extension unit. In this setting only the temperature sensor of the main unit is evaluated, the extension unit serves only for selecting the operating mode, and the set-value temperature.

7.3 Linking

The room temperature controllers created via the allocation function can now be linked with binary inputs or heating actuators.



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

7.3.1 Linking the room temperature controller with an actuator

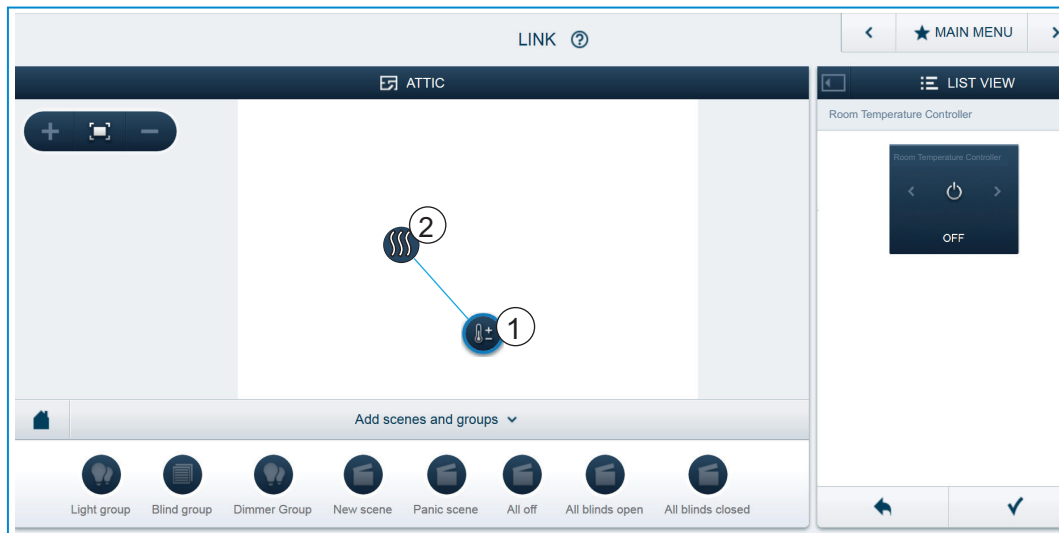


Fig. 10: Linking the room temperature controller with an actuator

- » To link the room temperature controller with an actuator, first click on the desired room temperature controller [1] which is to operate the actuator and then on the actuator [2].
- » Press the tick at the bottom right to take over your 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.

8 Updating options

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

9 Operation



Note...

The scope of delivery contains only the electronic insert. It must still be completed with a suitable cover plate and a cover frame.

Additional information about the switch ranges is available in the electronic catalogue (www.busch-jaeger-catalogue.com).

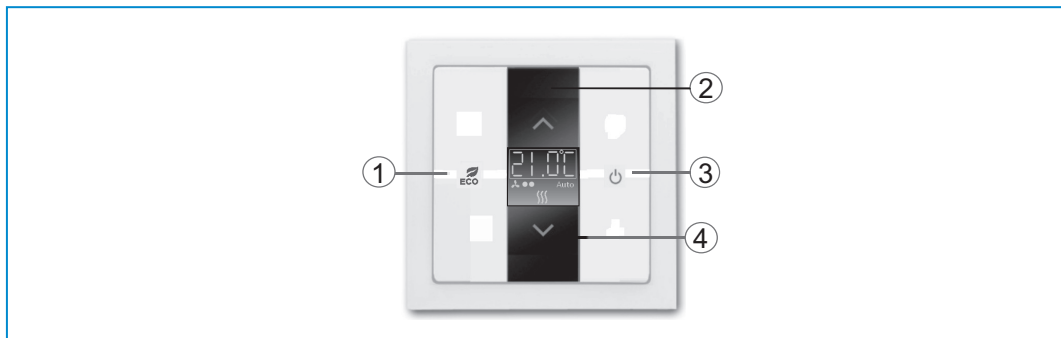


Fig. 11: Operation

- [1] ECO mode; press the button
- [2] Temperature increase; press the button
- [3] Temperature On Off; press the button
- [4] Reduce temperature; press the button



Note...

The display of the room temperature controller always indicates the set-value temperature. This can be changed via the arrow keys of the control element.

The room temperature controller has 4 operating modes that can be adjusted locally:

Comfort operation

Application: You are in the room for a longer period of time; the comfort temperature is to be reached.

Behaviour of the RTC: The display indicates the set-value temperature that has been set. The controller aims at this temperature.

Eco mode

Application: You are leaving the room for a few hours; the room temperature is to be reduced to save energy; however, the room is not to cool down completely.

Behaviour of the RTC: The display indicates "ECO". The temperature is reduced by 4°C (the reduction can be adjusted in the user interface).

Off mode

Application: The is not being used for a longer period of time.

Behaviour of the RTC: The display indicates "OFF". The heating valves are closed (frost protection is active).

Antifreeze mode

Application: Switches on automatically when a window contact has been connected and the window is being opened.

Behaviour of the RTC: The display indicates antifreeze. The heating valves close. If the room temperature drops below 7°C, the heating is switched on again to prevent damage to the building.

Heating/cooling switchover

The room temperature controller is suitable both for heating and cooling operation. The switchover of the two modes is made via a binary input which has been configured as heating/cooling reverser and is connected with the room temperature controller in the user interface.

9.1 Displays / messages

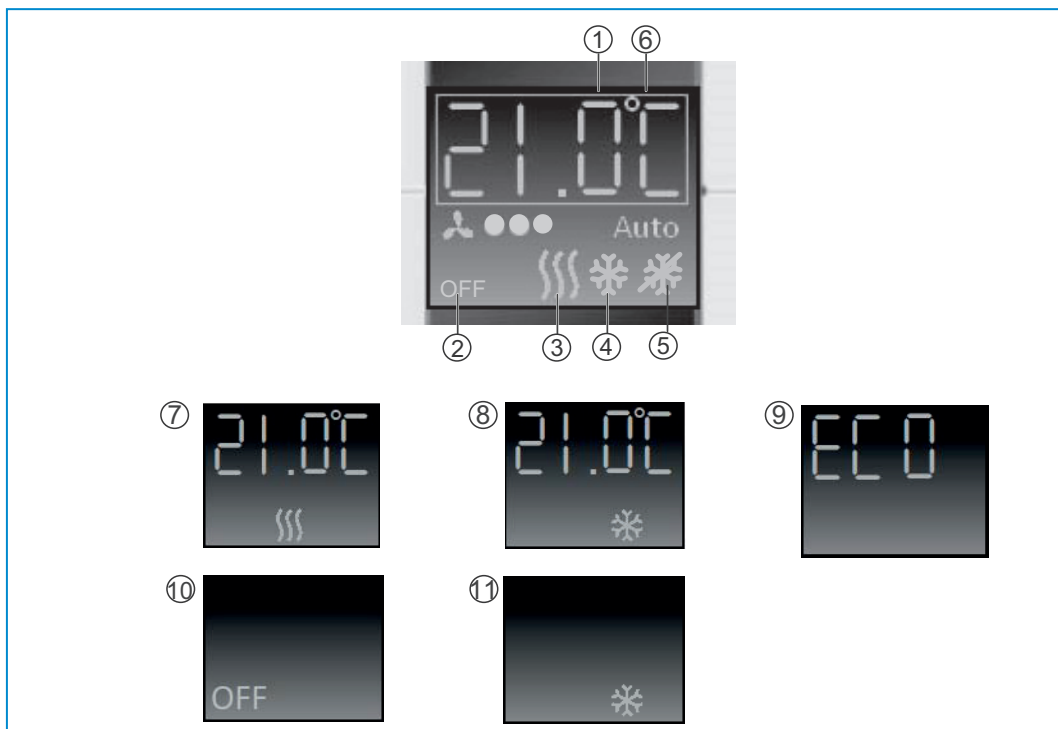


Fig. 12: Displays

- [1] Controller on / display of set-point temperature
- [2] Controller Off
- [3] Heating active
- [4] Cooling active
- [5] Frost protection active
- [6] Eco mode (indication "ECO")
- [7] Display of comfort mode heating
- [8] Display of comfort mode cooling
- [9] Display of ECO mode
- [10] Display of OFF mode
- [11] Display of antifreeze mode

10 Maintenance

The unit 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

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

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