Technical manual

Versatile wireless solutions

for controlling panel heating and cooling systems.

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Table of Content

1 General

1.1 Information regarding this technical manual

This technical manual provides important instructions with respect to the use of the Wireless Connection Module and the Wireless Room Thermostat. Compliance with all safety and installation instructions is the basis for safe working.

Read this manual carefully before the start of any work! It is a part of the product and need to be made accessible to the user at any time.

1.2 Explanation of symbols

Warnings

In this technical manual warnings are indicated by symbols. The notes are preceded by signal words that express the extent of the risks caused expression.

Always comply with the instructions and act prudently to avoid accidents, and damages to people and property.

⚠ DANGER	... points to an immediate hazardous situation, which leads to death or serious injury if not avoided.
⚠ WARNING	… points to a possible dangerous situation that can result in death or serious injury if not avoided.
⚠ CAUTION	... points to a possible dangerous situation that can lead to minor injuries, if not avoided.
ATTENTION	*... points to a possible adverse situation that can lead to property damage, if not avoided.*

Tips and recommendations

NOTE	*... highlights useful tips, information and recommendations for efficient and trouble-free operation.*

1.3 Limitation of liability

All information and instructions in this manual are in accordance with applicable standards and regulations, the state of art technology as well as our many years of knowledge and experience.

The manufacturer assumes no liability for damages due to:

- Failure to follow the technical manual
- Improper use
- Use of untrained personnel
- Unauthorized modifications
- Technical changes.

In addition the following applies: the duties as agreed in the contract, the "General Terms and Conditions" and the "Terms of Supply" of the manufacturer and the at time of the contract applicable statutory regulations.

1.3.1 Information in case of failure of the radio system

The radio system is not failsafe.

The radio system is equipped with an emergency function in which the system continues to function in a reduced mode. In this emergency mode, the LED of the channel blinks and the display of the wireless room thermostat shows a warning symbol.

For the correct operation of the emergency mode following conditions must be met:

- The wireless connection module must be powered.
- The wireless connection module can not by external influences such as lightning to be destroyed.

ATTENTION

Possible damage to property due to failure of the system!

The radio system is not failsafe. Note the following points to ensure that the system is operating properly.

– The wireless connection module must be powered
– The wireless connection module may not be destroyed by external influences such as lightning.

1.4 Copyrights

The transfer of technical manual to third parties without written permission of the manufacturer is prohibited.

NOTE

All content, texts, drawings, pictures and other illustrations are copyrighted and are subject to intellectual property rights. Any improper exploitation is punishable.

Reproduction in any shape or form – even partially – as well as the exploitation and / or notification of the content without written consent of the manufacturer is not allowed.

1.5 Scope of supply

Wireless room thermostat

The scope of delivery of the wireless room thermostat comprises:

- Wireless room thermostat
- Mounting material
- Battery version: 2 batteries 1.5 V AAA
- Short operating instructions wireless room thermostat without display: P100009964
- Short operating instructions wireless room thermostat without display: P100011012

Wireless connection module

The scope of supply of the wireless connection module comprises of:

- Wireless connection module
- For 24 V version: Transformer 230 V AC / 24 V
- DIN-rail
- Brief installation instructions wireless connection module 24 V version: P100010001
- Brief installation instructions wireless connection module 230 V version: P100010808
- CD-ROM with technical manual, multi languages.

1.6 Customer service

For additional technical information please contact your dealer or installer. Address, see invoice, delivery note or the second page of this manual.

NOTE

For efficient support please note the data on the name plate(s) before calling.

1.7 Area of application radio system

NOTE

The bidirectional radio system EnergyLogic with 868 MHz radio transmission is only approved for use in Europe.

In particular the radio system may not be used in the following countries: USA, Canada, Australia and Japan

2 Safety

2.1 Intended use

The wireless connection module is intended solely for the comfort control of surface heating and cooling systems.

The wireless room thermostat is intended solely for the operation and configuration of the wireless connection module.

The wireless connection module and the wireless room thermostat are approved for use in households and industry.

⚠ CAUTION

Risk of injury from improper use!

Any improper use can lead to dangerous situations.

– Use the wireless room thermostat and wireless connection module only for their intended use.
– All instructions mentioned in the technical manual have to be observed.

Claims of any kind for damage from improper use are excluded. The responsibility for all damages from improper use lies solely with the operator.

2.2 Changes and modifications

Changes and modifications to the wireless connection module and wireless room thermostat can cause unexpected hazards and are therefore expressly forbidden.

2.3 Requirements for professionals

⚠ WARNING

Danger of injury at improper handling!

Improper handling can result in significant personal injury and property damage.

– Any activity needs to be performed by qualified persons only.

The following qualification requirements for the various activities are identified in this technical manual:

- Professionals
  Because of their specialized training, knowledge, experience and knowledge of the relevant provisions, professionals are in the position to execute their assigned tasks and identify potential hazards on their own.
- Electricians
  Because of their specialized training, knowledge and experience, as well as knowledge of relevant standards and regulations, electricians are in the position to carry out work on electrical systems and identify potential hazards on their own.
  The electrician needs to observe the provisions of the local accident prevention regulation.

2.4 Safety and health hazards

Observe the safety instructions listed here and the warnings in subsequent chapters of this manual to reduce health hazards and avoid dangerous situations.

2.4.1 Warning sign

Danger from electrical voltage!

... identifies life-threatening situations due to electrical voltage. Failure to observe the safety instructions can result in severe injury or death. The work may be performed only by a qualified electrician.

A warning sign is located on the following component:

– Wireless connection module 230 V version.

2.4.2 Risk and safety

The following instructions should be observed to ensure your own safety and that of the devices:

⚠ DANGER

Danger from electrical voltage!

Contact with live parts is an immediate danger to life.

Damage to the insulation or individual components can be life threatening.

- When insulation is damaged turn off power immediately and arrange for repair.
- Only a qualified electrician should perform work on the electrical system.
- Prior to any work on the system, shut off the power supply and secure against restart. Check for the absence of power!
- Fuses should never be bridged or put out of service.
- When changing fuses check the correct amperage specification.
- Moisture and dust should be kept away from energized parts. Moisture or dust can cause a short circuit.

3 Identification

3.1 Name plate

The name plate of the wireless connection module on the left side. The name plate of the wireless room thermostat is at the backside and on the inside of the front panel.

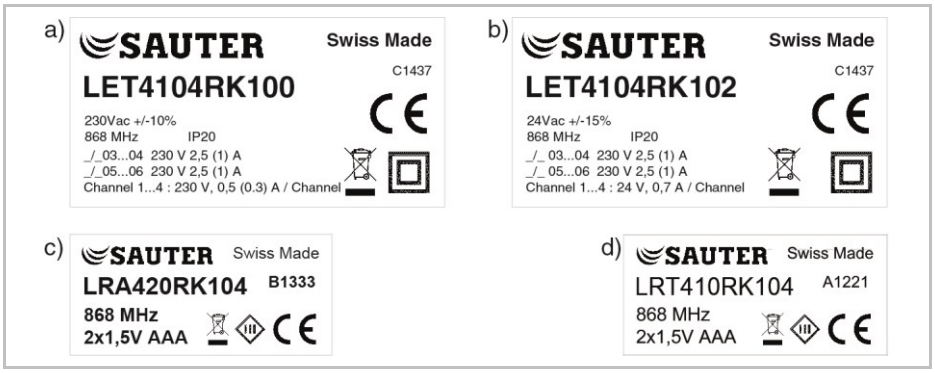


Fig. 1: Name plate a) wireless connection module 230 V b) wireless connection module 24 V, c) wireless room thermostat, d) Room thermostat with radio transmission, 24 V

3.2 Type designation

3.2.1 Wireless connection module

Without LAN interface	With LAN interface	Power supply		Channels	Max. number of thermal drives
		230 V	24 V [1)]		
LET4104RK100	LET4204RK100	•	–	4	6
LET4108RK100	LET4208RK100	•	–	8	12
LET4112RK100	LET4212RK100	•	–	12	18
LET4104RK102	LET4204RK102	–	•	4	6
LET4108RK102	LET4208RK102	–	•	8	12
LET4112RK102	LET4212RK102	–	•	12	18

1) including 230 V / 24 V transformer

Table 1: Type designation wireless connection module

3.2.2 Wireless room thermostat

Version	Colour	Power supply	Display	Sensor	Operation
LRT410RK104	White	Battery 2 x 1.5 V	None	Temperature	Dial
LRA420RK104	White	Battery 2 x 1.5 V	With	Temperature	Sensor button
LRA420RK124	Black	Battery 2 x 1.5 V	With	Temperature	Sensor button
LRA450RK104	White	Battery 2 x 1.5 V	With	Temperature and rel. humidity	Sensor button
LRA450RK124	Black	Battery 2 x 1.5 V	With	Temperature and rel. humidity	Sensor button

Table 2: Type designation wireless room thermostat

3.2.3 Accessories

Version	Designation	Technical data
LXR470RF10	Repeater	A plug-in mains adapter is included in the delivery.
0450231001	Active antenna	Fed via wireless connection module
0450573001	Transformer	230V / 24V 42 VA
0313367001	NTC sensor 10 kΩ	Cable length 1 m
0313367003	NTC sensor 10 kΩ	Cable length 3 m
0450232001	Outdoor temperature NTC sensor 10 kΩ	In housing protection type IP 43, –50…+90 °C, Connection by two screw terminals
0450241001	Cover plate white RAL 9016	–
0450541021	Cover plate black RAL 9005	–

Table 3: Type designation accessories

4 Design and function

4.1 Design

4.1.1 Wireless connection module

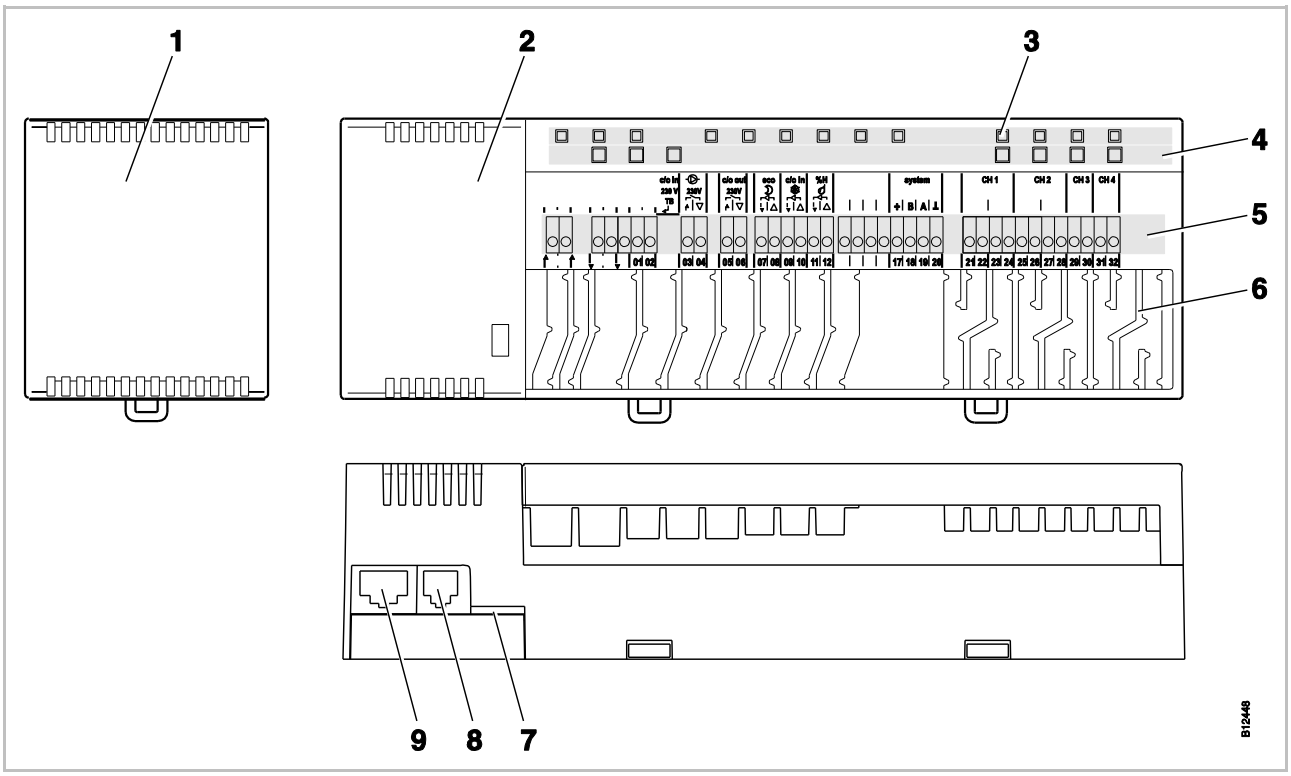


Fig. 2: Design wireless connection module, 4-channel version shown.

1 *Transformer 230 / 24 V AC (only versions 24 V)*
2 *Wireless connection module*
3 *LEDs*
4 *Push buttons*
5 *Terminals*
6 *Cable infeed*
7 *mini SD-card for Software-Update*
8 *RJ-12 for external active antenna*
9 *RJ-45 for LAN (depending on version)*

4.1.2 Wireless room thermostat

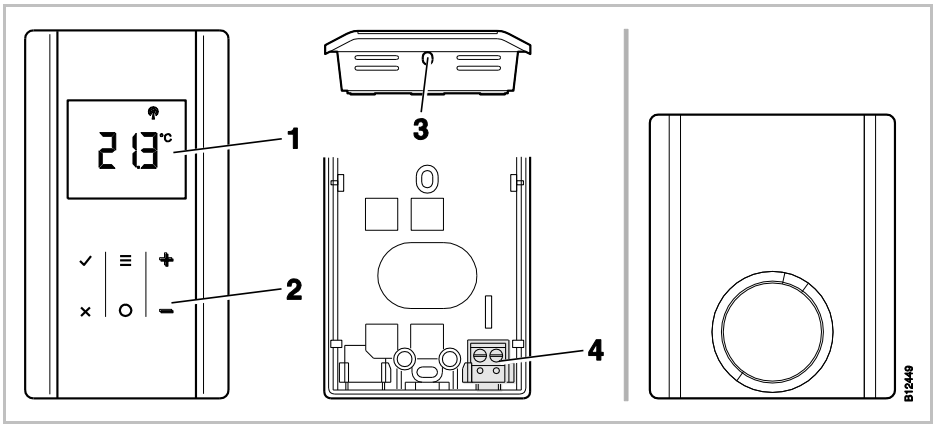


Fig. 3: Design wireless room thermostat, on the left with display, on the right without display

1 Display
2 Sensor buttons
3 Opening to open the wireless room thermostat
4 Connection of an external temperature sensor

4.2 Function

The wireless connection module and the wireless room thermostat are components of a bi-directional control system for comfort control of surface heating and cooling systems. The wireless connection module and the wireless room thermostat communicate securely via wireless transmission.

The wireless room thermostat measures the room temperature with an internal nickel-temperature sensor. Setpoints, mode of operation and parameters such as setpoint limits and time programs can be changed and configured with sensor buttons.

The wireless connection module equipped with short-circuit protected outputs, a stand-by mode and separate relays for the pump and burner control. The control of the actuators is either on / off control or pulse width modulation (PWM).

The system is equipped with a self-diagnostics and error display. Radio link tests can be performed easily ensuring the correct function.

There are various possibilities for addressing of the wireless room thermostats and wireless connection module. For example, it is possible to assign several wireless room thermostats to a wireless connection module and it is possible to combine to 3 wireless connection modules.

Temperature control

The wireless room thermostat measures the room temperature. The temperature setpoint is specified via the wireless room thermostat. Every 10 minutes the measured room temperature setpoint and the actual temperature are transmitted to the wireless connection module. After a change of the setpoint the new setpoint and the actual value are sent immediately to the wireless connection module.

For an efficient temperature control, three different control algorithms and an optimized thermal actuator control are available. For the temperature control one can select between one on/off and two PWM control algorithms.

With the on / off control the heating will be switched on or off when the temperature difference is greater than 0.2 K. If the setpoint is higher than the measured temperature, the valves are opened. If the setpoint is lower than the measured temperature, the valves are closed.

During PWM control, the opening and closing time of the valves is calculated from the temperature difference between the setpoint and the actual value. The higher this difference, the higher the opening or the closing time.

The optimized actuator control is a specially developed control for thermal actuators to save energy. At start, the thermal actuator becomes a constant signal for a defined period. Then, the actuator is controlled with a pulse-/pause-signal, so less energy is needed.

Each channel has its own control loop. If a wireless room thermostat is addressed to multiple radio channels, then radio channels are grouped in one control loop.

Floor temperature control via floor temperature sensor

In a wireless room thermostat to which a floor temperature sensor is connected, measurement of the floor temperature ensures that a comfortable floor temperature is maintained. Under normal conditions, the room temperature is controlled with the setpoint and the actual measured room temperature. The comfort control of the floor is activated when the actual room temperature is above the setpoint.

Humidity control (optional)

Optionally, wireless room thermostats with a humidity sensor are available.
→ See page 16, chapter 3.2.2.

From the measured humidity and setpoint, the wireless room thermostat determines the humidity difference. The signal is sent through the wireless connection module to an optional 1-channel I/O box. A humidifier or dehumidifier is connected to this I/O box.

Pump connection

The integrated pump logic with anti-blocking function provides for an appropriate control of the pump.

Energy saving mode (reduced mode)

The optimal comfort with minimal energy consumption is guaranteed by the selection of an individual temperature profile for each day provided by the time program. In the wireless room thermostat three different time programs can be selected and customized.

In addition, it is possible to connect an external time switch to the input "Eco (N/R)". The signal of this time switch reduces the setpoint of the wireless room thermostats by 3 K or more when active.

Cooling

Cooling can be activated through an external signal from e.g. a heat pump or an external switch. For this function two inputs are available: an input "C/O" and the "hot" input "24 ... 230 V TB / C/O". In addition it is possible to provide a signal to a cooling unit with the potential free output C/O.

Depending on the configuration of the wireless room thermostat, the cooling mode can be activated with the wireless room thermostat with master function, or with any wireless room thermostat.

Anti-blocking function for pump and valves

To prevent blocking of the pump and valves, once per week the anti-blocking function is activated. The function is started when one of the outputs was not active for a week. In this anti-blocking function, the pump is turned on for 3 minutes. The actuators are controlled per channel and will be switched on for 20 minutes. The pump and the actuators run independently without warning.

Emergency mode

When the radio signal between the wireless room thermostat and the wireless connection module is lost for more than 30 minutes, then the addressed channels switch over into emergency mode. During the emergency mode the thermal actuators are in a 30%-on / 70%-off mode of the standard time. The standard time is determined by the selected control algorithm. The channel LED(s) is (are) blinking. A warning symbol is shown on the display of the wireless room thermostat indicating that the emergency function is active. For a proper functioning of the emergency mode the wireless connection module must be provided with power not be destroyed by external influences such as a lightning strike.

Window contact (optional)

To monitor open windows, a window contact (NO/NC) can be connected to a wireless room thermostat.

If a wireless room thermostat reports an open window, the wireless connection module closes the connected valves. Valves with a bypass function or in heating operation with the frost protection function active are not closed.

Heating/cooling release via outdoor temperature

The wireless connection modules have an outdoor-temperature-controlled heating and cooling release function that can be added. Temperature limits for heating and cooling can be set. If the average outdoor temperature exceeds or undercuts the limit, the heating or cooling operation is released with a delay of 21 hours. The average outdoor temperature is averaged across 24 hours.
If the average outdoor temperature rises or drops above or below the limit, the heating or cooling operation is switched off at once.
If the Wireless connection module is activated for the first time or again, heating operation is released at once when the first valid outdoor temperature is below the outdoor temperature limit.

The heating and cooling release function is deactivated by default.
→ See 114, chapter 10.

Ventilation control

The relay output "C/O Out" can be optionally assigned to different output signals and configured for demand-dependent control of a ventilation system.

Once one of the wireless room thermostats is in the operating mode "Normal operation", the output activates and thus signals "Normal ventilation demand". When all wireless room thermostats are in the operating mode "Off" or "Reduced operation", the output activates and signals "Reduced ventilation demand".

Outdoor temperature

The outdoor temperature is recorded via a wireless room thermostat and serves as a value for the heating and cooling release. Each wireless or bus system only permits connection of one outdoor temperature sensor. At a wireless system, the wireless room thermostat may be assigned either to a Slave or Master wireless connection module. At a bus system, the wireless room thermostat must be assigned to a HeadMaster wireless connection module. The outdoor temperature is forwarded to all wireless connection modules and wireless room thermostats per radio or bus depending on system, and can be called at the wireless room thermostat via the parameters P-01 and P10.

4.3 Operating and monitoring elements

4.3.1 Wireless connection module

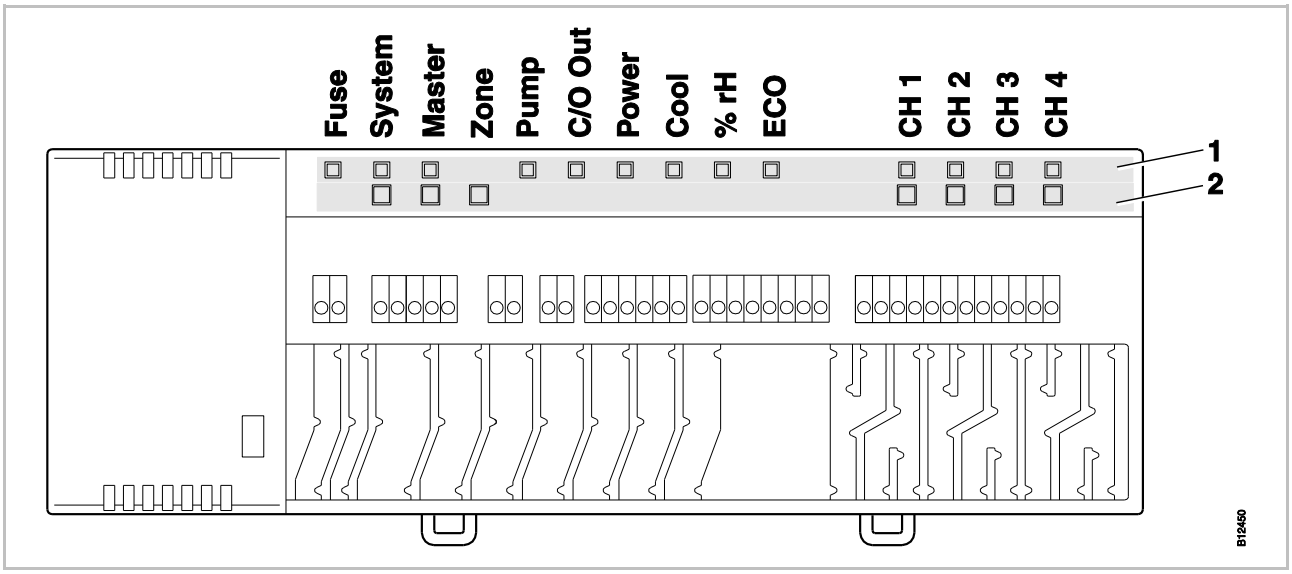


Fig. 4: Overview wireless connection module: push buttons and LEDs

→ For fuse protection see 130, chapter 16.2.

1 LEDs

2 Push buttons

Push buttons

Push buttons	Description
System	• Combining several wireless connection modules into a system via radio. A system may comprise up to 3 wireless connection modules. Additionally, the I/O-boxes ad outdoor temperature sensors may be integrated into a system. • Linking multiple systems into a bus system via RS485. A bus system may comprise up to 16 systems.
Master	Define a wireless connection module as master in a system with multiple wireless connection modules. Each system must have one master. As factory settings, the wireless connection modules are configured as slaves. → See also page 59, chapter 7.1.6.
Master + CH1	Defining a master wireless connection module as HeadMaster wireless connection module for a bus system. → Also see page 110, chapter 9.3.1.
Zone	Combine multiple radio channels in one zone up to a maximum of three zones.
Channels	• Address wireless room thermostat and wireless connection module. • Delete addressing.

Table 4: Push buttons wireless connection module

LEDs

LEDs	Description
Fuse: Red LED	• On – Wireless connection module 24 V-version: Microfuse 2 A T defective – Wireless connection module 230 V-version: Microfuse 4 A T defective
System: Yellow LED	• On: Communication between two or three wireless connection modules • One slow blink: Addressing mode • Fast double blinks: Communication via RS485
Master: Green LED	• On: Wireless connection module was configured as master. • On with breaks: Wireless connection module was configured as HeadMaster. • Off: Wireless connection module was configured as slave.
Zone, LED Power (blinking simultaneously)	• Blue (Cool): Zone 1 • Red (% rH): Zone 2 • Yellow (N/R): Zone 3
Pump: Green LED	• On: Pump on • Off: Pump off
C/O Out: Green LED	The function of the LED "C/O Out" depends on the settings of parameters P-51 and P-54. → Also see parameter descriptions, page 97 and page 98. • On – Function "Burner" active: Heating demand – Function "C/O" active: Cooling demand – Function "Ventilation control" active: At least one wireless room thermostat is in the operating mode "Normal operation".
Power: Green LED	• On: power supply on • Off: power supply off
Cool: Blue LED	• On – C/O input active (cooling mode active) – TB-C/O 24…230V input active (configured as C/O input) – C/O-output active: Switching via wireless room thermostat for heating/cooling • Off: Wireless connection module in heating operation
% rH: Red LED	• On: Dew-point active only in cooling mode • Blinking: TB active only in heating or cooling mode
ECO: Yellow LED	• On: ECO input is active • Off: ECO input is not active

LEDs	Description
CH 1…CH 12: Green LEDs	• On: Addressing completed and output active • Blinking: ready for addressing • Blinking, followed by rapidly blinking: warning before deleting, respectively deleting • Blinking fast: channel in emergency mode The number of channels (CH) depends on the version.

Table 5: LEDs wireless connection module

4.3.2 Wireless room thermostat with display

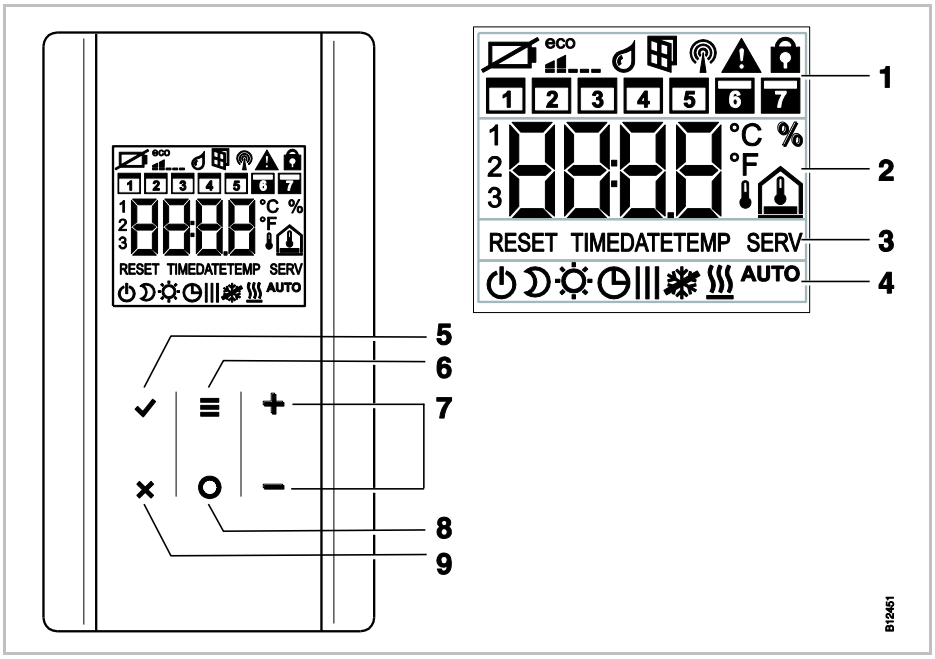


Fig. 5: Overview display and sensor buttons wireless room thermostat

1 *General information such as battery status, energy saving mode, alarms for window contact and dew point, wireless connection, general alarm, key lock, weekdays for time programs*
2 *Temperature setpoint and actual value, time, time program, outdoor and floor temperature*
3 *Help text for configuration*
4 *Modes of operation*
5 *Confirm changed value, confirm selection*
6 *Activate menu mode, select menus and parameter*
7 *Change sepoints, time and date and other values, select time programs*
8 *Function button, adjustable via parameter P-10*
9 *Cancel: Leave the current parameter or menu*

Sensor buttons

Sensor buttons	Description
2 s: ✓ ≡ + × ○ −	Activate operation with any button.
≡	Menu button: • Activate menu mode. • Select mode of operation. Possible modes of operation: frost protection (off), reduced, normal, time program, heating or cooling. • Select parameter (menu mode).
+ −	Change value.

Sensor buttons	Description
✓	• Save value • Confirm selection.
10 s: ✓	Change time and date.
✗	Cancel
5 s: ✓ + ✗	• Addressing • Test addressing.
5 s: + + −	Disable/enable operation (key-lock)
2 s: ○	Directly select function or display. **Function:** Heating or cooling takes priority over all other functions. Override is active for the time set here. **Function/Display:** Depending on settings chosen for the parameter P-10, pressing of the sensor button will perform one of the following functions: • Direct switching between heating/cooling and display of room temperature • Direct display of the floor temperature • Direct display of the outdoor temperature • Direct display of the relative humidity (optional)
5 s: ○	If a different function than the function "heating or cooling priority" is set for the parameter P-10, you may still set the function "heating or cooling priority" by pressing the sensor button ○ for 5 seconds.

Table 6: Sensor buttons wireless room thermostat

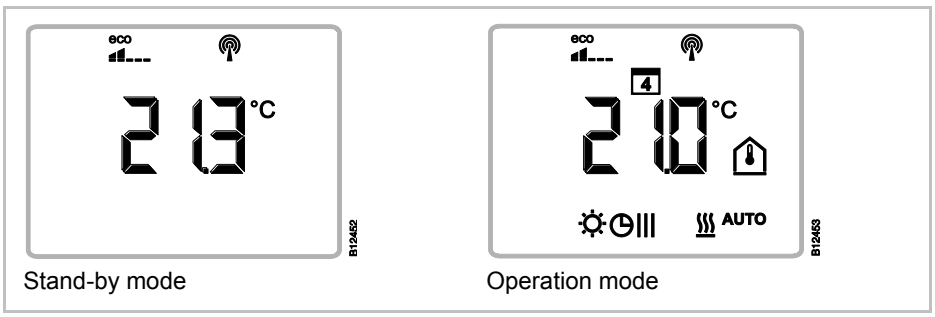
Symbols

Symbols	Description
	Battery nearly empty
eco eco	Relative energy consumption
	Dew-point alarm (only when dew-point sensor is connected)
	Window contact "Window open" (for optional accessory only)
	Wireless signal
	Loss of wireless connection
	General alarm
	Operation disabled
	Working days
	Weekend
1 2 3 0800	• Time and date • Time program

Symbols	Description
21 °C	Actual temperature
%	Relative humidity (only with integrated humidity sensor)
	Room temperature
	Floor temperature
	Outdoor temperature (only with accessory)
	Off (frost protection)
	Reduced operation
	Normal operation
	Time program with external clock
, ,	Time program 1, 2 and 3
	Cooling mode
	Cooling lock
	Heating mode
AUTO	Auto mode: heating and cooling mode controlled by wireless connection module.

Table 7: Symbols wireless room thermostat

Display modes



Stand-by mode

Operation mode

Fig. 6: Display modes wireless room thermostat

4.3.3 Wireless room thermostat without display

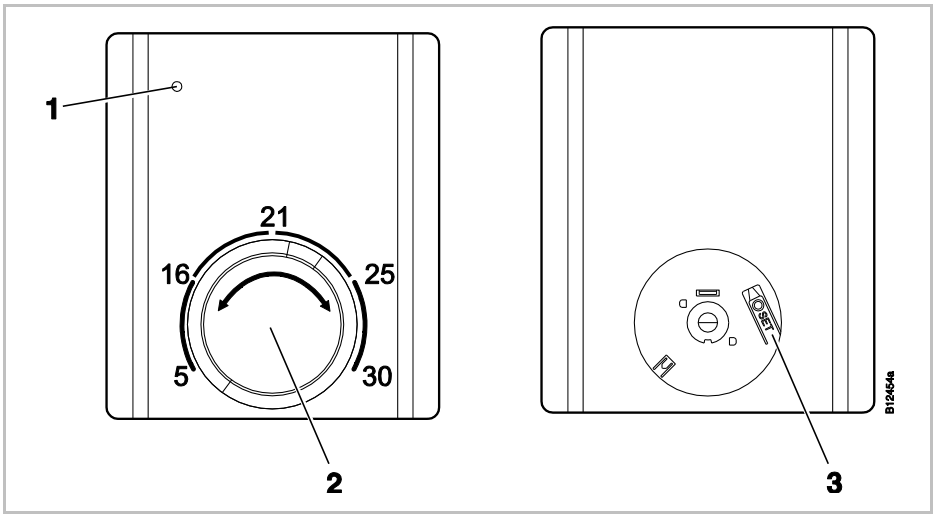


Fig. 7: Overview operating elements wireless room thermostat

1 LED: Display for wireless transmission and weak battery
2 Dial for setpoint setting
3 Button "SET" for addressing to a wireless connection module

LED

LED	Description
LED flashes	Wireless transmission between wireless room thermostat and wireless connection module
LED briefly lights up every 2 seconds	Battery must be replaced.

5 Installation

5.1 Wireless connection module

→ Information on dimensions, see page 130, chapter 16.2.1.

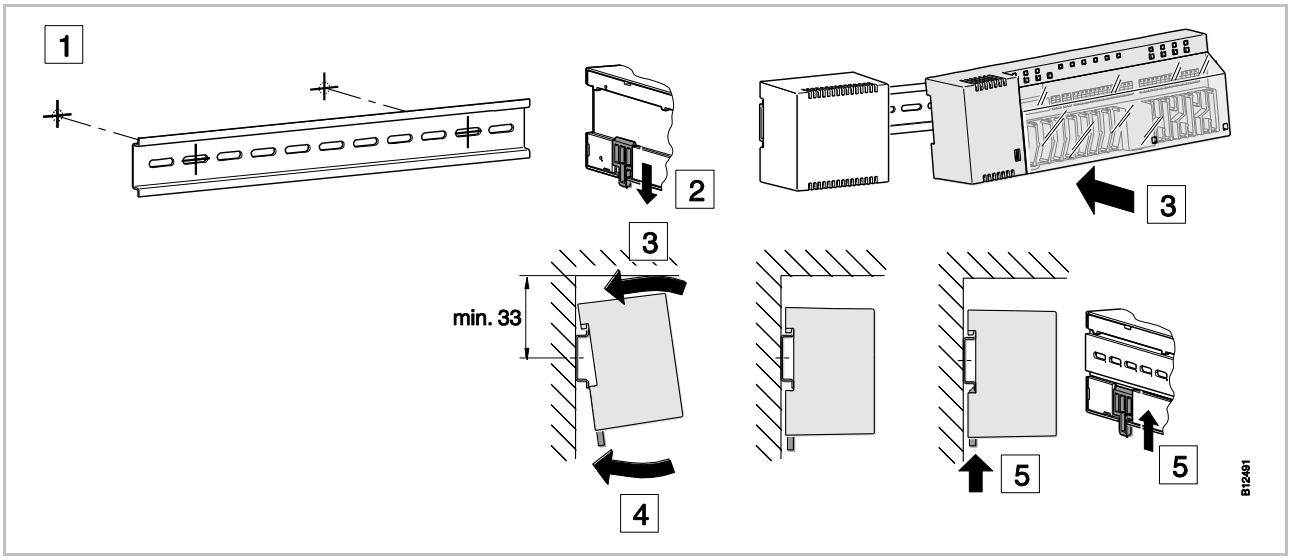


Fig. 8: Mounting wireless connection module, here shown in the 24 V version with transformer

NOTE

If LAN communication over PowerLAN is planned, then a double socket should be provided for the connections of the wireless connection module and the PowerLAN.

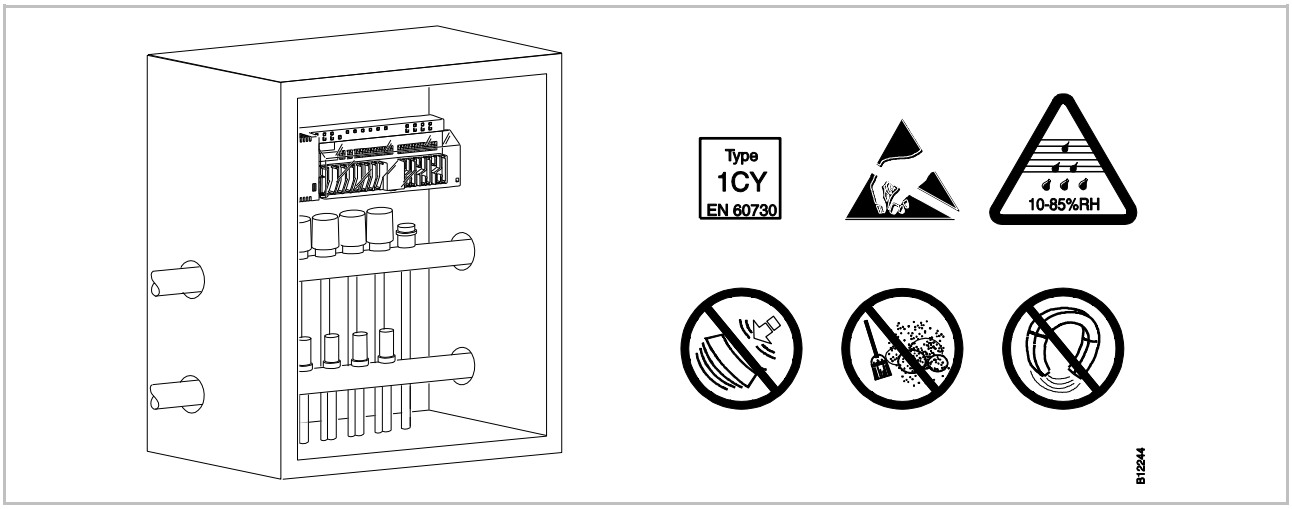


Fig. 9: Wireless connection module in distribution box

5.2 Wireless room thermostat

→ Information on dimensions, see page 133, chapter 16.3.1 and page 135, chapter 16.4.1.

Conditions for place of installation

The place of installation for the wireless room thermostat must meet the following conditions:

- Interior wall
- Not in direct sunlight
- Not directly beside the entrance door
- Away from sources of moisture
- Away from splashing water
- Away from heat sources such as fireplaces, heaters, televisions or other electronic devices.

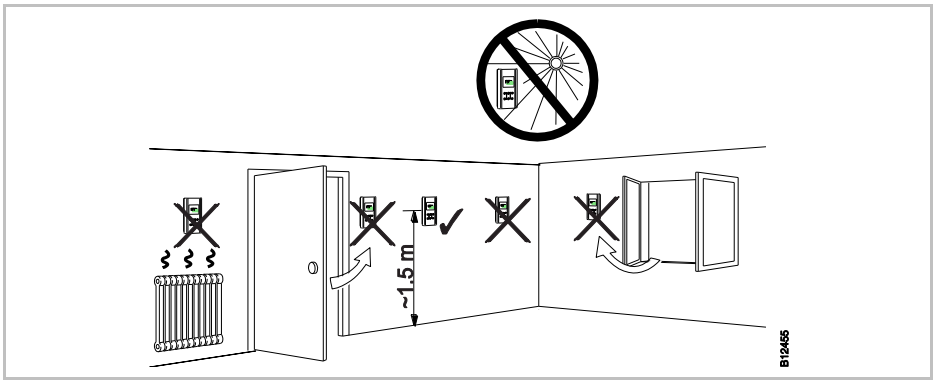


Fig. 10: Installation instruction

Installation conditions floor temperature sensor

The floor temperature sensor is placed in a protective tube that is placed centrally between the heating tubes within the heated area. The wall distance must be at least 0.5 m.

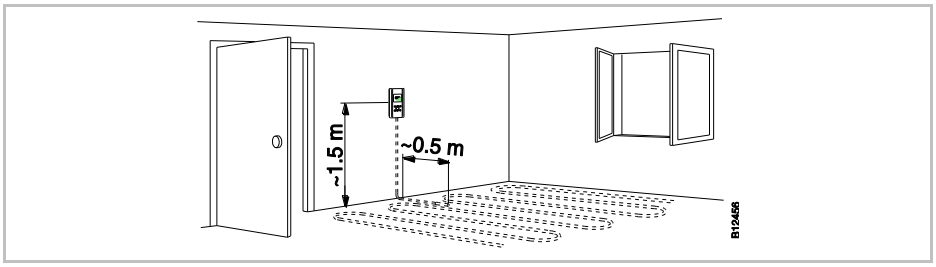


Fig. 11: Installation floor temperature sensor

Compensate floor temperature

The screed and floor covering causes the floor temperature to deviate from the floor temperature measured. The radio room thermostat shows the floor temperature measured.

Proceed as follows to adjust the wireless room thermostat display:

- Place a reference thermometer on the floor after a few days of operation.
- Compare the display of your reference thermometer to the display of the wireless room thermostat.
- Adjust the display via the parameter P-43. → See parameter description P-43, page 92.

5.2.1 Wireless room thermostat with display

Open wireless room thermostat

- Open the cover using the intended bore and a flat-tip screwdriver of 3 mm.
- Remove the cover.

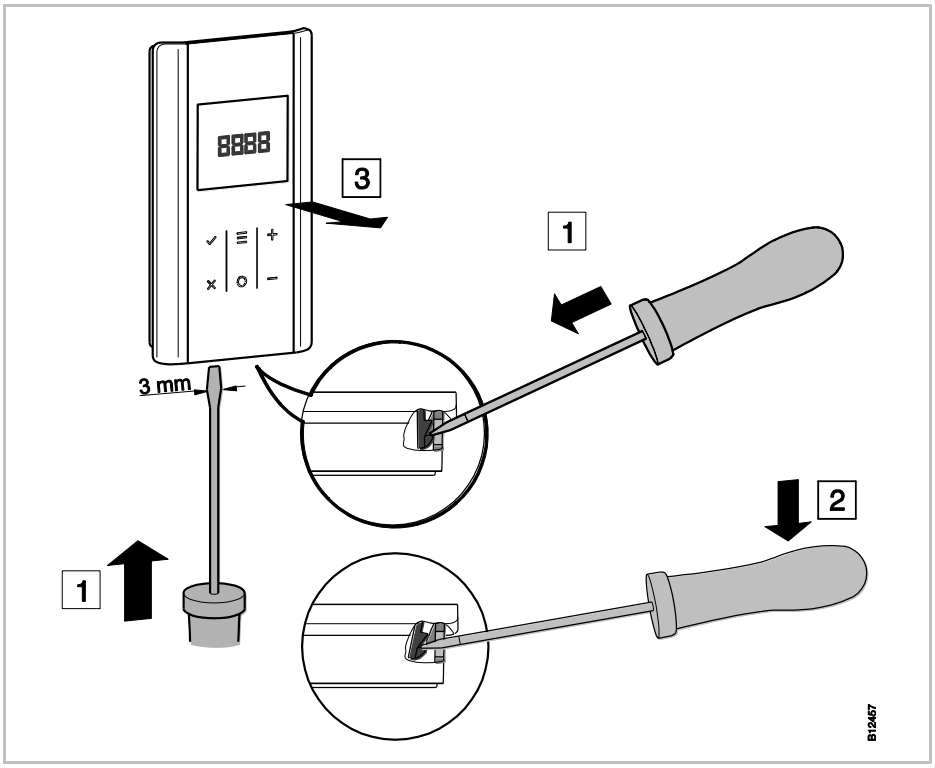


Fig. 12: Open wireless room thermostat

Mount lower part

► Mount the lower part of the wireless room thermostat using the two included dowels and screws.

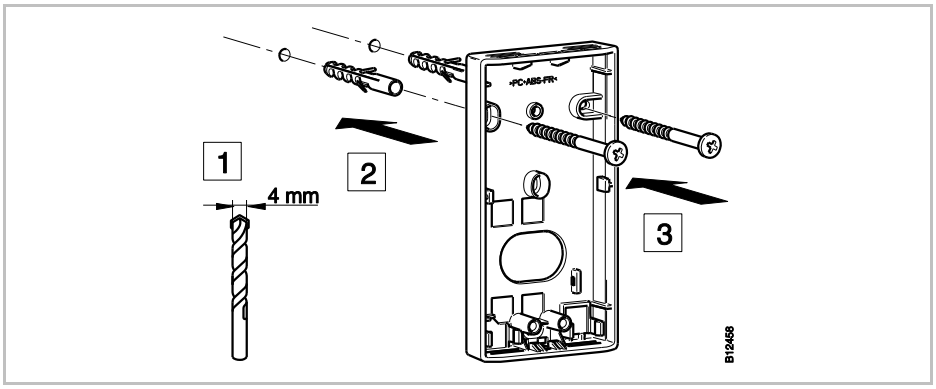


Fig. 13: Mount lower part of the wireless room thermostat

NOTE

Sauter offers a cover plate as an accessory for concealed sockets with a width exceeding 60 mm (white: 0450241001, black: 0450241021). *→ See page 134, chapter 16.3.5.*

Insert batteries

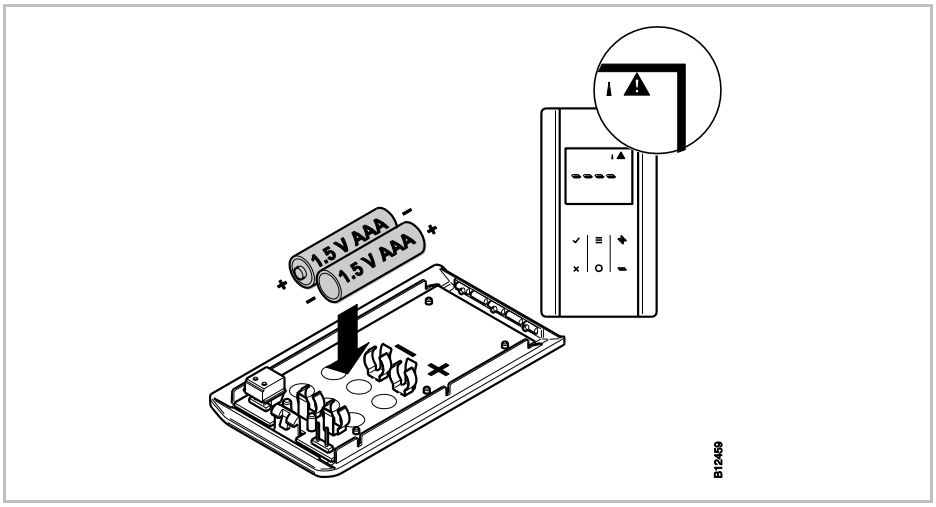


Fig. 14: Insert batteries

ATTENTION

Possible malfunction of the sensor buttons!

When inserting the batteries, the sensor buttons automatically calibrate for the surface.

– Do not touch the sensor buttons when inserting the batteries.
– If a sensor button does not work, remove the batteries and insert them again.

Close wireless room thermostat

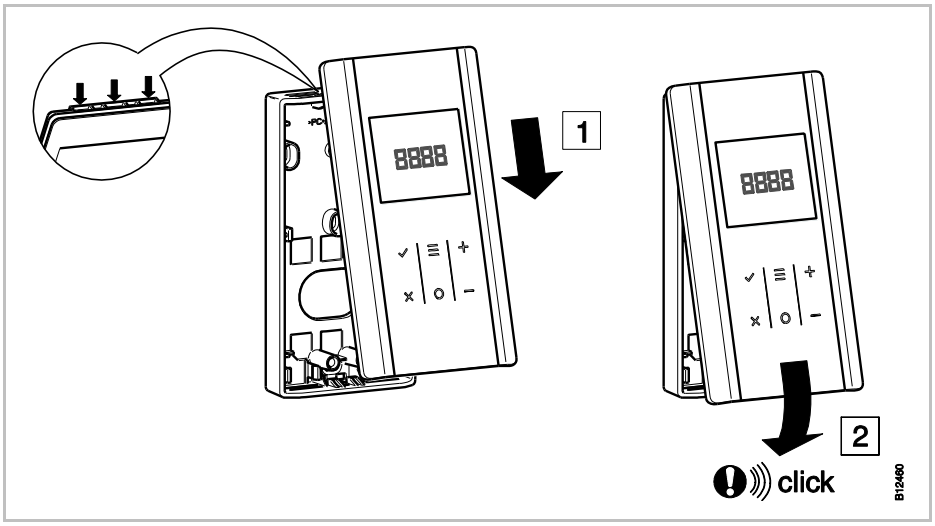


Fig. 15: Close wireless room thermostat

5.2.2 Connect external temperature sensor or window contact

Optionally, you may connect a floor, room, outdoor temperature sensor or a window contact to the wireless room thermostat with display. The function of the external temperature sensor or window contact is set via the parameter P-49. → See parameter description P-49, page 96.

- ► Open the wireless room thermostat. → See page 31, Fig. 12.
- ► Mount the bottom part of the wireless room thermostat. → See page 32, Fig. 13.
- ► Connect the temperature sensor or window contact according to the following figure.

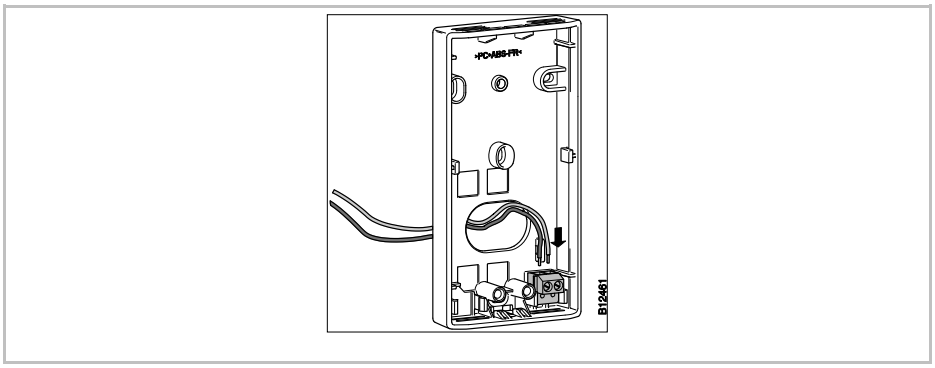


Fig. 16: Connect temperature sensor or window contact

- ► Close the wireless room thermostat → See page 33, Fig. 15

5.2.3 Wireless room thermostat without display

Remove dial

You need to remove the dial to open and address the wireless room thermostat.

► Remove the dial with a flat-tip screwdriver of 3 mm.

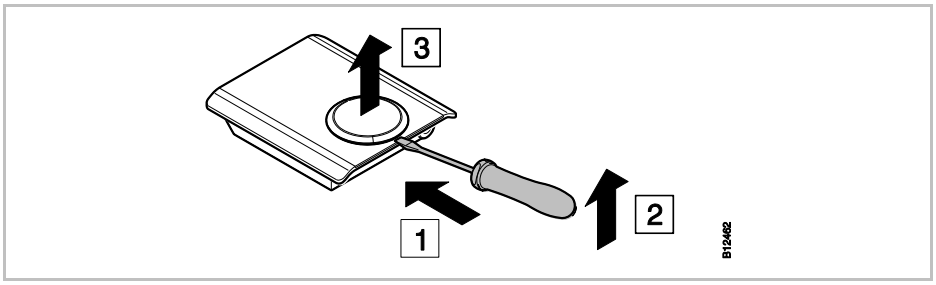


Fig. 17: Remove dial

Open wireless room thermostat

► Open the cover using the intended bore and a flat-tip screwdriver of 3 mm.

► Remove the cover.

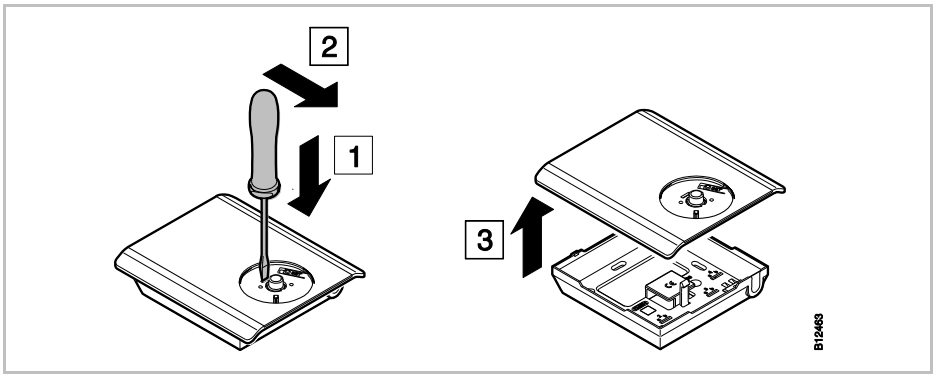


Fig. 18: Opening the wireless room thermostat

Mount lower part

► Mount the lower part of the wireless room thermostat using the two included dowels and screws.

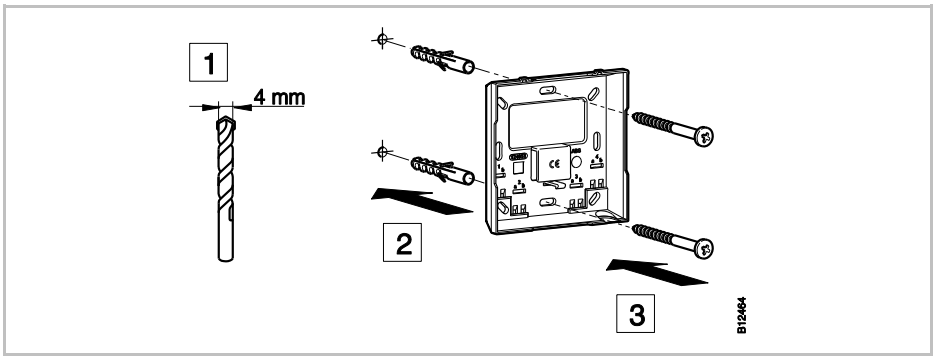


Fig. 19: Mount lower part of the wireless room thermostat

Insert batteries

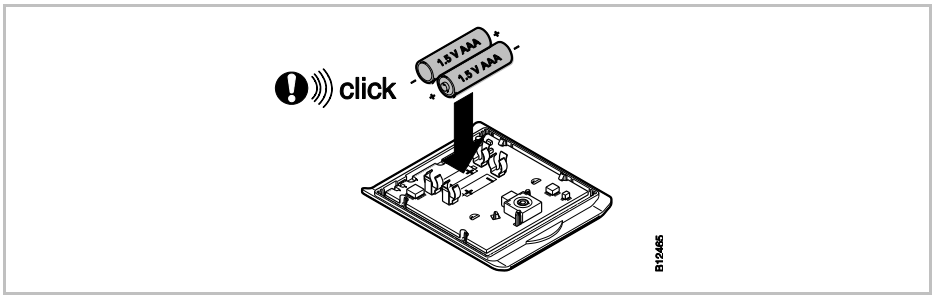


Fig. 20: Insert batteries

► Connect the wireless room thermostat.

Wireless room thermostat closing

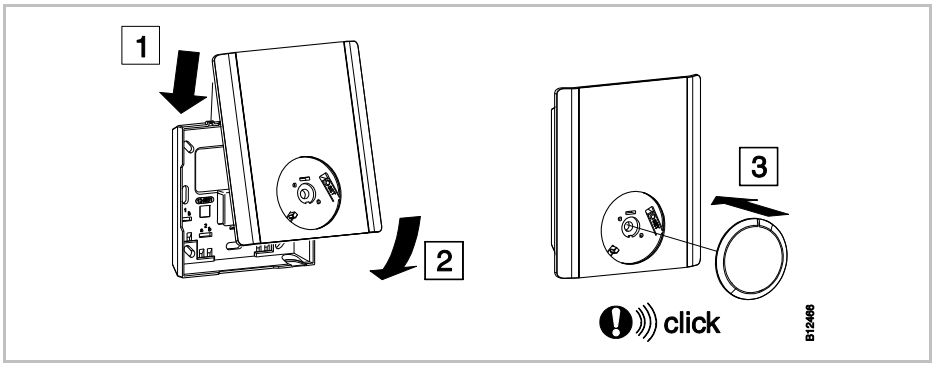


Fig. 21: Closing wireless room thermostat

6 Electrical connections

6.1 Safety

⚠ DANGER

Danger from electrical voltage!

Contact with live parts is an immediate danger to life.

Damage to the insulation or individual components can be life threatening.

– When insulation is damaged turn off power immediately and arrange for repair.
– Only a qualified electrician should perform work on the electrical system.
– Prior to any work on the system, shut off the power supply and secure against restart. Check for the absence of power!
– Fuses should never be bridged or put out of service.
– When changing fuses check the correct amperage specification.
– Moisture and dust should be kept away from energized parts. Moisture or dust can cause a short circuit.

6.2 General wiring notes

⚠ DANGER

Danger from electric shock!

Improper wiring may be potentially fatal.

– Perform wiring according to connection chart.
– Insert wires into the terminals completely to the stop.
– Only use the prescribed core cross-sections.
– Observe the prescribed dimensions for stripping.
– If wire-end ferrules with plastic collar are used, observe the prescribed dimensions for plastic collars.
– Do not use twin wire-end ferrules.

Fine-wire conductor

Fine-wire conductors must only be used with wire-end ferrules.

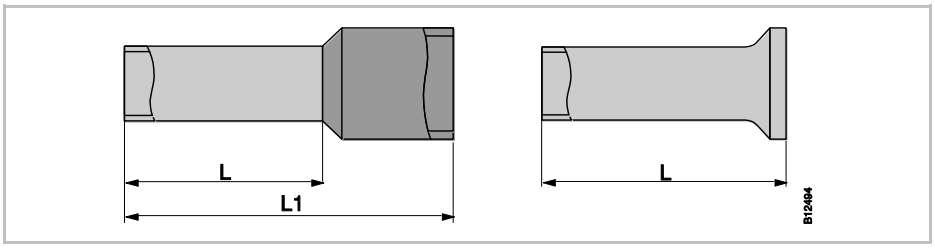


Fig. 22: Left: Wire-end ferrules with plastic collar
right: Wire-end ferrules without plastic collar

Strand cross-section [mm²]	L [mm]	L1 [mm]
0.25 to 0.34	6 to 8	10.5 to 12.5
0.5	6 to 8	11.5 to 13.5
0.75	6 to 8	12 to 14
1	8	14

Table 8: Dimensions for fine-wire conductors, wire-end ferrules with plastic collar

Strand cross-section [mm²]	L [mm]
0.25 to 0.34	5 to 7
0.5	6 to 8
0.75	6 to 8
1	6 to 8
1.5	6 to 8

Table 9: Dimensions for fine-wire conductors, wire-end ferrules without plastic collar

Single-wire or multi-wire conductors

Single-wire or multi-wire conductors must not be used without wire-end ferrules.

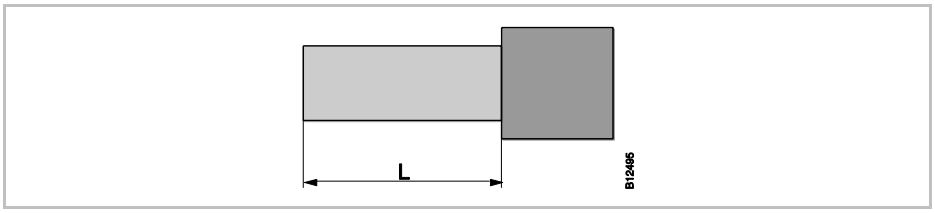


Fig. 23: Single-wire or multi-wire conductors

Strand cross-section [mm²]	L [mm]
0.5 to 1.5	8 to 9

Table 10: Dimensions for single-wire or multi-wire conductors

6.3 Wireless connection module 24 V version

6.3.1 Connection diagram

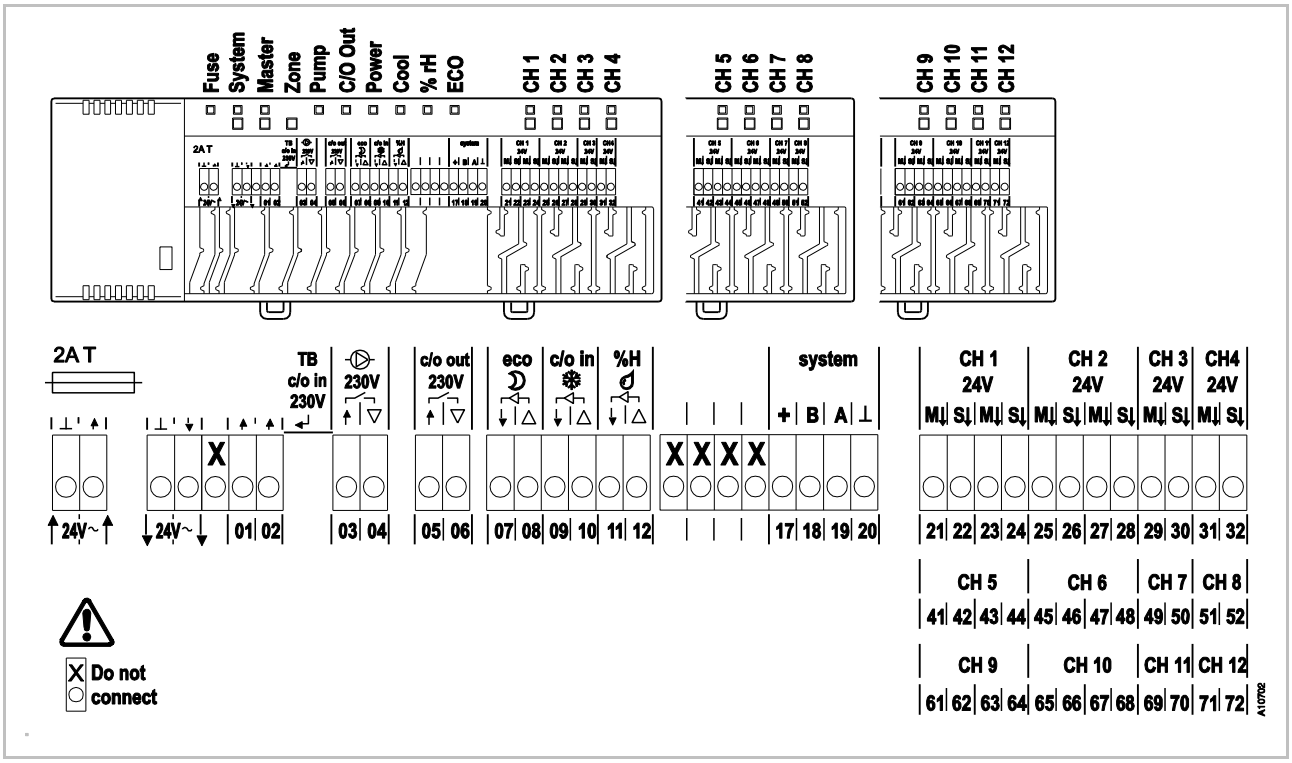


Fig. 24: Connection diagram, wireless connection modul 24 V version

6.3.2 Electrical connections

Remove cover

► Remove the cover as shown below.

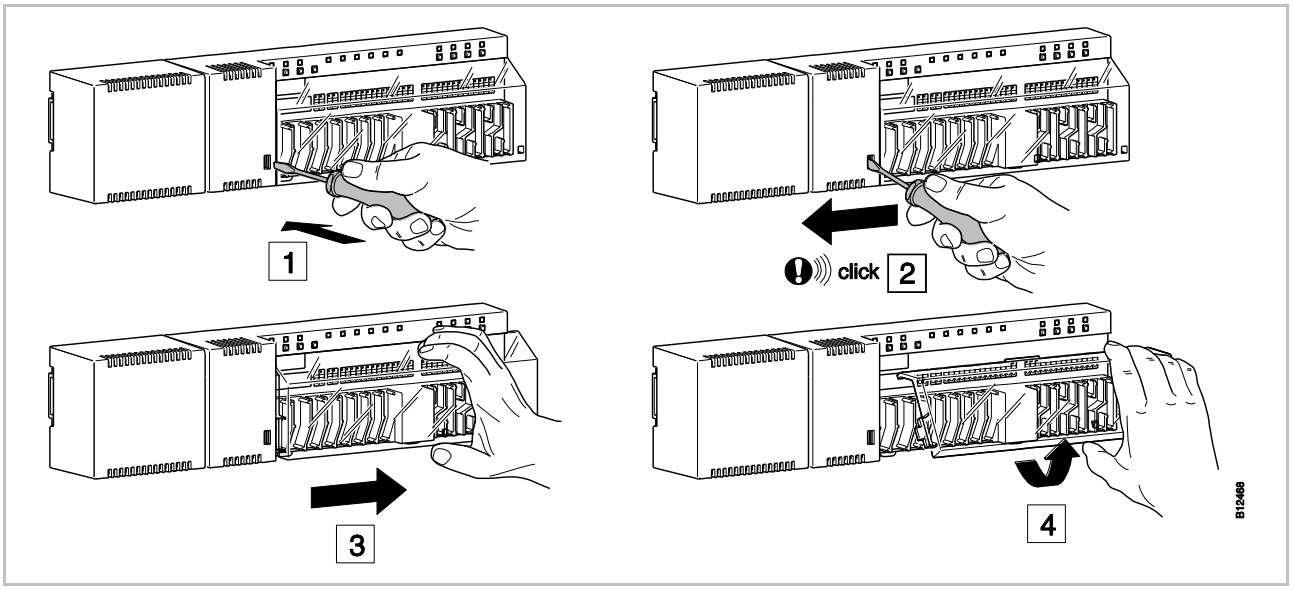


Fig. 25: Remove cover

Connect wires

DANGER

Danger from electrical voltage on terminals 1 to 6!

Contact with live parts is an immediate danger to life

– Shut off the power supply and secure against restart. Check for the absence of power!

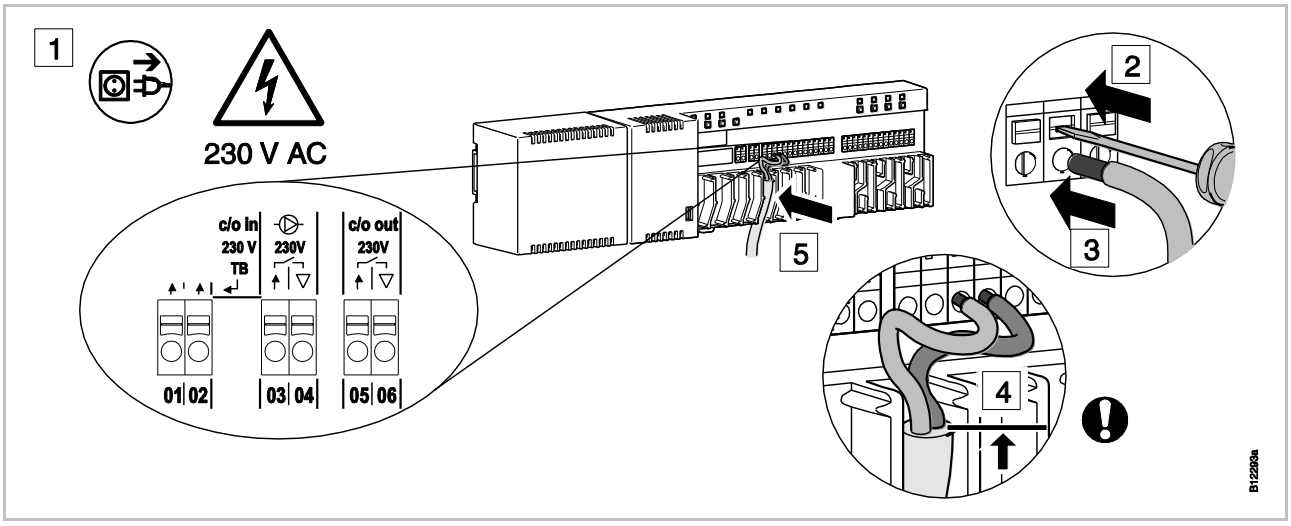


Fig. 26: Connect wires

- ▶ Press down the terminal pin with a screwdriver. See step 2.
- ▶ At the same time put the wire into the terminal opening. See step 3.
- ▶ Press the cable into the matching strain relief. See step 5.
  Observe that the line jacket should be as close as possible to the connection terminal. This keeps the individual conductors well in their position. See step 4.
  This must be performed specifically at the following terminals for the 230 V-lines:
  - **01** and **02**:c/o in 230 V TB
  - **03** and **04**: Pump 230 V
  - **05** and **06**: c/o out 230 V

Connect transformer

► Connect the transformer to the 24 V input terminals.

ATTENTION

Malfunctioning due to improper connection!

Improper connection may cause malfunction of the system.

– Each wireless connection module must have a separate transformer.

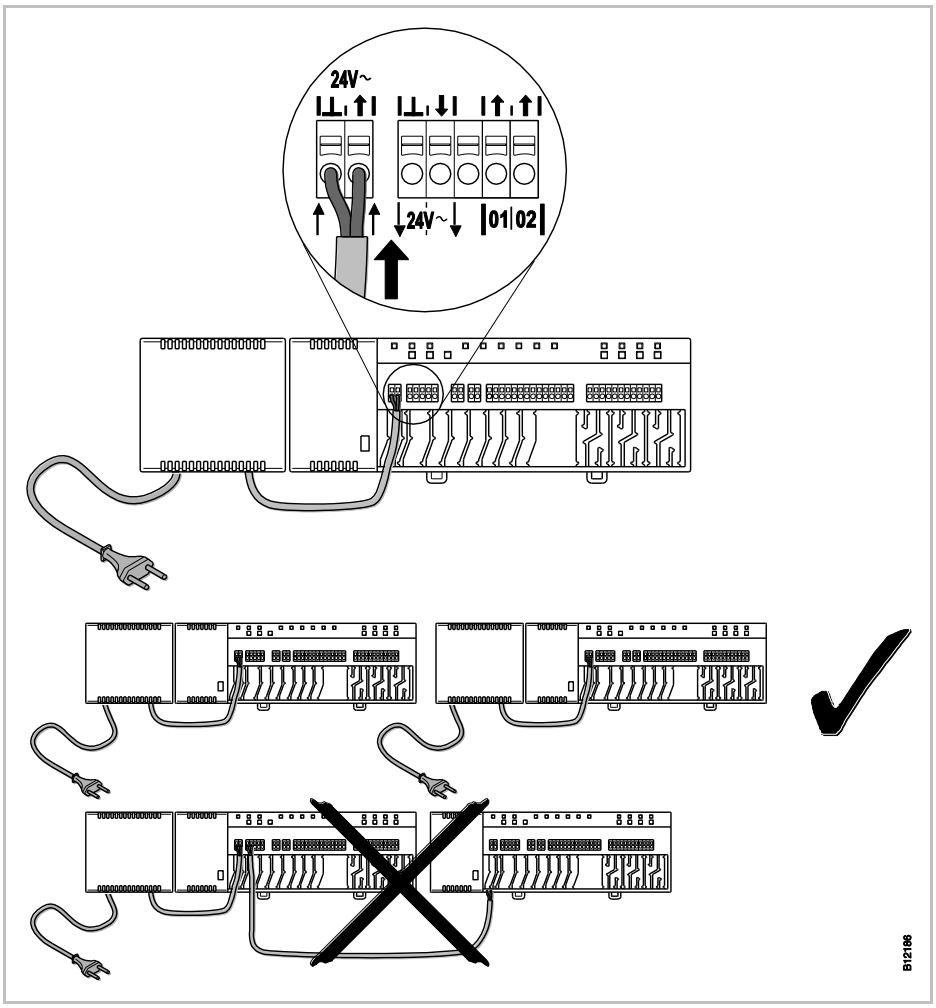


Fig. 27: Connect transformer

NOTE

The 24 V output is used only as support voltage for a dew-point sensor or as a voltage signal to the TB input (temperature limit).

Connect thermal actuators

- Connect the thermal actuators to the following terminals:
  - 4-channel version: terminals **21** to **32** for max. 6 actuators
  - 8-channel version: terminals **21** to **52** for max. 12 actuators
  - 12-channel version: terminals **21** to **72** for max. 18 actuators

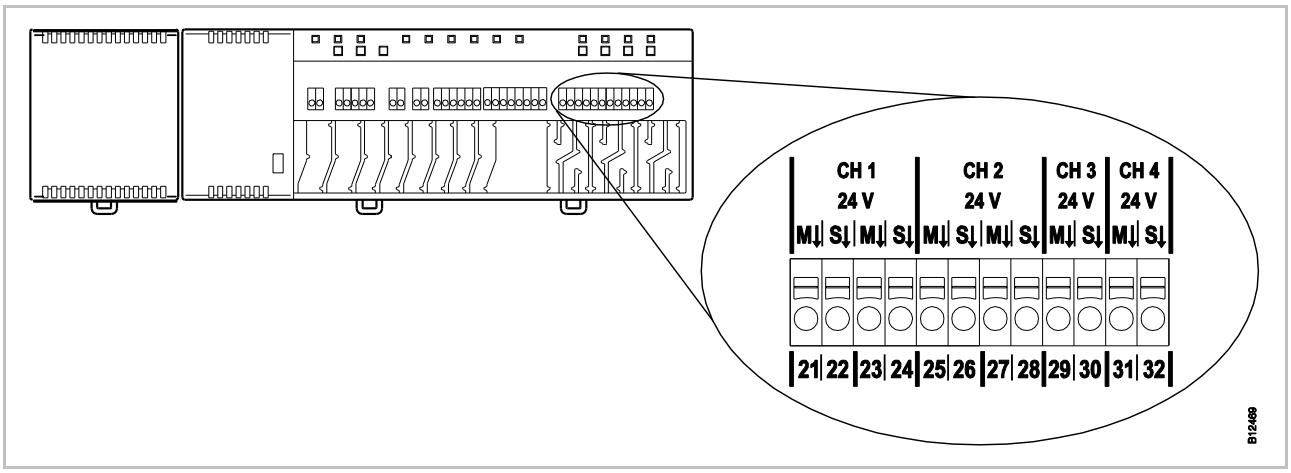


Fig. 28: Connect thermal actuators

TB-input for temperature monitoring

ATTENTION

Limitation of liability for safety function!

The safety function of the maximum floor temperature is provided by the separate, external temperature limiter by switching the pump off. The signal on terminal 01 triggers the additional closure of all valves; however, this does **NOT** replace the security function.

- Use only an approved temperature limiter
- Use the information regarding the maximum allowed water supply temperature provided by the manufacturers of the floor respectively the floor covering.

TB-input for temperature monitoring (continued)

The TB input is a configurable input that can be configured either as temperature or C/O input. The input is configured as temperature input in the factory. When the input is active, the pump is switched off at once and the thermal drives are closed.

► Connect the signal of the temperature limiter to the terminals **01 and 02.**

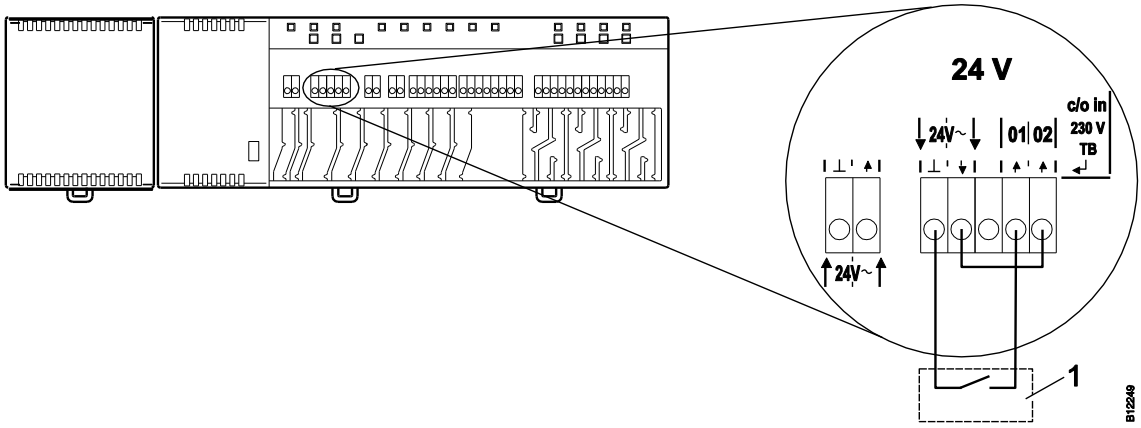


Fig. 29: TB-input, control with 24 V voltage from wireless connection module

Terminal 01 Voltage ON: cooling ON
Voltage OFF: cooling OFF

1 e.g. heat pump

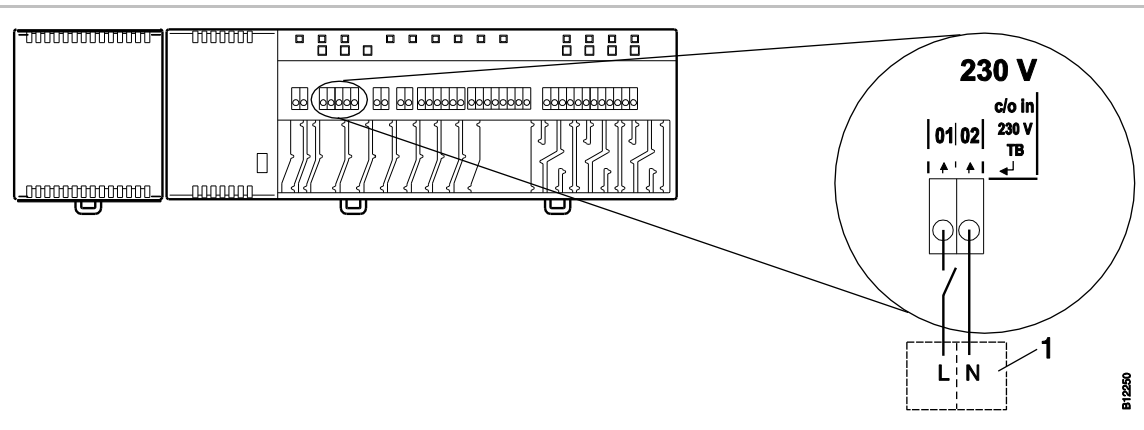


Fig. 30: TB-input, TB-input, control with 230 V

Terminal 01 Voltage ON: cooling ON
Voltage OFF: cooling OFF

1 e.g. heat pump

ATTENTION

Do not interchange the connection to terminals 01 (L) and 02 (N)!

Improper connection may cause malfunctioning of the system.

– Connect the phase and neutral wires correctly. Phase (L) to terminal **01** and neutral (N) to terminal **02**.

Connect 230 V pump

- ▶ Connect the pump to terminal **04** and the neutral conductor (N).
- ▶ Connect the phase (L) to the terminal **03**.

Contact rating: 230 V, 2.5 A, 1 A inductive switchable.

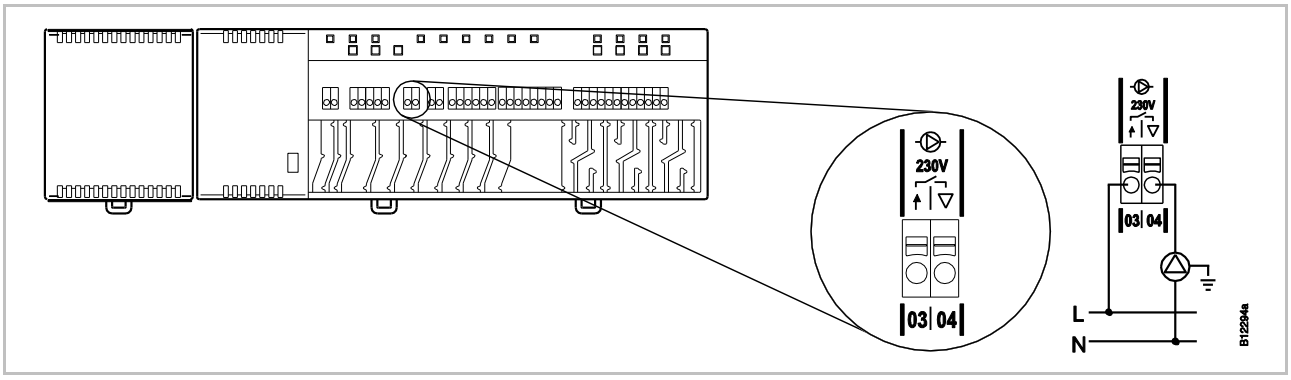


Fig. 31: Connect pump, 230 V

NOTE

To save energy and on demand, the pump command is released only after 2 minutes in any setting.

C/O- or burner or ventilation control output, potential-free contact

The output "c/o out" is a configurable output for cooling operation (C/O: Change-Over), burner start or demand report to the ventilation system.

- ▶ Connect a cooling unit, burner or ventilation control to terminals **05** and **06**. The wireless system must be parameterised for the respective application.

Contact load: 230 V 2,5 A, 1 A can be switched inductively.

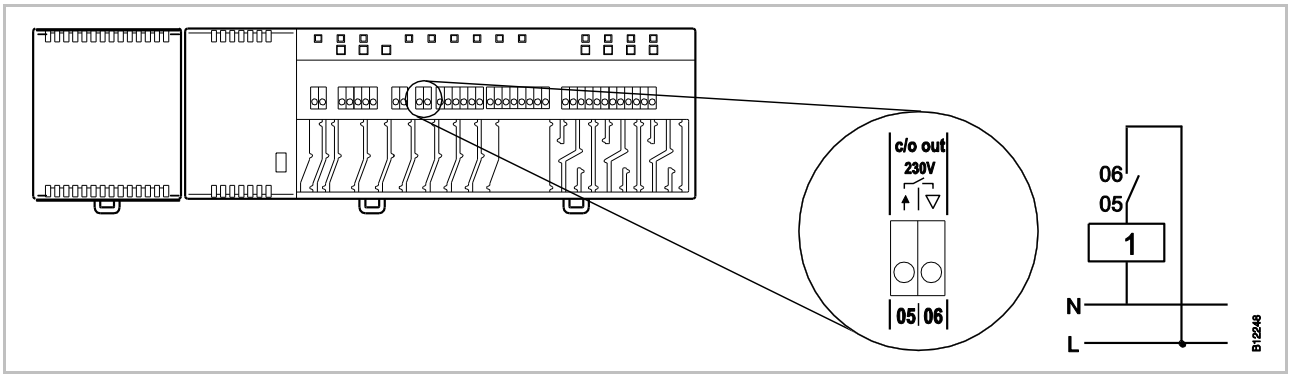


Fig. 32: C/O- or burner or ventilation control output, 230 V

Contact 05 / 06: *Closed: Cooling ON, burner ON or regular ventilation demand*
Open: Cooling OFF, burner OFF or reduced ventilation demand

1 Cooling unit, burner or ventilation control

Eco-input, for reduced mode with contact recognition

► Connect the contact of an external clock or modem to terminals **07** and **08**.

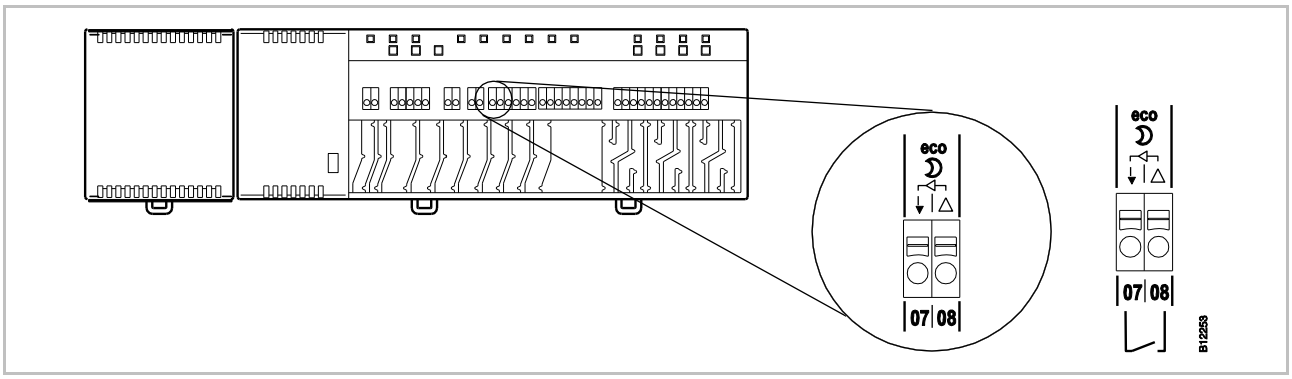


Fig. 33: Eco-input, contact recognition

Terminal 07 / 08, external contact: closed: reduced mode
open: normal mode

C/O-input for activating cooling operation by contact recognition

► Connect a heat pump or another cooling device to terminals **09** and **10.**

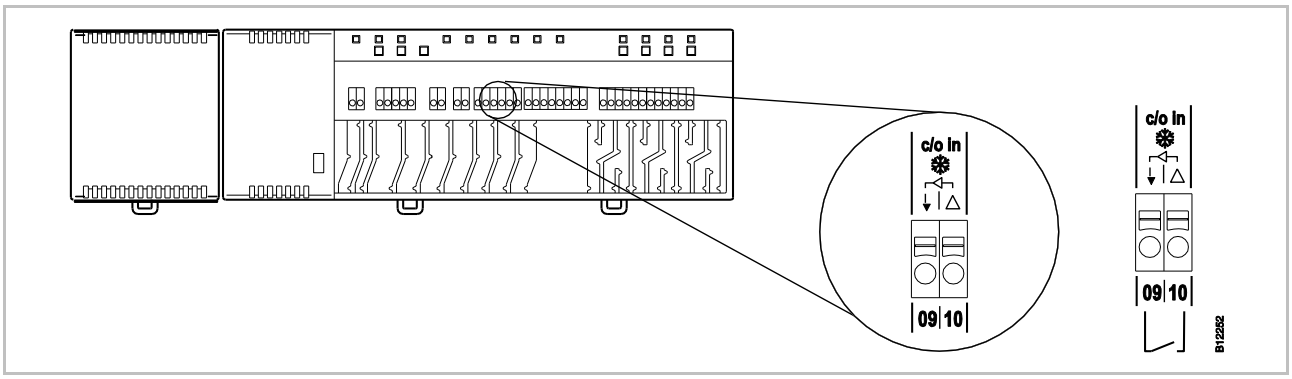


Fig. 34: C/O-input, contact recognition

Terminal 09 / 10, external contact closed: cooling ON
open: cooling OFF

%rH-input as optional humidity monitor in cooling operation

- ▶ Connect the terminals **1** and **2** of the dew point monitor to the 24 V support voltage terminals of the wireless connection module.
- ▶ Connect the switching output of the dew point monitor terminal **4** and **6** to the terminals **11** and **12** of the wireless connection module.

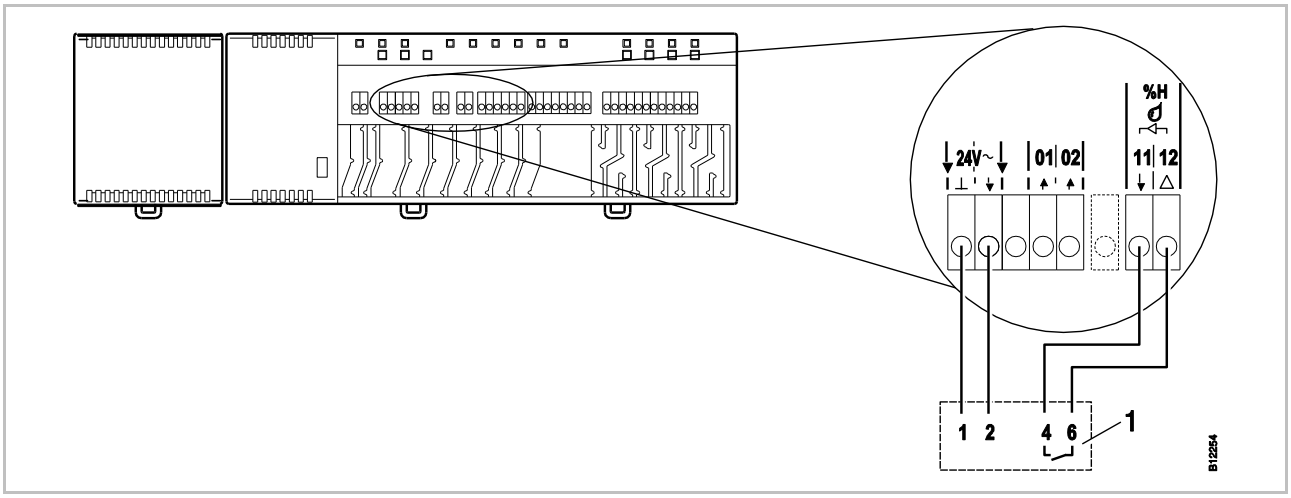


Fig. 35: Humidity input

Terminal 11 and 12, contact closed: maximum allowable humidity exceeded, cooling OFF
contact open: maximum allowable humidity not exceeded, cooling at demand ON

1 Sauter dew-point monitor EGH 102

Install cover

- ▶ Put on the cover as shown below
- ▶ Insert the plug from the transformer into the outlet.
- ▶ At the wireless connection module the **Power** LED must light.

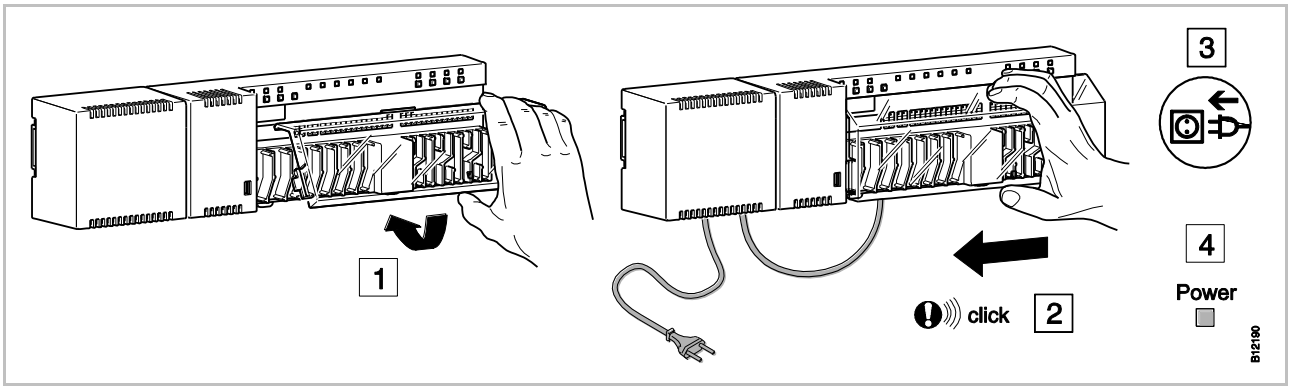


Fig. 36: Install cover and connect power supply

6.4 Wireless connection module 230 V

6.4.1 Connection diagram

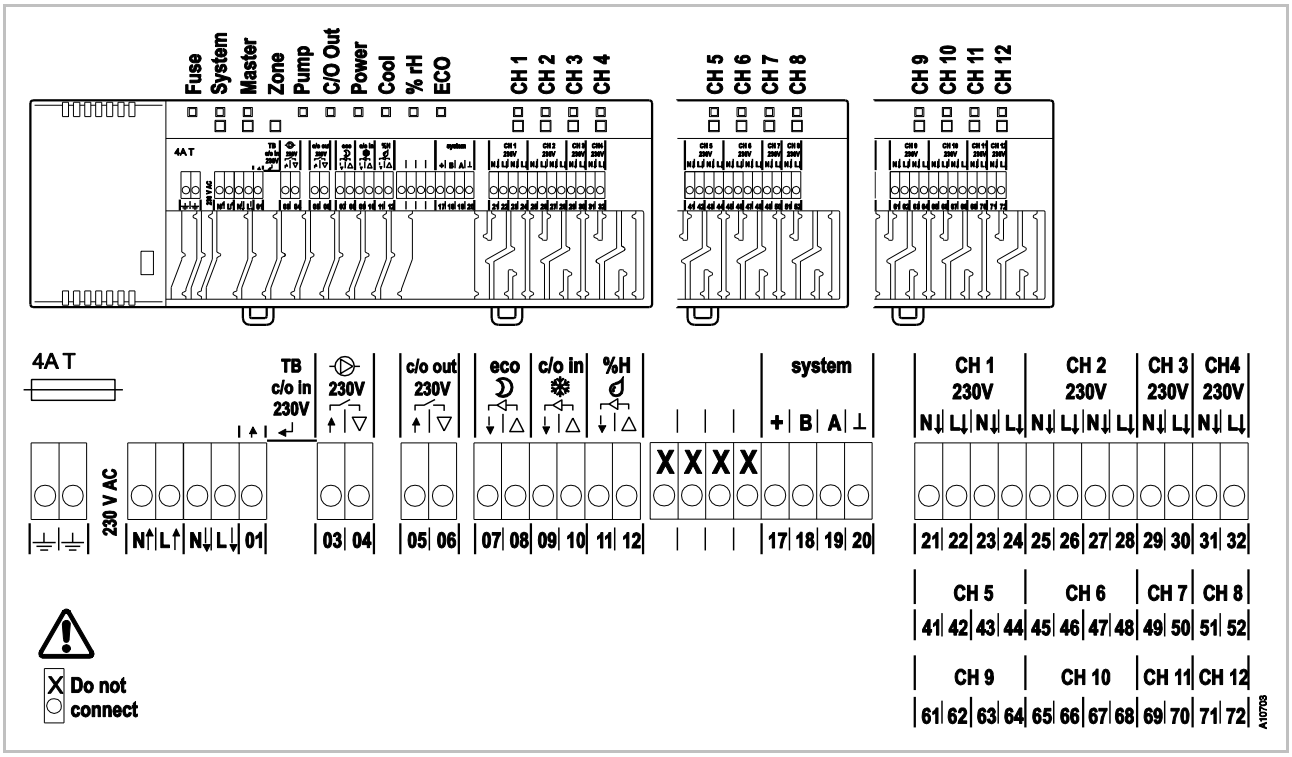


Fig. 37: Connection diagram, wireless connection module 230 V version

6.4.2 Electrical connections

Remove cover

► Remove the cover as shown below.

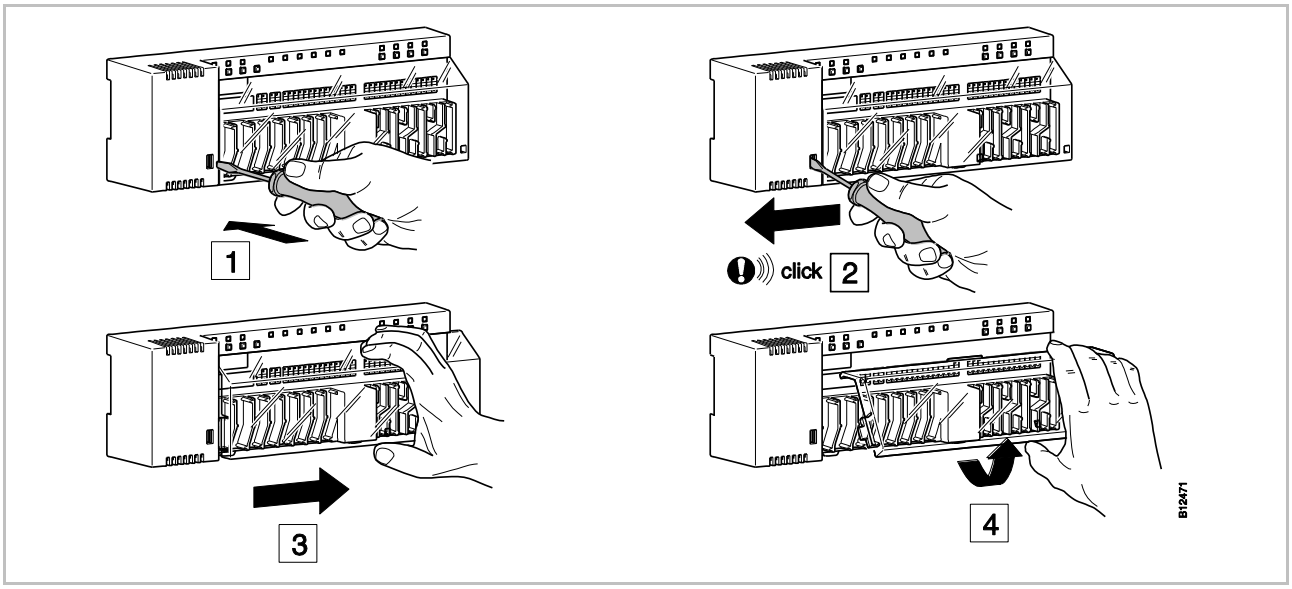


Fig. 38: Remove cover

Connect wires

⚠ DANGER

Danger from electrical voltage!

Contact with live parts is an immediate danger to life.

– Prior to any work on the system, shut off the power supply and secure against restart. Check for the absence of power!

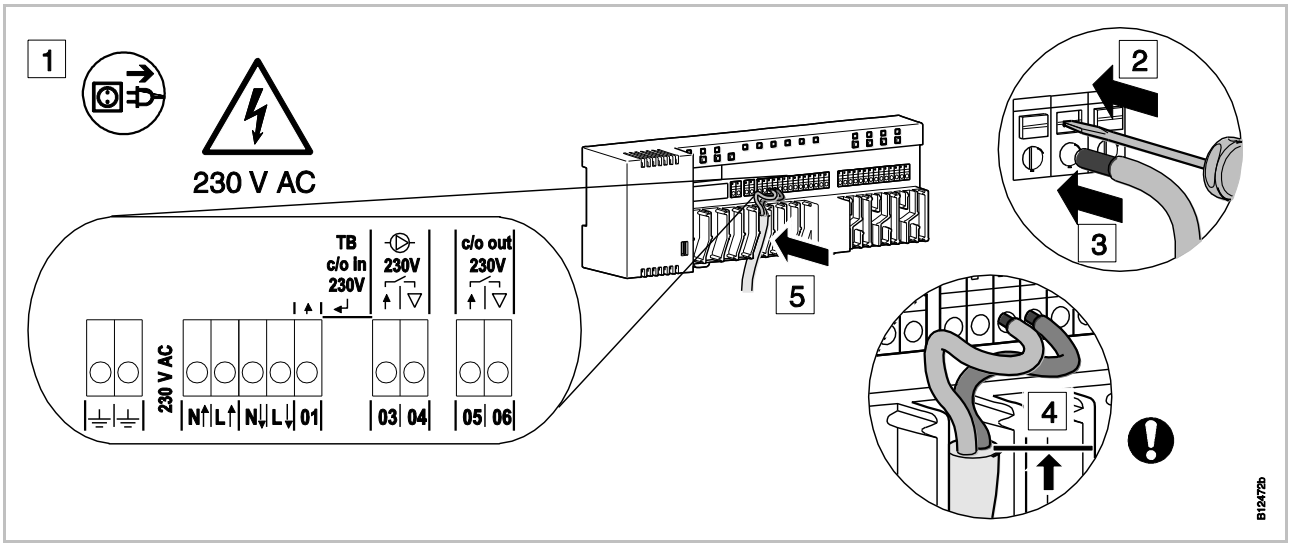


Fig. 39: Connect wires

- ▶ Press down the terminal pin with a screwdriver. See step 2.
- ▶ At the same time put the wire into the terminal opening. See step 3.
- ▶ Press the cable into the matching strain relief. See step 5.
  Observe that the line jacket should be as close as possible to the connection terminal. This keeps the individual conductors well in their position. See step 4.
  This must be performed specifically at the following terminals for the 230 V-lines:
  - **01** and **02**: c/o in 230 V TB
  - **03** and **04**: Pump 230 V
  - **05** and **06**: c/o out 230 V

Connect thermal actuators

- ► Connect the thermal actuators to the following terminals:
  - 4-channel version: terminals **21** to **32** for max. 6 actuators
  - 8-channel version: terminals **21** to **52** for max. 12 actuators
  - 12-channel version: terminals **21** to **72** for max. 18 actuators

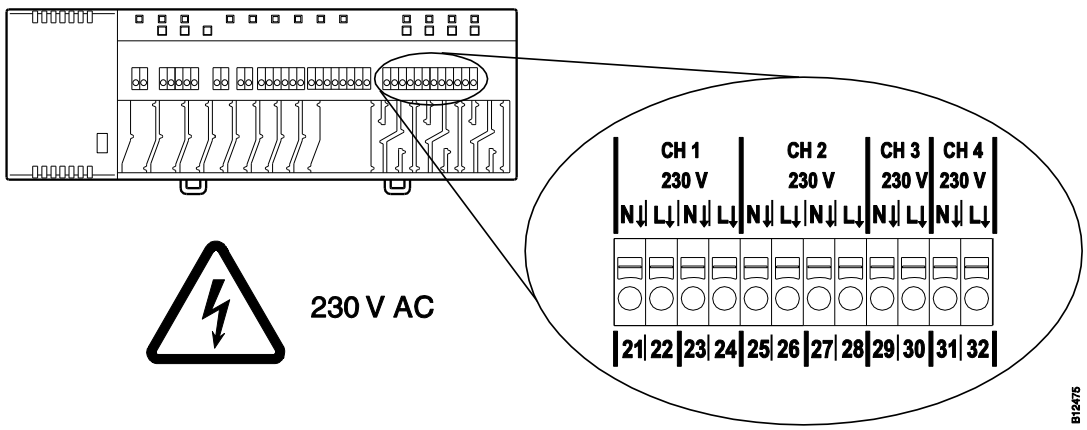


Fig. 40: Connect thermal actuators

TB-input for temperature monitoring

ATTENTION

Limitation of liability for safety function!

The safety function of the maximum floor temperature is provided by the separate, external temperature limiter by switching the pump off. The signal on terminal 01 triggers the additional closure of all valves; however, this does **NOT** replace the security function.

- Use only an approved temperature limiter
- Use the information regarding the maximum allowed water supply temperature provided by the manufacturers of the floor respectively the floor covering.

TB-input for temperature monitoring (continued)

You may use the TB input for temperature monitoring via an external maximum temperature limiter for the floor strand.

► Connect the signal of the temperature limiter to the terminals **01**.

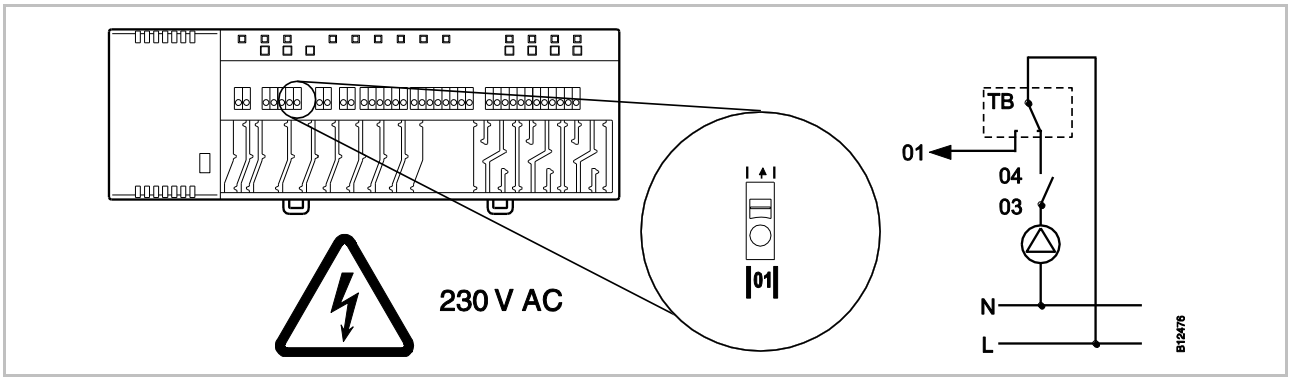


Fig. 41: TB- input for temperature monitoring

Voltage on terminal 01 *ON: all valves closed*
OFF: all valves are controlled by demand.

TB-input for activating cooling operation

The TB-input is a configurable input for a C/O-signal 230 V. Use the C/O-signal to switch from heating to cooling operation.

► Connect the C/O signal to the terminal **01**.

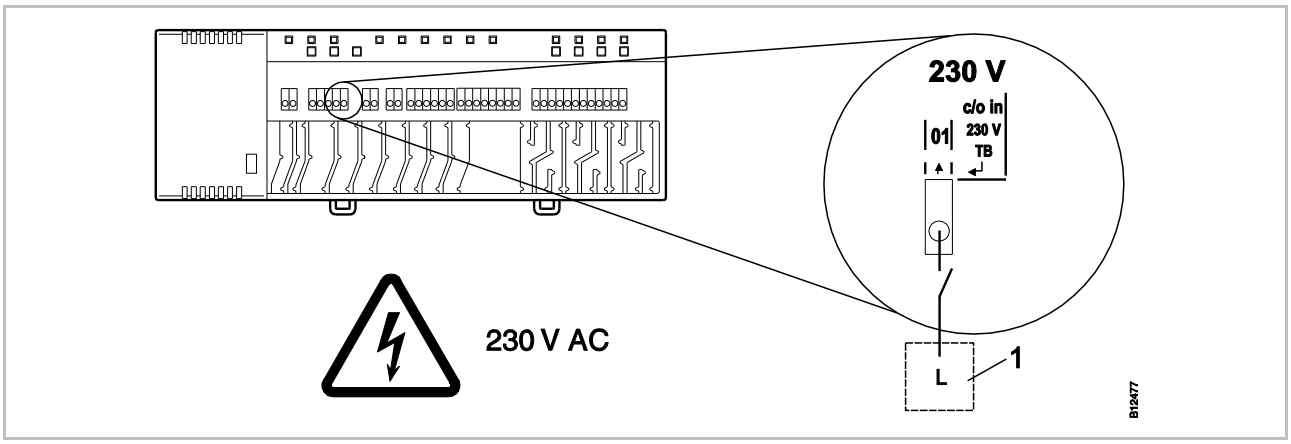


Fig. 42: TB-input, control with 24 V voltage from wireless connection module

Terminal 01 *Voltage ON: cooling ON*
Voltage OFF: cooling OFF

1 e.g. heat pump

Connect 230 V pump

- ► Connect the pump to terminal **04** and the neutral conductor (N).
- ► Connect the phase (L) to the terminal **03**.

Contact rating: 230 V, 2.5 A, 1 A inductive switchable.

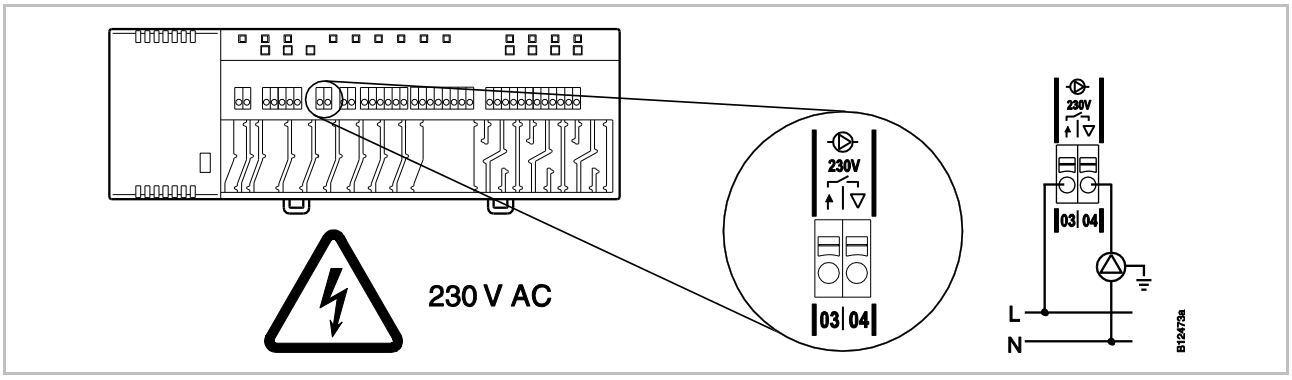


Fig. 43: Connect pump, 230 V

NOTE

To save energy and on demand, the pump command is released only after 2 minutes in any setting.

C/O- or burner or ventilation control output, potential-free contact

The output "c/o out" is a configurable output for cooling operation (C/O: Change-Over), burner start or demand report to the ventilation system.

- ► Connect a cooling unit, burner or ventilation control to terminals **05** and **06**. The wireless system must be parameterised for the respective application.

Contact load: 230 V 2,5 A, 1 A can be switched inductively

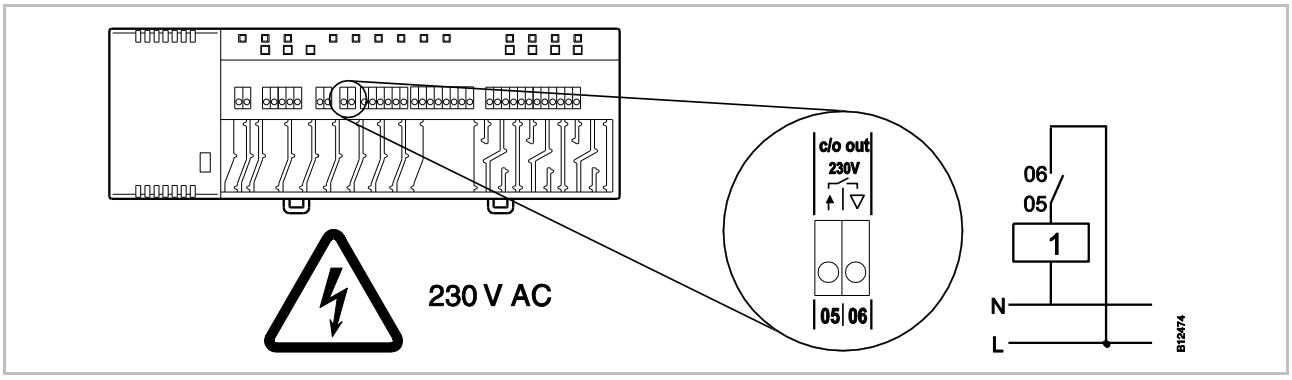


Fig. 44: C/O- or burner or ventilation control output, 230 V

Contact 05 / 06: *Closed:* *Cooling ON, burner ON or regular ventilation demand*
Open: *Cooling OFF, burner OFF or reduced ventilation demand*

1 Cooling unit, burner or ventilation control

Eco-input, for reduced mode with potential free contact

► Connect the contact of an external clock or modem to terminals **07** and **08**.

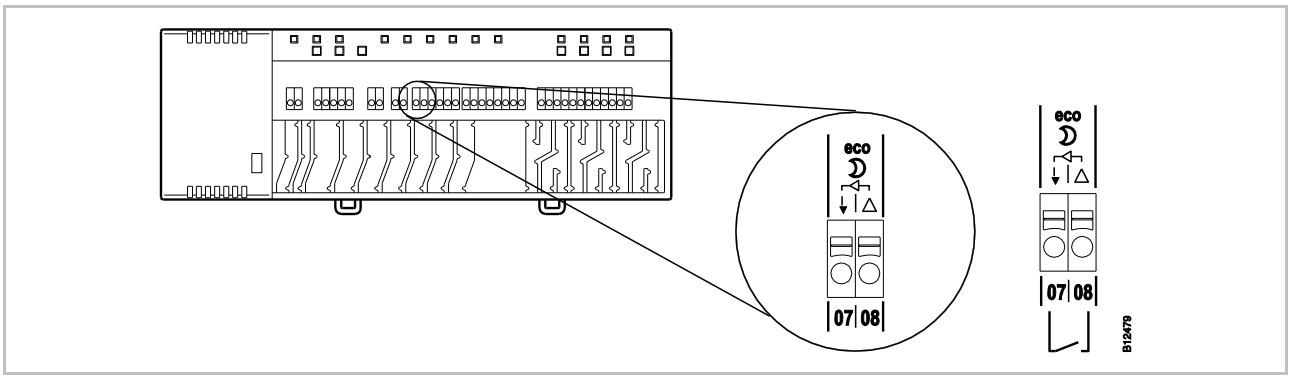


Fig. 45: Eco-input, potential free contact

Terminal 07 / 08, external contact:	*closed:*	*reduced mode*
	open:	*normal mode*

C/O-input, for activation cooling mode with a potential free contact

► Connect a heat pump or another cooling device to terminals **09** and **10.**

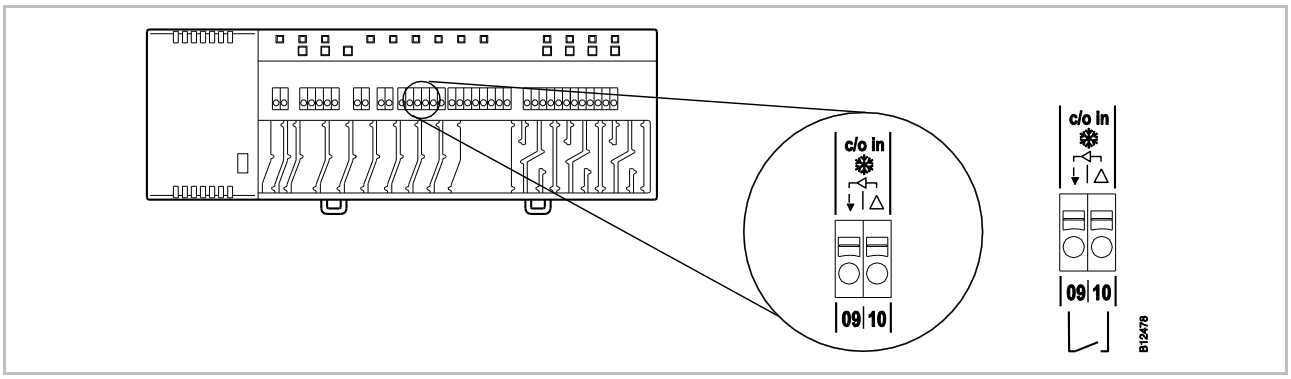


Fig. 46: C/O-input, potential free contact

Terminal 09 / 10, external contact	*closed:*	*cooling ON*
	open:	*cooling OFF*

%rH-input as optional humidity monitor in cooling operation

- Connect the terminals **1** and **2** of the dew point monitor to the 24 V support voltage terminals of the wireless connection module.
- Connect the switching output of the dew point monitor terminal **4** and **6** to the terminals **11** and **12** of the wireless connection module.

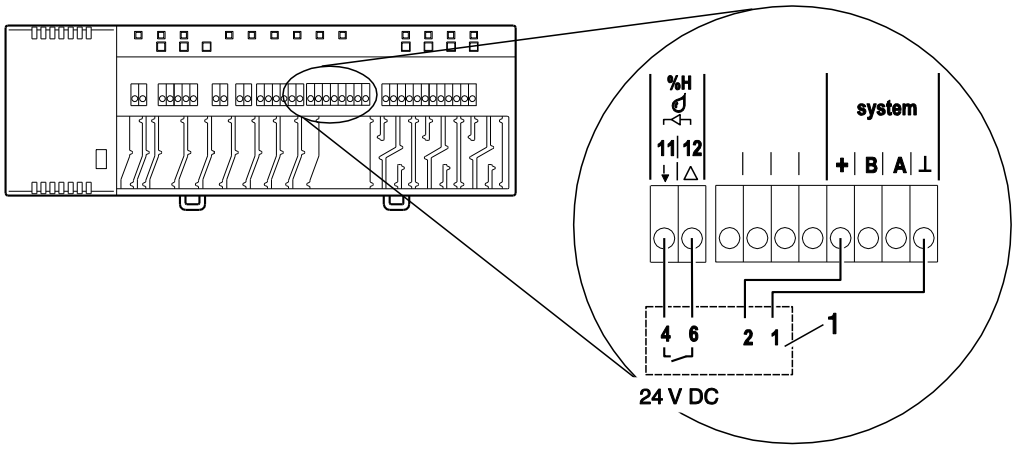


Fig. 47: Humidity input

Terminal 11 and 12, contact closed: maximum allowable humidity exceeded, cooling OFF
contact open: maximum allowable humidity not exceeded, cooling at demand ON

1 Sauter dew-point monitor EGH 102

Install cover

- Put on the cover as shown below
- Insert the plug from the transformer into the outlet.
- At the wireless connection module the **Power** LED must light.

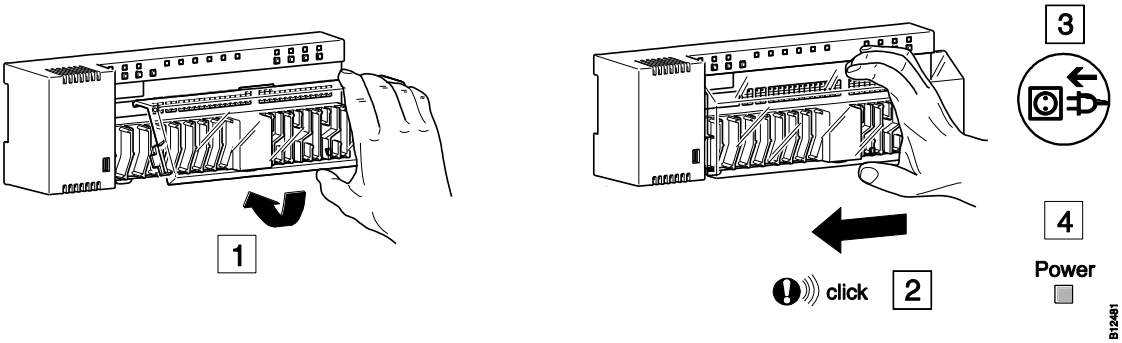


Fig. 48: Install cover and connect power supply

6.5 Connection LAN-network

Connection of LAN connection

Optionally, the wireless connection module is available with a LAN connection.
→ See page 22, chapter 4.3.1.

► Connect the LAN connection according to the following figure.

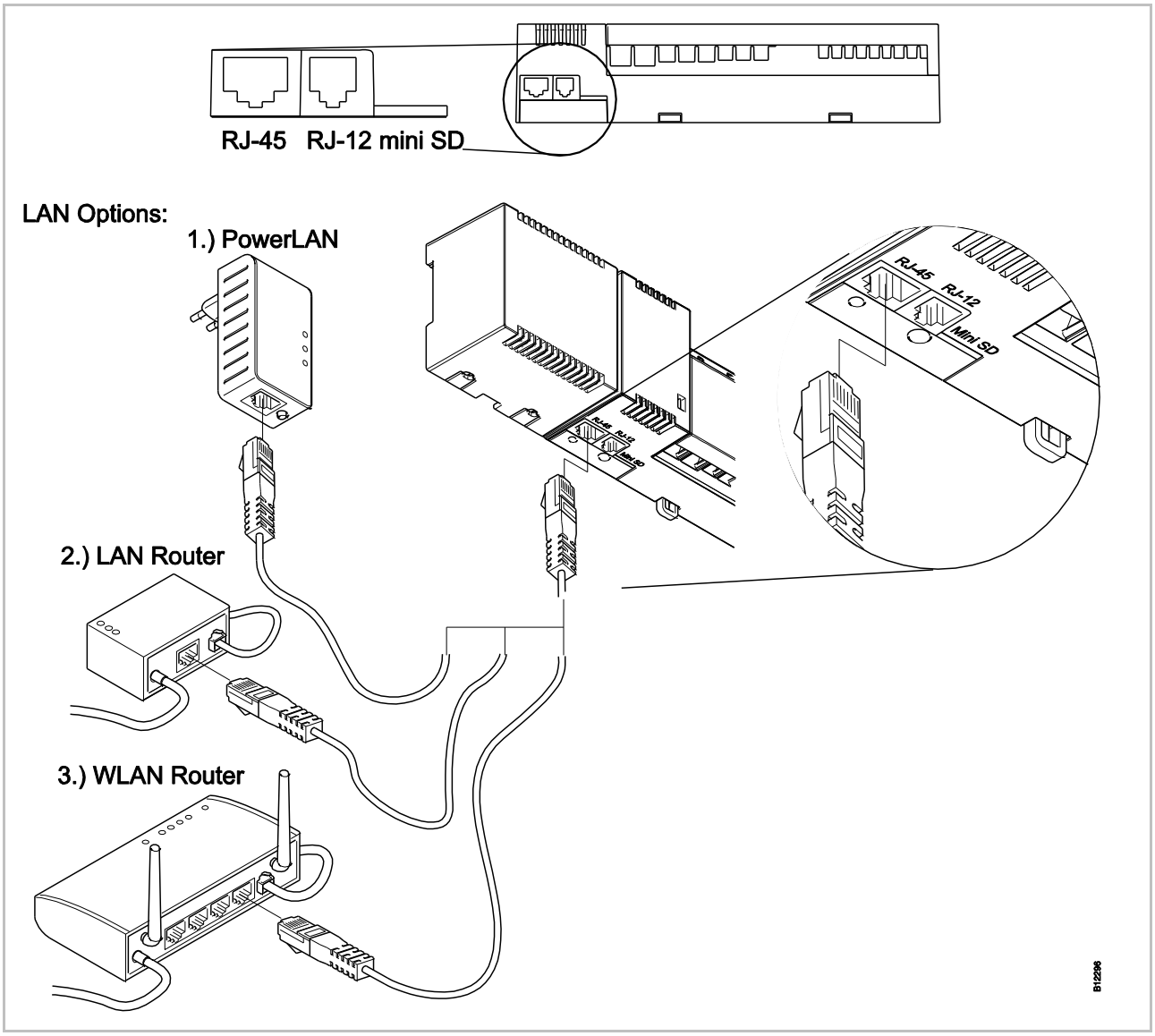


Fig. 49: LAN connection, here shown in the 24 V version with transformer

HINWEIS

Activate the LAN connection by defining the wireless controller as the master, see 7.1.6.

7 Commissioning and operation

Steps during commissioning

The commissioning of the control system comprises the following steps:

- ► Execute the addressing between wireless connection module and wireless room thermostats.
- ► Test addressing.
- ► If applicable: set time and date with one wireless room thermostat.
- ► Configure wireless connection modules and wireless room thermostats
- ► Configure wireless room thermostat into temperature sensor (sensor mode).

7.1 Addressing

Combination options

During addressing a wireless room thermostat is assigned to a radio channel.

The following combinations between a wireless connection module and a wireless room thermostat are possible:

- Address one wireless room thermostat to one radio channel.
- Address one wireless room thermostat to several radio channels.
- Address one wireless room thermostat or serveral wireless room thermostats in sensor mode to one radio channel.
- Address up to 3 wireless connection modules to each other.
- Combine several radio channels into one zone.

Maximum number

- Up to 20 wireless room units can be addressed to one wireless connection module, 4-, 8- or 12 channel version.
- One wireless room thermostat and up to four wireless room thermostats in sensor mode can be addressed to one channel. The additional wireless room thermostats have to be set into sensor mode before addressing to the channel.
- Each wireless connection module can be divided into up to 3 zones.

NOTE

If for example 12 channels are needed for one installation, but the number of wireless room units (thermostats, window contacts, etc.) is exceeding the maximum of 20 pieces, then one 4- and one 8-channel wireless connection module should be selected in order to be able to incorporate up to 40 wireless room units.

7.1.1 Assigning a wireless room thermostat to a radio channel

Example: Wireless room thermostat with display

One wireless room thermostat shall be addressed to radio channel CH 1.

- Press push button **CH 1** of the wireless connection module.
- The corresponding LED **CH 1** blinks.
- Press the sensor buttons ☑ and ☒ of the wireless room thermostat for 5 seconds simultaneously.
- LED **CH 1** of the wireless connection module lights.
- After 5 seconds LED **CH 1** goes off. If a demand is present, then LED **CH 1** would continue to light.
- The display of the wireless room thermostat is activated (operation mode) The symbol will be shown and the setpoint is blinking. The setpoint can be changed.

One wireless room thermostat is addressed to radio channel CH 1.

Example: Wireless room thermostat without display

A wireless room thermostat is to be assigned to radio channel CH 1.

- Remove the dial of the wireless room thermostat. → See page 34, Fig. 17.
- Push the pushbutton **CH 1** at the wireless connection module.
- The associated LED **CH 1** flashes.
- Push the button **SET** for 5 seconds at the wireless room thermostat.
- The LED **CH 1** at the wireless connection module lights up.
- After 5 seconds, the LED **CH 1** goes out. If there is a need, the LED **CH 1** continues to be lit.
- The LED at the wireless room thermostat flashes briefly. The wireless connection between wireless room thermostat and wireless connection module is established. The setpoint can be changed.

A wireless room thermostat is assigned to radio channel CH 1.

NOTE

If a room thermostat without display is used for cooling, you must set the dead zone for the wireless controller to 0 K via the room thermostat with display. If the dead zone is not set to 0 K, the wireless controller will use a difference of 2 K for control. A room thermostat without display does not recognise the dead zone and regulates the actual temperature according to the measured temperature. *→ See parameter description P-34, page 89.*

7.1.2 Address one wireless room thermostats to several radio channels

Example

Radio channel CH 1 and CH 2 shall be addressed to one wireless room thermostat.

- ▶ Press push button **CH 1** of the wireless connection module.
- ▶ The corresponding LED **CH 1** blinks.
- ▶ Press push button **CH 2** of the wireless connection module.
- ▶ The corresponding LED **CH 2** blinks.
- ▶ Press the sensor buttons ☑ and ☒ of the wireless room thermostat for 5 seconds simultaneously.
- ▶ LED CH 1 and **CH 2** of the wireless connection module light.
- ▶ After 5 seconds LEDs **CH 1** and **CH 2** go off.
- ▶ The display of the wireless room thermostat shows the symbol .

Radio channel CH 1 and CH 2 are addressed to one wireless room thermostat.

NOTE

The radio channels can be selected and addressed in any sequence.

7.1.3 Address several wireless room thermostats to one radio channel (sensor mode)

When several wireless room thermostats in sensor mode are addressed to one channel, then all actual measured temperatures will be used to calculate the average room temperature.

NOTE

Before addressing more than one wireless room thermostats to one radio channel, the additional wireless room thermostats have to be set into sensor mode.

In addition to one wireless room thermostat it is possible to add up to five wireless room thermostats in sensor mode.

When a wireless room thermostat will be addressed to a radio channel that is addressed already with another wireless room thermostat, then the address of the firstly addressed wireless room thermostat will be overwritten.

With parameter P-24 it is possible to put a wireless room thermostat back to factory settings. → See parameter description P-24, Option "4", page 87.

You may connect an external room temperature sensor to a wireless room thermostat in sensor mode. Use the option "1" for parameter P-49. A floor or outdoor temperature sensor must not be connected. → See parameter description P-49, option "1", page 96.

Example

Assign several wireless room thermostats to radio channel CH 1 for average temperature building.

Address the first wireless room thermostat

- Assign the first wireless room thermostat to a radio channel in accordance with chapter 7.1.1. → See page 54, chapter 7.1.1.

Second wireless room thermostat, set sensor mode

- Press the sensor buttons ☑ and ☰ of the wireless room thermostat for 10 seconds simultaneously
- The display shows "– – – –" first permanently for 5 seconds and then blinks for another 5 seconds.
- The display shows **SENS**.

NOTE

Sensor buttons ⊞ and ⊟ are inactive when the wireless room thermostat is set in sensor mode. The setpoint can only be changed at the wireless room thermostat which is in operation mode.

However, configuration of parameters can still be done by pressing the sensor button ☰.

Address second wireless room thermostat as temperature sensor

- Press push button **CH 1** of the wireless connection module.
- The corresponding LED **CH 1** blinks.
- Press the sensor buttons ☑ and ☒ of the second wireless room thermostat for 5 seconds simultaneously.
- LED **CH 1** of the wireless connection module lights.
- After 5 seconds LED **CH 1** goes off.
- The display of the second wireless room thermostat shows the symbol 📡.

A wireless room thermostat is assigned to radio channel CH 1 as temperature sensor. You may assign up to 4 temperature sensors to a channel. The wireless connection module calculates the average of the wireless room thermostat and all assigned wireless room thermostats in sensor mode.

Revoke sensor mode

If the wireless room thermostat has not been assigned to any wireless controller yet, revoke sensor mode as follows:

- Press the sensor buttons ☑ and ☰ of the wireless room thermostat simultaneously for 10 seconds.

If the wireless room thermostat has already been assigned to a wireless controller, revoke sensor mode according to either version A or B.

NOTE

In order to be able to reset the wireless room thermostat in sensor mode to the function "room operating unit", this wireless room thermostat must be assigned to a radio channel.

Version A

- Select parameter P-24, Option 4 of the service menu. → See parameter description P-24, page 87.

  The wireless room thermostat will be reset to factory settings. The assignment of the wireless room thermostat in sensor mode will be deleted.

Version B

- ▶ Delete the connection of the wireless room thermostat according to page 59, chapter 7.1.5.
- ▶ Press sensor button ☰ of the wireless room thermostat 5 seconds.
- ▶ The display shows "**SENS**" and symbol ⚠.
- ▶ Press sensor buttons ☰ and ☑ of the wireless room thermostat ☰ 5 seconds simultaneously.
- ▶ The display shows "**– – – –**".

The wireless room thermostat can be used again.

7.1.4 Test addressing

Wireless room thermostat with display

Execute the following steps to check if the wireless thermostat room are properly assigned to the wireless connection module.

- ▶ The display of the wireless room thermostat shows the symbol 📡. The wireless room thermostat is assigned to a wireless connection module.
- ▶ Press sensor buttons ☑ and ☒ of the wireless room thermostat 5 seconds simultaneously. The display of the wireless room thermostat shows "Pair" – "Test" as long as the LED of the wireless connection module lights.
- ▶ On the wireless connection module the LED of the assigned channel lights. If the wireless room thermostat is assigned to more than one channels then all assigned channel LEDs light.
- ▶ The LED/LEDs goes/go off after 5 seconds.

The addressing has been tested.

NOTE

When the display shows the symbol ⚠, then the radio connection between the wireless room thermostat and the wireless connection module is interrupted.

→ For possible causes see page 118, chapter 13.2.

Wireless room thermostat without display

When you test addressing, check that wireless connection module and wireless room thermostat are correctly assigned.

- ▶ Push the button SET at the wireless room thermostat.
- ▶ On the wireless connection module the LED of the assigned channel is lit. If the wireless room thermostat is assigned to more than one channel, then all assigned channel LEDs are lit.
- ▶ The LED goes out or the LEDs go out after 5 seconds

The addressing has been tested.

7.1.5 Delete addressing

Example

A wireless room thermostat, which is assigned to the radio channel CH 1 has to be deleted.

- Press channel button **CH 1** of the wireless connection module 12 seconds without interruption.
- After 2 seconds LED **CH 1** blinks 5 seconds.
- LED **CH 1** blinks fast another 5 seconds.
- LED **CH 1** goes off.
- After the next radio refreshing cycle the display of wireless room thermostat shows ⚠ and "**– – – –**". As this may take up to 10 minutes, press any button on the wireless room thermostat to check immediately if the channel has been deleted.

The addressing has been deleted.

7.1.6 Address up to 3 wireless connection modules to each other

Up to three wireless connection modules can be combined into one system. One of the wireless connection modules have to be defined as master. Ex factory all wireless connection modules are configured as slave.

NOTE

The wireless connection module has to be configured as master before any wireless room thermostats are assigned. When the wireless connection module is configured as master afterwards, then it is possible that certain parameter settings are lost.

Configure Master wireless connection module

- Press push button **Master** of the wireless connection module at least 10 seconds.
- After a short time the LED **Master** blinks 5 seconds.
- The LED **Master** blinks fast another 5 seconds.
- After 2 seconds the LED **Master** lights.

Address Slave wireless connection module to Master wireless connection module

- The LED **Master** lights.
- Press push button **System** of the Master wireless connection module until the LED **System** blinks.
- Press push button **System** of the Slave wireless connection module until the LED **System** blinks.
- At successful addressing:
  - the LED **System** of the Slave wireless connection module lights.
  - the LED **System** of the Master wireless connection module changes from blinking to on.
  - the LED **System** of the Master wireless connection module lights as soon as the first communication with the Slave wireless connection module has been built up.

Test addressing between Slave and Master wireless connection modules

The Slave wireless connection module is connected to the Master wireless connection module when at both the LED **System** lights.

NOTE

Further testing is not required. If desired the proper assignment can be tested by installing a bridge at terminals 09 and 10 (C/O-Input) of the Master wireless connection module. The Master wireless connection module will switch into cooling mode and will send this signal to the Slave wireless connection module. After max. 3 minutes the LED "Cool" of the "Slave" also lights blue.

Delete addressing of Master and Slave wireless connection modules "

- Reset radio system to factory settings. → See page 142, chapter 19.
- Press push button **Master** wireless connection module for 10 seconds.
- After a short time the LED **Master** blinks 5 seconds.
- The LED **Master** blinks fast another 5 seconds.
- At the Master wireless connection module the LEDs **Master** and **System** go off and at the Slave wireless connection module the LED **System** goes off.

NOTE

All central plant devices such as a central pump, burner control, C/O-signal for a heat pump etc. are connected to the Master wireless connection module. To a Slave wireless connection module only a local pump, if any, is connected.
→ For the configuration of the relevant parameters P-51, P-61, P62 und P-63 see parameter description page 97, chapter 8.3.6 and page 100, chapter 8.3.7.

7.2 Zones

Applications for zoning

Each wireless connection module can be divided in up to 3 zones.

Zones can be used fort he following applications:

- Within one zone the modes of operation, "Off (frost protection)", "Eco", "Normal Operation" or the same time program will be shared. The mode or operation can be changed at each wireless room thermostat.
- One wireless room thermostat will have the highest priority for heating and cooling. The change of mode will transferred to all wireless room thermostats within the zone. → See parameter description P-51, page 97.
- One wireless room thermostat will be assigned as master. With this wireless room thermostat there are following possibilities available:
  - Changing the mode of operation.
  - Changing the time program for the wireless connection module.
  - Selecting the mode of operation heating/cooling for the entire plant.

  → See parameter description P-48, page 95.
- All wireless room thermostats share the same setpoint within the zone. → See parameter description P-46, page 94.

7.2.1 Zone building, assign radio channels to one zone

NOTE

In the following example three zones are built. However, it is also possible to build one or two zones only, and to keep certain channels outside the zone(s).

Zoning building can be done only after the assignment of the wireless room thermostats to radio channels. After zoning building it is possible to add any wireless room thermostat to a zone.

Build first zone

- ▶ Press **Zone** button of the wireless connection module
- ▶ The green **Power** LED blinks.
- ▶ The blue LED indicating the first zone and the **CH** LEDs for channels not yet assigned to a zone blink.
- ▶ Press the **CH** buttons for the radio channels that need to be assigned to the first zone.
- ▶ The LEDs of the assigned channels light.

Build second zone

- ▶ Press **Zone** button for the second time.
- ▶ The red LED indicating the second zone and the **CH** LEDs for channels not yet assigned to a zone blink.
- ▶ Press the **CH** buttons for the radio channels that need to be assigned to the second zone.
- ▶ The LEDs of the assigned channels light.

Build third zone

- ▶ Press **Zone** button for the third time.
- ▶ The yellow LED indicating the third zone and the **CH** LEDs for channels not yet assigned to a zone blink.
- ▶ Press the **CH** buttons for the radio channels that need to be assigned to the third zone.
- ▶ The LEDs of the assigned channels light.

End zone building

- ▶ Press **Zone** button for the fourth time.
- ▶ The LEDs for zoning go off. The green **Power** LED lights.

The wireless connection is in operation. Zones are built.

7.2.2 Delete assignment of a radio channel to a zone

Delete the assignment of a radio channel to a zone in reverse order compared to the addressing

- ▶ Press the **Zone** button of the wireless connection module repeatedly until the LED for the zone from which the radio channel must be deleted lights.
  - – Zone 1: blue LED
  - – Zone 2: red LED
  - – Zone 3: yellow LED.
- ▶ The **CH** LEDs that are assigned to the selected zone light.
- ▶ Press the **CH** button of the radio channel that needs to be deleted from the zone.
- ▶ The relevant LED blinks. The radio channel is no longer assigned to the zone.
- ▶ Repeat this procedure in case further assignments need to be deleted.

7.2.3 Delete zone

NOTE

*When all CH LEDs blink after the first press of the **Zone** button, then no zones are built.*

- ▶ Press the **Zone** button of the wireless connection module repeatedly until the LED for the zone from which the radio channel must be deleted lights.
  - – Zone 1: blue LED
  - – Zone 2: red LED
  - – Zone 3: yellow LED.
- ▶ The **CH** LEDs that are assigned to the selected zone light.
- ▶ Press all **CH** buttons of the radio channels of which the **CH** LED lights. The CH LEDs blink. The zone is deleted.
- ▶ Repeat this procedure in case further zones need to be deleted. The wireless connection module is in standard operation when all zones are deleted.

7.3 Change setpoints

7.3.1 Set room temperature

Wireless room thermostat with display

The wireless room thermostat is in stand-by mode.

- ▶ Press any button on the wireless room thermostat for 2 seconds.
- ▶ The display changes into operation mode. The setpoint blinks.
- ▶ Press sensor button ⊟ or ⊞, to change the setpoint.
- ▶ Press sensor button ☑ to confirm the new setpoint.
  - – If no sensor button is pressed, then the new setpoint will be automatically saved after 5 seconds and the standby display is shown.
  - – To interrupt this procedure press the sensor button ☒. The new setpoint will **not** be saved.

Wireless room thermostat without display

- ▶ Set the temperature setpoint by turning the dial at the wireless room thermostat.
  - – Clockwise: Temperature setpoint is increased.
  - – Counterclockwise: Temperature setpoint is decreased.

7.3.2 Set floor temperature

The wireless room thermostat is in stand-by mode.

- ▶ Press any button on the wireless room thermostat for 2 seconds.
- ▶ The display changes into operation mode. The room temperature setpoint blinks.
- ▶ Press sensor button ☰ 5 seconds to enter the user menu. The display shows **P01**.
- ▶ Press sensor button ☰. The display shows **P02**.
- ▶ Press sensor button ☑. The display shows the setpoint for the floor temperature and the symbol ⏚.
- ▶ Press sensor button ⊟ or ⊞, to change the setpoint.
- ▶ Select one of the following options:
  - – Press sensor button ☑ to confirm the new setpoint. The display shows **P03**.
  - – Press sensor button ☒, to interrupt the procedure. The new setpoint is **not** saved. The display shows **P02.**
  - – If no sensor button is pressed, the wireless room thermostat returns into stand-by mode after 1 minute. The new setpoint is **not** saved.
- ▶ To leave the user menu press sensor button ☒. The display shows the operation mode.

NOTE

If for the stand-by mode for the parameter P-01 the option "Actual value" is selected, the actual value of the IR sensor (floor temperature) will be displayed for the first four seconds. Afterwards the actual value of the room temperature sensor is displayed. If for the parameter P-01 the option "IR sensor" (floor temperature) is selected, the display is in reverse order.

The floor temperature is measured every three minutes. The value shown and the value used in the wireless connection module is the average of the last three measurements.

7.4 Selecting operating mode

Possible modes of operation

With the wireless room thermostat the following modes of operation can be selected:

Symbol	Description
⏻	Off (frost protection)
☽	Reduced operation
☼	Normal operation
◷ III	Time program I "Pro 1", II "Pro 2" and III "Pro 3"
❄	Cooling mode (only selectable if the wireless room thermostat has priority over the heating/cooling device)
♨	Heating mode (only selectable if the wireless room thermostat has priority over the heating/cooling device)
❄ AUTO	Auto cooling mode (can not be changed by wireless room thermostat as the mode is determined by the cooling device through a C/O input)

Table 11: Modes of operation

NOTE

The setpoint can only be set in the operating mode "Normal operation". The setpoint cannot be set in the operating modes "Off" and "Reduced operation".

Select mode of operation

The wireless room thermostat is in stand-by mode.

- ▶ Press any button on the wireless room thermostat for 2 seconds.
- ▶ The display changes into operation mode. The room temperature setpoint blinks.
- ▶ Press shortly the sensor button ☰. The ⏻ symbol blinks.
- ▶ Press shortly the sensor button ☰, to change to the next mode of operation symbol. The symbol of the next mode of operation blinks.
- ▶ Press the sensor button ☰ repeatedly, until the symbol of the desired mode of operation blinks.
- ▶ Press the sensor button ☑, to confirm the new mode of operation.
  - – If no sensor button is pressed, the selection is interrupted after 10 seconds and the wireless room thermostat returns into stand-by mode. The new mode of operation is **not** saved.
  - – Press the sensor button ☒, to interrupt the procedure. The new mode of operation is **not** saved.

NOTE

The modes of operation heating and cooling are only selectable if the wireless room thermostat has the priority over the C/O input.

If a wireless room thermostat has been defined as master, then heating and cooling can only be selected with the master wireless room thermostat.

→ For the configuration of the relevant parameters P-48 and P-51 see parameter description page 95 and page 97.

NOTE

When the power supply is interrupted, only changes of setpoints and operating mode of the last 20 minutes are saved.

NOTE

When the operating mode "Reduced operation" has been selected and the display switches from sleep mode to operating mode, the display shows the setpoint minus the value for parameter P-44.

NOTE

When the operating mode "Off (frost protection)" was selected, the display switches from sleep mode to operating mode and the display shows the set value for parameter P-32. In cooling operation, the display shows "OFF" when switching from sleeping mode to operating mode. The buttons ⊞ and ⊟ are not active.

Select and change time program

→ See page 67, chapter 7.6.

NOTE

If a time program is activated it is possible to manually override the mode of operation determined by the time program. At the next switching point of the time program, the manual override is deactivated again by the time program. However, if "Off (frost protection)" has been selected, the mode of operation will remain "Off (frost protection)" at any time.

In order to permanently operate the wireless room thermostat manually, the time program must be deactivated.

7.5 Set time and date

At commissioning

For proper functioning of the plant it is necessary to set the time and date of each wireless connection module.

During addressing of the first wireless room thermostat to a wireless connection module, the setting of the time and date is automatically prompted. If this procedure is skipped, then it will be repeated when the next wireless room thermostat is assigned.

- The value for the hour blinks.
- Press sensor button ⊟ or ⊞, to set the actual value for the hours.
- Press sensor button ☑ to confirm. The value for the minutes blinks.
- Set minutes, year, month and day as described for the hours.
- When time and date have been set press sensor button ☑. The display shows the operation mode.

Check and adjust time and date, when needed

If necessary the time and date can be checked and adjusted directly at the wireless room thermostat.

The wireless room thermostat is in stand-by mode.

- Press any button on the wireless room thermostat for 2 seconds.
- The display changes into operation mode. The room temperature setpoint blinks.
- Press sensor button ☑ 5 seconds. The value for the hours blinks.
- Press sensor buttons ⊟ or ⊞, to set the actual value for the hours.
- Press sensor button ☑ to confirm. The value for the minutes blinks.
- Set minutes, year, month and day as described for the hours.
- When time and date have been set press sensor button ☑. The display shows the operation mode.

7.6 Time programs

7.6.1 Overview of the three time programs

The wireless connection module has three different types of time programs that can be changed.

- I: One profile for all weekdays (one profile)
  Profile symbol: 1 2 3 4 5 6 7
  Time program I has just one profile with three switched-on periods that are the same for every day.
- II: One profile for working days and one profile for the weekend (2 profiles)
  Profile symbols: working days: 1 2 3 4 5, weekend: 6 7
  With time program II one can distinguish between "working days" and "weekends", each with three switched-on periods.
- III: One profile for each weekday (7 profiles)
  Profile symbols: Monday 1, Tuesday 2, … Saturday 6, Sunday 7
  The most advanced time program can be made with time program III: it is possible to create different profiles for every weekday, each with three switched-on periods.

The time program I includes one profile. The profile is identically for every day. With time program II you can set different times for working days and weekend. Time program III offers the most possibilities. Here you can create for each weekday an own profile.

7.6.2 Definition "switched-on period" and "switching points"

NOTE

A switching point comprises of two switching points at all times. Specify a time for each switching point. Set the time for the change from "reduced operation" to "normal" for the first switching point. The display shows this switching point by the following icon ☼. Set the time for the change from "normal" to "reduced operation" for the second switching point. The display shows this switching point by the following icon ☽.

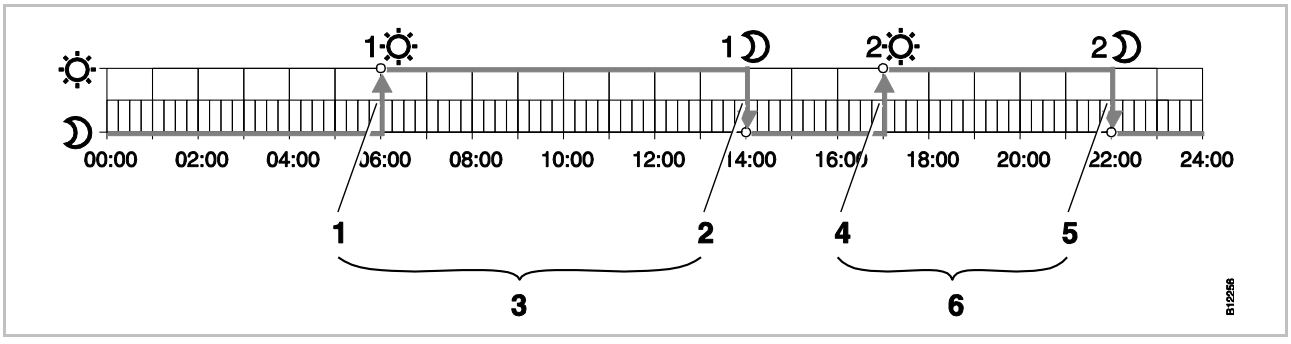


Fig. 50: Explanation "switched-on period" and "switching point"

1 *First switching point "reduced" → "normal"*
2 *First switching point "normal" → "reduced"*
3 *First switched-on period*
4 *Second switching point "reduced" → "normal"*
5 *Second switching point "normal"→ "reduced"*
6 *Second switched-on period*

7.6.3 Factory settings time program

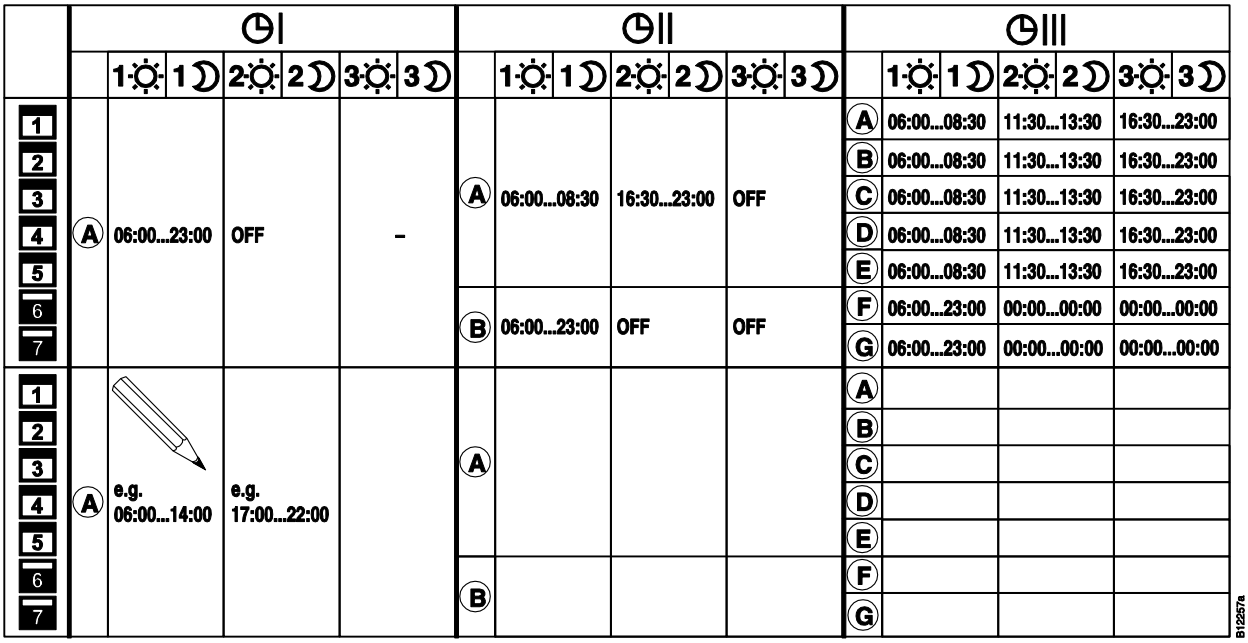


Fig. 51: Factory settings time programs

NOTE

It is possible to enter one to three switched-on periods. If only one switched-on period is entered, then during programming the second period is shown at the display as "OFF" and the third is not shown at all. When a second period is entered, then the third period will appear as "OFF", and can be programmed too.

NOTE

The temperature difference between "normal" and "reduced" can be adjusted individually for each wireless room thermostat. Factory setting is 3 K.

During "reduced operation" the display in operation mode shows the setpoint of "normal operation". If the setpoint has to be changed during "reduced operation", please note that the wireless connection module is actually controlling with the shown setpoint MINUS the set reduction.

→ See parameter description P-44, page 93.

7.6.4 Select time program

In the mode of operation "time program" one of the three time programs I, II, or III can be selected. The time programs are shown with the symbols ◷I, ◷II, or ◷III. If the symbol ◷ and the message **OFF** is shown, then no time program is active. If only the symbol ◷ without the message **OFF** is shown, then the "ECO" input of the wireless connection module is active.

The wireless room thermostat is in stand-by mode.

- ▶ Press any button on the wireless room thermostat for 2 seconds.
- ▶ The display changes into operation mode. The room temperature setpoint blinks.
- ▶ Press shortly the sensor button ☰ in order to enter the mode of operation selection. The ⏻ symbol blinks.
- ▶ Press the sensor button ☰ repeatedly, until the symbol of the time program blinks: ◷. The display shows **OFF.**
- ▶ Press the sensor buttons ⊟ or ⊞, to select time program **I**, **II, III, or OFF.** Corresponding to the symbols the display also shows **Pro1**, **Pro2** or **Pro3**.
- ▶ Press sensor button ☑, to confirm the selected time program.
  - – If no sensor button is pressed, the selection is interrupted after 10 seconds and the wireless room thermostat returns into stand-by mode. The new mode of operation is **not** saved.
  - – Press the sensor button ☒, to interrupt the procedure. The new mode of operation is **not** saved.

7.6.5 Change time program

NOTE

The sequence of the switching points has to be fix and ascending:

	Switching point	
Switched-on period 1	☼	*reduced ⇒ normal*
	☽	*normal ⇒ reduced*
Switched-on period 2	☼	*reduced ⇒ normal*
	☽	*normal ⇒ reduced*
Switched-on period 3	☼	*reduced ⇒ normal*
	☽	*normal ⇒ reduced*

The switching points can be shifted in any direction. However, they should not overlap each other. For example the second switching point reduced ⇒ normal should not lie before the first switching point reduced ⇒ normal.

The switching points of a switched-on period may not lie between the switching points of another switched-on period.

At midnight "00:00" means begin of day and "24:00" end of day.

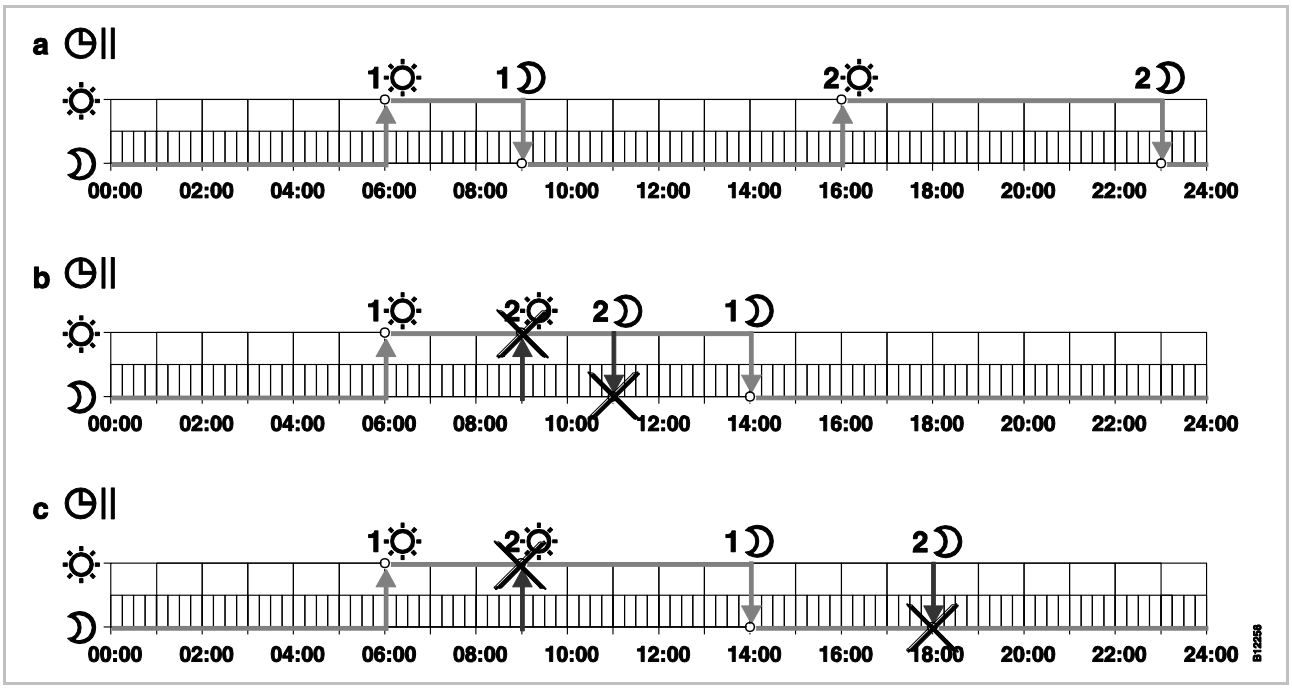


Fig. 52: Right and wrong settings of the time program

a Right setting: The switching points are configured in ascending order.

b Wrong setting: The switching points of the second switched-on period lie between the switching points of the first switched-on period.

c Wrong setting: Switched-on period 1 and 2 overlap.

Change an existing time program

Time program **Pro1** has to be changed.

The wireless room thermostat is in stand-by mode.

- Press any button on the wireless room thermostat for 2 seconds.
- The display changes into operation mode. The room temperature setpoint blinks.
- Press sensor button ☰ 5 seconds to enter the user menu. The display shows **P01**.
- Press sensor button ☰ shortly 3 times until the display shows **P04**.
- Press sensor button ☑. The display shows message Pro 1. The symbol ◷ blinks and all weekdays 1 2 3 4 5 6 7 are shown.
- Press sensor button ⊟ or ⊞, to select time program 2 **(Pro2)** or time program 3 **(Pro3).**
- Press sensor button ☑, to confirm the selection of the time program.

Example

The default value of the first time program has to be changed.

Switching points	Factory settings	Change
Switched-on period 1 "reduced" ⇒ "normal"	06:00	06:00 (unchanged)
Switched-on period 1 "normal" ⇒ "reduced"	23:00	09:00
Switched-on period 2 "reduced" ⇒ "normal"	OFF	16:00
Switched-on period 2 "normal" ⇒ "reduced"	OFF	22:00

Table 12: Example change of time program 1

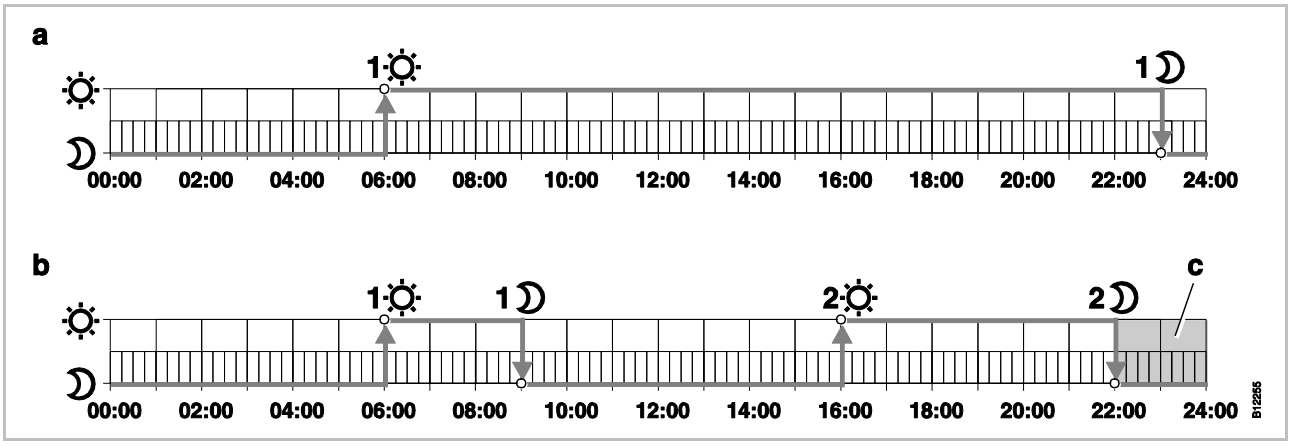


Fig. 53: Change of time program 1

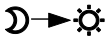
A Factory settings

B New settings according to example

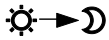
C In this example a third switched-on period can only lie in the grey area.

Time program Pro1 – change first switched-on period

Time program **Pro1** is selected. The factory settings need to be changed.



- Press sensor button ☑. The display shows the time of the first switching point for "reduced to normal". Time **06:00** blinks. Symbol ☼ is shown.

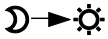


- Press sensor button ☑ to confirm the default time **06:00**. The display shows the time of the first switching point "normal to reduced". Time **23:00** blinks. Symbol ☽ is shown.
- Press sensor button ⊟, to set the new time at **09:00**.
- Press sensor button ☑, to save the changes of the first switch-on period.

The time for the first switching point "reduced to normal" has not been changed. The time for the first switching point "normal to reduced" has been changed to 09:00.

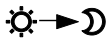
Set second switched-on period

- The display shows the message **OFF**. The second switched-on period is not used.



- Press sensor button ⊞, to set the new time at **16:00**.

The time for the second switching point "reduced to normal" has been set at 16:00. Symbol ☼ is shown.



- Press sensor button ☑. The display shows the time of the second switching point "normal to reduced". Time **16:00** blinks. Symbol ☽ is shown.
- Press sensor button ⊞, to set the new time at **22:00**.
- Press sensor button ☑, to save the changes of the second switch-on period.

The time for the second switching point "normal to reduced" has been set at 23:00. Symbol ☼ is shown.

Set third switched-on period

NOTE

The second switched-on period must first be set in time program Pro1 in order to enable the message OFF of the third switched-on period. If the second switched-on period is not set, the message OFF is not shown.

- The display shows the message **OFF**. The third switched-on period is not used.
- Select one of the following options:
  - Press sensor button ⊞, to set the time of the third switching point "reduced to normal". As the last switching point of the second switched-on period is set at 23:00, the time of the third switching points "reduced to normal" and "normal to reduced" have to be set between 23:00 and 24:00. Otherwise the second switched-on period has to be shifted.
  - Press sensor button ☑. The display shows **Pro2**. Symbol ◷ blinks and all working days 1 2 3 4 5 are shown.

Time program Pro2

- Select one of the following options:
  - Press sensor button ⊞, to skip time program **Pro2** and to go to time program **Pro3**.
  - Press sensor button ☒, to leave the time program Pro2. The display shows **P-04**.
  - Press sensor button ☑, to configure time program **Pro2**.
- After pressing the sensor button ☑, the display shows the symbol for working days 1 2 3 4 5.
- Set all switching points of the desired switched-on periods for the working days as described for **Pro1**.
- Repeat this procedure for the weekend. The display shows the symbol for the weekend 6 7.

Time program **Pro2** has be set.

Time program Pro3

- Procedure as described for time program **Pro 2**.

With time program **Pro3** all switching points of the desired switched-on periods are set per individual day of the week.

NOTE

To remove a switched-on period set the time of both switching points at the same value. First remove the third switched-on period, then the second switched-on period. When the second of three switched-on periods is removed, then also the third is deleted.

Please note that if sensor buttons are not pressed for more than one minute the wireless room thermostat return to its battery saving mode before the time program is completed.

7.6.6 Reset time programs to factory settings

The three time programs can be reset to factory settings individually with parameter **P-05**.

7.7 "eco" - Indicator

The "eco"- indicator displays the relative energy consumption of the plant. The "eco"- indicator has five levels.

The "eco"- level is depending on the following factors:

- Setpoint
- Actual room temperature
- Mode of operation
- Duration of the control deviation
- At heating and cooling plants: settings of the dead-zone.

Symbol	Description
	"eco"- level 1: low relative energy consumption, high energy efficiency
	"eco"-level 5: high relative energy consumption, low energy efficiency

Table 13: "eco"- indicator

Energy efficiency

The energy efficiency can be increased by the following measures:

- ▶ Reduce the setpoint of the room temperature and if applicable the minimum floor temperature.
- ▶ Use the time program and adapt this program to the end-user's daily schedule.
- ▶ For plants with heating and cooling: increase the dead-zone between heating and cooling.
- ▶ Use the optional accessory "Universal I/O Box" for an optimized control of the heat pump.

7.8 Parameterising function button

Function button

The sensor button ⊙ can be assigned with a function for the set duration. After pushing the sensor button ⊙, enter the duration first. Then the function selected in parameter P-10 is performed.

Specifying duration

The duration for the function of the sensor button ⊙ is set as follows:

- ▶ Press the sensor button ⊙ for 2 seconds. The display shows **P-0H**.
- ▶ Press the sensor button ⊟ of ⊞ to set the time. Maximum value: 9 hours (display **P-9H**). Minimum value: 1 hour **P-0H.** When selecting "0", the function is deactivated.
- ▶ Press the sensor button ☑.

Function Parameterisation

Set this function via the parameter P-10. → See parameter description P-10, page 83.

The following functions are available:

- Directly switch heating/cooling and display of the room temperature. → See following section "Procedure for direct switching of heating/cooling".
- Direct display of the floor temperature
- Direct display of the outdoor temperature
- Direct display of the relative humidity (optional)

NOTE

If you have chosen one of the 4 above functions, you may still use the function "selected duration". For this, press the sensor button ⊙ for 5 seconds.

Procedure for direct switching heating/cooling

- ▶ Press the sensor button ⊙ for 2 seconds. If the wireless connection module is in heating mode, the display shows **COOL** and the icon ❄ flashes. If the wireless controller is in cooling mode, the display shows **HEAT** and the icon ♨ flashes.
- ▶ Perform one of the following steps
  - ▶ Press the sensor button ☑ or wait for 10 seconds. The wireless connection module switches to cooling or heating mode.
  - Press the sensor button ☒ to cancel the process.

7.9 Lock / unlock operation of wireless room thermostat

Lock operation

- ▶ Press sensor buttons ⊟ and ⊞ of the wireless room thermostat simultaneously for at least 5 seconds.
- ▶ The display shows symbol 🔒. Operation is locked.

Unlock operation

- ▶ Press sensor buttons ⊟ and ⊞ of the wireless room thermostat simultaneously for at least 5 seconds.
- ▶ Symbol 🔒 is no longer shown at the display. Operation is unlocked.

7.10 Software update with microSD card

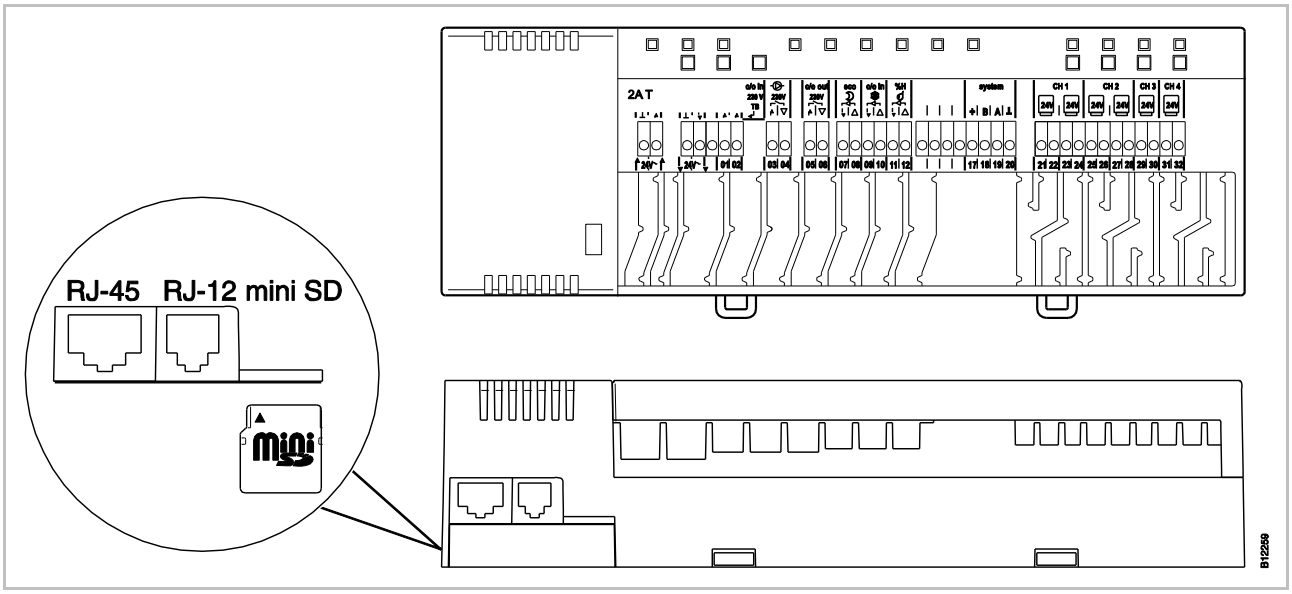


Fig. 54: mini SD-card

1 LAN connection, RJ-45
2 Active antenna connection, RJ-12
3 Slot for mini SD-card

- ▶ Disconnect power supply. Power LED off.
- ▶ Change SD-card.
- ▶ Reconnect power supply. Power LED on.
- ▶ The software update is automatically flashed into the micro controllers of the wireless connection module with the integrated boot loader.

NOTE

For the proper function of the plant it is normally not necessary to update the software.

However, if a plant extension is made some time after the installation and commissioning of the first wireless connection module and for example a second wireless connection module that should communicate with the existing wireless connection module is added, then it is appropriate that the software release of both wireless connection modules are the same.

As it is not possible to downgrade the software of the added wireless connection module, the software of the already installed wireless connection module should be updated with the software release of the added wireless connection module. The latest software release can be obtained at any time from the Sauter webpage. Please read the accompanying instructions before executing the software update.

NOTE

There is no microSD card in the LET41xx without a LAN interface.

In the LET42xx with a LAN interface, from version 2.2 onwards, there is no microSD card and none is required in order to operate it.

See quick reference for software update no. P100015568

8 Parameter descriptions

The menu is divided in a user menu and a service menu. The user menu is freely accessible. The service menu can only be entered through a service code.

NOTE

Parameters can only be set by a wireless room thermostat at the same time. Once an attempt is made to set parameters via another room thermostat at the same time, the display shows the following symbol 🔒.

8.1 Parameter overview

User menu

Parameter	Description
P-01	Set display in stand-by-mode: actual value or time.
P-02	Set setpoint for the minimal floor temperature.
P-03	Set upper and lower limits for room temperature setpoint.
P-04	Change time programs.
P-05	Reset time programs to factory settings.
P-06	Set display for stand-by-mode. (max. battery saving mode)
P-07	Activate or deactivate sound of sensor button.
P-08	Show ID-number of wireless room thermostat
P-09	Show ID-number of wireless connection module
P-10	Function for sensor button ⏻ parameterisation.
P-11	Specify limitation of humidity setpoint (optional for room thermostats with integrated humidity sensor).

Service menu

P-20
General parameters

Parameter	Description
P-SE	Access only with service code, factory settings "1234"
P-21	Show software-version of wireless room thermostat
P-22	Show software-version of wireless connection module
P-23	Show actual status of wireless connection module and I/O-Box
P-24	Reset parameter to factory settings.

P-30
Parameters for all wireless room thermostats

Parameter	Description
P-31	Set increment for room temperature setpoint adjustment.
P-32	Set temperature for frost protection function.
P-33	Set unit for temperature.
P-34	Set dead-zone for change-over between heating and cooling.
P-35	Change service code for service menu.
P-36	Change access code for public spaces.
P-37	Activate or deactivate "summer-/wintertime".

P-40
Parameters for individual wireless room thermostats

Parameter	Description
P-41	Set wall temperature correction of wireless room thermostat.
P-42	Set floor temperature correction of wireless room thermostat.
P-43	Set maximum floor temperature of wireless room thermostat.
P-44	Set reduction of room temperature for "Eco" function.
P-45	Activate or deactivate cooling lock and/or bypass, e.g. for a heat pump.
P-46	Activate or deactivate "setpoint sharing within one zone"
P-47	Activate or deactivate lock for public spaces or hotels.
P-48	Activate or deactivate master function of a wireless room thermostat.
P-49	Specify function of the external temperature sensor or configure window contact. An optional external temperature sensor or window contact must be connected to the wireless room thermostat.

P-50
Plant and topology related parameters

Parameter	Description
P-51	Set priorities for change-over of heating/cooling and configure output for heating/cooling or burner start.
P-52	Activate or deactivate "optimized time program".
P-53	Set communication between wireless connection modules radio frequency, BUS or LAN.
P-54	Determine "C/O Out" and overwrite set output function at the parameter P-51.

P-60
Control parameters

Parameter	Description
P-61	Configure ECO or N/R input.
P-62	Configure C/O in-/TB-input.
P-63	Select control of pump "local" or "Master-wireless connection module" (only with activated communication between wireless connection modules).
P-64	Select NC or NO function of thermal actuators.
P-65	Select control algorithm.
P-66	Activate or deactivate function "optimized actuator control".
P-67	Select controlled first start-up of floor heating.
P-68	Configure P-share of the PID-controller.
P-69	Configure I-share of the PID-controller.

P-70
Other control parameters

Parameter	Description
P-71	Activate and deactivate function "Heating/cooling release".
P-72	Specify outdoor temperature limit for heating release
P-73	Specify outdoor temperature limit for cooling release

8.2 User menu

Enter user menu

The wireless room thermostat is in stand-by mode.

- ▶ Press any button on the wireless room thermostat for 2 seconds.
- ▶ The display changes into operation mode. The room temperature setpoint blinks.
- ▶ Press sensor button ☰ 5 seconds to enter the user menu. The display shows **P01**.
- ▶ Select one of the following options:
  - – Press sensor button ☑, to confirm the parameter selection.
  - – Press sensor button ☰, to select parameter **P02.**
- ▶ Press sensor button ⊟ or ⊞, to change the settings of the selected parameter.
- ▶ Select one of the following options:
  - – Press sensor button ☑ to save the parameter change. The display shows the next parameter **Pxx**.
  - – Press sensor button ☒, to interrupt the procedure. The parameter change is **not** saved. The display shows the actual selected parameter.
  - – If no sensor button is pressed, the wireless room thermostat returns into stand-by mode after 1 minute. The changed parameter is **not** saved.
- ▶ To leave the user menu press sensor button ☒. Any confirmed parameter setting will be sent to the wireless connection module. The display shows the operation mode.

Parameter	Description
P-01	Set display in stand-by-mode. • Factory settings: room temperature ***NOTE*** • The display "Moisture" is only available for the version "Room operating device with moisture measurement". • The temperature of the external sensor can only be displayed if a temperature sensor is connected to a room thermostat. The function of the sensor is set via the parameter P-49. • If an outdoor temperature sensor is connected to a room thermostat, this temperature can be displayed at any room thermostat within the system. **Operation** ▶ Press sensor button ⊟ or ⊞, to select the displayed value change: room temperature, time, humidity, floor temperature or outdoor temperature. ▶ Press sensor button ☑ to confirm selection. The display shows **P-02**.

Parameter	Description
P-02	Set setpoint for the minimal floor temperature. • Factory settings: 15 °C • Setting range: 10…45 °C • Increment: 0.5 °C *NOTE* This parameter is only available for wireless room thermostats with connected floor sensor. Use the parameter P-43 to set the maximum floor temperature. The setpoint entered here must be lower than the value for P-43 minus 4 K. If the setpoint entered is too high, it is corrected automatically. **Operation** ▶ Press sensor button ⊟ or ⊞, to adjust the setpoint. ▶ Press sensor button ☑ to confirm the setpoint. The display shows **P-03**.
P-03	Set upper and lower limits for room temperature setpoint. • Factory settings: – Maximal setpoint temperature: 30 °C – Minimal setpoint temperature: 5 °C **Operation** ▶ Press sensor button ☑. The display shows **Hi30.** (Hi: high). ▶ Press sensor button ⊟ or ⊞, to set the upper limit. ▶ Press sensor button ☑. The display shows **Lo05.** (Lo: low). ▶ Press sensor button ⊟ or ⊞, to set the lower limit. ▶ Press sensor button ☑ to confirm the changed limits. The display shows **P-04**.
P-04	Change time programs. **Operation** → See page 66, chapter 7.5.
P-05	Reset time programs to factory settings. **Operation** ▶ Press sensor button ☑. The display shows **Pro1** for time program 1. ▶ Press sensor button ⊟ or ⊞, to select between time programs **Pro1**, **Pro2** or **Pro3**. ▶ Press sensor button ☑. The display shows **no**. ▶ Press sensor button ⊟ or ⊞, to select between options **no** and **yes**. ▶ Press sensor button ☑ to confirm the selection. The display shows **P-06**.
P-06	Set display for stand-by-mode. (max. battery saving mode) To minimize battery consumption the display can be switched off in stand-by- mode. Only the symbol "low battery" will be shown when applicable. • Factory settings: option "On" • Options – On: normal, as defined with parameter P-01. – Off: no symbols are shown (max. battery saving mode) **Operation** ▶ Press sensor button ☑. The display shows shortly **diSP** and then **On**. ▶ Press sensor button ⊟ or ⊞, to select option **On** or **OFF**. ▶ Press sensor button ☑ to confirm selection. The display shows **P-07**.

Parameter	Description
P-07	Activate or deactivate sound of sensor button. • Factory settings: Option "On" • Options – On: activate – OFF: deactivate **Operation** ► Press sensor button ☑. The display shows **On**. ► Press sensor button ⊟ or ⊞, to select option **On** or **OFF**. ► Press sensor button ☑ to confirm selection. The display shows **P-08**.
P-08	Show ID-number of wireless room thermostat. This ID-Number is needed to configure a smart phone web-application! **Operation** ► Press sensor button ☑. The display shows the ID-number. ► Press sensor button ☑. The display shows **P-09**.
P-09	Show ID-number of wireless connection module. This ID-Number is needed to configure a smart phone web-application! **Operation** ► Press sensor button ☑. The display shows the ID-number. ► Press sensor button ☑. The display shows **P-10** (enter service menu).

Parameter	Description
P-10	Use this parameter to specify the function of the sensor button ⊙. You may choose between the following functions: • Activation of a time for priorisation of the heating and cooling function • Display of the outdoor temperature • Direct switching between heating/cooling and display of room temperature • Display of the floor temperature • Display of the relative humidity • Factory settings: Option "0“ • Options – 0, Display: P-9H Press the sensor button ⊙, a time-bound priorisation of the heating or cooling function is activated at once for the set duration. The current room temperature is displayed. The function of the sensor button ⊙ overrides any other function. The selected function is active for the set duration. → See page 74, chapter 7.8. NOTE The priorisation of this function is displayed with the prefix "P" for this parameter. For example, a current outdoor temperature of 24° C is displayed as **P24 °C**. – 1, Display : The outdoor temperature and the outdoor temperature icon are displayed. For this, a sensor needs to be connected and the parameter P-49 must be configured. Push the sensor button ⊙ to display the current outdoor temperature. The value is forwarded to all wireless room thermostats that are part of the system and displayed on the respective wireless room thermostat after pushing the sensor button ⊙. The measured outdoor temperature serves as a pure display value and is not used for temperature control. For this option, an external temperature sensor must be connected to the wireless room thermostat. – 2, Display : Display: H-C is displayed if the room thermostat is configured as switching device "heating/cooling" and parameter P-51. Push the sensor button ⊙, switch between cooling and heating. The selection must be confirmed with the sensor button ☑. – 3, Display: The floor temperature and the floor temperature icon are displayed. For this, a floor sensor must be connected and the parameter P-49 must be configured accordingly. Push the sensor button ⊙ to display the current floor temperature. For this option, an external temperature sensor must be connected to the wireless room thermostat. – 4 Display: The relative humidity is displayed. The icon "%“ flashes. Push the sensor button ⊙ to display the current relative humidity. This option is only available for wireless room thermostats with integrated humidity sensor. The display switches to sleeping mode after 10 seconds. **Operation** ► Press the sensor button ☑. The display shows **P-9H**. ► Push the sensor button ⊟ or ⊞ to select an option. ► Press the sensor button ☑. The display shows **P-11**.

Parameter	Description
P-11	Limitation of the relative humidity This parameter is only available for wireless room thermostats with integrated humidity sensor. • Factory settings: – Maximum humidity setpoint: 65 % – Minimum humidity setpoint: 55 % • Adjusting area: 10…95 % **Operation** ► Press the sensor button ☑. The display shows **65 %**. ► Press the sensor button ⊟ of ⊞ to set the upper limit. ► Press the sensor button ☑. The display shows **55 %**. ► Press the sensor button ⊟ of ⊞ to set the lower limit. ► Press the sensor button ☑. The display shows **P-SE** (access to the service menu).

Table 14: User menu

8.3 Service menu

8.3.1 Enter service menu

P-SE

The service menu is protected with a service code. → This service code can be changed with parameter P-36. → See parameter description P-36, page 90.

The wireless room thermostat is in stand-by mode.

- Press any button on the wireless room thermostat for 2 seconds.
- The display changes into operation mode. The room temperature setpoint blinks.
- Press sensor button ☰ 5 seconds to enter the user menu. The display shows **P01**.
- Press sensor button ☰ repeatedly until the display shows **P-SE**.
- Press sensor button ☑. The display shows **0000**.
- Press sensor button ⊟ and ⊞ to enter the service code. The factory setting of the service code is **1234**. Confirm each selected digit with sensor button ☑.
- If the service code is correct then the display shows **P-20**, otherwise the display shows **P-SE**.

8.3.2 Select parameter group

- Press sensor button ☰, to select parameter group P-20, P-30, P-40, P-50 or P-60, e.g. **P-30**.
- Press sensor button ☑, to confirm the selected parameter group P-30. The display shows parameter **P-31**.
- Press sensor button ☰, repeatedly to select a parameter of the parameter group P-30. Press sensor button ☰ e.g. twice. The display shows **P-33**.
- Select one of the following steps:
  - Press sensor button ☑, to confirm selection.
  - Press sensor button ☰. The display shows **P-34**.
- Press sensor button ⊟ or ⊞, to change the settings of the selected parameter.
- Select one of the following steps:
  - Press sensor button ☑, to save the changed settings. The display shows the next parameter **Pxx**.
  - Press sensor button ☒, to interrupt the procedure. Any changed settings are not saved. The display shows the actual selected parameter.
- Press sensor button ☒, to leave the parameter group. The display shows the next parameter group, here e.g. **P-40**.
- To leave the user menu press sensor button ☒. Any confirmed parameter setting will be sent to the wireless connection module. The display shows the operation mode. The room temperature setpoint blinks.

8.3.3 P-20 "General parameters"

For the following parameter descriptions the relevant parameter was already selected. The display shows **P-xx**.

Parameter	Description
P-21	Show software-version of wireless room thermostat. **Operation** ► Press sensor button ☑. The display shows the Software-Version. ► Press sensor button ☑. The display shows **P-22**.
P-22	Show software-version of wireless connection module **Operation** ► Press sensor button ☑. The display shows the Software-Version. ► Press sensor button ☑. The display shows **P-23**.
P-23	Show actual status of wireless connection module and I/O-Box. • Options – 0: no errors detected. – 1: Alarm wireless connection module, TB-input active – 2: Alarm external signal I/O-Box – 3: Error wireless connection module and I/O-Box **Operation** ► Press sensor button ☑. The display shows **0** if no error is detected. If an error is detected, then **1**, **2** or **3** and the warning symbol ⚠ are shown. ► Press sensor button ☑. The display shows **P-24**.

Parameter	Description
P-24	Reset parameter to factory settings. Parameters are partly stored in the wireless connection module and partly in the wireless room thermostat. Which parameters can be reset under which conditions is defined in chapter 15.3. • Options – 0: Not active, no reset will be executed. – 1: Reset wireless connection module to factory settings. The addressing of wireless room thermostat and wireless connection module will not be deleted. The web server data are deleted. – 2: Reset wireless connection module to factory settings. The addressing of wireless room thermostats, wireless connection module and accessories will be deleted. The web server data are deleted. – 3: Reset wireless room thermostat to factory settings. The addressing of a wireless room thermostat or temperature sensor (sensor mode) will not be deleted. – 4: Reset wireless room thermostat to factory settings. The addressing of wireless room thermostat or temperature sensor (sensor mode) will be deleted. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select an option. ▶ Press sensor button ☑. The display shows **no**. ▶ Press sensor button ⊟ or ⊞, to select between options **no** or **yes**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the parameter **P-21**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ▶ Press the sensor button ☒. The display shows **P-20**.

Table 15: Service menu – P-20 "General parameter"

8.3.4 P-30 "Parameters for all wireless room thermostats"

Any change of the following parameters will be transmitted to all wireless room thermostats that are assigned to the wireless connection module.

It can take up to 10 minutes before all wireless room thermostats that are in stand-by-mode have received the transmitted data. If the wireless room thermostat is manually changed from stand-by-mode to operation-mode, the new data is immediately collected from the wireless connection module.

Parameter	Description
P-31	Set increment for room temperature setpoint adjustment. • factory settings: option "0" • Options: – 0: 0.5 K (1 F) – 1: 0.1 K (0.2 F) – 2: 0.2 K (0.5 F) **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **1** or **2**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-32**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-32	Set temperature for frost protection function. ***NOTE*** At a bus system, the temperature for the frost protection function for all master wireless connection modules is specified by the HeadMaster wireless connection module. If the value at a master wireless connection module is changed, the change is not assumed and not forwarded. For the Slave wireless connection modules, set the temperature for frost protection function separately via the Slave wireless connection module. Once the measured temperature undercuts the set temperature, the frost protection function is activated. • Factory settings: 8.0 °C • Setting range: 3…13 °C **Operation** ► Press sensor button ☑. The display shows **8.0**. ► Press sensor button ⊟ or ⊞, to change the value. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-33**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-33	Set unit for temperature. • Factory settings: Option "0" • Options: – 0: °C – 1: F **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **1**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-34**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-34	Set dead-zone for change-over between heating and cooling. *NOTE* At a bus system, the "dead-zone" for all master wireless connection modules is specified by the HeadMaster wireless connection module. If the value at a master wireless connection module is changed, the change is not assumed and not forwarded. The dead-zone will be applied by the wireless connection module as soon as the mode of operation changes over from heating to cooling and visa versa. The value of the dead-zone will be added to the setpoint "heating". The dead-zone is incorporated in the displayed room temperature setpoint. Calculation: Setpoint "cooling" = Setpoint "heating" + dead-zone Example: Setpoint "heating" = 21°C (shown setpoint during heating) Dead-zone = 2 K, Result: Setpoint "cooling" = 21 + 2 = 23°C. (shown setpoint during cooling) *NOTE* The value for the "dead-zone" may only be changed if the mode of operation is set at "heating". If this value is set during "cooling", the value will be doubled. If room thermostats without display are used in connection with a room thermostat with display, you must select the option "3" for "Deactivate dead zone". • Factory settings: Option "0" • Options: – 0: 2 K – 1: 4 K – 2: 6 K – 3: 0 K, dead-zone deactivated **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **1**, **2**, or **3**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-35**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-35	Change service code for service menu. **NOTE** At a bus system, the temperature for the frost protection function for all master wireless connection modules is specified by the HeadMaster wireless connection module. If the value at a master wireless connection module is changed, the change is not assumed and not forwarded. • Factory settings: 1234 **Operation** ► Press sensor button ☑. The display shows **1234**. ► Press sensor button ⊟ or ⊞, to change the service code. Confirm each selected digit with sensor button ☑. The display shows **no**. ► Press sensor button ⊟ or ⊞, to select between options **no** or **yes**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-36**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. **NOTE** In order to avoid unwanted access to the service parameters, the service code should be changed and safely documented by the installer.
P-36	Change access code for public spaces. **NOTE** At a bus system, the temperature for the frost protection function for all master wireless connection modules is specified by the HeadMaster wireless connection module. If the value at a master wireless connection module is changed, the change is not assumed and not forwarded. The access code for public spaces is independent from the service code protecting the service menu. The access code is only active if parameter P-47 is activated. • Factory settings: 1234 **Operation** ► Press sensor button ☑. The display shows **1234**. ► Press sensor button ⊟ or ⊞, to change the access code. Confirm each selected digit with sensor button ☑. The display shows **no**. ► Press sensor button ⊟ or ⊞, to select between options **no** or **yes**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-37**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. **NOTE** The access code has to be changed in order to avoid unwanted access.

Parameter	Description
P-37	Activate or deactivate "summer-/wintertime". If time and date are synchronized through the LAN-connection, then the automatic summertime / wintertime adaptation must be deactivated. • Factory settings: Option "0" • Options: – 0: activate – 1: deactivate **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0** or **1**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-31**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ► Press sensor button ☒. The display shows **P-30**.

Table 16: Service menu –P-30 " Parameters for all wireless room thermostats"

8.3.5 P-40 "Parameters for individual wireless room thermostats"

Parameter	Description
P-41	Set wall temperature correction of wireless room thermostat. The compensated temperature will be shown at the display as actual value. • Factory settings: 0 K • Setting range: –3…+3 K • Increment: 0.1 K **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to change the value. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-42**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-42	Compensate floor temperature. This parameter is only available for wireless room thermostats with connected floor sensor. The current temperature displayed is the compensated temperature. The set value is deducted from the measured temperature and the displayed value. • Factory settings: Option "0" • Options: – 0: standard setting – 1: average compensation – 2: high compensation **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **1** or **2**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-43**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-43	Set maximum floor temperature of wireless room thermostat. This parameter avoids that the floor temperature exceeds a maximum temperature level. ***ATTENTION*** This parameter is only available for wireless room thermostats with connected floor sensor. This function is not designed as a safety limiter. Therefore any liability for damages to the floor construction or plant components is expressly excluded. If a safety temperature limiter function is required then this has to be provided by an external hardwired safety temperature limiter (STB). • Factory settings: 35 °C • Setting range: 15…45 °C • Increment: 1 K

Parameter	Description
P-43 (continued)	**Operation** ► Press sensor button ☑. The display shows **35**. ► Press sensor button ⊟ or ⊞, to change the value. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-44**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-44	Set reduction of room temperature for "Eco" function. The frost protection function has a higher priority than the Eco function. → See parameter description P-32, page 88. Independently of the set value, the reduced temperature can not lower than 11 °C and not higher than 21 °C. This limitation will be selected automatically. • Factory settings: 3 K below the actual setpoint. • Setting range: 0 to +10 K • Step size: 1 K **Operation** ► Press sensor button ☑. The display shows **3**. ► Press sensor button ⊟ or ⊞, to change the value. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-45**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-45	Activate or deactivate cooling lock and/or by-pass, e.g. for a heat pump. *NOTE* • For applications that can lead to high temperatures, like solar heating, we strongly advise not to activate the function "By-pass heating" as the radio channel of the "by-pass heating" is not closed by the alarm of the TB-input. • When a heat pump is not equipped with a pressure overload by-pass, we advise to configure one or more heating loops (depending on the minimum load requirements), as by-pass. • Factory settings: Option "0" • Options: The function is only activated for the channel(s) that are assigned to the wireless room thermostat. – 0: By-pass inactive, cooling lock inactive – 1: By-pass "heating" active, cooling lock inactive – 2: By-pass "cooling" active, cooling lock inactive – 3: By-pass "heating" and by-pass "cooling" active, cooling lock inactive – 4: By-pass inactive, cooling lock active – 5: By-pass "heating" active, cooling lock active

Parameter	Description
P-45 (continued)	**Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **1**, **2**, **3**, **4** or **5**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-46**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-46	Activate or deactivate "setpoint sharing within one zone". → Refer to also page 138, chapter 18. Setpoint sharing is typically used for large rooms that have different temperature profiles for different parts of the room. The room is divided into several heating zones each with its own wireless room thermostat. Each heating zone will control the part of the room according to its own control loop. However, all setpoints are the same. A change of the setpoint at one wireless room thermostat initiates a change of all relevant wireless room thermostats. All relevant room thermostats need to be within one zone of the wireless connection module and enabled for setpoint sharing by the settings of parameter P-46. • Factory settings: Option "0" • Options: – 0: deactivate – 1: activate **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0** or **1**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-47**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-47	Activate or deactivate lock for public spaces or hotels. • factory settings: Option "0" • Options: – 0: deactivate lock. – 1: activate lock for public spaces. All sensor buttons are locked. When pressing sensor button ≣ the access code for public spaces is prompted. → See parameter description P-36, page 90. – 2: activate lock for hotels. All sensor buttons except for sensor buttons ⊟ and ⊞ are locked. With sensor buttons ⊟ and ⊞ it is possible to change the room temperature setpoint. When pressing sensor button ≣ the access code for public spaces is prompted. → See parameter description P-36, page 90.

Parameter	Description
P-47 (continued)	**Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0**, **1** or **2**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-48**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-48	Activate or deactivate master function of a wireless room thermostat. One wireless room thermostat per wireless connection module or per tone can be defined as master. With this master wireless room thermostat the modes of operation "Off (frost protection)", "reduced operation", "normal operation" and the time programs can be changed for the complete plant. Modes of operation can be changed locally with every wireless room thermostat. However, if the mode of operation is changed with the master wireless room thermostat then all local modes of operation are overridden. With parameter P-51 it is possible to provide any wireless room thermostat with the priority to change also the mode "heating/cooling", either centrally or locally (but valid for the entire plant). → See parameter description P-51, page 97. The master function of a wireless room thermostat is permanently shown in the display with **1** (left of the actual value). • Factory settings: Option "0" • Options: – 0: deactivate – 1: activate **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option 0 or 1. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-49**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-49  Section 10  Section 11	Optionally, you may connect an external temperature sensor to a wireless room thermostat. Indicate the function via this parameter. • Factory settings: Option "0“ • Options: – 0: The external temperature sensor serves as floor temperature sensor. For temperature control, the minimum and maximum floor temperature, as well as the room temperature are observed. The internal temperature sensor is compensated according to parameter setting P-41. The external temperature sensor is compensated according to parameter setting P-42. – 1: The external temperature sensor serves as room temperature sensor. The internal temperature sensor is deactivated. The external temperature sensor is compensated according to parameter setting P-41. – 2: The external temperature sensor serves as outdoor temperature sensor. The external temperature sensor does not influence the temperature control. The temperature sensor only serves to display the outdoor temperature. The measured outdoor temperature can be displayed on all wireless room thermostats that are part of the system. – 3: A window contact is connected. The contact works as "NC". The window contact is closed with the window closed. The condition of the window contact is conveyed to the wireless connection module. An open window is displayed in the wireless room thermostat with the icon ⊞. – 4: A window contact is connected. The contact works as "NO" (normally open). The window contact is open with the window closed. The condition of the window contact is conveyed to the wireless connection module. An open window is displayed in the wireless room thermostat with the icon ⊞. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0**, **1**, **2**, **3** and **4**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the parameter **P-41**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ▶ Press the sensor button ☒. The display shows **P-40**.

Table 17: Service menu – P-40 "Parameters for individual wireless room thermostats"

8.3.6 P-50 "Plant- and topology related parameter"

Parameter	Description
P-51	Set priorities for change-over of heating/cooling and configure output for heating/cooling or burner start. **ATTENTION** This setting is synchronised between wireless connection devices via radio and BUS RS485. Observe that the communications intervals for radio may need up to 3 minutes and those for BUS RS485 may need up to 1 minute to synchronise. If communication between wireless connection modules has been selected, then the settings of P-51 must be the same at all wireless connection modules with a wireless room thermostat. Otherwise the plant will not function properly. If option "0" or "1" has been selected, then the heating/cooling unit performs the master function and determines the heating/cooling mode. The mode of operation for heating/cooling can not be set by any wireless room thermostat nor be influenced by the wireless connection module. If option "2" has been selected, then the mode of operation for heating/cooling is determined by any wireless room thermostat. The heating/cooling unit has no influence on the mode of operation for heating/cooling. In addition it is possible to set one wireless room thermostat as master for heating/cooling. → See parameter description P-48, page 95. • Factory settings: Option "0" • Options: – 0: C/O-Input and C/O-Output of the wireless connection module have priority. – 1: Burner start and C/O-Input of the wireless connection module have priority. The C/O-Output is configured as burner start and switches off immediately when heating demand is not required. In cooling mode this output is inactive. – 2: The change-over between heating and cooling can only be done with the wireless room thermostat. In cooling mode the C/O-Output of the wireless connection module is active. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0**, **1** or **2**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-52**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-52	Activate or deactivate "optimized time program". If the function "optimized time program" is activated then the time of switching point "reduced to normal" shall be the time that the setpoint "normal operation" is reached. Hence, the wireless connection module will calculate an early start of the heating or cooling mode in order to do so. • Factory settings: Option "0" • Options: – 0: deactivated – 1: activated

Parameter	Description
P-52 (continued)	**Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0** or **1**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-53**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-53	Set communication "Radio/BUS RS485" or "LAN" between wireless connection modules. With the setting "Radio/BUS RS485", up to 3 wireless connection modules can be combined via radio and up to 16 via BUS RS485. The communications versions "Radio/BUS RS485" and "LAN" must not be used together within a system. • Factory settings: Option "0" • Options: – 0: Wireless and BUS RS485 communication active, LAN communication inactive – 1: LAN communication active, Wireless and BUS RS485 communication inactive – 2: Wireless, BUS RS485 and LAN communication inactive **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0**, **1** or **2**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-54**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-54	Overwriting the function set via parameter P-51 for output "C/O Out". By default, the parameter P-51 specifies the function for output "C/O Out" for the entire bus system. If you want to use a different function for output "C/O Out" for one or several wireless connection modules, specify the function via the parameter P-54. • Factory settings: Option "0" • Options: – 0: Function as set via parameter P-51. – 1: No function, C/O-output is inactive. – 2: C/O-output at this wireless connection module active at cooling demand – 3: Use C/O-output at this wireless connection module as burner control signal – 4: Use C/O-output as ventilation control signal, also see page 18, chapter 4.2 and page 114, chapter 10.

Parameter	Description
P-54 (continued)	**Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0**, **1**, **2**, **3** or **4**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the parameter **P-51**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ► Press sensor button ☒. The display shows **P-50**.

Table 18: Service menu – P-50 "Plant- and topology related parameters"

8.3.7 P-60 "Control parameters"

Parameter	Description
P-61	Configure ECO or N/R input. With the ECO-input it is possible to override the actual mode of operation of all wireless room thermostats with an additional main switch or SMS-modem. Depending on the selected option this function can either switch between "normal" and "reduced" or between "normal" and "frost protection (off)". The condition of the ECO input is forwarded to the associated Slave wireless connection module by each master wireless connection module . An ECO signal from a master wireless connection module has the same effect as a signal at the local ECO input of the wireless connection module. If the ECO-Input is activated, then the display shows the symbol ◷. • Factory settings: Option "0" • Options: – 0: N/R-Input is inactive. If at the wireless room thermostats a time program is selected, then this time program has priority. – 1: The ECO-Input has the highest priority, switches to "reduced". ECO-Input active: time program wireless room thermostat deactivated, mode of operation and setpoint can be changed. ECO-Input inactive: all functions of wireless room thermostat available, including time program. – 2: The ECO-Input has the highest priority, switches to "reduced". ECO-Input active: time program wireless room thermostat deactivated, mode of operation and setpoint can be changed. ECO-Input inactive: all functions of wireless room thermostat available, excluding time program. Symbol ◷ is fix. – 3: The ECO-Input has the highest priority, switches to "frost protection". ECO-Input active: time program wireless room thermostat deactivated, mode of operation and setpoint can be changed. ECO-Input inactive: all functions of wireless room thermostat available, including time program. Symbol – 4: The ECO-Input has the highest priority, switches to "frost protection". ECO-Input active: time program wireless room thermostat deactivated, mode of operation and setpoint can be changed. ECO-Input inactive: all functions of wireless room thermostat available, excluding time program. Symbol ◷ is fix. **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to select option **0**, **1**, **2**, **3** or **4**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-62**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-62	Configure C/O in-/TB-input. The TB-Inputs detects a voltage between 24 V and 230 V. • C/O in-/TB-Input: As soon as a voltage is detected the mode of operation of the wireless connection module is changed to cooling. If this wireless connection module is addressed to other wireless connection modules, then this C/O signal will be sent to the other wireless connection modules within 3 minutes. Please note wiring diagram Fig. 29, page 42. Phase and neutral have to be connected as defined in this diagram. The connection to terminals 01 (L) and 02 (N) may not be interchanged. • TB-Input for temperature monitoring: When the maximum supply water temperature is reached, an external safety limiter will switch off the pump and transfers this signal to the wireless connection module. Due to a primary pump or natural circulation it is possible that water further circulates through the heating loops. ***ATTENTION*** The TB-Input may not be used as safety temperature limiter. ***NOTE*** A radio channel configured as by-pass will not close when TB-Input is activated. • Factory settings: Option "0" • Options – 0: TB-Input is configured as temperature monitor. When the input is activated then the pump will be switched off immediately and all actuators are closed. When activated the red LED lights at the wireless connection module and the warning symbol is shown at the display of the wireless room thermostat. – 1: TB-Input is configured as temperature monitor. When the input is activated then the pump will be **not** be switched off, but all actuators are closed. When activated the red LED lights at the wireless connection module and the warning symbol is shown at the display of the wireless room thermostat. – 2: The "C/O in"-Input is configured as change-over for heating and cooling and as additional C/O-Input. When this input is activated, then the wireless connection module switches to cooling. The C/O-output is active. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0**, **1**, or **2**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-63**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-63	Select control of pump "local" or via master wireless connection device. This parameter can only be configured when several wireless connection modules communicate via radio frequency or BUS. • Factory settings: 0 • Options – 0: Pump output is configured as local pump. The pump will be switched on only when heating or cooling demand is caused by one of the channels of by the wireless connection module to which the pump is connected. The pump will not be switched on when demand is caused by another wireless connection. – 1: The pump output is only active at the master wireless connection module or at a bus system at the HeadMaster wireless connection module. Once there is a demand in a wireless connection module associated it he bus system, the pump output at the master wireless connection modulee or HeadMaster wireless connection module is activated. The local pump output is also active at wireless connection module where there is a need. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0**, **1**, or **2**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-64**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-64	Select NC or NO function of thermal actuators. ***NOTE*** At a bus system, the NC/NO configuration for all master wireless connection modules is specified by the HeadMaster wireless connection module. Option "NC" (normally closed) should be selected for thermal actuators that open the valve when the actuator is connected to power. Option "NO" (normally open) should be selected for thermal actuators that close the valve when the actuator is connected to power. • Factory settings: Option "0” • Options – 0: normally closed NC – 1: normally open NO **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select **0** or **1** ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-65**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-65  Section 10  Section 11	Select control algorithm. For efficient temperature control one can select between three control algorithms and an optimized actuator control. For optimized actuator control see next parameter description P-66. The following control algorithms can be selected: On/Off-control, PWM control for heat pump in combination with surface heating with high inertia (slow systems) and PWM control for surface heating with medium inertia (medium-lag systems) e.g. convection with wall heating. To save energy the pump is released 2 minutes after demand detection. ***NOTE*** For option "1" and "2", you can perform further setting for the control via parameters P-68 and P-69. • Factory settings: 0 • Options: – 0: On/Off-Control The heating will be switched on when the deviation between actual value and setpoint is larger than 0,5 K. The heating will be switched off when the deviation between actual value and setpoint is smaller than 0,5 K. On/Off-control is ideal for floor heating systems with higher supply water temperatures. The after run time of the pump control is 5 minutes. – 1: PWM-control with a period of 20 minutes. This control mode is ideal for floor heating in combination with a heat pump or with low supply water temperature. The after run time of the pump control is 20 minutes. – 2: PWM-control with a period of 12 minutes. This control mode is ideal for wall heating and low supply water temperatures. This PWM control is also suitable for eu.bac certification. The after run time of the pump control is 12 minutes. **Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0, 1** or **2**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-66**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-66  Section 10  Section 11	Activate or deactivate function "optimized actuator control". **ATTENTION** Use this parameter only for systems with 24 V wireless controllers. The relays for this application are not designed for 230 V wireless controllers. The optimized actuator control is a specially developed actuator control that saves energy. This control also replaces a quasi-proportional control. At the start the thermal actuator will receive a 100% signal for a certain period. After this heat up period the actuator receives pulse/pause signal that is depending on the ambient temperature, configured with the options of this P-66. This control yields a significant energy reduction. This parameter may only be used with AXT2 thermal actuators from SAUTER. Never use the parameter with the AXT3 thermal actuators from SAUTER or with third-party thermal actuators. There is the danger that the actuator will not open the valve. **NOTE** We recommend to deactivate the optimized actuator control at ambient temperatures below 10°C. • Factory settings: Option "0" • Options: – 0: deactivated, ambient temperature below 10 °C – 1: activated, ambient temperature between ca. 10 °C and 25°C – 2: activated, ambient temperature between ca. 25°C and 50°C **Operation** ► Press sensor button ☑. The display shows **0**. ► Press sensor button ⊟ or ⊞, to set option **0**, **1** or **2**. ► Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-67**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-67	Select controlled first start-up of floor heating. It is recommended to heat-up the floor slowly when a new floor heating system is installed. The heating up period takes 36 hours and is divided into three steps: • First step of 12 hours with a setpoint of 7 °C • Second step of 12 hours with a setpoint of 12 °C • Third step of 12 hours with a setpoint of 15 °C When the setpoint of the room temperature is reached, the valves will be closed. • Factory settings: Option "0" • Options: – 0: deactivate start-up-mode. – 1: activate start-up-mode. When this parameter is selected this start-up-mode can only be deactivated with the wireless room thermostat or by resetting the wireless connection module. When power is interrupted the start-up-mode is stopped and will continue after the power connection has been restored.

Parameter	Description
P-67 (continued)	**Operation** ▶ Press sensor button ☑. The display shows **0**. ▶ Press sensor button ⊟ or ⊞, to select option **0** or **1**. ▶ Select one of the following options: – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-68**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ▶ Press the sensor button ☒. The display shows **P-60**. To stop the start-up-mode during execution or to deactivate before begin: ▶ Press any button on the wireless room thermostat for 2 seconds. ▶ The display changes into operation mode. The setpoint blinks. ▶ Press sensor button ⊞. The display shows the remaining running time of the start-up-mode. Press sensor button ☒, to change to the standard display. ▶ Press sensor button ⊟, to reduce the remaining running time. The start-up-mode is deactivated at 0 hours. ▶ Press sensor button ☑. The display shows **no**. ▶ Press sensor button ⊟ or ⊞, to select option **no** or **yes**. – Select option **no**, to continue the start-up-mode. – Select option **yes**, to confirm the interruption of the start-up-mode. ▶ Press sensor button ☑. The display shows the standard display.
P-68  Section 10  Section 11	Configure P-share (amplification) for the PID-controller. Configure the PID-controller via parameters P-68 and P-69. Configure the I-share via the parameter P-69. The D-share cannot be set. *NOTE* The setting is only active if the option "1" and "2" was chosen for parameter P-65. Use parameter P-68 to specify how strongly the PID controller is to react to the currently measured setpoint/actual temperature difference. Only the currently measured setpoint/actual temperature difference is observed in this. The larger the difference, the larger the cooling/heating demand. The set value defines the setpoint/actual temperature difference where the actuation value is 100 %, i.e. where the valves are completely opened or closed. For example, the setting of 2 K would lead to actuation value is 50 % at a setpoint/actual difference of 1 K, i.e. where the valves are half opened or closed. At a setpoint/actual temperature difference of 2 K, the actuation size is 100 %. If temperature fluctuations are found, the P-share must be increased. • Factory settings: 3 K • Setting range: 1…10 K • Increment: 1 K **Operation** ▶ Press the sensor button ☑. The display shows the current value. ▶ Press the sensor button ⊟ or ⊞, to set setpoint. ▶ Perform one of the following steps – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-69**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-69  Section 10  Section 11	Configure P-share for the PID-controller. Configure the PID-controller via parameters P-68 and P-69. Configure the P-share via the parameter P-68. The D-share cannot be set. *NOTE* The setting is only active if the option "1" and "2" was chosen for parameter P-65. Use parameter P-69 to specify after how many hours the I-share reaches an actuation size of 100 % if the setpoint/actual temperature difference remains consistent. The I-share considers the total of all previous temperature differences. The larger the total, the larger the actuation size. • Factory settings: 4 h • Setting range: 0…10 h • Increment: 1 h The unit "h" is not displayed in the display. **Operation** ► Press the sensor button ☑. The display shows the current value. ► Press the sensor button ⊟ or ⊞, to set the setpoint. ► Perform one of the following steps – Press sensor button ☑, to save the changed settings. The display shows the parameter **P-61**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ► Press the sensor button ☒. The display shows **P-60**.

Table 19: Service menu – P-60 "Control parameters"

8.3.8 P-70 "Other control parameters"

Parameter	Description
P-71  Section 11	Activate and deactivate function "Heating/cooling release". • Factory settings: Option "0" • Options: – 0: Deactivate heating/cooling release – 1: Activate heating/cooling release **Operation** ► Press the sensor button ☑. The display shows **0**. ► Press the sensor button ⊟ or ⊞ to select the option **0** or **1**. ► Perform one of the following steps – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-72**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.

Parameter	Description
P-72  Section 11	Specify outdoor temperature limit for heating release. An outdoor temperature sensor must be connected to a wireless room thermostat. Use the parameter P-72 to set the outdoor temperature limit for heating release. If the average outdoor temperature across 24 hours undercuts this limit, heating is released. The release takes place with a time delay of 21 hours. If the average outdoor temperature rises above the limit, heating is deactivated at once. If the wireless connection module is activated for the first time or again, heating operation is released at once when the first valid outdoor temperature is below the outdoor temperature limit. • Factory settings: 16 °C • Setting range: 10…25 °C • Increment: 1 K **Operation** ► Press the sensor button ☑. The display shows the current value. ► Press the sensor button ⊟ or ⊞, to specify the setpoint. ► Perform one of the following steps – Press sensor button ☑, to save the changed settings. The display shows the next parameter **P-73**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter.
P-73  Section 11	Specify outdoor temperature limit for cooling release An outdoor temperature sensor must be connected to a wireless room thermostat. Use the parameter P-73 to set the outdoor temperature limit for cooling release. If the average outdoor temperature across 24 hours exceeds this limit, cooling is released. The release takes place with a time delay of 21 hours. If the average outdoor temperature drops below the limit, cooling is deactivated at once. If the wireless connection module is activated for the first time or again, cooling operation is released at once when the first valid outdoor temperature is above the outdoor temperature limit. • Factory settings: 25 °C • Setting range: 15…35 °C • Increment: 1 K **Operation** ► Press the sensor button ☑. The display shows the current value. ► Press the sensor button ⊟ or ⊞, to set the setpoint. ► Perform one of the following steps – Press sensor button ☑, to save the changed settings. The display shows the parameter **P-71**. – Press sensor button ☒, to interrupt the procedure. The display shows the selected parameter. ► Press the sensor button ☒. The display shows **P-70**.

Table 20: Service menu – P-70 "Other control parameters"

9 Bus system with RS485

9.1 Topology bus system

Multiple systems can be linked into a bus system via RS485. The bus system can be used, e.g. in apartment buildings, apartments or office buildings.

Each radio system is working independently, with some settings, such as alarms, being synchronised globally across all wireless systems.

Linking of a bus system is performed via a HeadMaster wireless connection module with one or several master wireless connection module. To one HeadMaster wireless connection module, up to 15 wireless systems can be connected.

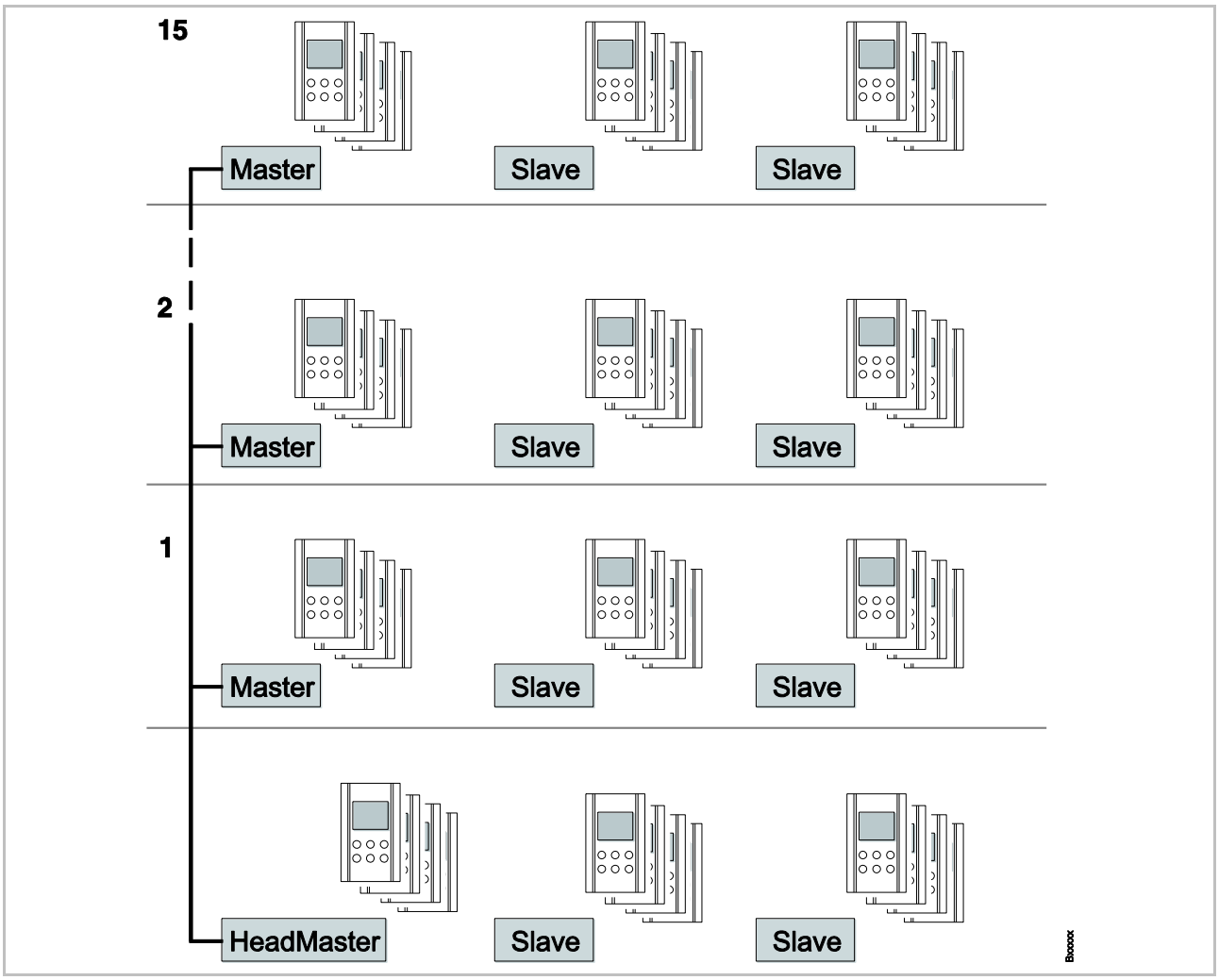


Fig. 55: Topology bus system

9.2 Electrical connection

Observe chapter 6.1 "Safety" and 6.2 "General wiring notes".

RS485

- Connect the wireless connection module in series according to the RS485 specification.
  - Terminal "system A": Data signal
  - Terminal "system B": Inverted data signal
  - Terminal "system ⊥": Ground (GND)

  Each wireless connection module has a bus end resistor.

NOTE

The terminals at the wireless connection module are designed for one wire. Therefore, the wiring of the wireless connection modules must be established via distributor sockets. Parallel or star-shaped wiring is possible.

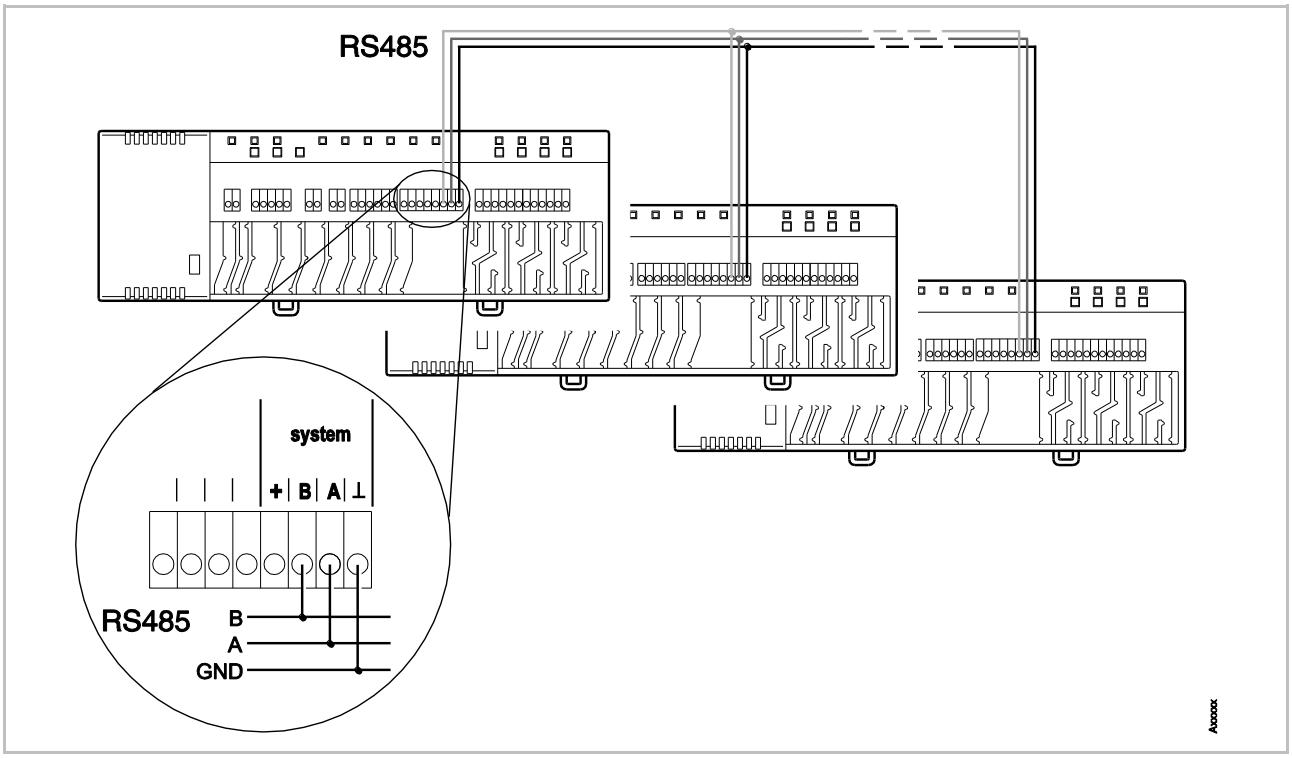


Fig. 56: Wiring bus system according to RS485 specification

ATTENTION

No communication due to wrong wiring!

Observe that the RS485 wiring always includes connection of the following terminals to each other.

– Terminal "system A" to terminal "system A" (data signal)

– Terminal "system B" to terminal "system B" (inverted data signal)

– Terminal "system ⊥" to terminal "system ⊥" (GND)

9.3 Commissioning

Steps during commissioning

Commissioning of a bus system comprises the following steps:

- Step A: Define one radio controller as HeadMaster wireless connection module.
- Step B: Assign one or several master wireless connection modules to a HeadMaster wireless connection module.
- Step C: Testing addressing.
- Optional: Assign one or two slave wireless connection modules to a master wireless connection module. → See page 59, chapter 7.1.6.
- Adjust the parameters to be synchronised via the HeadMaster wireless connection module.

NOTE

We recommend first complying with the order "Steps during commissioning". If you need to replace a wireless connection module, you can perform one of the above processes without losing information or addressing.

9.3.1 Step A: Define HeadMaster wireless connection module

For a RS485-bus system, you first need to define all wireless connection modules to be integrated into the system as master wireless connection modules. Then you need to define a master wireless connection module as HeadMaster wireless connection module.

Define master wireless connection module

- Press push button **Master** for at least 10 seconds.
- After a short time, the LED **Master** will flash for 5 seconds.
- The LED **Master** will flash faster for another 5 seconds.
- After 2 seconds, the LED **Master** lights up.

Define HeadMaster wireless connection module

- Push the pushbutton **Master** at the wireless master wireless connection module first. Keep the pushbutton **Master** pushed and at then push the pushbutton **CH1** additionally right after this.
- After a short time, the LEDs **Master** and **CH1** will flash for 5 seconds.
- The LEDs **Master** and **CH1** will flash faster for another 5 seconds.
- After 2 seconds, the LED **Master** flashes quickly double

The master wireless connection module is defined as HeadMaster wireless connection module.

NOTE

Observe that you need to push the pushbutton Master fist and then the pushbutton CH1. If you push the pushbutton CH1 first, you will delete addressing of channel CH1. Observe the flashing frequency.

9.3.2 Step B: Assign Master wireless connection module to HeadMaster wireless connection module

Assign Master wireless connection module to HeadMaster wireless connection module

▶ Press the pushbutton **System** at the HeadMaster wireless connection module until the LED **System** flashes quickly double.

▶ Wait until the following flash sequence has gone through:

– LED **System** flashes slowly for 5 seconds.

– LED **System** flashes quickly double.

▶ Press the pushbutton **System** at the Master wireless connection module, until the LED **System** flashes quickly double.

When addressing is successful, the LED **System** flashes quickly double at the master wireless connection module and the HeadMaster wireless connection module.

Assign other Master wireless connection module to HeadMaster wireless connection module

▶ Repeat the steps according to section "Assign master wireless connection module to HeadMaster wireless connection module" for each other master wireless connection module that you want to assign to the HeadMaster wireless connection module.

9.3.3 Step C: Testing addressing

Testing the addressing between Master and HeadMaster wireless connection module

The result of addressing is displayed as follows:

- Addressing successful: The LED **System** flashes quickly double at the Master wireless connection module. At the HeadMaster wireless connection module, the LEDs **System** and **Master** will flash double quickly.
- Addressing failed: At the Master wireless connection module, the yellow LED **System** goes out after 3 minutes. Repeat the process "Assigning Master wireless connection module to HeadMaster wireless connection module". Addressing may fail, e.g. if a line is broken.

9.3.4 Resetting the RS485 system

Reset HeadMaster wireless connection module as Master wireless connection module

▶ Press the pushbuttons **Master** and **CH1** at the same time for 10 seconds at the HeadMaster wireless connection module

▶ After a short time, the LEDs **Master** and **CH1** will flash for 5 seconds.

▶ The LEDs **Master** and **CH1** will flash faster for another 5 seconds.

▶ After 2 seconds, the LED **Master** lights up.

NOTE

When changing from Master to HeadMaster mode or from HeadMaster to Master mode, the RS485 addressings are deleted completely. You need to set up the RS485-bus system again.

Deleting the addressing between Master and HeadMaster wireless connection module

- ▶ Press the pushbuttons **Master** and **CH1** for 10 seconds at the HeadMaster wireless connection module to delete the assignment to the HeadMaster wireless connection module.
- ▶ The LED **System** stops flashing double quickly.

NOTE

The addressing at a master wireless connection module cannot be deleted. You can overwrite a present addressing, however.

If the addressing is overwritten, all information of the associated master wireless connection modules is lost. New assignment of the master wireless connection modules is required.

NOTE

If the voltage supply of the HeadMaster wireless connection module is interrupted, the LEDs of the master wireless connection modules go out after 3 minutes. The addressing is retained. Once voltage is pending again, the bus communication is established again automatically.

9.4 Functions

Demand

Each Master wireless connection module sends the following information to the HeadMaster wireless connection module via the RS485-bus:

- Cooling and heating demand of the associated wireless connection module system.
- Number of associated wireless room thermostats

C/O input (change-over)

The HeadMaster wireless connection module sends the status of its change-over input to all Master wireless connection modules. This corresponds to the condition of the C/O-input of the HeadMaster wireless connection module or cooling release via a wireless room thermostat.

If the Change-Over condition is controlled via the wireless room thermostats, this condition is sent by the Master wireless connection modules to the HeadMaster wireless connection module. The HeadMaster wireless connection module sends the information to the other Master wireless connection modules. The delay time may be one minute.

Outdoor temperature

The outdoor temperature is transferred via the RS485 bus. Each bus system can only have one wireless room thermostat with outdoor temperature sensor configured.

ECO input (operating mode)

The condition of the ECO input at the HeadMaster wireless connection module is sent to the Master wireless connection module via RS485. This signal is used at the respective master or Slave wireless connection module depending on settings of the P-61 parameter. See parameter P-61.

TB-input (Temperature limit)

The Master wireless connection modules consider the local temperature limit alarm and the temperature limit alarm of the HeadMaster wireless connection module.

If the HeadMaster wireless connection module's TB input is active, this signal is forwarded to all Master and Slave wireless connection modules. The master pump and local pumps are deactivated at once.

If the TB-input at a Master wireless connection module is active, the signal is forwarded only to the associated Slave wireless connection modules. The signal is not forwarded to the HeadMaster wireless connection module.

Parameters

The following parameters are forwarded to the Master wireless connection modules if changed at the HeadMaster wireless connection module:

- P-32 (Frost protection temperature)
- P-34 (Dead zone)
- P-35 (Service code)
- P-36 (Access code)
- P-64 (NC/NO).

Forwarding to the Slave wireless connection modules does not take place. Changes of these parameters at a Master wireless connection module are automatically overwritten by the HeadMaster wireless connection module.

A change of the parameter P-51 (priority switching heating/cooling) is forwarded to the Master wireless connection modules and the Slave wireless connection modules.

NOTE

All other parameters are not transferred via the RS485 bus.

10 Eu. Bac

NOTE

SAUTER Eco Climate Control may be referred to as an "eu.bac-certified wireless controller". For this, the following requirements must be fulfilled:

- *Only the AXT201 or AXT211 thermal actuators from SAUTER are used for the control.*
- *Third-party products may not be used with regard to the certification.*

eu.bac, the European Building Automation and Controls Association, is the European industry platform for manufacturers and providers of house automation, building automation and energy services for buildings.

With a Ca value (control accuracy) of 0.5 K, eu.bac-certified control enables energy savings of up to 20% in comparison with non-certified control.

A Ca value of 0.5 K in the underfloor heating sector is the best value that can be achieved.

SAUTER wireless control fulfils the eu.bac specifications for energy-saving systems for controlling the room temperature when the following instructions are considered:

Control algorithm

PWM control with a fixed period of 12 minutes must be activated.

For this, parameter P-65 must be configured to setting "2".

Optimised actuator activation

This activation enables energy savings and reduces the running times of the thermal actuators. This function is activated using parameter P-66:

Configure parameter P-66 to setting "2".

Proportional gain for the PID controller

With regard to the eu.bac certification, the default value of the proportional gain is set to 3K, see parameter P-68. When the PWM control is activated, parameter P-68 is also activated.

Integral gain for the PID controller

The default value of the integral gain is 4h, see parameter P-69.

When the PWM control is activated, parameter P-69 is also activated.

Window contacts / presence detector

If required, you can connect window contacts or a presence detector to a wireless room operating unit. You activate this function using parameter P-49.

To connect the window contacts:

• Setting “3”: The contact works as “NC” (normally closed). When the window is closed the window contact is closed and the heating is operating.

• Setting “4”: The contact works as “NO” (normally open). When the window is closed the window contact is open and the heating is operating.

To connect the presence detector with a potential-free contact:

• Setting “3”: The contact works as “NC” (normally closed). The contact is closed and reporting presence, and the heating starts operating.

11 MINERGIE®

NOTE

Sauter Eco Climate Control may be designated "MINERGIE room comfort (room temperature)". The following requirements must be met for this:

All system-specific properties, such as all minimum and maximum temperatures have been entered into the commissioning log. The commissioning log is available from Sauter Building Control.

Only products from Sauter, such as thermal drives, are used for control.

The Sauter radio control corresponds to the MINERGIE specifications for energy-saving systems for controlling the room temperature in Switzerland when the following instructions are observed.

Heating/cooling release

- Connect an outdoor temperature sensor to a wireless room thermostat.
- Activate the function "heating/cooling release. → See parameter description P-71, page 106.
- Specify the outdoor temperature limits for heating and cooling. → See parameter description P-72 and P-7, page 107.

Window contacts

If required, you may connect a window contact to a wireless room thermostat. The window contact function can be specified via the parameter P-49.

→ For connection of the window contact, see page 33, chapter 5.2.2.

→ For parameter description P-49, see page 96.

Ventilation control

On demand, you may connect a ventilation control for on-demand ventilation at the output "C/O Out" of the wireless connection module. In this case, select option "4" for parameter P-54.

→ For connection of the wireless connection module 230 V version, see page 43, Fig. 32.

→ For connection of the wireless connection module 24 V version, see page 50, Fig. 44.

→ See parameter description P-54, page 98.

Electrical additional heating (optional)

The control of electrical additional heaters can take place via the wireless connection module outputs "CH" for thermal drives. For this, connect the additional heaters via additional relays with sufficient current resilience and drop delay.

12 Cleaning and maintenance

Cleaning

Clean the wireless room thermostat with a lint-free, dry cloth. Do not use abrasive or caustic cleaning agents.

Maintenance

The wireless connection module and the wireless room thermostat do not require any maintenance.

13 Troubleshooting

The following tables describe possible problems and measures to remedy.

Contact your installer for any issues, which can not be resolved with to the following description. → See page 2.

13.1 Wireless connection module

Problem	Possible cause	Remedy	To be executed by
LED Fuse lights red	Fuse defect	• Replace fuse. → See page 131, chapter 16.2.2 and 16.2.3. • Check electrical connections.	Electrician
LED CH blinks	No radio signal between wireless room thermostat and wireless connection module	• Address wireless room thermostat to wireless connection module.	Professional

Table 21: Troubleshooting wireless connection module

13.2 Wireless room thermostat with display

Problem	Possible cause	Remedy	To be executed by
	Battery almost empty.	Replace batteries.	User
bAtt	Battery critically low. Radio connection between wireless room thermostat and wireless connection module is no longer guaranteed.	Replace batteries immediately. → See page 31, open wirelss room thermostat.	User
⚠ Err1 No radio signal between wireless room thermostat and wireless connection module for more than 30 minutes.	Power failure wireless connection module	Restore power supply. → See also page 119, chapter 13.2.1.	Electrician
	Fuse defect	• Replace fuse. → See page 134, chapter 16.3.2. • Check electrical connections.	Electrician

Problem	Possible cause	Remedy	To be executed by
⚠ Err2 No radio signal between wireless room thermostat in sensor mode and wireless connection module for more than 30 minutes.	Power failure wireless connection module	Restore power supply. → See also page 119, chapter 13.2.1.	Electrician
	Fuse defect	• Replace fuse. → See page 134, chapter 16.3.2. • Check electrical connections.	Electrician
⚠ Err3 Changed parameters can not be saved	Power failure wireless connection module	Restore power supply.	Electrician
	Fuse defect	• Replace fuse. → See page 134, chapter 16.3.2. • Check electrical connections.	Electrician
⚠ Err5 External temperature sensor defective	External temperature sensor defective	• Check lines • Replace external temperature sensor	Electrician
⚠	Dew-point exceeded.	Check supply water temperature of cooling unit. If possible increase supply water temperature.	Professional
Short-time display	Another wireless room thermostat is in the user or service menu.	Set one of the wireless room thermostats into sleeping mode by pressing the sensor button ☒.	Professional

Table 22: Troubleshooting wireless room thermostat with display

13.2.1 Procedure for ⚠ Err1 or ⚠ Err2

Once the display shows "⚠ Err1" or "⚠ Err2", the wireless room thermostat can no longer be assigned to a wireless connection module.

- ▶ Press the sensor buttons ☑ and ☰ of the wireless room thermostat for 10 seconds.
- ▶ After 5 seconds, the display "⚠ Err 1" or "⚠ Err2" goes out. The display shows the flashing symbols "**– – – –**" and "Reset".
- ▶ A query appears after 10 seconds. Select the option **yes** to reset the wireless room thermostat to factory settings. Select the options **no** to cancel the process.

We recommend that you perform one of the following steps after resetting the wireless room thermostat to factory settings:

- ▶ Delete the associated channel at the wireless connection module.
- ▶ Perform a complete reset for the wireless connection module.

13.2.2 Procedure when "radio signal lost"

- ▶ Resolve problem according to Table 22 on page 119.
- ▶ Execute following steps:
  - – Press any sensor button of the wireless room thermostat for 2 seconds. The display changes to operation mode.
  - – Wait until all wireless room thermostats have rebuilt the connection with the wireless connection module. This procedure takes at least one hour after power supply has been restored.

13.3 Wireless room thermostat without display

Interference/Display	Possible cause	Measure	To be performed by
LED briefly lights up every 2 seconds	Battery is nearly empty	Exchange batteries	Operator

Table 23: Troubleshooting:Wireless room thermostat without display

13.4 Replace batteries of wireless room thermostat

NOTE

Use high quality alkaline batteries with a long lifetime in order to enjoy long and problem free operation of the wireless room thermostat.

During battery replacement addressing and parameter settings remain stored. The radio connection and parameter settings are restored within 10 minutes after battery replacement.

- ▶ Open wireless room thermostat.
- ▶ Replace batteries. Dispose batteries environmental friendly!
- ▶ Close wireless room thermostat.

→ For wireless room thermostats with display see page 31, chapter 5.2.1.

→ For wireless room thermostats without display see page 34, chapter 5.2.3.

13.5 FAQs

FAQ	Note
Time and date is requested for every wireless room thermostat that is addressed.	During addressing of wireless room thermostats to a new connection module the input of time and date is prompted. This input can be skipped, however, with every next wireless room thermostat that is added the time and date prompt will pop-up until time and date are set. → See page 66, chapter 7.5.
Sensor buttons of the wireless room thermostat do not function properly.	Remove and replace the batteries. The wireless room thermostat executes a calibration of the sensor buttons automatically. Do not touch the sensor buttons during calibration. Alternatively, one can wait for 4 minutes until the next regular calibration has been executed. During this 4 minutes period the sensor buttons my not be touched.
Is it possible to show other values at the display than the room temperature?	Time or temperature can be selected. → See parameter description P-01, page 80.
Is it possible to deactivate the display?	Deactivate the display with parameter P-06, option "1". → See parameter description P-06, page 81.
How to correct the addressing of a wireless room thermostat?	It is possible to directly address a wrongly addressed wireless room thermostat to another channel. However, we recommend to delete the first connection before addressing to the new channel. → See page 58, chapter 7.1.5 and page 54, chapter 7.1.1.
How to find out which channels are already assigned to a zone?	Press the button **Zone** of wireless connection module once, twice, or three times. Each time the LEDs of the channels those are assigned to a zone light. → See page 61, page 7.2.
Is information lost during replacement of batteries?	Information is not lost during replacement of the batteries. Date is stored at the wireless connection module.
The pump doesn't switch on.	• One or more radio channels are configured as "by-pass". • The wireless room thermostat is addressed to another channel. • The wireless room thermostat is in emergency mode. No information is sent anymore. Press the relevant channel button on the wireless connection for 10 seconds. The corresponding LED goes off.
The LED **CH** is not lit when the setpoint is set after addressing or commissioning.	• Check if addressing was performed correctly. → See page 58, chapter 7.1.4. • If the LED CH at the wireless connection module flashes, perform addressing again. → See page 54, chapter 7.1.
The temperature does not increase in heating mode.	• Check the operating mode. The operating mode "Off (frost protection)“ may have been selected. • Check the frost protection temperature set. → See parameter description P-32, page 88.
The temperature does not drop in cooling mode.	• Cooling has been switched off.
The setpoint temperature cannot be set. The sensor buttons ⊟ and ⊞ do not react.	Check if the operating mode "Normal operation" has been selected. The setpoint temperature cannot be set in the operating modes "Off (frost protection)" and "Reduced operation". → See page 64, chapter 7.4.

FAQ	Note
A wireless conection module with the function "slave" in your system network (several wireless conection modules) has to be replaced. The new wireless conection module cannot be assigned to the Master wireless conection module.	Proceed as follows: ► Deactivate the master function at the Master wireless conection module. → See page 60, section "Delete addressing of wireless connection modules Master and Slave". ► Assign the "master" function to the wireless conection module again. → See page 59, section "Configure Master wireless connection module". ► Assign the replaced wireless controller to the Master wireless conection module again. Observe that reset to factory settings is not required. → See page 59, section "Address Slave wireless connection module to Master wireless connection module". ► If there is any other wireless conection module in the system network it has to be assigned to the Master wireless conection module as well.
The setpoint temperature cannot be set to the desired value.	The setting range is limited. → See page 81, parameter description P-03.
The wireless room thermostat shows only **SENS** and does not react any longer.	The sensor mode is active. ► Press the wireless room thermostat sensor buttons ☑ and ☰ simultaneously for 10 seconds.
The display of the wireless room thermostat shows **Err1**.	The distance from the wireless connection module is too big. The radio connection has been lost. The display shows **Err1** until the radio connection is established automatically. This process may take up to 30 minutes.
RS485 The master wireless connection module cannot be assigned to a HeadMaster wireless connection module.	A HeadMaster wireless connection module can be assigned 15 wireless systems. To warrant that addressing is not lost when voltage fails, the address is saved. If a master wireless connection module is replaced without the address being deleted first, the address remains saved in the HeadMaster wireless connection module. Only up to 15 addresses can be saved. ► Reset the HeadMaster wireless connection module to delete all addresses. → See page 112, section "Deleting the addressing between Master and HeadMaster wireless connection module".
RS485 Addressing of the wireless room thermostat has been lost at channel CH1.	Addressing of the channel CH1 has been lost when converting a master wireless connection module into a HeadMaster wireless connection module. The Master wireless connection module's LED **Power** blinks first. After 5 seconds, the LEDs **Power** and **CH1** blink quickly and at the same time. ► Re-assign the wireless room thermostat to the wireless channel CH1 of the master wireless connection module.

Table 24: FAQs

13.6 Tips and tricks

Application	Description
Wall heating with "by-pass"-function	When using the system for wall heating we recommend not to use the "by-pass-function" of the wireless connection module, but to realize this with special piping and separate valve.
Transfer of C/O-Signal	In case that the C/O signal between wireless connection modules is wired, we advice to connect the C/O output of the master wireless connection module to the C/O-input of the slave wireless connection module. If this C/O-signal is wired parallel with further wireless connection modules, then polarity of the wiring has to be correct.
Floor heating temperature monitoring.	At cooling the min. of the min / max configuration may not be used as dew-point monitor.

Table 25: Tips and tricks

14 Waste disposal

ATTENTION

Danger to the environment through improper disposal!

Improper disposal of the wireless room thermostat, the wireless connection modules or accessories may cause damage to the environment.

– Don't dispose batteries with household waste.
– Don't dispose the wireless connection module and the wireless room thermostat with household waste.
– Dispose the wireless connection modules and wireless room thermostat in accordance with the appropriate country-specific regulations.

15 Accessories

15.1 Active Antenna

To improve the transmission of a wireless connection module, e.g. when the wireless connection module is installed in a metal cabinet, an active antenna can be installed. → See page 22, Fig. 4.

The active antenna does not require any external power supply. It is provided via the included communication cable from the wireless connection module. A communication cable with a length of five meters and an RJ12 plug on either end is included in the delivery.

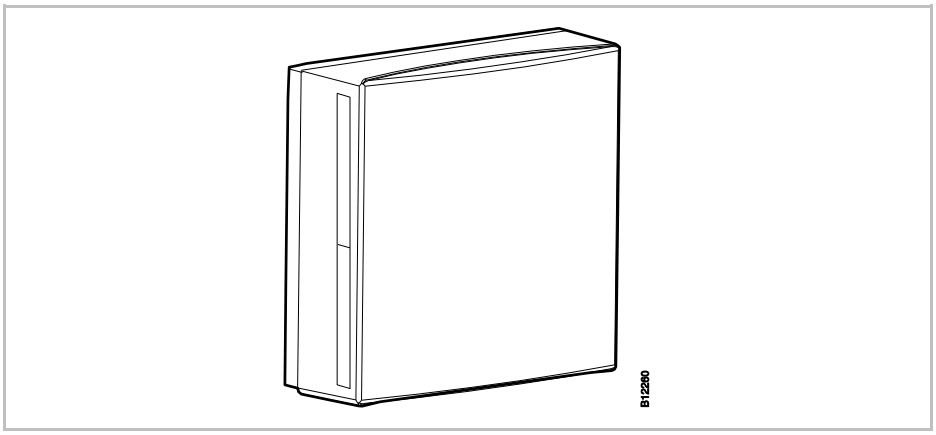


Fig. 57: Active antenna

NOTE

The active antenna does not require any addressing. Once the antenna is connected to the wireless connection module via the mains cable, the internal antenna of the wireless connection module is deactivated and the external active antenna assumes the function.

15.2 Repeater

Function repeater

If a radio connection between the wireless connection module and room thermostat or between wireless connection modules cannot be achieved, you may use a repeater. This leads to a larger range between the radio devices.

The repeater automatically assigns the required information to the wireless connection module via the radio connection. This requires a 230 V/5 V power supply. A plug-in mains adapter is included in the delivery.

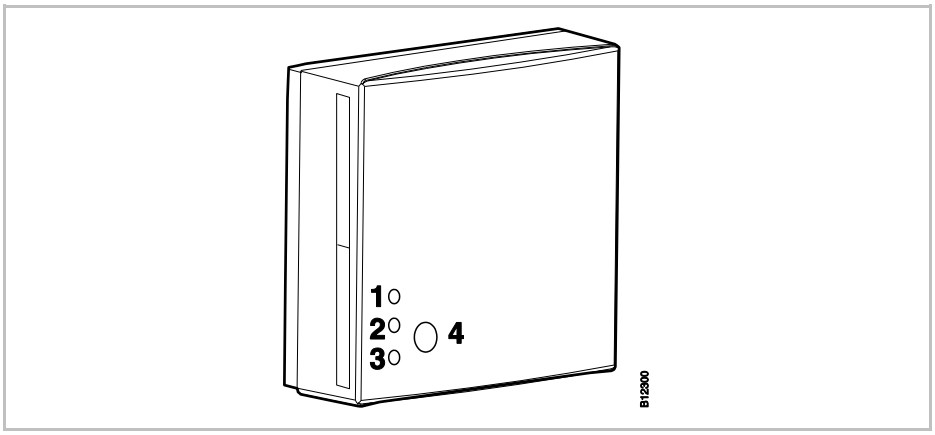


Fig. 58: Repeater

1 Red LED: Radio connection with the wireless connection module no longer present
2 Yellow LED: Display radio connection
3 Green LED: Display power supply
4 Push button for addressing

Radio room operating network and system network

No more than one repeater can be integrated into a radio room operating network or system network (wireless connection module). All room operating devices, room sensors or other accessories can transmit signals to the wireless connection module via the repeater in a radio room operating network. Only the two Slave wireless connection modules can transmit signals to the Master wireless connection module in a system network.

NOTE

If the radio connection has been lost, all LEDs at the repeater are lit.

15.2.1 Assign a room thermostat to the repeater

A repeater should be assigned to a room thermostat or several room thermostats.

NOTE

Within a radio room operating network, a repeater has to be assigned to only one room operating device. The other room operating devices are usually recognised automatically.

If a room operating device has a radio connection to the wireless connection module via the repeater, the room thermostat always radios via the repeater, even if the room thermostat would reach the wireless connection module without the repeater.

As soon as a repeater is no longer operating, e.g. due to a power supply failure, after 30 minutes the related room operating units automatically attempt to set up a wireless connection to the wireless controller. Err1 appears in the display.If the room operating unit can set up the wireless connection to the wireless controller, it communicates directly with the wireless controller.

When the repeater is active again, if the wireless connection to the wireless controller is interrupted once more, the room operating unit automatically communicates via the repeater again. It is only necessary to reassign the repeater if a new repeater is being used. The connection to the wireless controller is not lost in the case of a power failure. → For the display of Err1, see section 13.5.

The room thermostat is already installed at the final site.

The display of the wireless room thermostat shows the symbols "**– – – –**". Since the distance to the wireless connection module is too far, the room thermostat cannot be assigned to the wireless connection module. The room thermostat is to be assigned to the radio channel CH 1.

- ▶ Press push button **CH 1** on the wireless connection module. The corresponding LED **CH 1** blinkes.
- ▶ Remove the covers of the repeater.
- ▶ Place the repeater between the wireless connection module and room thermostat.
- ▶ Plug the USB mains plug into the repeater.
- ▶ Connect mains unit.
- ▶ Press the push button at the repeater for 5 seconds. The green LED at the repeater blinkes.
- ▶ Press the sensor buttons ☑ and ☒ of the room thermostat for 5 seconds simultaneously. The green and yellow LEDs at the repeater light up. The LED **CH 1** at the wireless connection module lights up.
- ▶ After 5 seconds, the LED **CH 1** goes out. If there is a need, the LED **CH 1** continues to be lit.

The display of the wireless room thermostat is activated (operation mode). The symbol is shown and the setpoint is blinking. The setpoint can be changed. The radio channel CH 1 is assigned a room thermostat. The repeater can be firmly installed.

NOTE

The maximum distance between repeater and wireless connection module is 40 m.

15.2.2 Test the repeater's radio connection

Perform the following steps to find out whether the radio connection to the wireless connection module is running via the repeater and whether the wireless connection module and the room thermostat are assigned correctly.

- The display of the wireless room thermostat shows the symbol . The room thermostat is assigned to a wireless connection module.
- Press the sensor buttons ☑ and ☒ of the room thermostat for 5 seconds simultaneously. The display of the wireless room thermostat shows "Pair" – "Test" as long as the LED of the wireless connection module is lit. The yellow LED at the repeater goes out and the green LED blinkes quickly.
- On the wireless connection module the LED of the assigned channel is lit. If the wireless room thermostat is assigned to more than one channel then all assigned channel LEDs are lit.
- The LED goes out or the LEDs go out after 5 seconds.

The addressing has been tested.

NOTE

When the green LED at the repeater blinks fast during the test, radio connection from room thermostat to wireless connection module via repeater is established properly.

When the green LED at the repeater lights, a direct radio connection between room thermostat to connection module exists. The room thermostat is placed in the wireless connection module's range.

15.2.3 Delete the repeater's radio connection

- Press the push button at the repeater for 10 seconds.
- After a short time, the yellow LED goes out. The green LED starts to blink. After another 5 seconds, all LEDs will blink.
- All LEDs at the repeater are lit. The green LED lights up again after a moment.

The addressing is deleted. You may re-address the repeater.

15.2.4 Assign the repeater to a wireless connection module

The system comprises a Master wireless connection module and up to Slave wireless connection modules. Since the distance is too far, the Slave wireless connection modules cannot be assigned to the Master wireless connection module.

- ▶ Press push button **System** of the Master wireless connection module until the LED **System** blinks.
- ▶ Remove the covers of the repeater.
- ▶ Place the repeater between the Master wireless connection module and the Slave wireless connection modules. The maximum distance between repeater and wireless connection module is 30 m.
- ▶ Plug the USB mains plug into the repeater.
- ▶ Connect mains unit.
- ▶ Press the push button at the repeater for 5 seconds. The green LED at the repeater blinkes.
- ▶ Press push button **System** of the Slave wireless connection module until the LED **System** blinkes. The green and yellow LEDs on the repeater light up.
- ▶ At successful addressing:
  - – the LED **System** of the Slave wireless connection module lights up.
  - – the LED **System** of the Master wireless connection module changes from blinking to off.
  - – the LED **System** of the Master wireless connection module lights up as soon as the first communication with the Slave wireless connection module has been built up.

NOTE

If the red LED starts to blink during addressing, the wireless connection module does not answer. The distance between repeater and wireless connection module may be too large.

15.2.5 Test addressing between the Slave and Master wireless connection modules

If the LED **System** is lit on the Slave and Master wireless connection modules each, the Slave wireless connection module is assigned to a Master wireless connection module. If the LED **System** is not lit, this wireless connection module is too far away from the repeater.

NOTE

No further tests are required. If required, check the addressing by installing a jumper across terminals 09 and 10 (C/O input) at the Master wireless connection module. The Master wireless connection module will switch to cooling mode and forward the signal to the Slave wireless connection module. After no more than 3 minutes, the LED "Cool" will light up blue.

15.2.6 Check repeater assignment

Perform the following step to check if a repeater is assigned to a room operating network or a system network.

► Press the push button at the repeater briefly.
  – If the green LED is lit, the repeater is connected to the room operating network.
  – If the yellow LED is lit, the repeater is connected to the system network.

15.2.7 Repeater and radio connection to the wireless connection module

If the red LED is lit on the repeater in addition to the green and the yellow ones, the connection to the wireless connection module has been lost. Check the following items:

- Is the wireless connection module supplied with voltage? The green LED Power must be lit.
- Is the microfuse of the wireless connection module OK? A defective microfuse is displayed by the red LED.

► For system networks: Was a reset performed via the Master wireless connection module? The LED "Master" is not lit at a reset.

NOTE

A blinking yellow LED at the repeater signals that the radio connection quality is at its threshold. This can be due to the distance between repeater and wireless connection module or due to interferences like metal, etc. We recommend that the repeater be placed closer to the wireless connection module or to remove interferences.

15.2.8 Deactivate LEDs at the repeater

If you are bothered by the LEDs being lit, you can switch off the LEDs as follows.

► Remove the covers of the repeater.

► There is a push button in the upper area of the PCB. Keep this push button pressed for 5 seconds. The LEDs go out.

► Install the cover of the repeater.

16 Technical data

16.1 Radio system

Radio frequency	868 MHz (coded)
Transmission rate	50 kbit/s
Direction	Bidirectional
Reach	• 40 m in "normal housings" or detached houses, depending on environment • 200 to 300 m in free field, depending on obstacles, surfaces, local disturbances
Standards	• Radio: EN 300220 • RTTE-Immunity: EN 301489-3 • RTTE-Radiation: EN 300220-3
Power reserve internal timer	24 hours after the complete charging time of 6 hours

16.2 Wireless connection module

16.2.1 Construction and dimensions

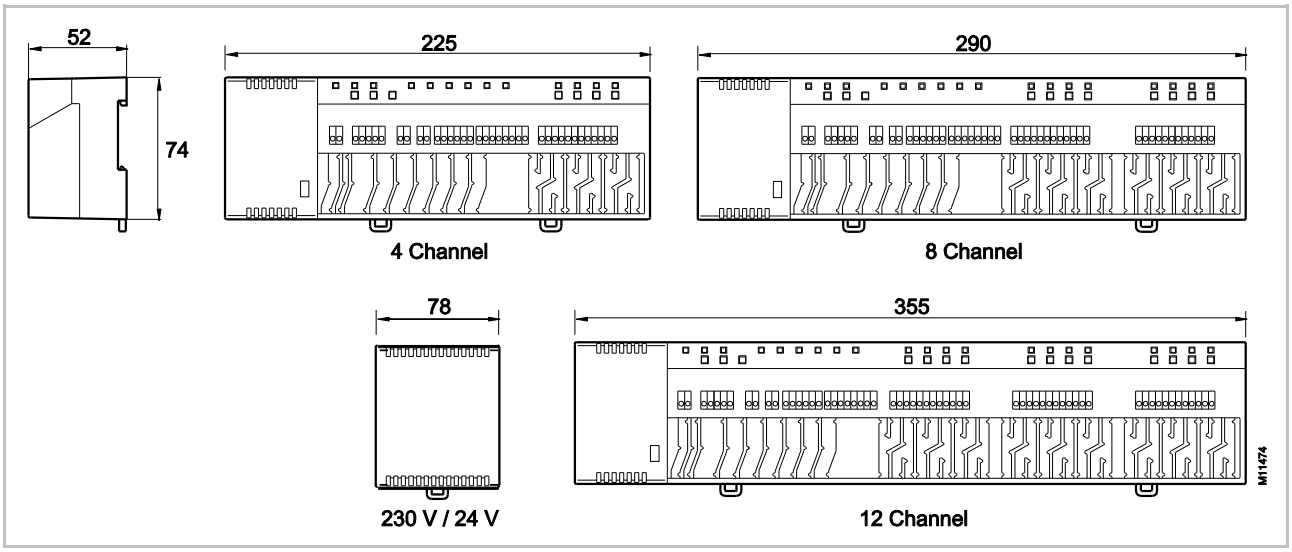


Fig. 59: Dimensions wireless connection module 24 V version and 230 V version and transformer for wireless connection module 230 V (all dimensions in mm)

Dimensions (width x height x depth) Dimensions connection module without transformer	• 4-channel: 225 mm x 74 mm x 52 mm • 8-channel: 290 mm x 74 mm x 52 mm • 12-channel: 355 mm x 74 mm x 52 mm • Transformer: 78 mm x 74 mm x 52 mm
Weight incl. transformer	• 4-channel: 1,3 kg • 8-channel: 1,5 kg • 12-channel: 1,7 kg
Cable insertion	Insertion baffle meander shape
Monitoring	LEDs

16.2.2 Electrical connections 24 V version

Power supply wireless connection module	24 V AC ± 15% via separate 230 V/24 V 50/60 Hz transformer
Fuse protection	2 A T (Type ELU 179120, manufacturer Siba)
Power source 24 V	External transformer with cable 230 V AC, 50/60 Hz
Power consumption at 24 V, transformer included, without thermal actuators, 4-, 8- or 12-channel version	2.6 W
Power consumption in operation	• 4-channel: max. 14.6 W • 8-channel: max. 26.6 W • 12-channel: max. 38.6 W Power consumption is depending on the number of actuator that is connected.
Max. current at stand-by	200 mA / 250 mA
Max. number of thermal actuators	• 4-channel: 6 (2 channels / 2 actuators, 2 channels / 1 actuator) • 8-channel: 12 (4 channels / 2 actuators, 4 channels / 1 actuator) • 12-channel: 18 (6 channels / 2 actuators, 6 channels / 1 actuator)
Protection class	II (EN60730)
Wire cross-section	Max. 1.5 mm^2 , see page 36, chapter 6.2.

16.2.3 Electrical connections 230 V version

Power supply wireless connection module	230 V AC ± 10%, 50 … 60 Hz
Fuse protection	4 A T (Type ELU 179200, manufacturer Siba)
Power consumption at 230 V, without thermal actuators, 4-, 8- or 12-channel version	2.6 W
Power consumption in operation	• 4-channel: 12.5 W • 8-channel: 24.5 W • 12-channel: 36.5 W Power consumption is depending on the number of actuator that is connected.
Max. current at stand-by	2 mA / 2,5 mA
Max. number of thermal actuators	• 4-channel: 6 (2 channels / 2 actuators, 2 channels / 1 actuator) • 8-channel: 12 (4 channels / 2 actuators, 4 channels / 1 actuator) • 12-channel: 18 (6 channels / 2 actuators, 6 channels / 1 actuator)
Wire cross-section	Max. 1.5 mm^2 , see page 36, chapter 6.2.

16.2.4 Inputs

C/O	Contact recognition, low voltage from wireless connection module
Eco (N/R)	Contact recognition, low voltage from wireless connection module
Dew-point monitoring	Contact recognition, low voltage from wireless connection module
C/O in-/TB-input	• General input wireless connection module 24 V: 24…230 V • General input wireless connection module 230 V: 230 V

16.2.5 Outputs

Max. number of thermal actuators	• 4-channel: 6 (2 channels / 2 actuators, 2 channels / 1 actuator) • 8-channel: 12 (4 channels / 2 actuators, 4 channels / 1 actuator) • 12-channel: 18 (6 channels / 2 actuators, 6 channels / 1 actuator)
Outputs for thermal actuators	• 24 V version: 24 V with Triac-outputs • 230 V version: 230 V with relais-outputs, potential free 0,5 (0,3) A • NO (normally open) / NC (normally closed), configurable • PWM- or On/Off-control • Shortcut protected
Configurable output for C/O, burner start or ventilation control	• 230 V / 2.5 A, 1 A inductive • Potential free • Without time delay and after-run time
Relays for pump output	• 230 V / 2.5 A, 1 A inductive • Potential free • 2 min delay (configurable) • 30 s after-run time (configurable)

16.2.6 Performance data

Data transmission	• Room control network: max. 10 min • System network: max. 1 min
Transmission power	1…32 mW, depending on the distance between room thermostat and wireless connection module
Average transmission power	Approx. 0.0004 mW
Transfer interval in operation	• Wireless room thermostat to wireless connection module: every 10 min • Wireless connection module to wireless connection module: every 3 min

16.2.7 Environmental conditions

Ambient temperature	0…+55 °C
Ambient humidity	5…80 % r.F.
Storing and transport temperature	–25…+60 °C
Degree of protection	IP 20 (EN 60529)

16.3 Wireless room thermostat with display

16.3.1 Construction and dimensions

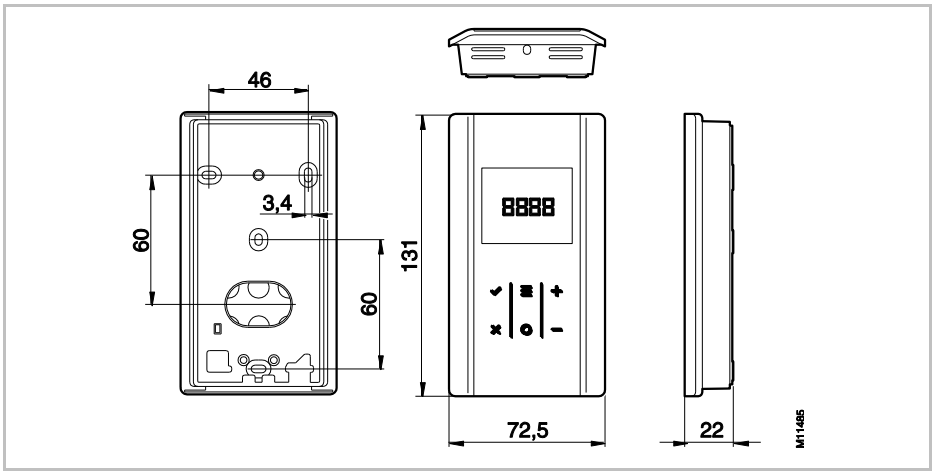


Fig. 60: Dimensions wireless room thermostat with display (all dimensions in mm)

Dimensions (width x height x depth)	72.5 mm x 131 mm x 22 mm
Weight	130 g
Display	• TFT LCD, black on grey, 76 Symbols • Dimensions: 32 mm x 38 mm

16.3.2 Power supply

Battery	2 x 1.5 V AAA
Battery lifetime	> 1.5 years
Fuse protection	2 A T (Type ELU 179120, manufacturer Siba)
Protection class	III (EN 60730)

16.3.3 Performance data

Adjustment area of temperature setpoint	+5 … +30 °C
Measuring accuracy (resolution)	±0.1 K / ±0.5 K
Cycle time	approx. 10 min
Dead time	approx. 50 s
Transfer interval	• 1 … 10 min • 5 s after change of setpoints or operating mode
Activation time (wake-up time)	< 2 s or 1.2 s
Max. collection time for information from RF-CTR	5 s or 10 s
Sleeping mode	• Without operation: after max. 5 s • After programming at user level: 30 s • After programming at service level: 20 min

16.3.4 Environmental conditions

Ambient temperature	0…+55 °C
Ambient humidity	5…80 % r.F.
Storing and transport temperature	–25…+60 °C
Degree of protection	IP 20 (EN 60529)

16.3.5 Dimension cover plate (acessory)

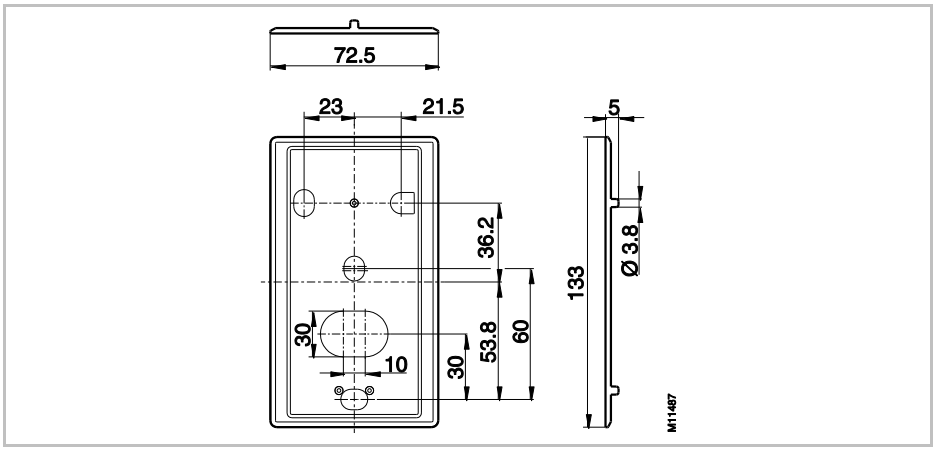


Fig. 61: Dimensions cover plate (all dimensions in mm)

16.4 Wireless room thermostat without display

16.4.1 Construction and dimensions

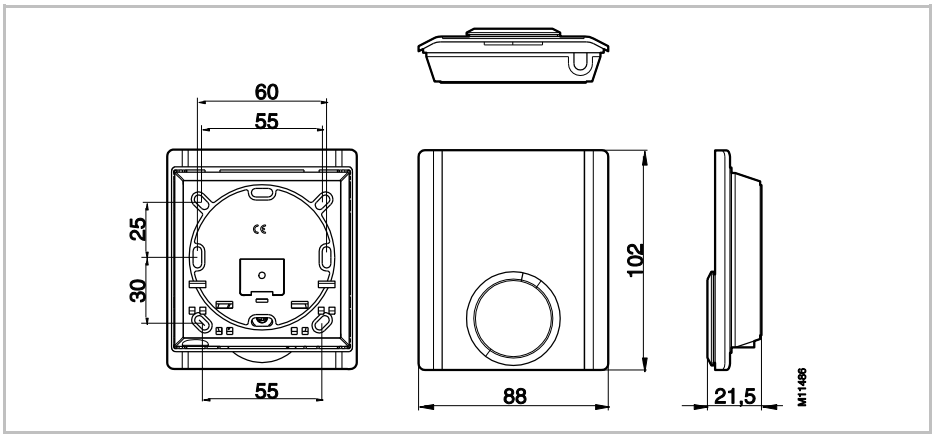


Fig. 62: Dimensions wireless room thermostat without display (all dimensions in mm)

Dimensions(width x height x depth)	88 mm x 102 mm x 21,5 mm
Weight	80 g
Sensor	NTC

16.4.2 Power supply

Battery	2 x 1.5 V AAA
Battery lifetime	> 1.5 years
Fuse protection	2 A T (Type ELU 179120, manufacturer Siba)
Protection class	III (EN 60730)

16.4.3 Performance data

Setting range setpoint	+5 … +30 °C
Accuracy (resolution)	±0.2 K/±0.5 K
Transfer interval	• In operation: approx. every 10 min • When operating the dial: approx. 5 s
Frost protection	8°C

16.4.4 Environmental conditions

Ambient temperature	0…+55 °C
Ambient humidity	5…80 % r.F.
Storing and transport temperature	–25…+60 °C
Protection class	IP 20 (EN 60529)

17 Menu structure

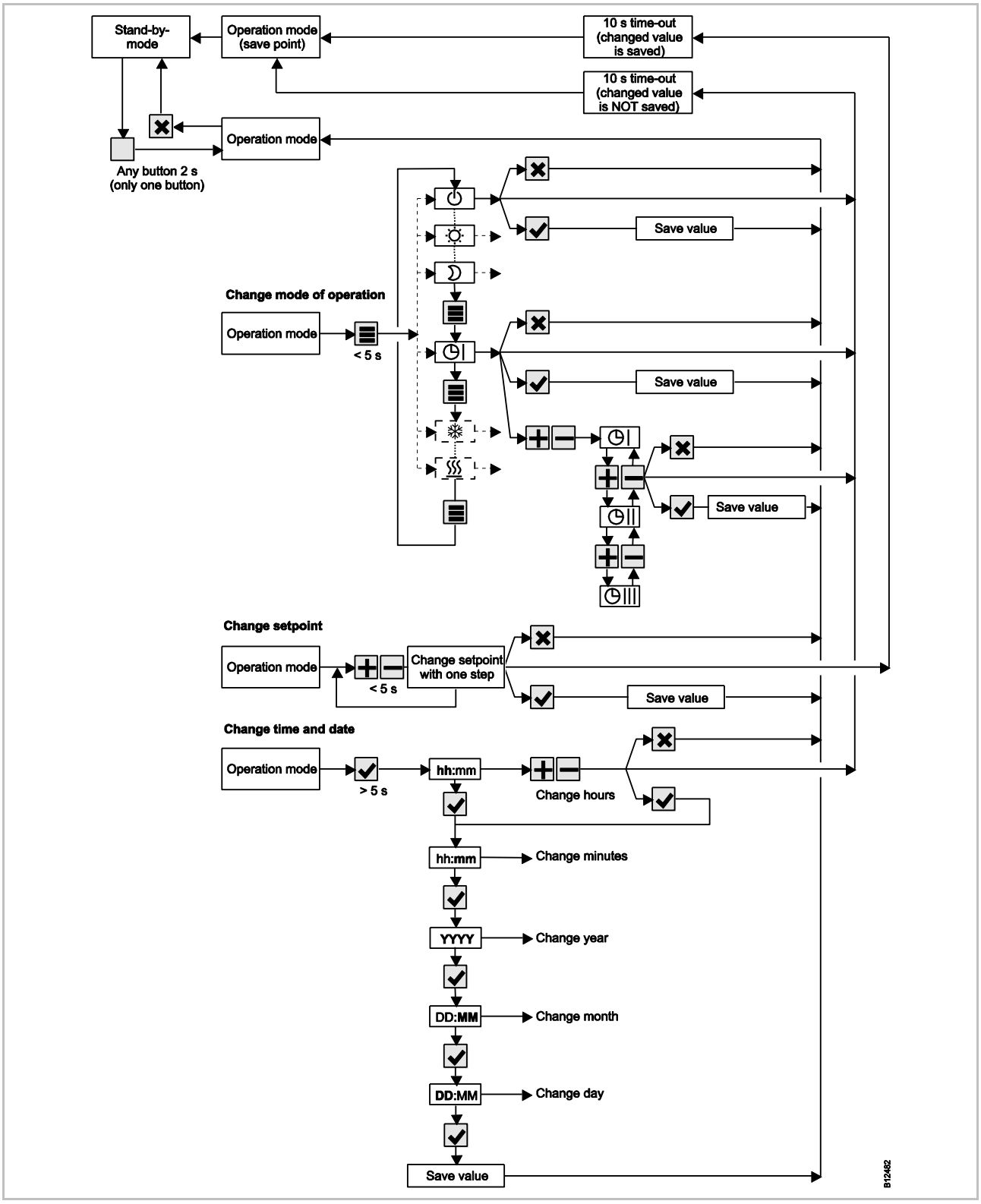


Fig. 63: Menu structure operation

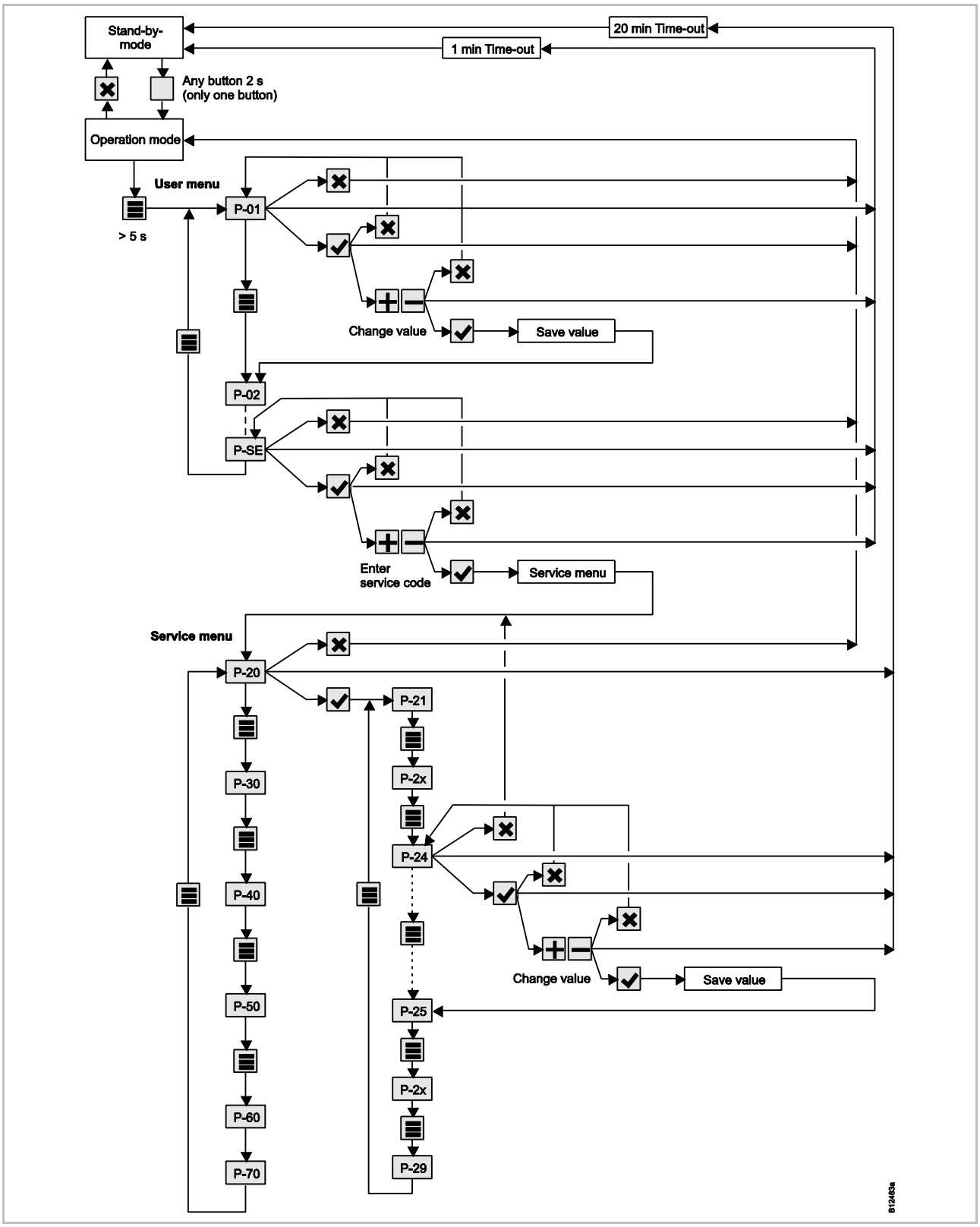


Fig. 64: Menu structure parameter settings for user and service level

18 Plant examples and communication

18.1 Plant examples with one wireless connection module

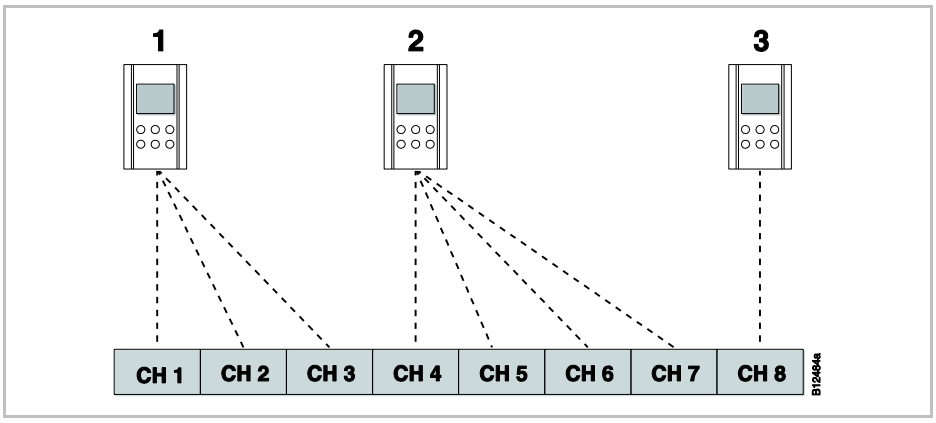


Fig. 65: Radio channel group with equal priority

1 Radio channel group 1
2 Radio channel group 2
3 Single addressing
CH 1…CH 8: radio-channels

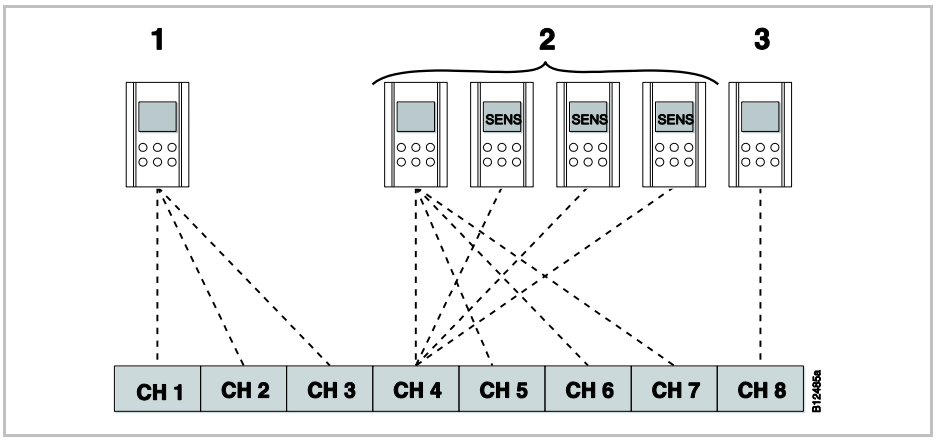


Fig. 66: Radio channel groups with equal priority and average temperature building

1 Radio channel group 1
2 Radio channel group 2 with average temperature building
3 Single addressing
CH 1…CH 8: radio-channels
SENS: wireless room thermostat Sensor mode, → see page 56, chapter 56.

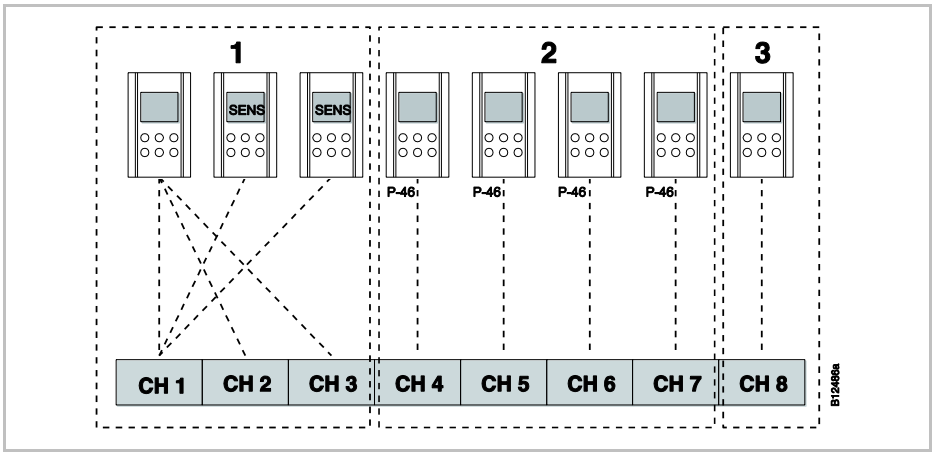


Fig. 67: Radio channel groups with zone building

1 Zone 1 with average temperature building
2 Zone 2 with setpoint sharing
3 Zone 3
CH 1…CH 8: radio-channels
Setpoint sharing → see page 94, parameter P-46.

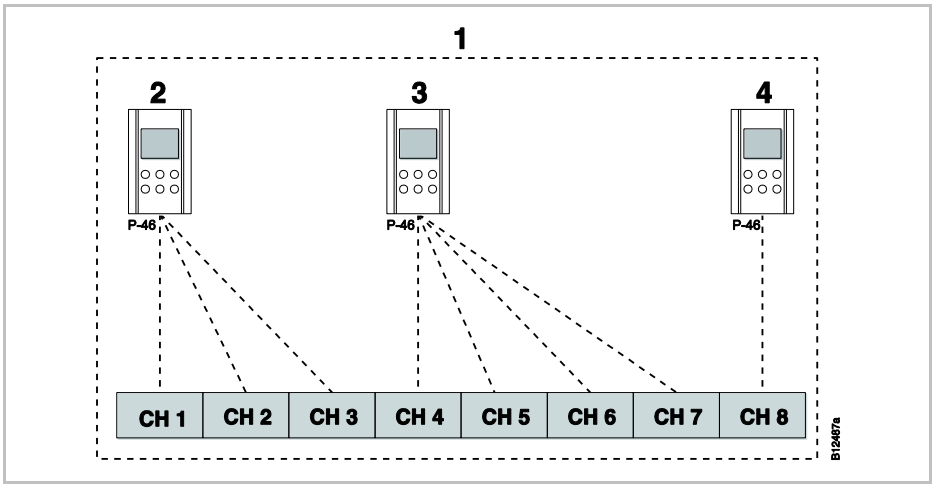


Fig. 68: Setpoint sharing for all wireless room thermostat within one zone

1 Zone 1 with setpoint sharing
2 Radio channel group 1
3 Radio channel group 2
4 Single addressing
CH 1…CH 8: radio-channels
Setpoint sharing, → see page 94, parameter P-46.

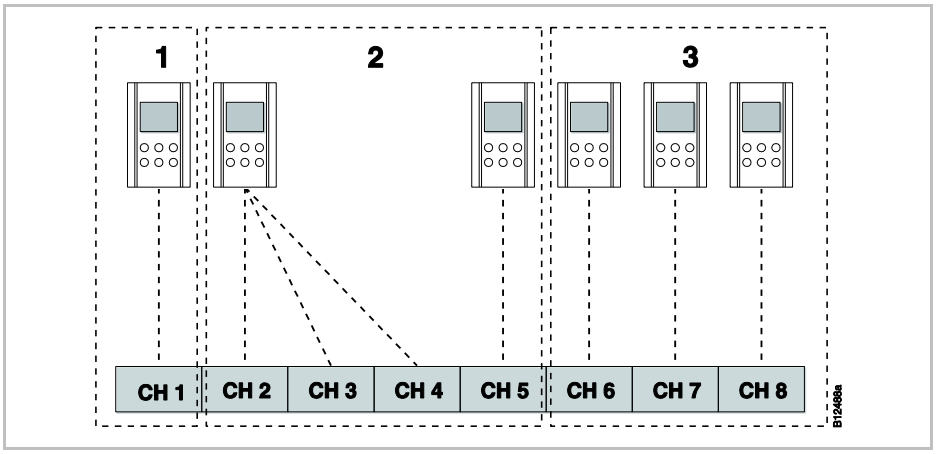


Fig. 69: Wireless room thermostat as "Master" for changing mode of operation – Wireless room thermostat as "Master" with own zone.

1 Zone 1 Wireless room thermostat as "Master"

2 Zone 2

3 Zone 3

CH 1…CH 8: radio-channels

Master function → see page 95, parameter P-48.

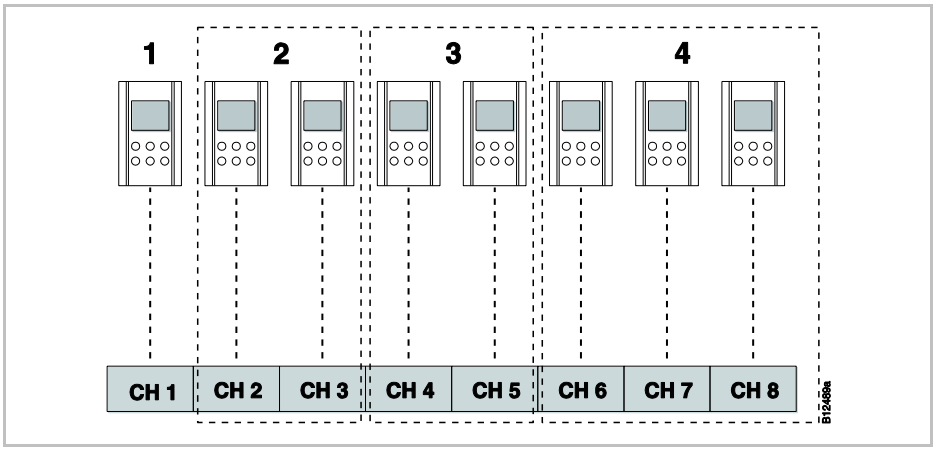


Fig. 70: Wireless room thermostat as "Master" for mode of operation – wireless room thermostat outside the zones

1 Wireless room thermostat as "Master", outside the zones

2 Zone 1

3 Zone 2

4 Zone 3

CH 1…CH 8: radio-channels

Master function → see page 95, parameter P-48.

18.2 Plant examples with up to three wireless connection modules

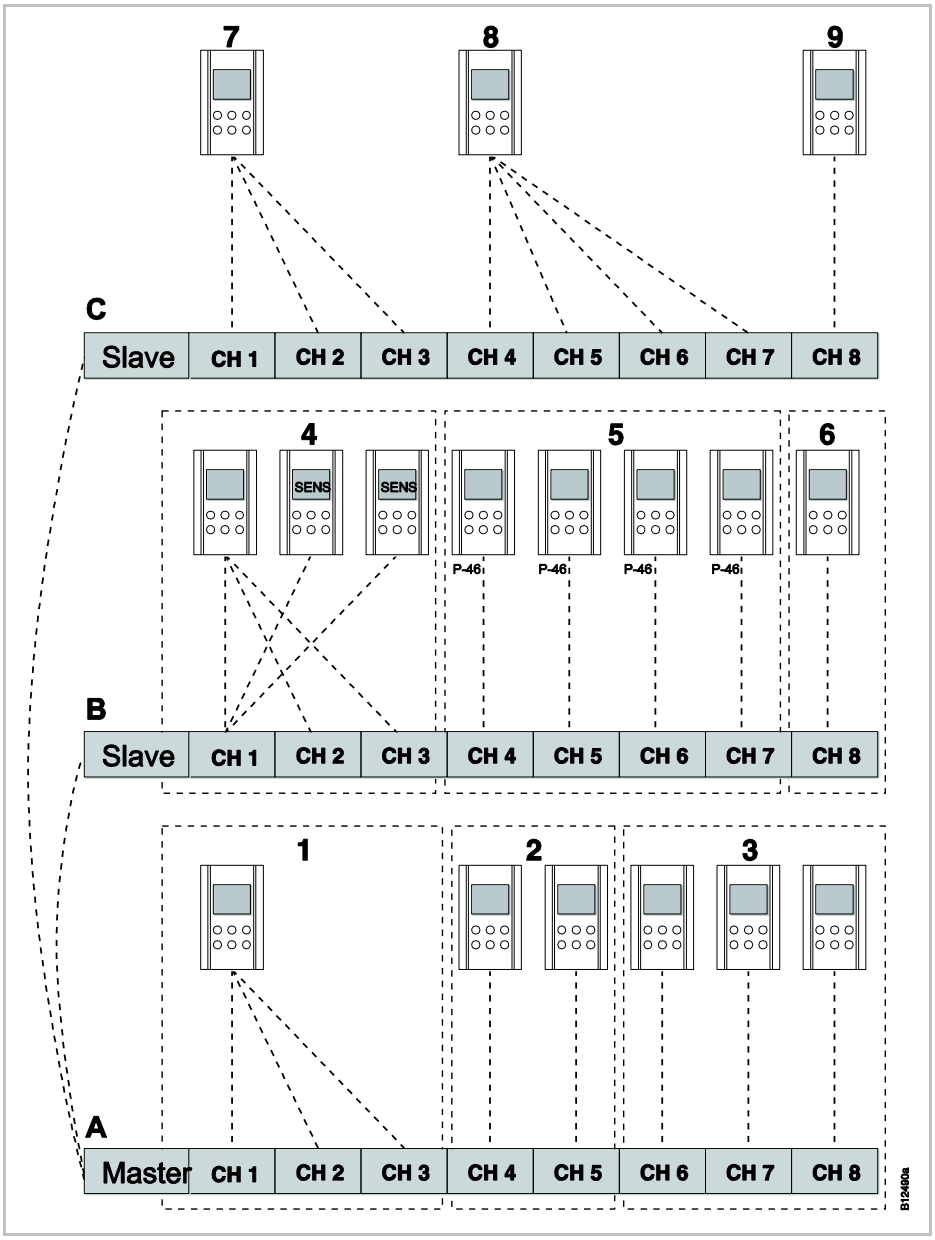


Fig. 71: Example with three wireless connection modules

A Basement
1 Zone 1, basement
2 Zone 2, basement
3 Single addressing

B 1. Floor
4 Zone 1 with average temp. building
5 Zone 2 with setpoint sharing
6 Zone 3

C 2. Floor
7 Radio channel group 1
8 Radio channel group 2
9 Single addressing

CH 1…CH 8: radio-channels

19 Reset radio system to factory settings

The following procedure resets wireless room thermostats and the associated wireless connection modules to factory settings.

- Reset all wireless room thermostats assigned to the wireless connection module to the factory settings via parameter P-24, option "4".
  → See page 87, parameter description P-24, option "4".
- Press the push buttons **Master** and **System** of the wireless connection module simultaneously for 10 seconds.
- After a short time, the LEDs **Master** and **System** will blink for 5 seconds.
- The LEDs **Master** and **System** will blink faster for another 5 seconds.
- The LEDs **Master** and **System** at the Master wireless connection module go out.

NOTE

If you would like to only reset the wireless connection module or the wireless room thermostat to factory settings, proceed according to the parameter description P-24. *→ See parameter description P-24, page 87.*

Index

Factory settings parameter

User menu

Parameter	Description	Factory setting	New
P-01	Set display in stand-by-mode: actual value or time.	Room temperature	
P-02	Set setpoint for the minimal floor temperature.	15 °C	
P-03	Set upper and lower limits for room temperature setpoint.	30 ° C / 5 °C	
P-04	Change time programs.		
P-05	Reset time programs to factory settings.	–	
P-06	Set display for stand-by-mode. (max. battery saving mode)	On	
P-07	Activate or deactivate sound of sensor button.	On	
P-08	Show ID-number of wireless room thermostat	–	
P-09	Show ID-number of wireless connection module	–	
P-10	Function for sensor button parameterisation.	0	
P-11	Specify limitation of humidity setpoint (optional for room thermostats with integrated humidity sensor).	65 % / 55 %	

Service menu

Parameter	Description	Factory setting	New
P-SE	Access only with service code, factory settings "1234"	–	
P-21	Show software-version of wireless room thermostat	–	
P-22	Show software-version of wireless connection module	–	
P-23	Show actual status of wireless connection module and I/O-Box	–	
P-24	Reset parameter to factory settings.	–	

Parameter	Description	Factory setting	New
P-31	Set increment for room temperature setpoint adjustment.	0: 0,5 K	
P-32	Set temperature for frost protection function.	8.0 °C	
P-33	Set unit for temperature.	0: °C	
P-34	Set dead-zone for change-over between heating and cooling.	0: 2 K	
P-35	Change service code for service menu.	1234	
P-36	Change access code for public spaces.	1234	
P-37	Activate or deactivate "summer-/wintertime".	0: activated	

Parameter	Description	Factory setting	New
P-41	Set wall temperature correction of wireless room thermostat.	0 K	
P-42	Set floor temperature correction of wireless room thermostat.	0	
P-43	Set maximum floor temperature of wireless room thermostat.	35 °C	
P-44	Set reduction of room temperature for "Eco" function.	3 K	
P-45	Activate or deactivate cooling lock and/or bypass, e.g. for a heat pump.	0	
P-46	Activate or deactivate "setpoint sharing within one zone"	0: deactivated	
P-47	Activate or deactivate lock for public spaces or hotels.	0: deactivated	
P-48	Activate or deactivate master function of a wireless room thermostat.	0: deactivated	
P-49	Specify function of the external temperature sensor or configure window contact. An optional external temperature sensor or window contact must be connected to the wireless room thermostat.	0	

Parameter	Description	Factory setting	New
P-51	Set priorities for change-over of heating/cooling and configure output for heating/cooling or burner start.	0	
P-52	Activate or deactivate "optimized time program".	0: deactivated	
P-53	Set communication between wireless connection modules radio frequency or BUS.	0	
P-54	Determine "C/O Out" and overwrite set output function at the parameter P-51.	0	

Parameter	Description	Factory setting	New
P-61	Configure ECO or N/R input.	0	
P-62	Configure C/O in-/TB-input.	0	
P-63	Select control of pump "local" or "Master-wireless connection module" (only with activated communication between wireless connection modules).		
P-64	Select NC or NO function of thermal actuators.	0: NC	
P-65	Select control algorithm.	0: On/Off	
P-66	Activate or deactivate function "optimized actuator control".	0: deactivated	
P-67	Select controlled first start-up of floor heating.	0: deactivated	
P-68	Configure P-share of the PID-controller.	4 K	
P-69	Configure I-share of the PID-controller.	2 h	

Parameter	Description	Factory setting	New
P-71	Activate and deactivate function "Heating/cooling release".	0: deactivated	
P-72	Specify outdoor temperature limit for heating release	16	
P-73	Specify outdoor temperature limit for cooling release	25	

Factory settings timer program