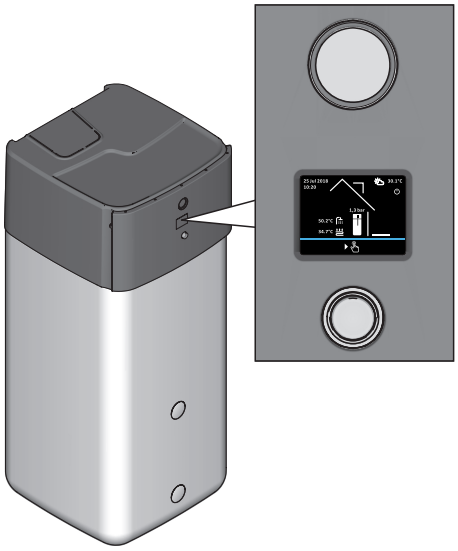
Operating instructions

Controller RoCon+ HP1



EHSH(B)04P30D3
EHSX(B)04P30D3
EHSX(B)04P50D3
EHSH(B)08P30D3
EHSX(B)08P30D3
EHSH(B)08P50D3
EHSX(B)08P50D3
EHSH(B)04P30D2
EHSX(B)04P30D2
EHSH(B)08P30D2
EHSH(B)08P50D
EHSX(B)04P50D
EHSX(B)08P50D

ETSH(B)16P30D
ETSX(B)16P30D
ETSH(B)16P50D
ETSX(B)16P50D

Operating instructions
Controller RoCon+ HP1

English

List of contents

1 General safety precaution

1.1 Particular safety instructions

WARNING

Heating devices that are not set up and installed correctly can impair the function of the heating device and/or cause serious or fatal injury to the user.

- Work on the heat generator (such as set-up, servicing, connection and initial start-up) must only be carried out by persons who are authorised and who have successfully completed **qualifying technical or vocational training** and who have taken part in advanced training sessions recognised by the relevant responsible authorities for the specific activity. They include, in particular, certified heating engineers, qualified electricians and HVAC specialists who, because of their **professional training** and their **expert knowledge,** have experience in the professional installation and maintenance of heating systems, oil and gas installations and hot water storage systems.
- Only operate the heat generator when it is in perfect condition with the protective hood closed.

WARNING

Disregarding the following safety instructions may result in serious physical injury or death.

- This device may only be used by **children** aged 8 and above and by persons with restricted physical, sensory or mental capabilities or with a lack of experience and knowledge if they are under supervision or if they have been instructed in the safe use of the equipment and understand the dangers arising from it. **Children** must not play with the device. Cleaning and **user maintenance** must not be carried out by **children** without supervision.
- Establish the power supply in accordance with IEC 60335-1, via a separate isolator that separates all poles with a contact opening distance and that provides full disconnection in accordance with overvoltage category III.
- All the electrical work must only be carried out by electrically qualified experts and with consideration of the local and national regulations, and the instructions in this manual. Check that a suitable electrical circuit is being used. Insufficient load capacity of the electrical circuit or improperly executed connections can result in electric shock or fire.

1.1.1 Observing the instructions

- The original documentation is written in German. All other languages are translations.
- Please read this manual carefully and thoroughly before proceeding with the installation or modification of the heating system.
- The precautionary measures described in this document cover very important topics. Follow them meticulously.
- The installation of the system, and all activities described in this manual and the applicable documents for the installer must be carried out by an approved installer.

Documentation set

This document is part of a documentation set of other applicable documents. The complete set comprises:

- Installation manual for the Daikin Altherma indoor unit – subsequently referred to as "indoor unit " (format: paper – included in the indoor unit scope of delivery)
- Operating manual for the indoor unit (format: paper – included in the indoor unit scope of delivery)
- Operating manual for the heat pump (format: paper – included in the indoor unit scope of delivery)
- Installation manual for the outdoor unit (format: paper – included in the outdoor unit scope of delivery)
- Installation instructions for optional components (format: paper – included in the scope of delivery of the respective component)
- Installer reference guide of the indoor unit (format: digital)
- Installer reference guide of the outdoor unit (format: digital)
- Operating instructions for controller RoCon HP, EHS157034, EHS157068 (status 04/2017) (format: digital)

The reference guides contain the complete set of technical data, a detailed description of best practices and information on maintenance, troubleshooting and decommissioning.

The digital documents and the latest editions of the supplied documentation are available on the regional Daikin website or, on request, from your dealer. The Daikin website is easy to access using the QR code on your device.

1.1.2 Meaning of warnings and symbols

Warnings in this manual are classified according into their severity and probability of occurrence.

DANGER

Indicates an immediate danger.

Disregarding this warning can lead to serious injury or death.

WARNING

Indicates a potentially dangerous situation.

Disregarding this warning may result in serious physical injury or death.

CAUTION

Indicates a situation which may cause possible damage.

Disregarding this warning can cause damage to property and the environment and result in minor injuries.

This symbol identifies user tips and particularly useful information, but not warnings or hazards

Special warning signs

Some types of danger are represented by special symbols.


Electric current


Risk of burns or scalds

General description

1 Handling instructions are shown as a list. Actions where the sequential order must be adhered to are numbered.

[Language]: Parameters are shown in square brackets.

"Operating mode", "Deutsch": Available menu names and parameter setting options are shown in quotation marks.

[→ Main menu]: The position of menus and functions is shown in square brackets with →.

1.2 Safety instructions for installation and operation

1.2.1 General

- For any work on the equipment that extends above and beyond the operation of the regulating system, the details provided in the supplementary documents must be observed, particularly with regard to safety instructions.

Avoid danger

The indoor unit conforms to the state of the art and meets all recognised technical requirements. However, improper use can lead to serious injuries or death, as well as causing material damage.

To avoid hazards, only operate the indoor unit:

- as stipulated and in perfect condition,
- with an awareness of the safety and hazards involved.

This assumes knowledge and use of the contents of this manual, all applicable documents, the relevant accident prevention regulations as well as the recognised safety-related and occupational health rules.

Display representation of the RoCon+ HP1 controller

Certain screen displays or menu items may deviate from those shown in these instructions depending on the national or equipment variant of the indoor unit or the user status logged onto the controller.

1.2.2 Intended use

The RoCon+ HP1 controller may only be used in the indoor units specified on the title page that are approved for the control system. The RoCon+ HP1 controller must only be operated in accordance with the specifications in these instructions.

Any other use or use beyond the intended use is considered improper use. The operator alone bears responsibility for any resulting damage.

For any work on the equipment that extends above and beyond the operation of the regulating system, the details provided in the supplementary documents must be observed, particularly with regard to safety instructions.

Documentation

The technical documentation included in the scope of supply is a constituent part of the equipment. It must be stored in such a way that it can be consulted at any time by the operator or technicians.

2 Product description

INFORMATION

The RoCon+ HP1 controller is part of the indoor unit.

It consists of the switching panel RoCon BM2C PCB to which the actuators and sensors as well as other components in the regulating system are connected and the RoCon+ B1 control panel.

These operating instructions only explain the functions and possible settings of the controller. More information on the switch box and other equipment components can be found in the supplementary documents.

The electronic, digital controller is able to automatically control all heating and hot water functions for a direct HC, a storage loading circuit and also further HCs via optionally connectible mixer modules, depending on the heating device.

It performs all safety management for the indoor unit. This executes a safety switch-off in the event of a water shortage or undefined operating states. A corresponding error message shows the operator all the information regarding fault causes.

All function settings for the indoor unit and the optional RoCon devices that are connected via the data bus are undertaken with the control elements of the integrated RoCon+ B1 control panel and shown on the plain text display with coloured backlighting.

The following additional, optional devices can be connected to the indoor unit via the controller data bus:

- RoCon U1 (EHS157034) room station
- RoCon M1 (EHS157068) mixer module

In addition, the RoCon+ HP1 controller has a freeze-up protection function for the direct HC and the storage tank charging circuit as well as an automatic function for heating support (integration of an auxiliary heat source such as a wood-burning boiler or solar system).

The potential-free AUX switching contact can be used to carry out different control functions in conjunction with external devices (request from an external heat generator, changeover to bivalent operation, external status indicator, etc.).

In addition, it also has several inputs for assessing external control contacts (external operating mode switching or heat request, Smart Grid and low rate EVU functions[1]).

The optional outdoor temperature sensor installed on the north side of the building can be used to further optimise the weather-compensated leaving water temperature control.

If the optional RoCon G1 (EHS157056) gateway is installed and connected to the Internet, the indoor unit can be conveniently monitored and operated by remote control using a mobile phone (app).

Initial commissioning of the heating system is described in the installation instructions for the indoor unit.

Certain menu items of the RoCon+ HP1 controller are only accessible to the heating expert. This security measure ensures that no undesirable malfunctions arise during operation of the system through incorrect settings.

All settings for the assigned HC can be made with the RoCon U1 (EHS157034) room station in the same way as on the control panel. If the terminal function is activated, all operating possibilities that are available on the integrated control panel are available with the exception of certain special functions (e.g. manual operation).

After appropriate assignment, a connected RoCon M1 (EHS157068) mixer module is also operated using the RoCon+ B1 control panel and/or the RoCon U1 (EHS157034) room station.

2.1 Temporary shutdown

CAUTION

A heating system that is shut down can freeze in the event of frost and may suffer damage.

- Drain the heating system that is shut down if there is danger of frost.
- If the heating system is not drained, the power supply must be ensured and the external main switch must remain switched on if there is a danger of frost.

If the heat pump is not required for a lengthy period, it can be temporarily decommissioned.

However, we recommend not to disconnect the system from the power supply but merely to switch it to "Standby mode"

The system is then protected from frost. The pumps and valve protection functions are active.

If it is not possible to guarantee the power supply when there is danger of frost,

- completely drain the indoor unit on the water side, or
- apply suitable antifreeze measures to the connected heating system and hot water storage tank (e.g. draining).

INFORMATION

If there is only a risk of frost for a few days when the power supply is not reliable, it is not necessary to empty the indoor unit due to the very good thermal insulation, provided that the storage tank temperature is regularly monitored and does not fall below +3°C.

However, this provides no freeze-up protection for the connected heat emitter.

[1] The energy supply company (EVU) sends signals that are used for controlling the power mains utilisation and that have an influence on the cost of the power and availability.

3 Operation

3.1 General

DANGER: RISK OF ELECTROCUTION

If electrical components come into contact with water, this can cause an electric shock as well as cause potentially fatal burns or injuries.

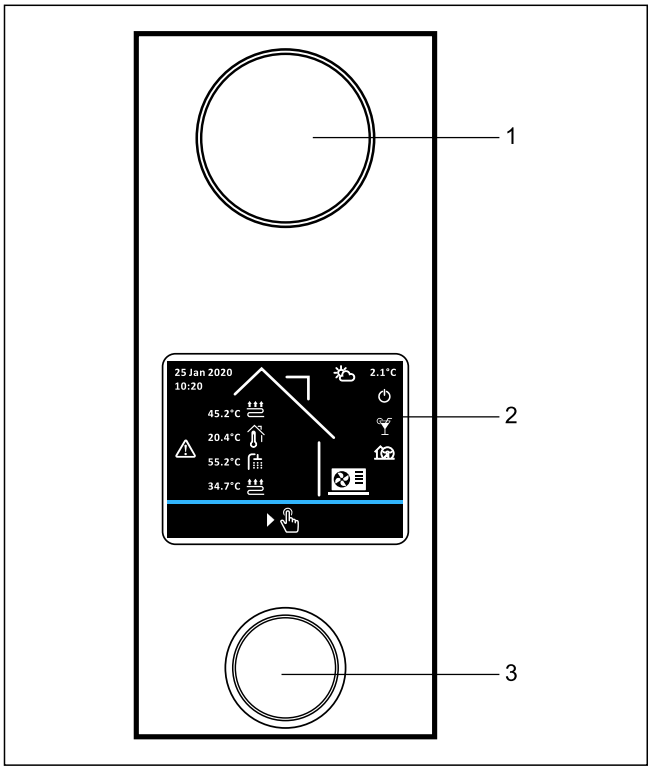
- The displays and keys of the controller must be protected against the effects of moisture.
- To clean the controller, use a dry cotton cloth. The use of aggressive cleaning agents and other fluids can cause damage to devices or lead to electric shock.

INFORMATION

The heat pump makes the most effective use of energy at the lowest possible return and hot water target temperatures.

If an external heat generator (e.g. the optional backup heater) is activated at target leaving water temperatures above 50°C, the efficiency (COP) of the heat pump can deteriorate (depending on the outside temperature).

3.2 Display and operating elements



3–1 RoCon+ B1 display and operating elements

1 Status indicator
2 Display
3 Rotary button

3.2.1 Status indicator

The LEDs of the status indicator light up or flash to indicate the operating mode of the device.

3–1 Status indicator

LED	Mode	Description
Flashes blue	Standby	The device is not in operation.
Lights up blue	Operation	The device is in operation.
Flashes red	Error	An error has occurred. For further details, see "8 Errors and faults" [▸ 47].

3.2.2 Display

During normal operation the display is deactivated (completely dark). The activity of the system is indicated by the status indicator. Each press of the rotary button (turn, press or hold) activates the display with the start screen.

If the start screen is active and no user input is made for 60 seconds, the display is deactivated. If no input is made by the user at any other point in the menu for 120 seconds, the system returns to the start screen.

3.2.3 Rotary button

CAUTION

Never operate the operating elements of the controller with a hard, pointed object. This can cause damage and can cause the controller to malfunction.

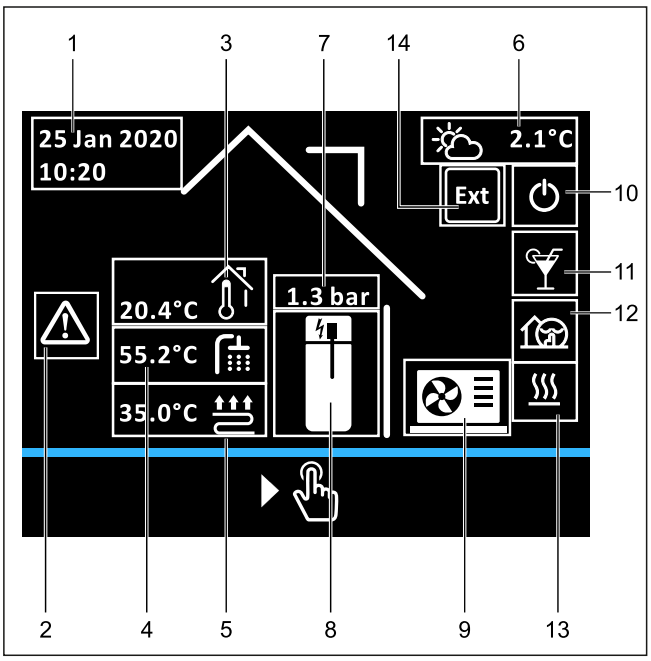
The rotary button can be used to navigate in the respective level, to select or change the setting value and to accept this change with a short key press.

3–2 Function of the rotary button

Action	Result
Turning	Select menu, select setting, make setting
Press 	Confirm selection, accept setting, execute function.
Press for 2 sec. 	Exit menu

3.2.4 Start screen

The start screen provides an overview of the current operating status of the system. From the start screen, any operation of the rotary switch (turn, press or hold down) leads to the Main menu.



3–2 Display position on the start screen

3–3 Display icons on the start screen

Item	Icon	Explanation
1		Date and time
2		Error message
3		Only with connected room unit: Room temperature
4		Hot water temperature
5		Underfloor heating leaving water temperature
		Convector heating leaving water temperature
		Radiator heating leaving water temperature
6		Outside temperature
7		Pressure in the HC
8		Storage tank without heating rod
		Storage tank with connected heating rod (off)
		Storage tank with connected heating rod (on)
9		No outdoor unit detected
		Outdoor unit present, compressor off
		Outdoor unit present, compressor on
10		Operating mode: Standby
		Operating mode: Reduce
		Operating mode: Heating
		Operating mode: Cooling
		Operating mode: Summer
		Operating mode: Automatic 1
		Operating mode: Automatic 2
		Operating mode: Emergency
11		Special program: Party
		Special program: Absent
		Special program: Holiday
		Special program: Public holiday
		Special program: 1 x hot water
		Special program: Screed
		Special program: Ventilation
12		Quiet mode On
13		Operating mode: Heating
		Operating mode: Cooling
		Operating mode: Hot water
		Operating mode: Defrost
		Operating mode: No request
14	Ext	External operating mode switched (Burner blocking contact or Room thermostat)

INFORMATION

If the local control panel is used as a remote controller for a mixer module, both the standard screen and the menu structure are changed (see "9 Mixer module" [▶ 48]).

3.3 Operating concept

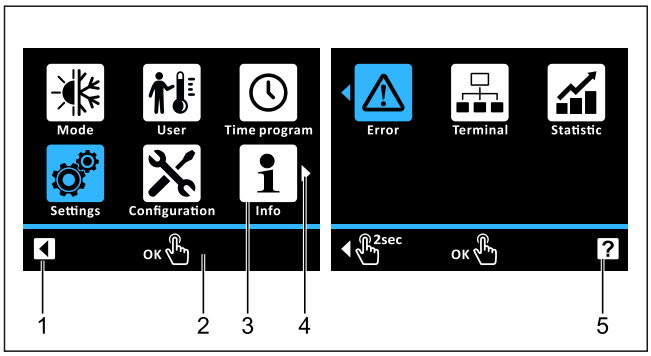
The operating concept of the controller allows quick navigation in the menu:

- Clear display of information
- Straightforward selection of parameters
- Setting of setpoints and programs.

The basics of the operating concept are described in detail below using a few examples. The operation of special functions follows the same principle and is described in the corresponding sections if required in "4 Function" [▸ 11].

3.3.1 Navigating in the menu

From the start screen, any operation of the rotary switch (turn, press or hold down) leads to the main menu. The menu view consists of an upper area for the menu icons of the various submenus and the lower menu bar. The Back and Help icons are displayed in the menu bar. Use the rotary button to switch between the icons (including the icons in the menu bar). Multi-page menus are indicated by the page break arrow. Use the rotary button to switch between the menu icons on the different menu pages.



3–3 Example: Elements in a two-page menu

1 Back icon
2 Menu bar
3 Menu icon
4 Page change arrow (for multi-page menus)
5 Help icon

Example: In the "Statistics" menu, change [→ Main menu]:

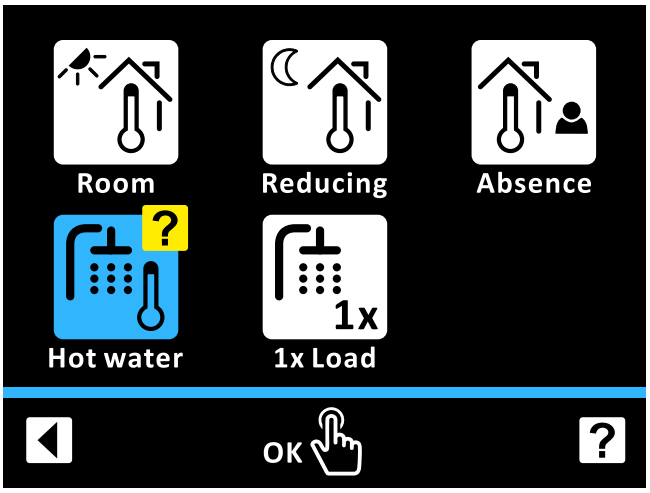
1 Turn the rotary button clockwise until the "Statistics" icon (on the second menu page) turns blue.

2 Briefly press the rotary button to confirm ("OK").

Result: The "Statistics" submenu is called up

3.3.2 Help function

A help text is available for each menu icon.



3–4 Help function

Example: Calling up the help text for the "Hot water" menu and stopping the help function again [→ Main menu → User]:

1 Turn the rotary button clockwise until the help icon in the menu bar turns blue.

2 Briefly press the rotary button to confirm ("OK").

Result: The help function becomes active, the "?" symbol is displayed on the last menu icon.

3 Turn the rotary button anticlockwise until the "?" symbol appears on the "Hot water" icon.

4 Briefly press the rotary button to confirm ("OK").

Result: The help text for the "Hot water" is displayed.

5 Briefly press the rotary button to confirm ("OK").

Result: Exits the help text level.

6 Turn the rotary button clockwise until the help icon in the menu bar turns blue.

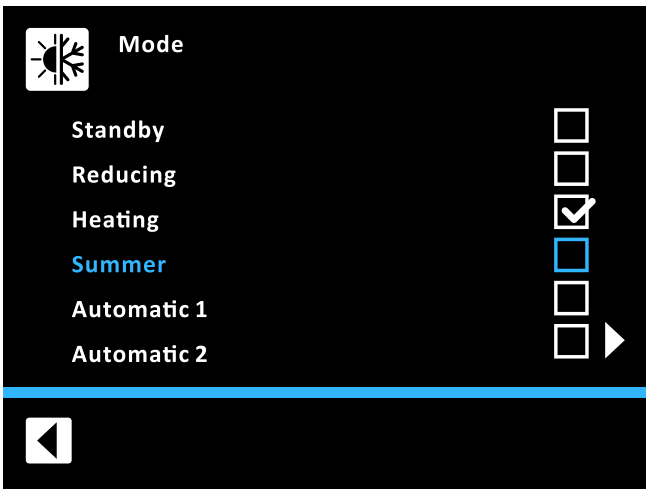
7 Briefly press the rotary button to confirm ("OK").

Result: The help function is terminated.

3.3.3 Navigating in lists and selecting list entries

Lists exist as pure information lists or can be used to select a list entry. Turning the rotary button switches between the list entries. Multi-page lists are indicated by the page break arrow. Turn the rotary button to switch between the list entries of the different pages.

In the case of selection lists, the currently selected list entry is indicated by a tick. Click "OK" to select another list entry. The corresponding setting is then accepted and the list is exited.



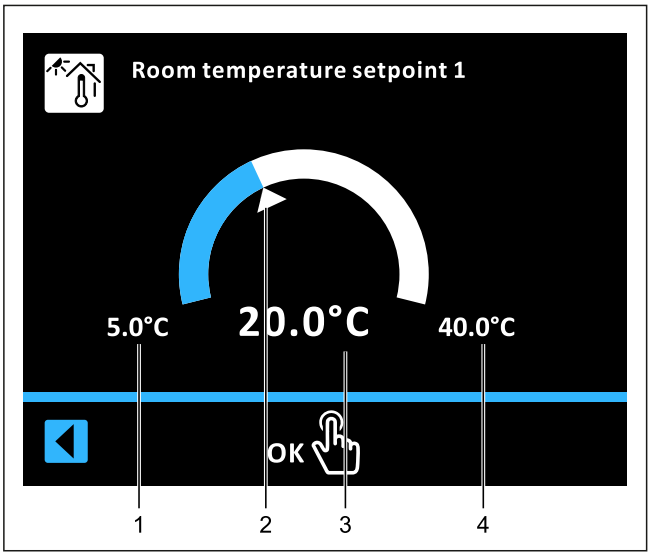
3–5 List with selected list entry

Example: Switch the operating mode to "Summer" [→ Main menu → Operating mode]

1 Turn the rotary button clockwise until the "Summer" list entry is displayed in blue.
2 Briefly press the rotary button to confirm ("OK").
Result: The box is ticked in the "Summer" list entry.
3 Turn the rotary button anticlockwise until the Back icon turns blue.
4 Briefly press the rotary button to confirm ("OK").
Result: The setting is saved and the setting level is exited.

3.3.4 Setting setpoints

The setpoint of a parameter can be changed within the displayed scale. Click "OK" to save the new value. Press and hold the rotary button to exit the setting level without saving. For some parameters there is an "Off" setting in addition to values on the scale. This setting can be selected by turning the rotary button anticlockwise after the minimum value of the scale has been reached.



3–6 Display of the parameter setting

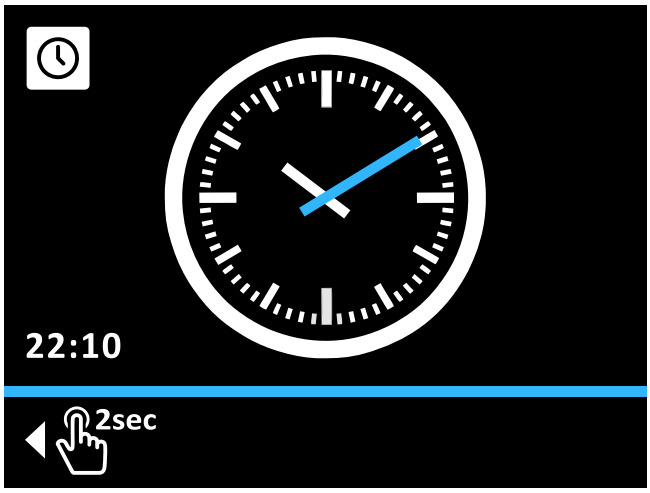
1 Minimum value
2 Default value
3 Currently selected value
4 Maximum value

Example: Set [Room temperature target 1] to 22°C [→ Main menu → User → Room → Room temperature target 1]:

1 Turn the rotary button clockwise until 22°C is displayed.
2 Briefly press the rotary button to confirm ("OK").
Result: The setting is saved and the setting level is exited.

3.3.5 Setting the times

The clock function is used to set the current time.



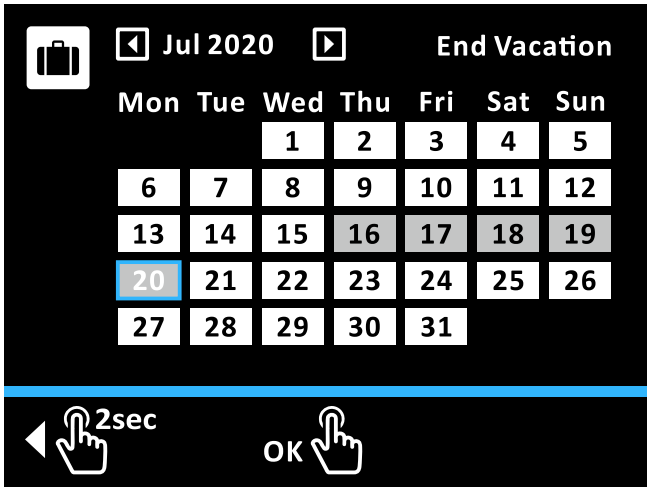
3–7 Setting the times

Example: Set the time to 16:04 [→ Main menu → Settings → Display → Time]:

1 Turn the rotary button clockwise until the circle is displayed in blue.
2 Briefly press the rotary button to confirm ("OK").
Result: The hour hand is displayed in blue.
3 Turn the rotary button clockwise until 16:00 is displayed.
4 Briefly press the rotary button to confirm ("OK").
Result: The minute hand is displayed in blue.
5 Turn the rotary button clockwise until 16:04 is displayed.
6 Briefly press the rotary button to confirm ("OK").
Result: The Confirm icon in the menu bar is displayed in blue.
7 Briefly press the rotary button to confirm ("OK").
Result: The setting is saved and the setting level is exited.

3.3.6 Calendar function

The calendar function is used to set the current date or the "Holiday" and "Public holiday" time programs. The calendar function allows the selection of a time period for the time programs.



3–8 Setting the period with the calendar function

Example: Set [Holiday] from 16 July 2020 – 20 July 2020 [→ Main menu → Time program → Holiday]:

1 Turn the rotary button clockwise until the month selection is Jul 2020.

2 Briefly press the rotary button to confirm ("OK").

Result: 1 July is shown with a blue border.

3 Turn the rotary button clockwise until 16 July is highlighted in blue.

4 Briefly press the rotary button to confirm ("OK").

Result: 16 July is shown on a grey background.

5 Turn the rotary button clockwise until 20 July is highlighted in blue.

6 Briefly press the rotary button to confirm ("OK").

Result: The setting is saved and the setting level is exited.

When a new holiday period is set, the previously set holiday period is automatically deleted. Alternatively, the holiday setting can also be reset.

Example: Reset the holiday setting [→ Main menu → Time program → Holiday]:

1 Turn the rotary button clockwise until the month selection is displayed in blue.

2 Briefly press the rotary button to confirm ("OK").

Result: The last selected day of the holiday is displayed with a blue border.

3 Turn the rotary button anticlockwise until all days are shown in white.

4 Briefly press the rotary button to confirm ("OK").

Result: The holiday setting is reset and the setting level is exited.

3.3.7 Setting the time programs

The time program function is used to set permanent time programs (see "4.3.2 Permanent time programs" [▸ 13]). This allows the daily setting of 3 switching cycles. The times can be entered separately for each individual weekday or in blocks of "Monday to Friday", "Saturday to Sunday" and "Monday to Sunday". The selected switching cycles are highlighted in grey ("🖼 3–9 Time program function with overview level (left) and setting level (right)" [▸ 10]) in the overview level of the respective program.

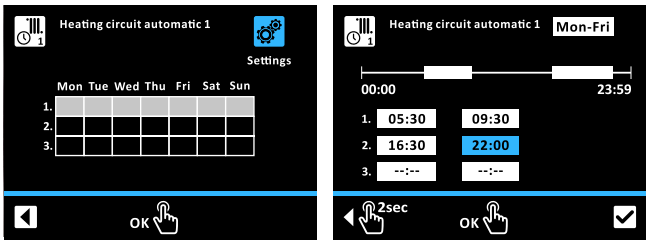
▦ 3–4 Structure of the permanent time programs

Time period	Switching cycle
Single day of the week (Monday, Tuesday ...)	1. 06:00 to 22:00 2. xx:xx to xx:xx 3. xx:xx to xx:xx
Working week (Monday to Friday)	1. 06:00 to 22:00 2. xx:xx to xx:xx 3. xx:xx to xx:xx
Weekend (Saturday to Sunday)	1. 06:00 to 22:00 2. xx:xx to xx:xx 3. xx:xx to xx:xx
Entire week (Monday to Sunday)	1. 06:00 to 22:00 2. xx:xx to xx:xx 3. xx:xx to xx:xx

INFORMATION

Time settings for a switching cycle in a weekday or block program will also be accepted for other time periods as long as they are for the same weekdays.

- The starting time in the first switching cycle is changed from 06:00 am to 05:00 am for the individual weekday "Monday". In the period "Monday to Friday" and "Monday to Sunday", the first switching cycle is automatically changed from 06:00 to 05:00.



🖼 3–9 Time program function with overview level (left) and setting level (right)

Example: For the [Heating circuit auto. 1] program, set switch cycles 1 and 2 for Monday to Friday [→ Main menu → Time program → HC auto 1]:

1 Turn the rotary button clockwise until the "Settings" icon is displayed in blue.

2 Briefly press the rotary button to confirm ("OK").

Result: Display changes to setting level with blue flashing period selection.

3 Turn the rotary switch clockwise until the required time period is displayed.

4 Briefly press the rotary button to confirm ("OK").

Result: The display changes to the input window for the start time of the first switching cycle.

5 Briefly press the rotary button to confirm ("OK").

Result: Input window for start time of the first switching cycle flashes blue.

6 Turn the rotary button clockwise until the required start time is displayed.

7 Briefly press the rotary button to confirm ("OK").

Result: The display changes to the input window for the end time of the first switching cycle.

8 Turn the rotary button clockwise until the required end time is displayed.

9 Briefly press the rotary button to confirm ("OK").

Result: The display changes to the input window for the start time of the second switching cycle.

10 Briefly press the rotary button to confirm ("OK").

Result: Input window for the start time of the second switching cycle flashes blue.

11 Turn the rotary button clockwise until the required start time is displayed.

12 Briefly press the rotary button to confirm ("OK").

Result: The display changes to the input window for the end time of the second switching cycle.

13 Turn the rotary button clockwise until the required end time is displayed.

14 Briefly press the rotary button to confirm ("OK").

Result: The display changes to the input window for the start time of the third switching cycle.

15 Turn the rotary button clockwise until the Confirm icon turns blue.

Result: The display changes to the Confirm icon.

16 Briefly press the rotary button to confirm ("OK").

Result: The programming is saved.

Result: The setting level is exited.

Result: Selected switching cycles are highlighted in grey.

17 Turn the rotary button anticlockwise until the Back icon turns blue.

18 Briefly press the rotary button to confirm ("OK").

Result: The menu is exited

3.3.8 External operation

In addition to operation via the integrated RoCon+ HP1 controller, the system can also be adjusted and operated via external devices.

Operation via the Internet

An optional (RoCon G1 (EHS157056)) gateway can be used to connect the RoCon+ HP1 controller to the Internet. This enables remote control of the RoCon+ HP1 by mobile phone (using an app).

Operation via the room station

It can also be operated via the optional RoCon U1 (EHS157034) room station. The operating elements and instructions for use are described in the "Daikin RoCon HP, EHS157034, EHS157068 Operating Instructions " (available in digital form). All application instructions are also valid for the indoor unit.

4 Function

The system fully automatically controls the operation of the room heating, room cooling and domestic hot water preparation on the sanitary side on the basis of the specifications set in the RoCon + HP1 controller. The functions that can influence system operation are described below.

Some of the functions and parameters described are restricted by access rights and can only be set by a heating specialist (see "4.5.1 Access rights (technician code)" [▸ 16]).

4.1 Operating mode

[→ Main menu → Operating mode]

This menu is used to select the operating mode for operating the device. The current operating mode is indicated by a corresponding symbol on the start screen.

Standby operating mode (Standby)

NOTICE

A heating system that is not protected against frost can freeze in the event of frost and thus be damaged.

- Drain the heating system on the water side if there is a danger of frost.
- If the heating system is not drained, the power supply must be ensured and the mains switch must remain switched on if there is a risk of frost.

In this operating mode, the indoor unit is switched to standby mode. The freeze-up protection function remains unchanged. In order to maintain this function, the system must not be disconnected from the mains.

All controllers integrated in the RoCon system via the CAN bus are primarily also switched to the "Standby" operating mode.

INFORMATION

In the "Standby" operating mode, the heat pump and the optionally connected backup heater are disconnected from the power supply (energy-saving mode) if the following conditions are met:

- the outdoor temperature sensor is connected and correctly parametrised in the system configuration
- the outside temperature is more than 8°C
- there is no heating request
- the freeze-up protection function is not active in any connected HC and
- the indoor unit has been switched on for at least 5 minutes.

Reduce operating mode

Reduced heating operation (lower room target temperature) according to the set reduction temperature in the [Reduce room temperature] parameter (see "4.2 User" [▸ 12]).

Domestic hot water preparation according to the target leaving water temperatures and switching cycles in the [Hot water auto. 1] hot water time program (see "4.2 User" [▸ 12]).

Heating operating mode

Heating, cooling operation according to the room target temperature set in the [Room temperature target 1] parameter (see "4.2 User" [▸ 12]).

A connected outdoor temperature sensor (weather-compensated leaving water temperature control), a connected RoCon U1 (EHS157034) room station or a connected room thermostat also influence the target leaving water temperature.

Domestic hot water preparation according to the target leaving water temperatures and switching cycles in the [Hot water auto. 1] hot water time program (see "4.2 User" [▸ 12]).

Summer operating mode

Only domestic hot water preparation according to the set target temperatures and switching cycles is carried out in the [Hot water auto. 1] hot water time program (see "4.2 User" [▸ 12]).

All controllers integrated in the RoCon system via the CAN bus are primarily also switched to the "Summer" operating mode.

Automatic 1 operating mode (time program)

Automatic heating and setback mode according to the permanent time programs (see "4.3 Time program" [▸ 13]):

- [Heating circuit auto. 1]
- [Hot water auto. 1]

Automatic 2 operating mode (time program)

Automatic heating and setback mode according to the permanent time programs (see "4.3 Time program" [▸ 13]):

- [Heating circuit auto. 2]
- [Hot water auto. 2]

INFORMATION: Switching contact for external operating mode changeover

A potential-free switching contact connected to the "Ext" terminals on connection J8 of the indoor unit and wired with a resistor can also be used to change over from an external device (e.g. modem, ...). See "▦ 4–1 Resistance values for evaluating the EXT signal" [▸ 12].

In this case, the switching contact functionality is dependent on the parameter [Func. burner blocking contact]:

- [Func. burner blocking contact] = "Resistance values" (default setting): Evaluation of the resistance values.
- [Func. burner blocking contact] = "Burner blocking contact": Evaluation as a burner blocking contact. If the switching contact is closed, the external heat generator has priority.

▦ 4–1 Resistance values for evaluating the EXT signal

Operating mode	Resistance	Tolerance
Standby	<680Ω	±5%
Heating	1200Ω	
Reduce	1800Ω	
Summer	2700Ω	
Automatic 1	4700Ω	
Automatic 2	8200Ω	

INFORMATION

The resistances specified in "▦ 4–1 Resistance values for evaluating the EXT signal" [▸ 12] in a tolerance field of 5%. Resistances outside this tolerance field are interpreted as an open input. The heat generator switches back to the previously active operating mode.

The input is not considered for resistance values greater than the value for "Automatic 2".

If several switching contacts are connected to the indoor unit (e.g. smart grid, room thermostat), the associated functions may have a higher priority than the external mode switching. The operating mode requested by the EXT switching contact is then possibly not activated or is only activated later.

Besides these operating modes, different temporary time programs (see "▦ 4–2 Overview of temporary time programs" [▸ 12]) are available that are carried out with priority after activation.

▦ 4–2 Overview of temporary time programs

Temporary heating program	Setting/activation in the menu	Information
Party	Time program	"4.3 Time program" [▸ 13]
Absent		
Public holiday		
Holiday		
Screed	Configuration	"4.5.7 Additional program" [▸ 19]

INFORMATION

If a temporary heating program (Party, Absent, Public holiday, Holiday, Screed) is started during the selected operating mode, control is carried out primarily according to the settings for this time program.

4.2 User

[→ Main menu → User]

The most important target temperatures and functions are set for the user in this menu.

4.2.1 Room temperature target setting

[→ Main menu → User → Room]

The room target temperatures for room heating in heating operation are defined in this menu. The available setpoints (1-3) belong to the respective cycle (1-3) of the [Heating circuit auto. 1] and [Heating circuit auto. 2] time programs.

Further explanations and possible settings for this menu can be found in "7.3 User" [▸ 29].

4.2.2 Room temperature reduced setting

[→ Main menu → User → Reduce]

The room target temperatures for room heating in Reduced mode are defined in this menu. The reduced operation is carried out by the "Reduce" operating mode or by the "Heating circuit auto. 1" and "Heating circuit auto. 2" time programs.

Further explanations and possible settings for this menu can be found in "7.3 User" [▸ 29].

4.2.3 Room temperature absent setting

[→ Main menu → User → Absent]

The room target temperature for room heating in Absence mode are defined in this menu. The absence operation is carried out by the "Absent" or "Holiday" time programs.

Further explanations and possible settings for this menu can be found in "7.3 User" [▸ 29].

4.2.4 Hot water temperature, target setting

[→ Main menu → User → Hot water]

The hot water target temperatures for domestic hot water preparation are defined in this menu. The available setpoints (1-3) belong to the respective cycle (1-3) of the "Hot water auto. 1" and "Hot water auto. 2" time programs.

Further explanations and possible settings for this menu can be found in "7.3 User" [▸ 29].

4.2.5 Unscheduled domestic hot water preparation

[→ Main menu → User → 1x load]

By starting this function, the hot water can be heated up to the [Hot water temperature target 1] target temperature at any time. The heating up is carried out with priority and independent of other heating programs. After this temporary function has elapsed, the controller automatically jumps back to the previously active operating mode.

Possible settings for this menu can be found in "7.3 User" [▶ 29].

4.3 Time program

[→ Main menu → Time program]

Various freely adjustable permanent time programs are available for convenient and individual room and hot water temperature control. Temporary time programs are also available, which override the permanent time programs or the currently set operating mode for the duration of their validity.

4.3.1 Temporary time programs

INFORMATION

The following temporary time programs can be cancelled at any time due to the manual changing of the operating mode.

Party

[→ Main menu → Time program → Party]

The program runs from activation until the end of the set period. During this time, the HC is controlled to the temperature set in the [Room temperature target 1] parameter. If the [Automatic 1] or [Automatic 2] time program is active, the heating cycle is extended or started prematurely. The domestic hot water preparation is not affected.

Absent

[→ Main menu → Time program → Absent]

The program runs from activation until the end of the set period. During this time, the HC is controlled to the room target temperature in the [Room temperature absent] parameter. The domestic hot water preparation is not affected.

Holiday

[→ Main menu → Time program → Holiday]

A calendar function can be used to enter a time period of absence. During this time, the HC is continuously controlled (24 h per day) to the room target temperature set in the [Room temperature absent] parameter. This program is not started if the Standby operating mode is active on the set start date.

Public holiday

[→ Main menu → Time program → Public holiday]

A calendar function can be used to enter a time period of presence. During this time, regulation is carried out exclusively according to the settings for "Sunday" in [Heating circuit auto. 1] and [Hot water auto. 1].

4.3.2 Permanent time programs

For the connected HCs and the storage tank charging circuit, time programs control the HC and hot water temperatures or the operating times of the circulation pump according to the specified switching cycles. The switching cycles are saved in time blocks for which different target temperatures can be set.

The saved time program can be changed at any time. For a better overview, it is recommended to write down and safely store the programmed switching cycles ("11.1 Timers" [▶ 52]).

Heating circuit auto. 1 and Heating circuit auto. 2

[→ Main menu → Time program → HC auto 1/HC auto 2]

The time programs for the HC can be parametrised in these menus. Three switching cycles can be set per day, to which the [Room temperature target 1/2/3] parameters are assigned. Outside the switching cycles, it is controlled to the [Reduce room temperature] setpoint. The entry can be made separately for each individual weekday or in week segments.

Hot water auto. 1 and Hot water auto. 2

[→ Main menu → Time program → DHW auto 1/DHW auto 2]

The time programs for the domestic hot water preparation can be parametrised in these menus. Three switching cycles can be set per day, to which the [Hot water temperature, target 1/2/3] parameters are assigned.

Outside of the switching cycles, it is controlled to the minimum adjustable setpoint (see "7.3.4 Menu: Hot water temperature, target" [▶ 29]).

Circulation program

[→ Main menu → Time program → Circulation]

A time program for an optionally connected circulation pump can be parametrised in this menu. 3 switching cycles per day can be set.

INFORMATION

Use of circulation lines not permitted in France!

Sound program

INFORMATION

During quiet mode, the output in room heating and room cooling operation decreases so that it may no longer be possible to achieve pre-set target temperature values. This program can therefore only be set by the installer.

In this menu, a time program can be parametrised for various stages of the heat pump quiet mode. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off)

Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.

A noise level can be assigned to each switching cycle:

- 0 – no noise reduction,
- 1 – low noise reduction,
- 2 – medium noise reduction,
- 3 – maximum noise reduction.

Factory settings

The permanent time programs are preset according to the following factory settings.

4–3 Factory setting of the permanent time programs

	Switching cycle 1		Switching cycle 2		Switching cycle 3	
Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
Room heating						
Temperature setting	[Room temperature target 1]: 20°C		[Room temperature target 2]: 20°C		[Room temperature target 3]: 20°C	
	[Reduce room temperature]: 10°C					
"Heating circuit auto. 1"						
Monday – Friday	06:00	22:00	--:--	--:--	--:--	--:--
Saturday, Sunday	07:00	23:00	--:--	--:--	--:--	--:--
"Heating circuit auto. 2"						
Monday – Friday	06:00	08:00	16:00	22:00	--:--	--:--
Saturday, Sunday	07:00	23:00	--:--	--:--	--:--	--:--
Domestic hot water preparation						
Temperature setting	[Hot water temperature target 1]: 48°C		[Hot water temperature target 2]: 48°C		[Hot water temperature target 3]: 48°C	
"Hot water auto. 1"						
Monday – Sunday	05:00	21:00	--:--	--:--	--:--	--:--
"Hot water auto. 2"						
Monday – Friday	05:00	21:00	--:--	--:--	--:--	--:--
Saturday, Sunday	06:00	22:00	--:--	--:--	--:--	--:--
"Circulation program"						
Monday – Friday	05:00	21:00	--:--	--:--	--:--	--:--
Saturday, Sunday	06:00	22:00	--:--	--:--	--:--	--:--
"Sound program"						
Monday – Sunday	--:--	--:--	--:--	--:--	--:--	--:--

4.3.3 Time program reset

[→ Main menu → Time program → TP reset]

This menu can be used to reset the time programs to factory settings. To do this, select the respective time programs and then confirm the selection with the Confirm button on the second menu page.

4.4 Settings

[→ Main menu → Settings]

The basic settings of the controller and the system are made in this menu. This includes the integration of optional and external components. Depending on the access authorisation (user or expert), different parameters are available.

4.4.1 Display settings

[→ Main menu → Settings → Display]

This menu can be used to set the following parameters: Language, date, time, LCD brightness and LCD illumination time.

Further explanations and possible settings for this menu can be found in "7.5 Settings" [▸ 31].

INFORMATION

Increasing the brightness of the LCD display beyond the factory-set value will reduce the life of the display.

4.4.2 System

[→ Main menu → Settings → System]

This menu combines basic parameters of the heating system.

Further explanations and possible settings for this menu can be found in "7.5.2 Menu: System" [▸ 32].

4.4.3 External heat sources

[→ Main menu → Settings → Ext. source]

This menu can be used to configure the integration of an optional external heat source.

The heat supplied by an alternative heat generator (WEZ) must be fed to the unpressurised cylinder water in the hot water tank of the indoor unit.

- On use of the optional EKBUxx backup heater, this is carried out due to the design installation situation.
- When using an alternative WEZ (e.g. gas- or oil-fired boiler), this can be hydraulically integrated:
  - unpressurised via the connections (solar feed and solar return) of the hot water storage tank or
  - with Daikin Altherma EHS…**B**… and ETS…**B**… device types, via the integrated pressure solar heat exchanger

The setting of the [Config. ext. heat source] parameter determines whether and which additional heat generator (WEZ) is available for domestic hot water preparation (DHW) and heating support (HZU).

- No external heat source
- Optional backup heater
- External heat source for DHW and heating support: Alternative WEZ provides domestic hot water preparation and heating support. To request the WEZ, relay K3 is switched for connections X1-L1 and XBUH1-T1 on the RTX-EHS PCB.
- External heat source for DHW or HZU: Alternative WEZ 1 (optional EKBUxx backup heater) provides domestic hot water preparation and alternative WEZ 2 provides heating support. To request the WEZ 1, relay K3 (connections X1-L1 and XBUH1-T1) is switched on the RTX-EHS PCB and to request the WEZ 2, relay K1 (connections X1-L3 and XBUH1-T3) is switched on the RTX-

EHS PCB. Heed warning notice! The operation of an additional alternative WEZ is also influenced by the settings of the [Bivalence function] and [Bivalence temperature] parameters.

Further explanations and possible settings for this menu can be found in "7.5.3 Menu: External heat source" [▶ 33].

4.4.4 Inputs/Outputs

[→ Main menu → Settings → Inputs/Outputs]

This menu can be used to adjust parameter for inputs and outputs of the controller PCB to optimise the system controller individually.

Smart grid

WARNING

There is a danger of scalds at hot water target temperatures over 65°C. This is possible because the utility company (EVU) is entitled to control current draw optimised according to supply and demand in the definitions for Smart Grid.

Such forced charging can cause the hot water target temperature in the hot water tank to exceed 65°C.

This storage tank charging is carried out even when "Standby" operating mode is set.

- Install scald protection in the hot water distribution line.

To use this function, a special electricity meter with SG receiver to which the heat pump must be connected is required.

As soon as the function is activated by the [Smart grid] parameter, the heat pump is set to an operating mode as per the following table depending on the utility company signal.

4–4 Use of the SG signal

Signal[1]		Electricity costs	Effect on	
EVU	SG		Hot water	Heating installations
1	0	---	No operation[2]	No operation[2]
0	0	Normal	Normal operation	Normal operation
0	1	low	Switch-on recommendation, and storage tank setpoint temperature value is increased depending on the [Smart grid mode] parameter.	Switch-on recommendation, and target leaving water temperature is increased depending on the [Smart grid mode] parameter.
1	1	Very low	Switch-on command and storage tank setpoint temperature is set to 70°C.	Switch-on command for storage tank charging[3]

AUX switching function

Setting the [AUX switching function] parameter determines the switching conditions for the potential-free AUX switching contact (toggle switch output A). This switching contact can be used to control an external heat generator, for example.

If one of the switching conditions is fulfilled, the potential-free switching contact is switched after the time set in the [AUX wait time] parameter.

AUX switching contact (toggle switch output **A**) is **not switched** if the switch function is deactivated. [AUX switching function] parameter = "Inactive".

AUX switch contact (toggle **switch output A**) is **switched** when one of the following conditions is set:

- Storage tank temperature (T_{dhw}) ≥ [Switching threshold TDHW (AUX)] parameter value.
- if an error is pending.
- Outside temperature <[Bivalence temperature] parameter value.
- Heat request for domestic hot water preparation.
- Heat request for room heating or cooling requirement.
- Heat request for room heating or domestic hot water preparation.
- "Cooling" operating mode active.

Interlink function

Setting the [Interlink function] parameter = "On" provides the option that the indoor unit includes two different leaving water temperature setpoints in the controller.

This applies to both weather-compensated control and control according to a fixed target leaving water temperature (see "4.5 Configuration" [▶ 16]).

One possible application is, for example, the additional integration of an HP convector in a surface heating and cooling system.

Prerequisite: 2 switching contacts (e.g. room thermostats) are connected to the plug connection J16 of the indoor unit.

- [Interlink function] parameter = "Off": Deactivated
- [Interlink function] parameter = "On": Evaluation of the heating and cooling switching contacts at plug connection J16 on the RoCon BM2C PCB:
  Activation of cooling operation only by switching the operating mode to "Cooling" (see "4.1 Operating mode" [▶ 11]). [Room thermostat] parameter must be set to "Yes".

1 Open switching contacts: Only freeze-up protection active

2 "Heating" or "Automatic 1" / "Automatic 2" operating mode active during the switching cycles in day mode.

- Closed heating switching contact = IL1: It is controlled to the normal target leaving water temperature according to the parameter settings for [Heating].
- Closed cooling switching contact = IL2: It is controlled to the increased target leaving water temperature (normal target leaving water temperature + value of the [Interlink temperature increase] parameter). Priority if both switching contacts are closed!

3 "Cooling" operating mode active.

- Closed heating switching contact = IL1: It is controlled to the normal target leaving water temperature according to the parameter settings in level [Heating circuit config.] > [Cooling].
- Closed cooling switching contact = IL2: It is controlled to the reduced target leaving water temperature (normal target leaving water temperature – value of the [Interlink temperature increase] parameter). Priority if both switching contacts are closed!

Further explanations and possible settings for this menu can be found in "7.5.4 Menu: Inputs/Outputs" [▶ 33].

[1] Switching contacts at input J8 of the RoCon BM2C PCB closed (1) or open (0).
[2] No freeze-up protection function
[3] When the charging process is completed, heating is carried out according to the settings for the respective HC. Heating support from the HC active if [Heating support (HZU)] parameter = "On".

4.4.5 Intelligent storage tank management

[→ Main menu → Settings → ISM]

If the storage temperatures are high enough, the energy in the storage tank can be used for room heating. This can either increase comfort ([Continuous heating] function) or make it possible to use energy from an external heat source, e.g. solar, when heating is required ([Heating support (HZU)] function).

Continuous heating

The activated Continuous heating function ([Continuous heating] parameter = "On") allows uninterrupted heating even during defrosting of the evaporator. This enables high comfort to be guaranteed, even with rapidly reacting heating systems (e.g. convectors).

Heating support (HZU)

If the heating support ([Heating support (HZU)] parameter = "On") is activated, the energy in the built-in storage tank of the indoor unit is used to perform the heating function. If the storage tank temperature is sufficiently high, the heat generation by the heat pump remains out of operation.

The minimum required storage tank temperature (T_{HZUmin}) is calculated as follows:

T_{HZUmin} = Currently active hot water target temperature[1]+hysteresis[2]

a) Switch-on condition:

Tdhw>T_{HZUmin}+4 K **and** Tdhw>Information parameter [Feed temperature, target]+1 K

If the switch-on condition is fulfilled, heat is taken from the storage tank and this is used to supply the heating system.

b) Switch-off condition:

Tdhw<T_{HZUmin} **or** Tdhw<Information parameter [Feed temperature, target] (see "7.7.2 Values" [▶ 44])

If the switch-off condition is met, heating support from the hot water storage tank is ceased, and the heat pump takes over heating operation.

The [Heating support power] parameter limits the maximum power that can be taken. The [Heating support max. temp.] parameter limits the maximum temperature that can enter the heating system.

Further explanations and possible settings for the parameters in this menu can be found in "7.5.5 Menu: Intelligent Storage Mgmt" [▶ 36].

4.5 Configuration

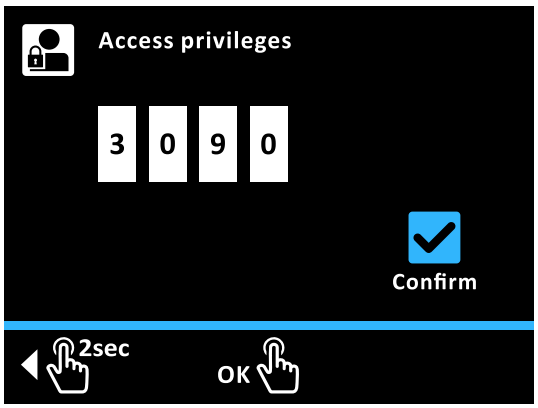
[→ Main menu → Configuration]

This menu can be used to optimally adapt the operating characteristics of the system to the system structure and the needs of the users. Additional programs facilitate commissioning. Depending on the access authorisation (user or expert), different parameters are available.

4.5.1 Access rights (technician code)

[→ Main menu → Configuration → Access]

Certain functions and parameters in the controller are restricted by access rights and are not visible to the user. To gain access to it, the specialist code must be entered.



4–1 Setting the access code

Example: Set code 3090 (example only, this is not a valid access code) [→ Main menu → Configuration → Access]:

1. Turn the rotary button clockwise until the first input field is displayed in blue.
2. Briefly press the rotary button to confirm ("OK").
   Result: The first input field flashes blue.
3. Turn the rotary button clockwise until 3 is displayed.
4. Briefly press the rotary button to confirm ("OK").
   Result: The second input field is displayed in blue.
5. Turn the rotary button clockwise until the third input field is displayed in blue.
6. Briefly press the rotary button to confirm ("OK").
   Result: The third input field flashes blue.
7. Turn the rotary button clockwise until 9 is displayed.
8. Briefly press the rotary button to confirm ("OK").
   Result: The fourth input field is displayed in blue.
9. Turn the rotary button clockwise until the Confirm icon turns blue.
10. Briefly press the rotary button to confirm ("OK").
    Result: The code is checked and the setting level is exited.

4.5.2 Sensors

[→ Main menu → Configuration → Sensors]

Optional sensors are activated and configured in this menu. Pressure setpoints for the water side can be defined.

Further explanations and possible settings for the parameters in this menu can be found in "7.6.1 Menu: Sensors" [▶ 37].

4.5.3 HC config.

[→ Main menu → Configuration → HC config]

This menu is used to adjust the basic functionality of the HC.

Further explanations and possible settings for the parameters in this menu can be found in "7.6.2 Menu: Heating circuit config." [▶ 38].

Weather-compensated leaving water temperature control

If the weather-compensated leaving water temperature control is active, the leaving water temperature ([Feed temperature, target] parameter) is determined automatically according to the set heating/cooling curve depending on the outside temperature.

[1] Information parameter [Hot water temperature, target] (see "7.3.4 Menu: Hot water temperature, target" [▶ 29])
[2] [Heating support hysteresis] parameter setting (see "7.5.5 Menu: Intelligent Storage Mgmt" [▶ 36])

This function is activated in the delivery condition. It can only be deactivated (fixed value control) or reactivated with a technician code.

If the RoCon U1 (EHS157034) room station is also connected to the RoCon+ HP1, the target temperatures are controlled according to the weather and room temperature [Room influence]) parameter.

This function can only be configured using the technician code. Contact your heating expert in this regard.

This function is activated or deactivated via the [Weather-compensated] parameter in the "Configuration" menu.

- [Weather-compensated] parameter = "Weather-compensated": Weather-compensated leaving water temperature control according to the settings made in the [Heating] and [Cooling] menus.
- [Weather-compensated] parameter = "Feed temperature, fixed": Control based on fixed target temperature
  - For heating operation: [Feed temperature, heating mode] parameter or [Feed temperature, reducing mode] parameter
  - For cooling operation: [Feed temperature, cooling mode] parameter

INFORMATION

The weather-compensated leaving water temperature control has no influence on the target leaving water temperature in the case of a hot water circuit request.

With mixer module connected M1

The setting of the heating/cooling curves and the activation of the weather-compensated leaving water temperature control for the assigned HC are carried out in the same way as described above.

The assigned HC can be operated as a:

- Mixer add-on
  The outside temperature of the outdoor temperature sensor connected to the indoor unit external temperature sensor is transmitted to the mixer module via the CAN bus.

or as a

- Mixer add-on with zone control
  A separate outdoor temperature sensor must be connected to the mixer module. The assigned HC is controlled according to the outside temperature relevant for this zone.

If the terminal function is activated, the mixer module can be operated and the settings for the assigned HC undertaken via the RoCon+ B1 control panel of the indoor unit.

In conjunction with the RoCon U1 (EHS157034) room station, the mixer module can also control the assigned HC completely autonomously and independently of the heat generator.

Further explanations and possible settings for this menu can be found in "7.6 Configuration" [▸ 37].

Freeze-up protection function

The integrated heating circulation pump is switched on at an external temperature below the [Frost protection temperature] parameter value in order to prevent the heating system from freezing.

In addition, the feed, storage and connected room temperature sensors are also constantly monitored. If the temperature measured by one of these sensors falls below 7°C (below 5°C at room temperature), the antifreeze function is also activated.

If the heating leaving water temperature falls below 7°C, the heat pump heats until the heating leaving water temperature reaches at least 12°C.

The function is ended if the external temperature rises above the set [Frost protection temperature] parameter value+1 K and also there is no other activation condition.

INFORMATION

Operation of the heat pump can be shut off completely for a limited period of time by the utility company if the following low-tariff functions are activated:

[HT/NT function] parameter = "Switch all off" or [Smart grid] parameter = "On"

These situations can be recognised if, in the [→ Main menu → Information → Overview] menu in the operating data field "Ext" the "High rate" or "SG1" value is displayed.

4.5.4 Heating

[→ Main menu → Configuration → Heating]

This menu is used to configure heating times and target leaving water temperatures for heating operation.

Heating curve

INFORMATION: Overheating and moisture protection

In the event of malfunction, the underfloor heating system, the screed or the floor structure could be damaged due to overheating.

- Prior to initial commissioning, set the maximum temperature limit in the RoCon+ HP1 controller ([Max. feed temperature] parameter) to the maximum permissible system temperature before the screed drying starts.
- Connect an overheating protection switch (in the building) at the "EXT" plug connection to external mode switch-over so that the indoor unit is switched to "Standby" or "Summer" mode. If the [Room thermostat] parameter = "Yes" or [Interlink function] parameter = "On", the overheating protection switch must be connected so that the room thermostat's switching contact is interrupted.
- If the underfloor heating is also used for room cooling, the connection notes in the above point also apply to the connection of a moisture protection switch in the building.

The heating curve is used to adapt the leaving water temperature to the characteristics of the building independent of the respective outside temperature (weather-compensated leaving water temperature control, see "4.5 Configuration" [▸ 16]). Generally speaking, the slope of the heating curve describes the ratio of the leaving water temperature change to the external temperature change.

The heating curve is valid within the limits of the minimum and maximum temperatures set for the respective HC. Deviations may occur between the room temperature measured in the occupied area and the desired room temperature; these can be minimised by installing a room thermostat or a RoCon U1 (EHS157034) room station.

The **controller** is set at the **factory** in such a way that the **heating curve** does **not independently adjust itself** during operation.

The **automatic heating curve adjustment** can be activated ([Heating curve adaptation] parameter) **if** the **outdoor temperature sensor** and the **room station** (RoCon U1 (EHS157034)) are **connected** (see "4.5 Configuration" [▸ 16]).

Start conditions for automatic heating curve adjustment:

- Outside temperature<8°C
- Operating mode is "Automatic 1" or "Automatic 2"
- Duration of the setback period is at least 6 h

If **no automatic heating curve adjustment** is activated, the heating curve can be **manually** adjusted by **adjusting** the [Heating curve] **parameter**).

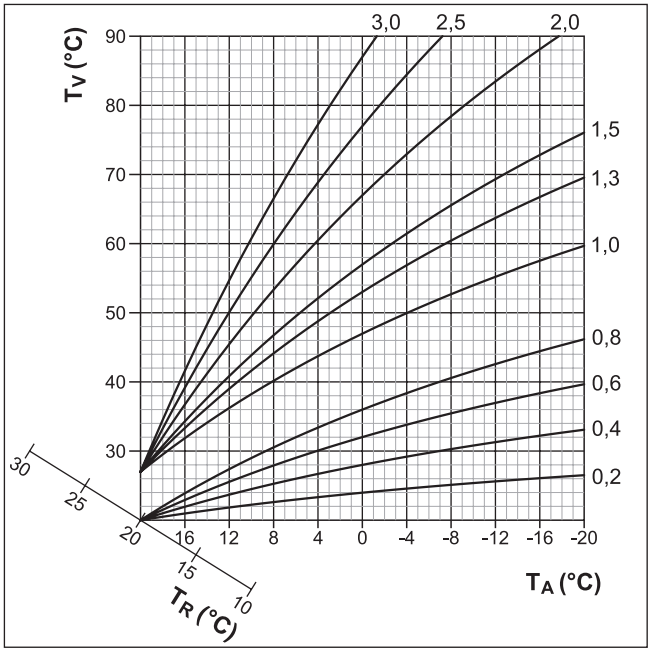
INFORMATION: Manually adjusting the heating curve

Do not make any corrections to the set values for 1 – 2 days, and then only make them in small increments.

- Deactivate the external heat sources (e.g. stoves, direct sunlight, open windows).
- Fully open any radiator thermostat valves or actuators.
- Activate "Heating" operating mode. Approximate setting values:

  Radiator: 1.4 to 1.6.

  Underfloor heating: 0.5 to 0.9.



4–2 Heating curves

T_A Outside temperature
T_R Room temperature setpoint
T_V Leaving water temperature

Comfort heating

If the heat pump cannot cover the heating demand when outside temperatures are very low, heat is extracted from the storage tank and used for room heating. In rare cases (in systems with high required leaving water temperatures and low required hot water temperatures), the required leaving water temperature can be higher than the storage tank setpoint temperature. In order to avoid short-term loss of comfort in heating operation for these systems, the [Comfort heating] parameter can be set to "On". At corresponding outside temperatures, the storage tank temperature is raised above the storage tank temperature set for the hot water requirement.

INFORMATION

If [Comfort heating] is set to "On", the power consumption of the heat pump may increase. In the default setting, [Comfort heating] is set to "Off".

Detailed explanations and possible setting values of this function can be found in "7.6 Configuration" [▸ 37].

4.5.5 Cooling

[→ Main menu → Configuration → Cooling]

This menu is used to make settings for cooling operation.

INFORMATION: Danger of condensation

In the event of malfunction or incorrect parameter settings, the underfloor heating, the screed or the floor structure could be damaged due to condensation.

- Prior to initial commissioning and activation of cooling operation, set the minimum temperature limit to the minimum permissible system temperature in the RoCon + HP1 controller ([Feed temperature lower limit] parameter).

To protect against moisture damage caused by cooling, a moisture protection switch can be connected to the plug connection J8 "EXT" (see "4.5.4 Heating" [▸ 17]).

Prerequisites for cooling operation:

- Outside temperature > set value of room target temperature
- Outside temperature > set value of the [Start cooling outside temp.] parameter
- "Cooling" operating mode activated.
  - via menu "Operating mode" or
  - via room thermostat function (cooling switching contact closed)
- No heat request active in the heating system's RoCon system.

INFORMATION

If the mean outside temperature falls below 4°C when "Cooling" operating mode is active, the operating mode automatically switches to "Heating".

Renewed automatic operating mode changeover to "Cooling" only takes place:

- if a room thermostat is connected to plug connection J16 (cooling) and
- the room thermostat's switching contact is closed and
- the mean outside temperature increases to over 10°C again.

Cooling curve

[→ Main menu → Configuration → Cooling → Cooling curve]

The cooling curve determines the target leaving water temperature in cooling operation depending on the respective outside temperature. (for weather-compensated leaving water temperature control, see "4.5.3 HC config." [▸ 16]). Warmer outside temperatures result in a colder target leaving water temperature and vice versa. The cooling curve can be adapted to the condition of the building by four parameters (see "4–3 Cooling curve parameter dependency" [▸ 19]).

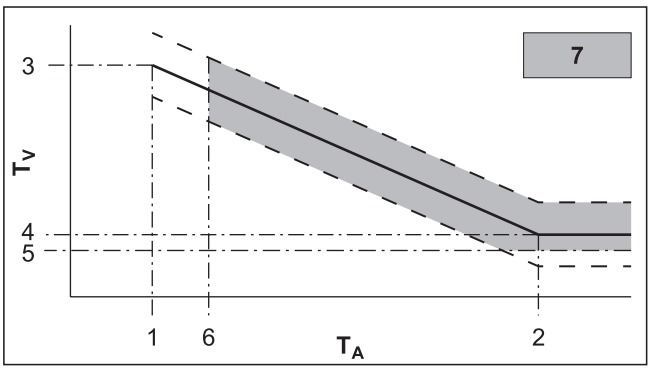
1 [Start cooling outside temp.]
2 [Max. cooling outside temp.]
3 [Target flow cooling, start]
4 [Target flow cooling, max.]

Cooling parameters

[→ Main menu → Configuration → Cooling → Parameters]

This menu combines further parameters to determine target leaving water temperatures in cooling operation.

During weather-dependent leaving water temperature control, the user can increase or decrease the target leaving water temperature by a maximum of 5 K with the parameter [Cooling setpoint correction]. A temperature reduction is limited by the [Feed temperature lower limit] parameter.



4–3 Cooling curve parameter dependency

1	[Start cooling outside temp.] parameter
2	[Max. cooling outside temp.] parameter
3	[Target flow cooling, start] parameter
4	[Target flow cooling, max.] parameter
5	[Feed temperature lower limit] parameter
6	Room target temperature
7	Cooling operation possible
T_A	Outside temperature
T_V	Leaving water temperature
--------	Cooling curve
- - - -	Possible parallel cooling curve shift

Further explanations and possible settings for the parameters in this menu can be found in "7.6.4 Menu: Cooling" [▶ 40].

4.5.6 Hot water

[→ Main menu → Configuration → DHW]

The domestic hot water preparation can be individually adapted to the behaviour and requirements of the users in this menu. This minimises energy consumption and increases comfort.

Solar function

The [Solar function] parameter is used to reduce the target temperature of the hot water storage tank in order to increase the yield of a connected solar system. The setpoint of the hot water temperature is set as a function of the outside temperature and in compliance with the safety functions. In addition, the following parameters are defined: [Hot water hysteresis] = 5 K; [Building insulation] = "Normal"

To activate the solar function, it must be set in the menu [→ Main menu → Configuration → DHW → Solar function] to "On" and the switching contact connected to the plug connection J8 (EXT) must be closed..

Settings for optional circulation pump

Depending on the [Circulation pump control] parameter, an optional circulation pump can be controlled synchronously with the selected time program for domestic hot water preparation or with the time program for the circulation pump (see "4.3 Time program" [▶ 13]). During the release times of the selected time program, the circulation pump can be operated either continuously or cycled. This is defined with the [Circulation pump interval] parameter.

Anti-legionella protection

This function is used to prevent bacterial contamination in the hot water tank by thermal disinfection. To do so, the hot water tank is heated 1× daily or 1× weekly to the disinfection temperature [Anti-legionella temperature] depending on the [Anti-legionella day] parameter. Disinfection starts at the specified start time [Anti-legionella start time] and is active for one hour. An optionally connected circulation pump is automatically switched on during this time.

Detailed explanations and possible setting values of this function can be found in "7.6.5 Menu: Hot water" [▶ 41].

4.5.7 Additional program

[→ Main menu → Configuration → Addition]

This menu combines programs which simplify initial commissioning of the system.

Ventilation function

[→ Main menu → Configuration → Addition → Ventilation]

By activating the air purge function, the controller starts a fixed defined sequence program with start/stop operation of the integrated heating circulation pump and various positions of the integrated 3-way changeover valves. Existing air can escape during operation via the automatic air purge valve.

INFORMATION

The activation of this function does not replace correct venting of the HC.

The HC must be completely full before activating this function.

Relay test

[→ Main menu → Configuration → Addition → Relay test]

This program allows testing of internal switching relays. This may be necessary in the event of malfunctions, error messages or as part of annual maintenance. When the menu is opened, all relays are deactivated. Selecting one or more relays activates them. When the menu is exited, all relay tests are terminated.

The relay test menu is operated in the same way as list entries (see "3.3.3 Navigating in lists and selecting list entries" [▶ 8]). However, several relays can be activated in parallel in the relay list for testing. To do this, select the corresponding relay with "OK". Activated relays are indicated by a tick.

Screed drying

[→ Main menu → Configuration → Addition → Screed]

The screed drying is started in the menu according to the settings in [Screed program]. The program is used exclusively for the prescribed drying of newly created screed for underfloor heating systems. The first day of the screed program begins after activation of the program at the change of day at 00:00.

Screed drying is a special function and is not interrupted by any other operating mode. It can only be activated by the heating expert for the direct HC and/or optionally connected mixed HCs. It must be activated separately for each HC.

INFORMATION

Before starting the screed drying, the [Room thermostat] and [Interlink function] parameters must be deactivated. During a short-term power failure, a previously activated screed drying is continued at the point of the interruption.

After activation of the screed drying, all weather-compensated control functions of the respective HC are switched off. The respective HC works as a constant temperature control regardless of the operating mode and switching times.

Already activated screed drying can be deactivated at any time. After ending the screed drying, the parameter is automatically set to "Off" and the HC works according to the currently set operating mode again.

Screed program

[→ Main menu → Configuration → Addition → Program]

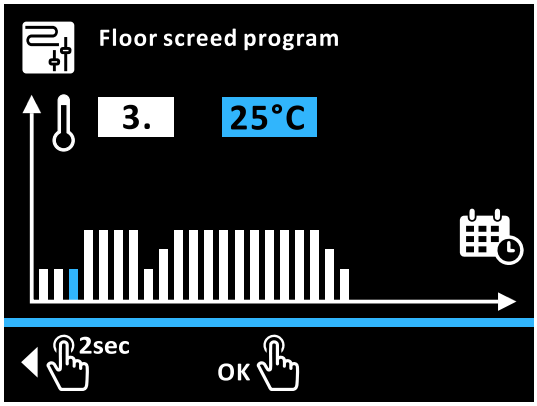
This menu allows the individual adjustment of the factory settings for the duration and target leaving water temperatures of the screed drying. Changes can only be made after entering the specialist code.

Changing the screed program

A separate target leaving water temperature can be set for each day for a maximum duration of 28 days. The end of the screed program is defined by the first day without a preset target leaving water temperature.

4–5 Default settings of the screed program

Day	Factory setting	Day	Factory setting
1 – 3	25°C	10 – 19	55°C
4 – 7	55°C	20	40°C
8	25°C	21	25°C
9	40°C	22 – 26	-



4–4 Changing the screed program

Example: Increase the leaving water temperature of the 3rd day to 40°C and stop the program on the 8th day [→ Main menu → Configuration → Addition → Program]:

1. Turn the rotary button clockwise until the day selection is set to 3.
2. Briefly press the rotary button to confirm ("OK").

   Result: The temperature field is displayed in blue.
3. Turn the rotary button clockwise until the temperature selection is 40°C.
4. Briefly press the rotary button to confirm ("OK").

   Result: Temperature selection of the next day is shown in blue
5. Briefly press the rotary button several times until the day selection is set to 8.
6. Turn the rotary button anticlockwise until the temperature selection is set to "Off".
7. Briefly press the rotary button to confirm ("OK").

   Result: Day 8 to day 28 are set to "Off", the Confirm icon is shown in blue
8. Briefly press the rotary button to confirm ("OK").

   Result: The programming is saved and the menu is exited.

Typical screed programs

Function heating

The function heating serves as proof of the production of defect free work for the heating engineer. A prefabricated heating protocol related to underfloor heating can be found in the Internet portal of the manufacturer.

In this sense, the function heating (identical with "Heating" in EN 1264, section 5.2) is not considered as a heating process to achieve workability of the screed. Generally, a special screed curing heating and/or mechanical drying is required for this.

The heating of cement screeds should be carried out at the earliest after 21 days and of anhydrite screeds after 7 days at the earliest in accordance with the specifications of the manufacturer. The first heating begins with a leaving water temperature of 25°C that must be maintained for 3 days. Afterwards, the heating is carried out with the maximum set leaving water temperature for the HC (limited to max. 55°C), which must be maintained for a further 4 days.

Due to the insulating effect of the DUO heating pipe for System 70, the screed function must be carried out at higher temperatures. The temperature profile must be adapted in the [Screed program] parameter for this use case. For System 70, the heating begins at a temperature of 38°C that is maintained for 3 days. The set maximum HC temperature (limited to 70°C) is then maintained for 4 days.

After the described heating process, it is not yet assured that the screed has reached the required moisture content for workability of the screed.

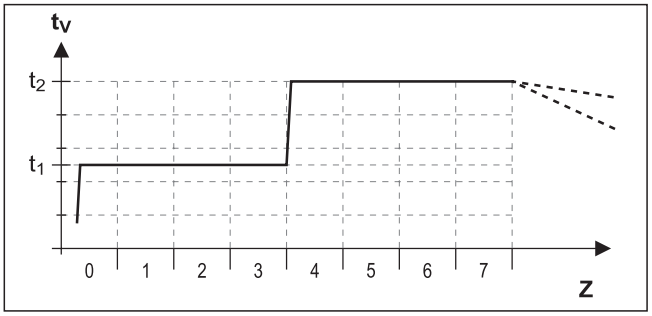
The moisture content in the screed must be checked by measurement prior to laying the surface covering.

INFORMATION

Procedure in accordance with EN 1264 Part 4:

For anhydrite and cement screeds, the HCs must be leak tested by a water pressure test after completion. The leaktightness must be ensured immediately before and during the laying of the screed. The height of the test pressure is at least 1.3x the maximum permitted operating pressure.

Suitable measures must be taken if there is a risk of freezing, e.g. use of antifreeze agents or heating the building. If antifreeze agents are no longer necessary for the intended operation of the system, the antifreeze agent must be removed by draining and rinsing the system with at least 3 changes of the water.



4–5 Chronological sequence of the screed program during the function heating

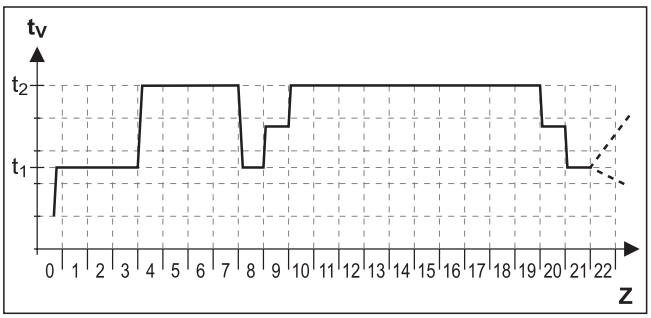
- t_1 Start temperature 25°C
- t_2 Maximum HC temperature
- t_V Leaving water temperature
- Z Duration of the screed function in days after starting the function

Screed curing heating

The drying process for the screed cannot be exactly predicted. If there is a high degree of humidity, sometimes it can stop completely. The drying process can be speeded up by activating the underfloor heating (screed curing heating) or measures such as mechanical drying.

Each screed curing heating must be ordered separately by the client as an extra service in accordance with German construction contract procedures (VOB). The workability of the screed is a prerequisite for the top floor installer to start work so that he can produce defect free work.

With standard settings, the combined function and screed curing heating program can be activated to achieve the required residual moisture in the screed for workability of the screed (see "4–6 Chronological sequence of the screed program during the combined function and screed curing heating" [▶ 21]). However, the residual moisture of the screed must basically be checked metrologically before the flooring can be laid.



4–6 Chronological sequence of the screed program during the combined function and screed curing heating

- t_1 Start temperature 25°C
- t_2 Maximum HC temperature
- t_V Leaving water temperature
- **Z** Duration of the screed function in days after starting the function

Detailed explanations and possible setting values of this function can be found in "7.6 Configuration" [▶ 37].

4.5.8 Configuration Wizard

[→ Main menu → Configuration → Wizard]

This menu summarises the parameters queried in the Configuration Wizard. This allows a quick adjustment of the system settings. See "5.1 Configuration Wizard" [▶ 24].

4.5.9 Parameter reset

[→ Main menu → Configuration → Parameter reset]

All customer-specific parameter settings can be reset to factory settings in this menu. This can be useful if the indoor unit no longer functions properly and no other causes of malfunction can be identified.

4.6 Information

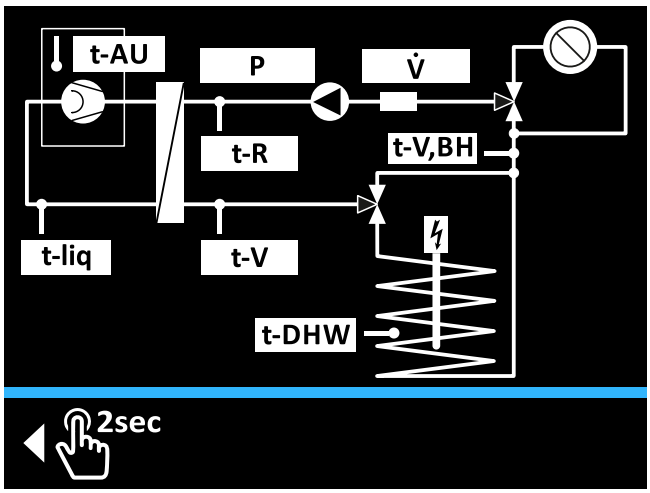
[→ Main menu → Information]

This menu displays all system temperatures, the heat generator type, various software information and the operating states of all system components. The number of displayed parameters depends on which components are connected. No adjustments can be made to these values.

4.6.1 Current

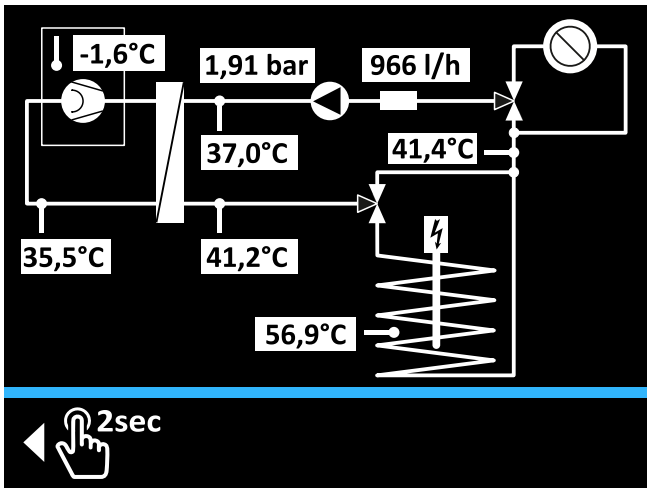
[→ Main menu → Information → Current]

This menu shows the hydraulic diagram of the system. The first and second pages show sensors and the assigned, current values. The third page shows the compressor, pump and heating rod in white if they are inactive and blue if they are active. The current valve position is shown for both 3-way valves.

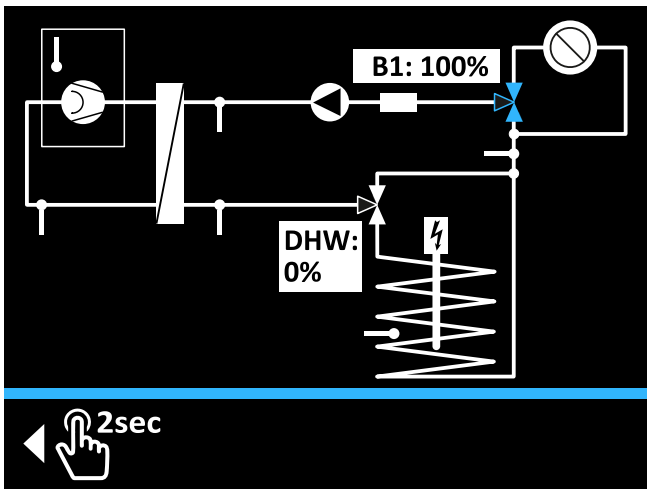


4–7 Hydraulic circuit diagram – first page

- **t-AU** Outdoor temperature sensor
- **P** Pressure
- **V̇** Volume flow
- **t-R** Heating return flow temperature
- **t-V** leaving water temperature after the plate heat exchanger
- **t-V,BH** Heating leaving water temperature; if necessary, after heating support heat exchanger
- **t-liq** Refrigerant temperature
- **T-DHW** Temperature in the hot water storage tank



4–8 Hydraulic circuit diagram - second page



4–9 Hydraulic circuit diagram – third page

- **B1** Current position of the 3-way mixing valve 3UVB1 (0%: heating network; 100%: internal bypass)
- **DHW** Current position of the 3-way distributor valve 3UV DHW (0%: heating network; 100% hot water storage tank)

4.6.2 Overview

[→ Main menu → Information → Overview]

This menu lists the current operating states of the heat pump and its components.

Further explanations of the parameters in this menu can be found in "7.7 Information" [▸ 43].

4.6.3 Values

[→ Main menu → Information → Values]

In this menu, the current setpoint and actual values are listed.

Further explanations of the parameters in this menu can be found in "7.7 Information" [▸ 43].

4.6.4 Water pressure

[→ Main menu → Information → Water pressure]

The current water pressure is displayed in large font in this menu. This makes it easier to read during the installation of the system.

4.7 Error

[→ Main menu → Error]

The error handling of the heat pump takes place in this menu. See "8 Errors and faults" [▸ 47].

4.8 Terminal

[→ Main menu → Terminal]

This menu can also be used to operate and parametrise other devices integrated in the RoCon system via the CAN bus (control components mixer module or heat generator), provided the respective control panel has the required authorisation.

Functional IDs

The RoCon system offers a very wide range of application and extension options. The individual RoCon system components communicate via the CAN data bus. To do this, the RoCon BM2C PCBs and the RoCon+ B1 control panels of the indoor unit and, if necessary, the optional RoCon U1 (EHS157034) room station system components and RoCon M1 (EHS157068) mixer module are connected to each other via data bus cables. These system components must be allocated unique functional IDs, so that the data exchange and the assignment within the RoCon system functions without any problems.

The easiest way to assign the functional identifiers is to use the Configuration Wizard. This is carried out automatically during the first commissioning or can be started manually in case of extensions in the heating system in [→ Main menu → Configuration → Wizard]. In addition, most identifiers can also be adapted to the RoCon system by parameter settings in this menu.

4–6 Functional IDs in the RoCon system

ID/Function	System components	Parameters	Comments
HC ID Unique numbering of a HC in the heating system in the RoCon system. A maximum of 16 HCs can be controlled.	Indoor unit (RoCon BM2C)	[Direct circuit configuration] See "7.11 Configuration Wizard" [▸ 46]	Factory setting = 0 Should not normally be changed.(1)
	RoCon U1 (EHS157034) room station	[Heating circuit assignment] see RoCon U1/M1 instructions(2)	Factory setting = "Off" Adaptation required if there are different HCs in the system and/or the [Master-RoCon] parameter = "On"
	RoCon M1 (EHS157068) mixer module	[Heating circuit assignment] see RoCon U1/M1 instructions(2)	Factory setting = "Off" Must always be adapted to the setting of the address switch.
Heat generator ID Unique numbering of a heat generator in the RoCon system.(1)	Indoor unit (RoCon BM2C)	[Bus ID heat generator] See "7.11 Configuration Wizard" [▸ 46]	Factory setting = 0 Should not normally be changed.(1)
	RoCon M1 (EHS157068) mixer module	[Boiler Assignment] see RoCon U1/M1 instructions(2)	Factory setting = 0 Should not normally be changed.(1) Defines the heat generator that supplies the assigned HC with heat.

(1) A maximum of 8 heat generators can be connected in the RoCon system via the CAN data bus. Several heat generators integrated in the heating system must be regarded as a special application. If necessary, contact a service technician.

(2) "Operating instructions for Daikin RoCon HP, EHS157034, EHS157068", status 04/2017, available in digital form: www.daikin.eu, search for "EHS157034"

ID/Function	System components	Parameters	Comments
Terminal ID Unique numbering of a RoCon+ B1 or EHS157034 control panel from which a heat generator and/or mixer module can be remotely controlled in the RoCon system. The authorisation for remote control can be allocated to up to 10 control panels in the RoCon system. If remote control is to be possible in the RoCon system, the control panel must be allocated the ID "0".	Indoor unit (RoCon BM2C)	[Terminal address] See "7.9 Terminal" [▶ 45]	Factory setting = "Off" The value should be set to "0" if at least 1 mixer module is connected in the RoCon system and the mixer circuit is to be operated from the heat generator.
	RoCon U1 (EHS157034) room station	[Terminal address] See "7.9 Terminal" [▶ 45]	Factory setting = "Off" The value must be set to a unique numerical value in the RoCon system if the room station system components are to be remotely controlled using a valid device ID.
Device ID Unique numbering of a heat generator or mixer module in the RoCon system. Up to 16 device numbers can be allocated. These device numbers are detected during a [Bus scan] and are displayed for identification of a remotely controlled device.	Indoor unit (RoCon BM2C)	[Bus ID heat generator] See "7.11 Configuration Wizard" [▶ 46]	Identical to heat generator detection. The value must not be the same as the HC ID of a mixer module in the RoCon system.
	RoCon M1 (EHS157068) mixer module	[Heating circuit assignment] See "9 Mixer module" [▶ 48]	Identical to the HC ID. The value must not be the same as the heat generator ID of the heat generator in the RoCon system. The value must be the same as the setting of the address switch.

4.8.1 Selecting the terminal address

[→ Main menu → Terminal → Address]

Setting of the terminal ID of the control panel for system access. The set value must be unique throughout the entire system. Confirmation of this parameter with the rotary button effects a new initialisation of the controller.

All settings except "Off" authorise the user of the control panel to activate the terminal function and thus to operate all RoCon system components with a valid device ID.

4.8.2 Bus scan for terminal function

[→ Main menu → Terminal → Bus scan]

After activating the "Bus scan", a list of detected devices (with assigned terminal address) is displayed in the menu [→ Main menu → Terminal] for selection. After selecting and confirming an external device, the terminal function for this device is activated. The control panel is then in terminal operation.

The local control panel acts as a remote controller for the external device and the corresponding start screen is shown on the display. In this case, all the control functions are performed and saved 1:1 in the same way as on the external device. The displayed values and symbols are always taken over by the selected device.

To operate the local device, switch to the start screen of the external device. Press and hold the rotary switch to return to the menu of the local device.

INFORMATION

To perform the bus scan, a valid terminal address must be assigned to the RoCon+ B1 control panel of the indoor unit or the RoCon U1 (EHS157034) room station. This can only be done with a specialist code. Contact your heating expert in this regard.

If the terminal function is to be used in the heating system, the terminal ID = 0 ([Terminal address] parameter = "0") must be assigned to a control panel.

Example: Activate terminal operation for the heat generator with bus identification 2 [→ Main menu → Terminal → Bus scan]:

The bus scan is carried out. An overview of all devices that are found is displayed.

1 Turn the rotary switch clockwise until the BM1/BE1 #2 controller is displayed in blue.

2 Briefly press the rotary button to confirm ("OK").

Result: The local control panel acts as a remote controller for the heat generator with bus ID 2.

To end terminal operation and switch the control panel back to the operation of the assigned device, switch to the start screen of the external device. Press and hold the rotary switch to return to the menu of the local device.

INFORMATION

If the local control panel is used as a remote controller for a mixer module, both the standard screen and the menu structure are changed (see "9 Mixer module" [▶ 48]).

4.9 Statistics

INFORMATION

The values listed in this menu are approximate values. In particular if glycol is present in the system, there may be greater deviations from real performance data.

[→ Main menu → Statistics]

This menu can be used to access the values for the power output and run times of the heat pump and its components. The [Electr. energy total] parameter describes the total electrical power input of the heat pump and its components. All other values refer to the energy provided by the heat pump or the run time of various components.

4.9.1 Month

[→ Main menu → Statistics → Month]

This menu can be used to call up summed values for the power output and power input over the month. The displayed value is assigned to the month shown in blue on the diagram. The various values can be displayed by turning the rotary switch.

4.9.2 Total

[→ Main menu → Statistics → Total]

This menu can be used to call up summed values for the power output and power input of the heat pump since commissioning (or since the last reset by a specialist).

5 Initial commissioning

INFORMATION

In addition to the commissioning instructions listed in this chapter, the specific commissioning instructions listed in the respective installation instructions for the heat pump must be observed.

5.1 Configuration Wizard

The Configuration Wizard simplifies system configuration during installation. It appears automatically during initial commissioning and guides the user through defined selection pages. As long as the entire system setting is not confirmed, the Configuration Wizard is called up again each time it is switched on. Only after confirmation of the system setting can the heat generator switch to normal operation. In normal operation, the parameters of the Configuration Wizard can be called up and set in the menu [→ Main menu → Configuration → Wizard].

The different selection pages of the Configuration Wizard are operated according to the screens described in "3.3 Operating concept" [▸ 8]. Confirming a selection with "OK" or the confirm icon leads directly to the next selection page. The modified parameter is applied directly.

5.2 Menu navigation in the Configuration Wizard

→ Language

1 Select the desired language.

2 Confirm the selection with the Confirm icon.

→ Standard configuration

If **no optional RoCon system components** are connected:

1 Briefly press the rotary button to confirm ("Yes").

When **optional RoCon system components** such as RoCon U1 (EHS157034) and/or RoCon M1 (EHS157068) are connected:

1 Turn the rotary button clockwise until "No" is displayed in blue.

2 Briefly press the rotary button to confirm ("OK").

3 Select and set the following list elements as required:

- Direct circuit configuration (see "4.8 Terminal" [▸ 22])
- Bus ID heat generator (see "4.8 Terminal" [▸ 22])
- Time master (see "7.11 Configuration Wizard" [▸ 46])

4 If all settings have been made as required, confirm by clicking on the Confirm icon.

→ Time

1 Setting the current time (see "3.3.5 Setting the times" [▸ 9]).

→ Date

1 Setting the current date (see "3.3.6 Calendar function" [▸ 9]).

→ System parameters

The following parameters can be set:

- [Room thermostat] present? (see "7.5.4 Menu: Inputs/ Outputs" [▸ 33])
- [Heating support (HZU)] required? (see "7.5.5 Menu: Intelligent Storage Mgmt" [▸ 36])
- [Continuous heating] required? (see "7.5.5 Menu: Intelligent Storage Mgmt" [▸ 36])

→ Heating limit

The following parameters can be set:

- [Heat limit, heating mode] (see "7.5.3 Menu: External heat source" [▸ 33])
- [Heat limit, reducing mode] (see "7.5.3 Menu: External heat source" [▸ 33])

→ Weather-compensated

Weather-compensated control is required:

1 Confirm the "Weather-compensated" selection with the Confirm icon.

The following parameters can be set:

- [Room temperature target 1] setting (see "7.5.1 Menu: Display settings" [▸ 31])
- [Heating curve] setting (see "4.5.4 Heating" [▸ 17])
- Only with reversible device type: Setting of the cooling curve (see "4.5.5 Cooling" [▸ 18])

Weather-compensated control is not required:

1 Select the "Feed temperature, fixed" setting.

2 Confirm the selection with the Confirm icon.

The following parameters can be set:

- [Feed temperature, heating mode] setting (see "7.6.3 Menu: Heating" [▸ 38])
- Only with reversible device type: Setting [Feed temperature, cooling mode] (see "7.6.4 Menu: Cooling" [▸ 40])

→ Hot water

The following parameters can be set:

- [Hot water temperature target 1] (see "7.3.4 Menu: Hot water temperature, target" [▸ 29])
- [Hot water hysteresis] (see "7.6.5 Menu: Hot water" [▸ 41])

→ Device selection

The following parameters can be set:

- [Outdoor unit]
- [Indoor unit]

→ External heat generator

No external heat generator available:

1 Select the "No external heat generator" setting.

2 Confirm the selection with the Confirm icon.

Optional backup heater available:

1 Confirm the "Backup heater BUH" selection with the Confirm icon.

2 Select and set the following list elements as required:

- [External power hot water] (see "7.5.3 Menu: External heat source" [▸ 33])
- [External power stage 1] (see "7.5.3 Menu: External heat source" [▸ 33])
- [External power stage 2] (see "7.5.3 Menu: External heat source" [▸ 33])
- Emergency (see "8.1 Emergency operation" [▸ 47])

3 If all settings have been made as required, confirm by clicking on the Confirm icon.

Alternative external heat generator available:

1 Select the "DHW + heating support" or "Two external heat generators" setting (see "7.5.3 Menu: External heat source" [▸ 33]).

2 Confirm the selection with the Confirm icon.

3 Select and set the following list elements as required:

- [External power hot water] (see "7.5.3 Menu: External heat source" [▶ 33])
- [External power stage 1] (see "7.5.3 Menu: External heat source" [▶ 33])
- [Emergency] (see "8.1 Emergency operation" [▶ 47])

4 If all settings have been made as required, confirm by clicking on the Confirm icon.

→ **Heating system**

1 The [Heating system] parameter can be set (see "7.5.2 Menu: System" [▶ 32]).

6 Parameter overview

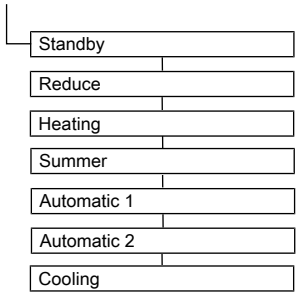
Parameters that are only available for certain device types are marked as follows:

(a) ETS only…

(b) EHS only…

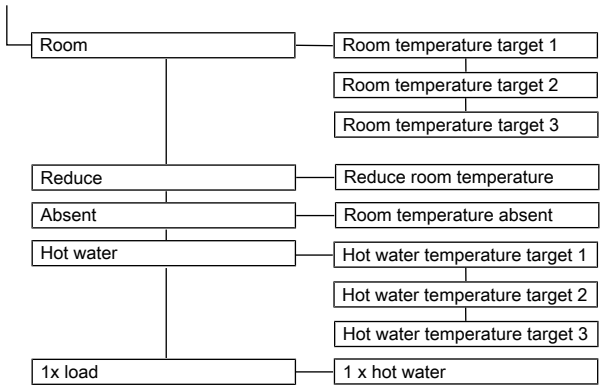
(c) EHS only…D3

6.1 Menu: Operating mode



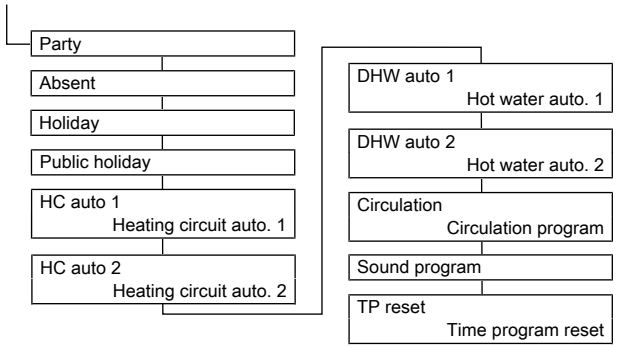
6–1 Parameter in menu: "Operating mode"

6.2 Menu: User



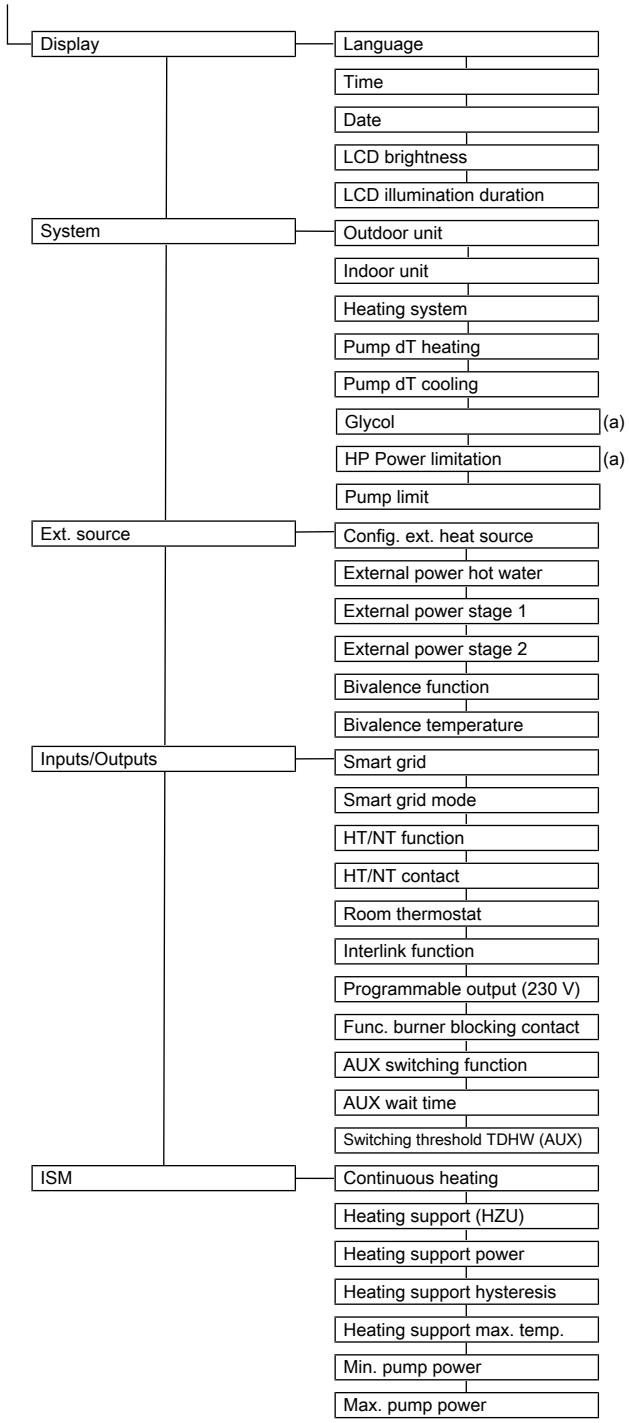
6–2 Parameter in menu: "User"

6.3 Menu: Time program



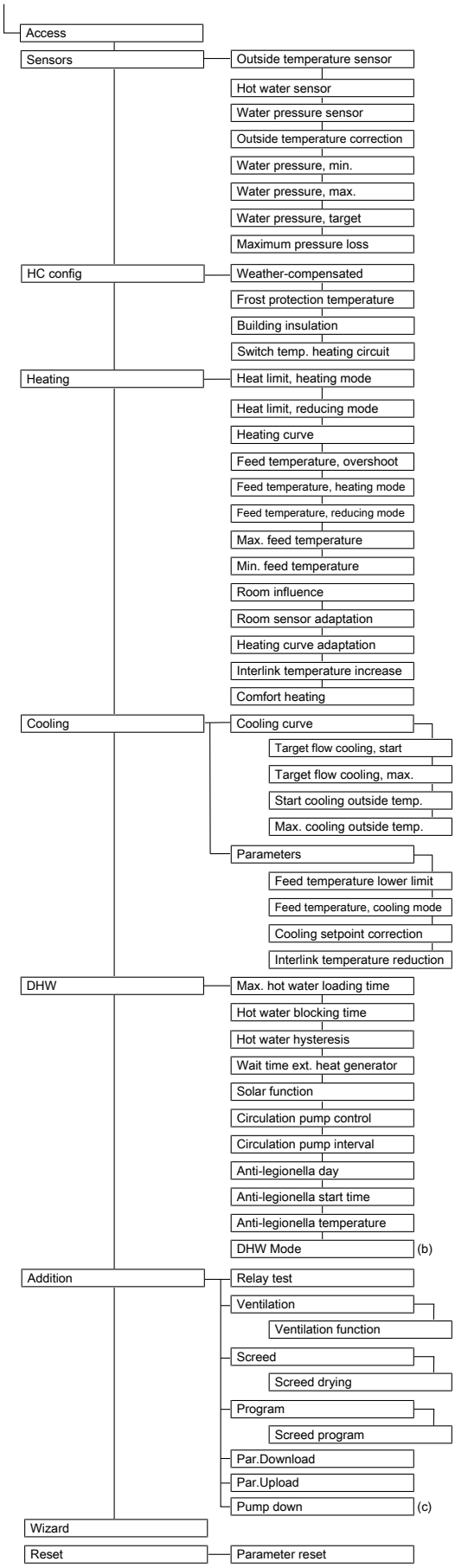
6–3 Parameter in menu: "Time program"

6.4 Menu: Settings



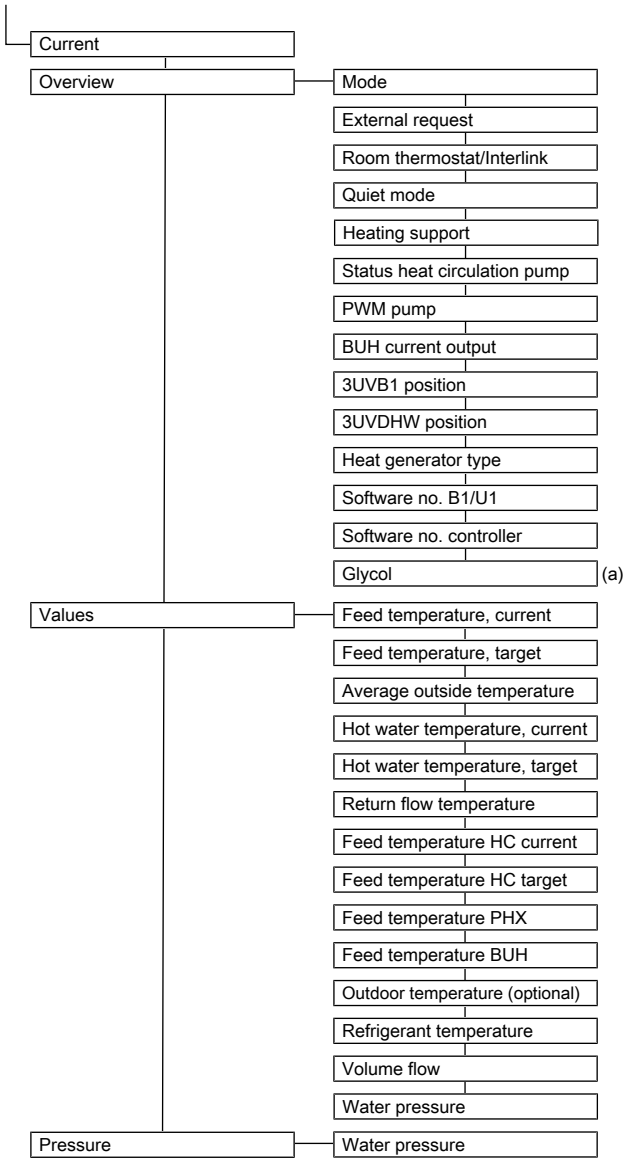
6–4 Parameter in menu: "Settings"

6.5 Menu: Configuration



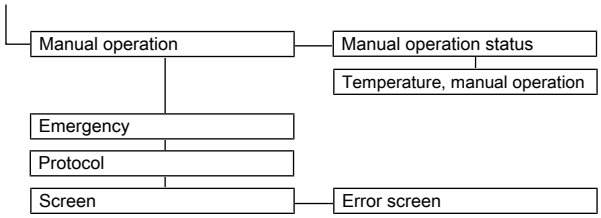
6–5 Parameter in menu: "Configuration"

6.6 Menu: Information



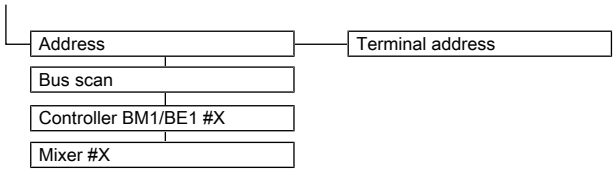
6–6 Parameter in menu: "Information"

6.7 Menu: Error



6–7 Parameter in menu: "Error"

6.8 Menu: Terminal

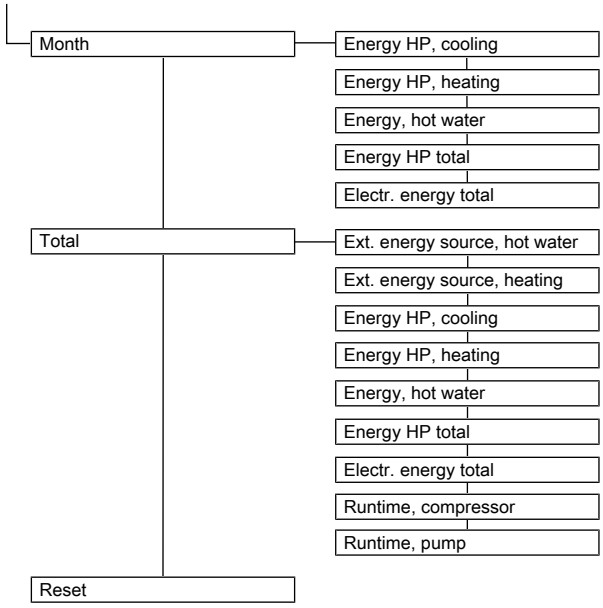


6–8 Parameter in menu: "Terminal"

INFORMATION

If the local control panel is used as a remote controller for a mixer module, both the standard screen and the menu structure are changed (see "9 Mixer module" [▶ 48]).

6.9 Menu: Statistics



6–9 Parameter in menu: "Statistics"

7 Parameter settings

7.1 Explanation of the parameter tables

The parameter tables listed in "7.2 Operating mode" [▶ 28] to "7.10 Statistics" [▶ 46] contain compact information on all parameters that are available in the respective menus and submenus of the controller (1st menu level, 2nd menu level).

In addition to the parameter designations, the tables contain information on setting ranges, factory settings, setting options or adjustment steps and brief explanations of the function.

In addition, they provide an explanation of the access rights for operation of the controller. The following abbreviations are used for corresponding labelling:

BE	Access right for the operator
HF	Access authorisation with technician code
	If different entries are made in the BE and HF columns, the technician must be logged in before selecting the parameter level in order to obtain the status entered in the HF column (see "4.5.1 Access rights (technician code)" [▶ 16])

Status:

N	Not visible
E	Visible and configurable
S	Visible

INFORMATION

Changing some parameters requires a restart of the device. This takes a few minutes. No further settings can be made during this time. The restart can be delayed by 5 minutes in response to the prompt "Restart required. Perform now?" by selecting "later".

Parameters that require a restart are marked with (*) in the following tables

7.2 Operating mode

[→ Main menu → Operating mode]

7–1 Parameter in the "Operating mode" menu

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Standby	☐ / ☑	In this operating mode all internal functions are switched off. Freeze-up protection remains active and a blocking protection for the pump is guaranteed. All controllers integrated in the RoCon system via the CAN bus are primarily also switched to the operating mode if this setting is selected. Outputs are not always completely free of voltage.	☑	-	E	E
Reduce	☐ / ☑	The internal HC continuously regulates to the required reduced leaving water temperature according to the [Heating curve] or [Feed temperature, reducing mode] parameters or to the room temperature [Reduce room temperature] if the room thermostat is connected. Domestic hot water preparation is carried out according to [Hot water auto. 1].	☐	-	E	E
Heating	☐ / ☑	The internal HC continuously regulates to the required leaving water temperature according to the [Heating curve] or [Feed temperature, heating mode] parameters or to the room temperature [Room temperature target 1] if the room thermostat is connected. Domestic hot water preparation is carried out according to [Hot water auto. 1].	☐	-	E	E
Summer	☐ / ☑	The internal HC is switched off. Freeze-up protection remains active and a blocking protection for the pump is guaranteed. Domestic hot water preparation is carried out according to [Hot water auto. 1]. All controllers integrated in the RoCon system via the CAN bus are primarily also switched to the operating mode if this setting is selected.	☐	-	E	E
Automatic 1	☐ / ☑	The internal HCs are controlled according to the set [Heating circuit auto. 1] time program with the respective room target temperatures. Domestic hot water preparation is carried out according to [Hot water auto. 1].	☐	-	E	E
Automatic 2	☐ / ☑	The internal HCs are controlled according to the set [Heating circuit auto. 2] time program with the respective room target temperatures. Domestic hot water preparation is carried out according to [Hot water auto. 2].	☐	-	E	E
Cooling	☐ / ☑	The internal HC continuously regulates to the required leaving water temperature according to the parameters in the menu [→ Main menu → Configuration → Cooling] or to the [Room temperature target 1] room temperature if the room thermostat is connected. Domestic hot water preparation is carried out according to [Hot water auto. 1]. Freeze-up protection remains active and a blocking protection for the pump is guaranteed.	☐	-	E	E

7.3 User

[→ Main menu → User]

7.3.1 Menu: Room temperature target

[→ Main menu → User → Room]

7–2 Parameter in the "Room temperature target" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Room temperature target 1	5 – 40°C	Setpoint of the room temperature in °C, which is valid for the 1st switching time cycle of the [Automatic 1] and [Automatic 2] time programs.	20°C	0.5°C	E	E
Room temperature target 2	5 – 40°C	Setpoint of the room temperature in °C, which is valid for the 2nd switching time cycle of the [Automatic 1] and [Automatic 2] time programs.	20°C	0.5°C	E	E
Room temperature target 3	5 – 40°C	Setpoint of the room temperature in °C, which is valid for the 3rd switching time cycle of the [Automatic 1] and [Automatic 2] time programs.	20°C	0.5°C	E	E

7.3.2 Menu: Reduce room temperature

[→ Main menu → User → Reduce]

7–3 Parameter in the "Reduce room temperature" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Reduce room temperature	5 – 40°C	Setpoint of the reduced room temperature in °C, which is valid for the [Automatic 1] and [Automatic 2] time programs.	15°C	0.5°C	E	E

7.3.3 Menu: Room temperature absent

[→ Main menu → User → Absent]

7–4 Parameter in the "Room temperature absent" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Room temperature absent	5 – 40°C	Setpoint of the reduced room temperature in °C, which is valid for the [Absent] and [Holiday] time programs.	15°C	0.5°C	E	E

7.3.4 Menu: Hot water temperature, target

[→ Main menu → User → Hot water]

7–5 Parameter in the "Hot water temperature, target" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Hot water temperature target 1	35 – 70°C	Setpoint of the hot water temperature in °C, which is valid for the 1st switching time cycle of the [Automatic 1] and [Automatic 2] time programs. Outside of the switching cycles, control is performed at the lowest temperature of the setting range.	48°C	0.5°C	E	E
Hot water temperature target 2	35 – 70°C	Setpoint of the hot water temperature in °C, which is valid for the 2nd switching time cycle of the [Automatic 1] and [Automatic 2] time programs.	48°C	0.5°C	E	E
Hot water temperature target 3	35 – 70°C	Setpoint of the hot water temperature in °C, which is valid for the 3rd switching time cycle of the [Automatic 1] and [Automatic 2] time programs.	48°C	0.5°C	E	E

7.3.5 Menu: 1x Hot water

[→ Main menu → User → 1x load]

▦ 7–6 Parameter in the "1 x hot water" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
1 x hot water	Off	Start of one-time domestic hot water preparation to the set setpoint [Hot water temperature target 1] without time limit, independent of the heating programs.	☑	-	E	E
	On		☐			

7.4 Time program

[→ Main menu → Time program]

▦ 7–7 Parameter in the "Time program" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Party	0 – 360 min	This operating mode can be used to set a unique time for temporarily extending the heating time of the internal HC.	0 min	15 min	E	E
Absent	0 – 360 min	This operating mode can be used to set a one-off time for temporary control to the parametrised absence temperature.	0 min	15 min	E	E
Holiday	Date 1st day - Date last day	The internal HC provides continuous (24 h per day) regulation to the parametrised absence temperature ([Reduce room temperature] parameter). A calendar function can be used to enter a time period of absence.	-	1 day	E	E
Public holiday	Date 1st day - Date last day	A calendar function can be used to enter a time period of presence. During this period of time, regulation is carried out exclusively according to the settings for "Sunday" in the [Heating circuit auto. 1] and [Hot water auto. 1] time programs.	-	1 day	E	E
Heating circuit auto. 1	See "4.3 Time program" [▸ 13]	In this menu, the 1st time program can be parametrised for the internal HC. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.	See "▦ 4–3 Factory setting of the permanent time programs" [▸ 14]	15 min	E	E
Heating circuit auto. 2	See "4.3 Time program" [▸ 13]	In this menu, the 2nd time program for the internal HC can be parametrised. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.	See "▦ 4–3 Factory setting of the permanent time programs" [▸ 14]	15 min	E	E
Hot water auto. 1	See "4.3 Time program" [▸ 13]	This menu can be used to parametrise the 1st time program for domestic hot water preparation. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.	See "▦ 4–3 Factory setting of the permanent time programs" [▸ 14]	15 min	E	E
Hot water auto. 2	See "4.3 Time program" [▸ 13]	This menu can be used to parametrise the 2nd time program for domestic hot water preparation. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.	See "▦ 4–3 Factory setting of the permanent time programs" [▸ 14]	15 min	E	E
Circulation program	See "4.3 Time program" [▸ 13]	This menu can be used to parametrise a timer program for the circulation pump. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised.	See "▦ 4–3 Factory setting of the permanent time programs" [▸ 14]	15 min	E	E

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Sound program	See "4.3 Time program" [▶ 13] 0 – 3	In this menu, a time program can be parametrised for various stages of the heat pump quiet mode. 3 switching cycles with a resolution of 15 minutes can be set. A separate entry for each weekday is possible. Format: (on) hh:mm – hh:mm (off) Also, the cycles from Monday to Friday, Saturday to Sunday and Monday to Sunday can be parametrised. A noise level can be assigned to each switching cycle: 0: no noise reduction, 1: low noise reduction, 2: medium noise reduction, 3: maximum noise reduction.	0	15 min	N	E
Time program reset	Party Absent Holiday Public holiday Heating circuit auto. 1 Heating circuit auto. 2 Hot water auto. 1 Hot water auto. 2 Circulation program Sound program	This menu can be used to reset the time programs to factory settings. To do this, select the respective time programs and then confirm the selection with the Confirm icon.	-	-	E	E

7.5 Settings

[→ Main menu → Settings]

7.5.1 Menu: Display settings

[→ Main menu → Settings → Display]

▦ 7–8 Parameter in the "Display settings" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Language	Deutsch	National language of the display texts on the control panel	☑	-	E	E
	English		☐			
	Français		☐			
	Nederlands		☐			
	Español		☐			
	Italiano		☐			
	Português		☐			
	Lietuvos		☐			
Time		Time in hours/minutes format.			E	E
Date		Current date in day/month/year format. The current day of the week is calculated automatically from the date.			E	E
LCD brightness	10 – 100%	Brightness of the display	80%	10%	E	E
LCD illumination duration	1 – 60 s	Lighting duration of the display	30 s	1 s	E	E

7.5.2 Menu: System

[→ Main menu → Settings → System]

▦ 7–9 Parameter in the "System" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Outdoor unit	No selection		-	-	N	E
	4 kW	For outdoor units of the type ERGA... series and indoor units EHS...				
	6 kW					
	8 kW					
	11 kW					
	14 kW					
	16 kW					
	EPRA14	For outdoor units of the type EPRA... series and indoor units ETS...				
	EPRA16					
	EPRA18					
Indoor unit	No selection	Heat pump interior unit type Adaptation of the set value important, as the device types have different defrosting logics.	-	-	N	E
	EHSX/H(B) 04/08P30D					
	EHSX/H(B) 04/08P50D					
	EHSX/H(B) 08P50D					
	EHSX/H(B) 16P50D					
	ETSH/X(B) 16P30D					
	ETSH/X(B) 16P50D					
Heating system (*)	Floor heating	Heat exchanger type in the heating system If "Radiator" is selected and high leaving water temperatures are desired, it may make sense to increase the [Max. feed temperature] parameter to 65°C ([→ Main menu → Configuration → Heating]).	☑	-	N	E
	Convector		☐			
	Radiator		☐			
Pump dT heating (*)	3 – 10	Required temperature difference between return and leaving water temperature. If a minimum temperature difference is required for proper operation of the heat emitters in heating operation.	5	1	N	E
Pump dT cooling (*)	3 – 10	Required temperature difference between return and leaving water temperature. If a minimum temperature difference is required for proper operation of the heat emitters in cooling operation.	5	1	N	E
Glycol (*)	No glycol added	For ETS… indoor units only	☑	-	N	E
	Glycol added	Adding glycol to the water circuit is recommended to guarantee freeze-up protection in the event of a power failure. If glycol has been added to the system, the RoCon+ HP1 controller setting must be adapted accordingly.	☐			
HP Power limitation	20 – 50 A	For ETS… indoor units only The permanent power limitation is useful to ensure maximum power consumption of the system. In some countries, legislation limits the maximum power consumption for room heating and domestic hot water preparation.	50 A		N	E
Pump limit		This parameter defines the maximum pump speed. Under normal conditions, the default setting should NOT be changed. The limitation of the pump speed is skipped if the flow rate is in the range of the minimum flow rate. The water flow resulting at limited pump speed can be taken from the pump characteristic curve (see installation instructions for the indoor unit)	6	1	N	E
	0	No limit				
	1 – 4	Limitation of pump speed independent of the operating status. This setting cannot guarantee heating comfort. The maximum pump speed depends on the setting as follows: 1: 90%, 2: 75%, 3: 65%, 4: 55%				
	5 – 8	Limitation of the pump speed if there is no heating or cooling requirement. The maximum pump speed depends on the setting as follows: 5: 90%, 6: 75%, 7: 65%, 8: 55%				

7.5.3 Menu: External heat source

[→ Main menu → Settings → Ext. source]

7–10 Parameter in the "External heat source" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Config. ext. heat source		Setting of whether there is an additional external heat generator for domestic hot water preparation (DHW) and/or heating support (HZU) (see "4.4.3 External heat sources" [▶ 14]).		-	N	E
	No external heat generator	The heat pump is the only heat source	☐			
	Backup heater BUH	Optional heating rod (3N~) installed in the storage tank	☑			
	DHW + heating support	An alternative heat generator (e.g. backup heater 1N~) provides domestic hot water preparation and backup heating	☐			
	Two external heat generators	Two external heat generators: Alternative WEZ 1 (e.g. backup heater 1N~) takes over domestic hot water preparation and alternative WEZ 2 takes over heating support	☐			
External power hot water	1 – 40 kW	Heat output of the electric heater booster for domestic hot water preparation	3 kW	1 kW	N	E
External power stage 1 (*)	1 – 40 kW	Heat output of the electric heater booster for heating support stage 1 See operating instructions for heating element EKBUxx.	3 kW	1 kW	N	E
External power stage 2 (*)	1 – 40 kW	Heat output of the electric heater booster for heating support stage 2 See operating instructions for heating element EKBUxx.	3 kW	1 kW	N	E
Bivalence function (*)		The bivalence function is only relevant to operation of the optional heater booster due to a backup request (room heating operation).		-	N	E
	Aux. heating always possible	Operation of the backup heater is always possible.	☐			
	Aux. heating T-biv. dependent	Backup heater is only released if the temperature set in the [Bivalence temperature] parameter is undercut.	☑			
Bivalence temperature	-15°C – +35°C	Setting influences the effect of the potential-free AUX switching contact (toggle switch output A) defined in the [AUX switching function] parameter. Only if [Bivalence function] parameter = "Aux. heating T-biv. dependent": Outside temperature as of which the optional heater booster is activated to support room heating. The bivalence temperature is relevant to operation of the optional heater booster due to a backup request (room heating operation). The temperature of the temperature sensor integrated in the heat pump outdoor unit (info value "Average outside temperature") is used for this.	0°C	1°C	N	E

7.5.4 Menu: Inputs/Outputs

[→ Main menu → Settings → Inputs/Outputs]

7–11 Parameter in the "Inputs/Outputs" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Smart grid		Evaluation of the SG signal (see "4.4.4 Inputs/Outputs" [▶ 15]).		-	N	E
	Off	Smart Grid function not active, SG signal is not evaluated.	☑			
	On	Depending on the utility company signal, the heat pump is shut off (no freeze-up protection function) or operated at higher temperatures.	☐			
Smart grid mode		Only if [Smart grid] parameter = "On": Is used for a possible target temperature increase with a Smart Grid switch-on command.		-	N	E
	Comfort	Increase of the hot water target temperature by 5 K	☑			
	Standard	Increase of the target leaving water temperature by 2 K and increase of the hot water target temperature by 5 K	☐			
	Eco	Increase of the target leaving water temperature by 5 K and increase of the hot water target temperature by 7 K	☐			

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
HT/NT function		Setting of which heat sources are switched off if the high rate signal output by the utility company (EVU) is received in the case of a low rate mains connection.		-	N	E
	Inactive	Deactivated (no effect)	☑			
	Switch off compressor	Refrigerant compressor is switched off	☐			
	Switch off compressor + BUH	Refrigerant compressor and backup heater are switched off	☐			
	Switch all off	Everything is switched off (no freeze-up protection function, see "4.5.3 HC config." [▶ 16])	☐			
HT/NT contact		Definition of whether the HT/NT input is evaluated as a normally closed contact or a normally open contact.		-	N	E
	Normally open contact	Switching contact closed during high rate.	☑			
	Normally closed contact	Switching contact closed during low rate.	☐			
Room thermostat		Configuration of a room thermostat with floating contacts connected to connection J16 of the indoor unit.		-	N	E
	No	Deactivated	☑			
	Yes	1 Open contacts: Only freeze-up protection active. 2 If [Interlink function] parameter = "On": see description [Interlink function] 3 If [Interlink function] parameter = "Off": Evaluation of the heating and cooling switching contacts at connector J16 on the RoCon BM2C PCB (only if none of the "Standby", "Reduce", "Summer", "Holiday", "Public holiday" or "Screed" operating modes are active): ▪ Closed heating switching contact: Operating mode is switched to "Heating". Priority if both switching contacts are closed. ▪ Closed cooling switching contact: Operating mode is switched to "Cooling".	☐			

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Interlink function		Configuration for systems that are operated with 2 different target leaving water temperatures (see "4.4.4 Inputs/Outputs" [▶ 15]). One possible application is, for example, the additional integration of an HP convector in a surface heating and cooling system. Prerequisite: 2 room thermostats are connected to plug connection J16 of the indoor unit.		-	N	E
	Off	Deactivated	☑			
	On	Evaluation of the heating and cooling switching contacts at plug connection J16 on the RoCon BM2C PCB. Activation of cooling operation only by switching the operating mode to "Cooling" (see "4.1 Operating mode" [▶ 11]). [Room thermostat] parameter must be set to "Yes". (If [Room thermostat] parameter = "No" is set, the heating circulation pump runs in continuous operation!) 1 Open switching contacts: Only freeze-up protection active 2 "Heating" and "Automatic 1"/"Automatic 2" operating modes active during the switching cycles in day mode: ▪ Closed heating switching contact = IL1: It is controlled to the normal target leaving water temperature according to the parameter settings in [→ Main menu → Configuration → Heating]. ▪ Closed cooling switching contact = IL2: It is controlled to the increased target leaving water temperature (normal target leaving water temperature + value of the [Interlink temperature increase] parameter. Priority if both switching contacts are closed! 3 "Cooling" operating mode active. ▪ Closed heating switching contact = IL1: It is controlled to the normal target leaving water temperature according to the parameter settings in [→ Main menu → Configuration → Cooling]. ▪ Closed cooling switching contact = IL2: It is controlled to the reduced target leaving water temperature (normal target leaving water temperature – value of the [Interlink temperature reduction] parameter). Priority if both switching contacts are closed!	☐			
Programmable output (230 V)		Configuration of the multi-function output (230 V, J14 connection):		-	N	E
	Inactive	The output has no function.	☐			
	Heating circuit request	Header pump – The output becomes active as soon as any HC (e.g. mixer circuit) of the system reports a heat request to the heat generator.	☐			
	Circulation request	Circulation pump – The output is activated either after the time program of the circulation pump or after the time program of the domestic hot water preparation, depending on the parametrisation (see "4.3 Time program" [▶ 13]).	☑			
	Direct heating circuit request	Feeder pump – The output becomes active as soon as a heat requirement is pending for the direct HC of the heat generator.	☐			
Func. burner blocking contact	Resistance values	Selection of the functionality of the EXT switching contact (J8) (see "4.1 Operating mode" [▶ 11])	☑	-	N	E
	Burner blocking contact		☐			

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
AUX switching function		Setting assigns the switching conditions for the potential-free AUX switching contact (toggle switch output A, see "4.4.4 Inputs/ Outputs" [▶ 15]).		-	N	E
	Inactive	Function deactivated.	☑			
		AUX switching contact switches:				
	Switching threshold TDHW (AUX)	If storage tank temperature (Tdhw) ≥ value of [Switching threshold TDHW (AUX)] parameter.	☐			
	Heating/cooling request	If a cooling request or heating request is present.	☐			
	BUH request	If a hot water request to the backup heater (EKBUxx) is present or the configured backup heater is requested for heating support.	☐			
	Error	If an error is pending	☐			
	TVBH > 60 °C	If the sensor value (TVBH) is >60°C.	☐			
	Outside temperature	If the outside temperature is <[Bivalence temperature] parameter value. (heat pump continues to operate = parallel equilibrium mode)	☐			
	Outside temp. + DHW/heating	If the outside temperature is <[Bivalence temperature] parameter value + a heating request or a hot water request is present. (heat pump does not continue to operate = alternative equilibrium mode)	☐			
	DHW request	If a hot water request is present.	☐			
	Outside temperature + heating	If the outside temperature is <[Bivalence temperature] parameter value + "room heating" heat request (not for hot water request). Heat pump no longer operates in room heating operation below the value set in the [Bivalence temperature] parameter – only in hot water mode. Application: Alternative room heating bi-valence mode if the boiler is hydraulically integrated so that it directly heats the unpressurised storage tank water of the indoor unit (connection via solar connections).	☐			
	Multi-oil	If the outside temperature is <[Bivalence temperature] parameter value + "room heating" heat request (not for hot water request). Heat pump no longer operates in room heating operation below the value set in the [Bivalence temperature] parameter – only in hot water mode. Application: Alternative room heating equilibrium mode if the boiler is hydraulically integrated in the heat pump feed. For this application type, the freeze-up protection function must be deactivated on the indoor unit ([Frost protection temperature] parameter = "Off").	☐			
	Cooling mode	If the heat pump is in the "Cooling" operating mode.	☐			
AUX wait time	0 – 600 s	AUX switching contact (A) only switches after a delay if the switching condition (see [AUX switching function] parameter) is present for longer than the set time.	120 s	5 s	N	E
Switching threshold TDHW (AUX)	20 – 85°C	Storage tank temperature (Tdhw) switching threshold for AUX switching contact (see [AUX switching function] parameter).	50°C	1°C	N	E

7.5.5 Menu: Intelligent Storage Mgmt

[→ Main menu → Settings → ISM]

▦ 7–12 Parameter in the "Intelligent Storage Mgmt" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Continuous heating		This function enables uninterrupted heating, even when the evaporator is being defrosted. This enables high comfort to be guaranteed, even with rapidly reacting heating systems (e.g. convectors).		-	N	E
	Off	No uninterrupted heating	☐			
	On	Uninterrupted heating. When the evaporator is being defrosted, heat for heating is taken from the storage tank.	☑			

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Heating support (HZU)		Heating support from hot water storage tank if minimum temperature is exceeded (see "4.4 Settings" [▶ 14] and [Heating support hysteresis] parameter).		-	N	E
	Off	No heating support	☐			
	On	Heating support function active	☑			
Heating support power	3 – 40 kW	The setting limits the heating support output.	15 kW	1 kW	N	E
Heating support hysteresis	2 – 15	Only if [Heating support (HZU)] parameter = "On": Heating support is activated if Tdhw>THZUmin+4 K and Tdhw>[Feed temperature, target]+1 K. Heating support is deactivated if Tdhw<THZUmin or Tdhw<[Feed temperature, target]. THZUmin = currently active hot water target temperature [Hot water temperature, target] (see "7.3.4 Menu: Hot water temperature, target" [▶ 29]) + set [Heating support hysteresis] parameter value. Tdhw = current hot water storage tank temperature [Feed temperature, target] = currently active target leaving water temperature (see "4.5 Configuration" [▶ 16])	5	1	N	E
Heating support max. temp.	5 – 85°C	The setting limits the target leaving water temperature (measured against $t_{V, BH}$) when the heating support function is active.	60°C	1°C	N	E
Min. pump power	40 – 80%	Lower limit for pump operation. Only used when heating support is active or heat is generated by an external heat source. During normal operation, the pump is controlled according to the [Pump limit] parameter, see "7.5.2 Menu: System" [▶ 32].	50%	1%	N	E
Max. pump power	60 – 80%	Upper limit for pump operation. Only used when heating support is active or heat is generated by an external heat source. During normal operation, the pump is controlled according to the [Pump limit] parameter, see "7.5.2 Menu: System" [▶ 32].	80%	1%	N	E

7.6 Configuration

[→ Main menu → Configuration]

7.6.1 Menu: Sensors

[→ Main menu → Configuration → Sensors]

▦ 7–13 Parameter in the "Sensors" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Outside temperature sensor (*)	Integrated sensor	Selection of whether the sensor integrated in the outdoor unit or an optional outdoor temperature sensor is used to determine the target leaving water temperatures	☑	-	N	E
	Optional sensor		☐			
Hot water sensor		Configuration of the domestic hot water preparation:		-	N	E
	Inactive	No function for domestic hot water preparation.	☐			
	Sensor	Function for domestic hot water preparation is activated. A storage temperature sensor is evaluated for domestic hot water preparation (if no storage temperature sensor is connected, an error message is generated).	☑			
	Thermostat	Function for domestic hot water preparation is activated. A thermostatic switch (ON/OFF) is evaluated for domestic hot water preparation where an "open terminal" is evaluated as "not required".	☐			
Water pressure sensor		Configuration of the sensor for detecting the water pressure of the system.		-	N	E
	Off	No sensor evaluation	☐			
	On	Sensor evaluation activated (if no pressure sensor is connected, an error message is generated.)	☑			
Outside temperature correction	-5.0 – +5.0 K	Individual adjustment for the measured value of the outside temperature relevant for the controller.	0.0 K	0.1 K	N	E

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Water pressure, min.	0.1 – 5.0 bar	Defines the minimum water pressure. Pressure monitoring function (only with activated pressure sensor [Water pressure sensor] = "On"): If the measured value falls below the set value, an error message is generated.	0.5 bar	0.1 bar	N	E
Water pressure, max.	0.1 – 5.0 bar	Defines the maximum water pressure. Pressure monitoring function (only with activated pressure sensor, [Water pressure sensor] = "On"): If the measured value exceeds the set value, a warning message is generated.	3.0 bar	0.1 bar	N	E
Water pressure, target	0.1 – 5.0 bar	Defines the target water pressure. Pressure monitoring function (only with activated pressure sensor, [Water pressure sensor] = "On"): If the measured value falls below the set value by more than the value set in the [Maximum pressure loss] parameter, a warning message is generated.	0.9 bar	0.1 bar	N	E
Maximum pressure loss	0.1 – 5.0 bar	Defines the maximum acceptable pressure loss in the heating system. Pressure monitoring function (only with activated pressure sensor, [Water pressure sensor] = "On"): If the measured value falls below the set value by more than the value set in the [Water pressure, target] parameter, a warning message is generated.	0.5 bar	0.1 bar	N	E

7.6.2 Menu: Heating circuit config.

[→ Main menu → Configuration → HC config]

▦ 7–14 Parameter in the "Heating circuit config." menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Weather-compensated		Selection of the method for determining the target leaving water temperature.		-	N	E
	Feed temperature, fixed	Control to a fixed target leaving water temperature (depending on operating mode)	☐			
	Weather-compensated	Weather-compensated control based on the heating curve.	☑			
Frost protection temperature	Off	No freeze-up protection of the HC	0°C	1°C	E	E
	-15 – 5°C	If the outside temperature drops below the set value, the system switches to freeze-up protection operation (the pumps are switched on). The function is ended if the outside temperature rises above the set value +1 K.				
Building insulation	Off	Setting the building insulation standard. This influences the averaged outside temperature and the automatic adaptations of the heating curve and the heating times.	☐	-	E	E
	low		☑			
	Normal		☐			
	Good		☐			
	Very good		☐			
Switch temp. heating circuit		Automatic activation of cooling operation.	Off	1°C	N	E
	Off	Deactivated				
	10 – 40°C	If the outside temperature exceeds the set value, the system is switched to the "Cooling" operating mode. If the outside temperature falls 2 K below the set value, the system automatically switches back to the previously activated operating mode				

7.6.3 Menu: Heating

[→ Main menu → Configuration → Heating]

▦ 7–15 Parameter in the "Heating" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Heat limit, heating mode	Off	Setting of the automatic summer switch-off of the heating operation. If the outside temperature measured and averaged by the controller exceeds the set value by 1 K, the HC is switched off. The heating is released again if the outside temperature undercuts the set heating limit.	19°C	1 K	E	E
	10 – 40°C					

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Heat limit, reducing mode	Off 10 – 40°C	Setting the heating limit for the "switch-off" of the HC during the setback time (functioning as in [Heat limit, heating mode] parameter).	10°C	1 K	E	E
Heating curve	0.0 – 3.0	Only if [Weather-compensated] parameter = "Weather-compensated": Setting of the heating curve. The heating curve reflects the dependency of the HC's target leaving water temperature on the outside temperature (see "4.5 Configuration" [▶ 16]).	0.5	0.1	E	E
Feed temperature, overshoot (*)	0 – 4	This function defines how far the water temperature may exceed the target leaving water temperature before the compressor is stopped. The compressor resumes operation when the leaving water temperature falls below the target leaving water temperature. This function ONLY applies to heating operation.	3	1	N	E
Feed temperature, heating mode	20 – 90°C	Only if [Weather-compensated] parameter = "Feed temperature, fixed": Setting of the target leaving water temperature for the HC during the heating time in operating mode: "Automatic 1", "Automatic 2", "Heating".	40°C	1°C	E	E
Feed temperature, reducing mode	10 – 90°C	Only if [Weather-compensated] parameter = "Feed temperature, fixed": Setting of the target leaving water temperature for the HC during the reduction time in operating mode: "Automatic 1", "Automatic 2", "Heating".	10°C	1°C	E	E
Max. feed temperature	20 – 90°C	The setting limits the leaving water temperature (measured on $t_{V, BH}$) when the heating support function is active. The determined HC target leaving water temperature is limited to the maximum value set here. If an optionally connected mixed HC requests a higher temperature of the heat generator, this is taken into account. This means the internal circulation pump of the heat generator always runs if the generator is switched on. If the direct HC supplies the underfloor heating, a mechanical temperature limiter must be installed to prevent any overheating of the screed.	80°C	1°C	N	E
Min. feed temperature	10 – 90°C	The determined HC target leaving water temperature is limited to the minimum value set here.	10°C	1°C	N	E
Room influence		Only when a room station is connected and assigned to the HC: The setting of what influence the deviation of the room temperature measured by the RoCon U1 (EHS157034) room station from the current setpoint (see "4.2 User" [▶ 12]) has on the leaving water temperature.	Off	1 K	E	E
	Off	Purely weather-compensated leaving water temperature control				
	0 K	Purely weather-compensated leaving water temperature control, but internal circulation pump continues running until the next heating cycle after a heat requirement during the setback cycle.				
	1 – 20 K	Causes a correction of the target leaving water temperature (parallel shift of the heating curve) by the set factor. If the measured temperature lies 2 K below the setpoint, the target leaving water temperature is increased by 2x the set value.				
Room sensor adaptation	-5 – +5 K	Only when a room station is connected and assigned to the HC: Individual adjustment of the room temperature relevant to the controller. If a systematic deviation of the room temperature measured by the RoCon U1 (EHS157034) room station to the actual temperature in the occupied area of this room is determined, the measured value can be corrected by the set value.	0.0 K	1 K	E	E

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Heating curve adaptation		Function can only be executed when the room station is connected and assigned to the HC:		-	N	E
	Off	Deactivated	☑			
	On	Activated = start of a one-time automatic heating curve adaptation. Prerequisites: ▪ Outside temperature < 8°C ▪ Setting of the operating mode: "Automatic 1" or "Automatic 2" ▪ Duration of the setback period is at least 6 hours Function: At the start of the setback time, the current room temperature is set as the setpoint for the following 4 hours. The heating curve is determined by the controller from the target leaving water temperatures that are required to maintain this room temperature. If the automatic heating curve adaptation is interrupted, the function pauses until the adaptation is successfully carried out or ended the next day (setting the parameter to "Off" or changing the current operating mode). Domestic hot water preparation and heating optimisation is locked during the automatic heating curve adaptation.	☐			
Interlink temperature increase	1 – 50 K	Only if [Interlink function] parameter = "On": The target leaving water temperature is increased by the set value when the cooling RT switching contact is closed. Request, e.g. by HP convector.	5 K	1 K	N	E
Comfort heating		If the heat pump cannot cover the heating demand when outside temperatures are very low, heat is extracted from the storage tank and used for room heating if the storage tank temperature is [Hot water temperature, current]>[Feed temperature, target]. (See "4.5.4 Heating" [▸ 17])			N	E
	Off	Only if the heating demand is not covered is the storage tank temperature raised. During the time it takes to raise the temperature, there may be a slight loss of comfort.	☑			
	On	At corresponding outside temperatures, the storage tank temperature is always raised above the storage tank temperature set for the hot water requirement. The power consumption of the heat pump may increase.	☐			

7.6.4 Menu: Cooling

[→ Main menu → Configuration → Cooling]

▦ 7–16 Parameter in the "Cooling" menu

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Target flow cooling, start	5 – 25°C	Only if [Weather-compensated] parameter = "Weather-compensated": Setting of the cooling target leaving water temperature at the start of cooling operation (outside temperature = [Start cooling outside temp.] parameter)	18°C	1°C	E	E
Target flow cooling, max.	5 – 25°C	Only if [Weather-compensated] parameter = "Weather-compensated": Setting of the minimum cooling target leaving water temperature. This is held constant as of the outside temperature ([Max. cooling outside temp.] parameter).	8°C	1°C	E	E
Start cooling outside temp.	15 – 45°C	Only if [Weather-compensated] parameter = "Weather-compensated": Setting as of which outside temperature cooling operation starts with the highest cooling target leaving water temperature [Target flow cooling, start] (setting condition: "Cooling" operating mode).	24°C	1°C	E	E
Max. cooling outside temp.	20 – 45°C	Only if [Weather-compensated] parameter = "Weather-compensated": Setting of the outside temperature at which the lowest cooling target leaving water temperature [Target flow cooling, max.] is specified (setting condition: "Cooling" operating mode).	35°C	1°C	E	E

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Feed temperature lower limit	5 – 25°C	Setting of the absolute lower limit of the cooling target leaving water temperature. Limitation acts if a lower cooling target leaving water temperature is determined from other parameter settings. If optional freeze-up protection valves are installed in the system, the [Feed temperature lower limit] parameter must not be set below 7°C.	18°C	1°C	N	E
Feed temperature, cooling mode	8 – 30°C	Only if [Weather-compensated] parameter = "Feed temperature, fixed": Setting of the cooling target leaving water temperature (fixed value) for active cooling operation.	18°C	1°C	E	E
Cooling setpoint correction	-5.0 – +5.0 K	Parallel shift of the cooling characteristic curve by the set value.	0.0 K	1 K	N	E
Interlink temperature reduction	1 – 50 K	Only if [Interlink function] parameter = "On": When the RT switching contact cooling is closed, the cooling target leaving water temperature is reduced by the set value (see [Interlink function] parameter). Request, e.g. by HP convector.	5 K	1 K	N	E

7.6.5 Menu: Hot water

[→ Main menu → Configuration → DHW]

▦ 7–17 Parameter in the "Hot water" menu

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Max. hot water loading time	10 – 240 min	Setting of the maximum duration of a domestic hot water preparation cycle. Then cancellation of domestic hot water preparation if the current hot water temperature does not reach the set setpoint in the [Hot water temperature target 1] parameter.	60 min	10 min	N	E
Hot water blocking time	0 – 180 min	Setting of the blocking time after completion or cancellation of a domestic hot water preparation cycle. The repeat request for domestic hot water preparation is operated after this blocking time has elapsed at the earliest.	30 min	10 min	N	E
Hot water hysteresis	2 – 20 K	Hot water charging switching threshold Setting of the temperature difference by which the temperature in the hot water storage tank may fall in comparison with the currently valid hot water target temperature [Hot water temperature, target] (see "7.3.4 Menu: Hot water temperature, target" [▸ 29]) before the heat pump for hot water charging is to be activated.	7 K	1 K	E	E
Wait time ext. heat generator	20 – 95 min	Delay time as of which the additional heat generator may support the heat pump in hot water charging (see "4.5 Configuration" [▸ 16]).	50 min	1 min	E	E
Solar function		Used to reduce the target temperature of the hot water storage tank in order to increase the yield of a connected solar system.		-	E	E
	Off	No function	☑			
	On	The setpoint of the hot water temperature is set as a function of the outside temperature and in compliance with the safety functions. The setpoint reduction has priority over the settings for the time programs. In addition, the following parameters are defined: [Hot water hysteresis] = 5K; [Building insulation] = "Normal" Activated if the switching contact connected to the plug connection J8 (EXT) on the control panel RoCon BM2C PCB is also closed	☐			
Circulation pump control		Setting for the control of a circulation pump. Use in France not permitted!		-	E	E
	Off	Optional circulation pump is synchronously controlled to the active switching time program for domestic hot water preparation.	☑			
	On	Optional circulation pump is controlled according to the [Circulation program] switching time program.	☐			
Circulation pump interval		Setting of the interval control for an optional circulation pump. Use in France not permitted!	Off	1 min	E	E
	Off	Deactivated. The circulation pump runs permanently during the release times of the assigned switching time program ([Circulation pump control] parameter).				
	1 – 15 min	The circulation pump runs clocked (clock cycle ratio: pump runtime = setting value each 15 min).				

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Anti-legionella day		Setting of the day for thermal disinfection of the hot water storage tank.	Off	-	E	E
	Off	No thermal disinfection				
	Monday ... Sunday	Day of thermal disinfection				
	Daily	Daily thermal disinfection				
Anti-legionella start time	00:00 – 23:45	Setting of the start time for thermal disinfection of the hot water storage tank (format hh:mm).	03:30	15 min	N	E
Anti-legionella temperature	60 – 70°C	Setting of the hot water target temperature during thermal disinfection of the hot water storage tank.	65°C	1°C	N	E
DHW Mode		For EHS… indoor units only: This function is used for optimum adaptation of the domestic hot water preparation to demand.		-	E	E
	On	Domestic hot water preparation at low output and higher efficiency	☑			
	Off	Domestic hot water preparation at higher output for greater comfort	☐			

7.6.6 Menu: Additional programs

[→ Main menu → Configuration → Addition]

▦ 7–18 Parameter in the "Additional programs" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Relay test		Manual control of individual relays for test purposes. After confirmation of this parameter with the rotary button, the list of switchable relays is displayed with a checkbox on the display. For selection and confirmation of a relay with the rotary button, a tick is placed in the checkbox and the respective relay is activated. Multiple selection is possible.	-	-	N	E
	Output J1	Output J1: No function				
	Output J14	Output J14: Circulation pump power supply				
	Output J2 contact A	Contact A at output J2: 3UVB1 mixing valve "closed"				
	Output J2 contact B	Contact B on output J2: 3UVB1 mixing valve "open"				
	Output J12 3UV DHW open	Output J12: 3UV DHW distribution valve "closed"				
	Output J12 3UV DHW closed	Output J12: 3UV DHW distribution valve "open"				
	Connection J3 N/O contact B	Connection J3: Potential-free relay: normally open contact B-B1				
	Connec. J3 changeover contact A	Connection J3: Potential-free relay: Changer A-A1/A-A2 - AUX				
	Output J10	Output J10: A1P power supply				
	Output J17 relay K2	Output J17 (pin 3): Relay K2 (RTX-EHS) Output XBUH1 T2				
	Output J17 relay K1	Output J17 (Pin 2): Relay K1 (RTX-EHS) Output XBUH1 T3				
	Output J17 relay K3	Output J17 (Pin 4): Relay K3 (RTX-EHS) Output XBUH1 T1				
Ventilation function		Activation of the automatic air purge of the indoor unit and the connected HC.		-	N	E
	Off	Deactivated	☑			
	On	Start of the air purge function	☐			

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Screed		Function for screed drying		-	N	E
	Off	Deactivated	☑			
	On	The target leaving water temperature is regulated according to the [Screed program]. The day on which the screed function is activated is not included in the running time of the screed program. The first day starts when the day changes at 00:00 am. On the day of activation, heating is carried out for the remaining time with the target leaving water temperature of the first day's program (see "4.5.7 Additional program" [▶ 19]).	☐			
Screed program	Off, 10 – 70°C per heating day	Setting of the sequence program of the screed heating. A separate target leaving water temperature can be set for each day for a maximum duration of 28 days. The end of the screed program is defined by the 1st day with the setpoint setting "Off" (see "4.5.7 Additional program" [▶ 19]).	See "4.5.7 Additional program" [▶ 19]	1°C	N	E
Pump down	☐ / ☑	Only for EHS...D3 indoor units in combination with ERGA...EV3 outdoor units: By activating this function, the refrigerant is sucked back into the refrigerant compressor.	☐	-	N	E

7.7 Information

[→ Main menu → Information]

7.7.1 Overview

[→ Main menu → Information → Overview]

▦ 7–19 Parameter in the "Overview" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Mode	No request	Current mode of the heating pump.	-	-	S	S
	Heating					
	Cooling					
	Domestic hot water preparation					
	Defrost					
External request		External request:	-	-	S	S
	No external mode	Heat pump operates in normal operation.				
	Low rate	EVU function HT/NT active and low rate.				
	High rate	EVU function HT/NT active and high rate.				
	SGN	EVU function Smart grid active, normal operation.				
	SG1	EVU function Smart grid active, discharge: No heat pump operation, no freeze-up protection function.				
	SG2	EVU function Smart grid active, switch-on recommendation, operation at higher target temperatures, inexpensive electricity.				
	SG3	EVU function Smart grid active, switch-on command and storage tank charging to 70°C, inexpensive electricity				
Room thermostat/ Interlink		Room thermostat/Interlink:	-	-	S	S
	Off	If [Interlink function] = "On": Freeze-up protection only; otherwise: "Off"				
	Request	If [Room thermostat] = "Yes"				
	No heat request	If [Room thermostat] = "Yes"				
	IL1	If [Interlink function] = "On": Normal target leaving water temperature				
	IL2	If [Interlink function] = "On": In heating operation, increased target leaving water temperature, in cooling operation reduced target leaving water temperature				
Quiet mode	0 – 3	Status of the Quiet mode	-	-	S	S
Heating support	Off	Status of the heating support	-	-	S	S
	On					

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Status heat circulation pump	Off On	Status of the internal heating circulation pump	-	-	S	S
PWM pump	25 – 100%	Output of the internal heating circulation pump	-	-	S	S
BUH current output	-	Current output of the optional backup heater in kW	-	-	S	S
3UVB1 position	-	The current position of the 3-way 3UVB1 mixing valve is displayed in %	-	1%	S	S
3UVDHW position	-	The current position of the 3-way 3UV DHW distributor valve is displayed in %.	-	1%	S	S
Heat generator type	-	The configured type of the heat generator is displayed.	-	-	S	S
Software no. B1/U1	-	The software and the version of the RoCon+ B1 control panel are displayed on the indoor unit: ETS: 427.001.AR EHS…D2: 427.001.AT, EHS…D3: 427.001.AV	-	-	S	S
Software no. controller	-	The software number and version of the RoCon BM2C controller PCB are displayed on the indoor unit: ETS: 425.001.Y EHS…D2: 425.002.D, EHS…D3: 425.002.F	-	-	S	S
Glycol		For ETS... indoor unit only:		-	N	E
	No glycol added	No glycol present in the HC	☑			
	Glycol added	Glycol present in the HC	☐			

7.7.2 Values

[→ Main menu → Information → Values]

▦ 7–20 Parameter in the "Values" menu

Parameters	Unit	Description	Factory setting	Increment	Access BE	Access HF
Feed temperature, current	°C	The current leaving water temperature of the heat generator is displayed (t_V).	-	1°C	S	S
Feed temperature, target	°C	The current target leaving water temperature of the heat generator is displayed.	-	0.1°C	S	S
Average outside temperature	°C	The current outside temperature is displayed.		0.1°C	S	S
Hot water temperature, current	°C	The current temperature of the hot water storage tank is displayed. If no hot water function is activated, "----" is displayed.	-	0.1°C	S	S
Hot water temperature, target	°C	The current target temperature for domestic hot water preparation is displayed. If no hot water function is activated, "----" is displayed. Here, the current setpoint is always the maximum value of all requests relevant for this hot water circuit.	-	0.1°C	S	S
Return flow temperature	°C	The current return flow temperature of the heat generator is displayed. If no respective sensor is connected to the heat generator, "----" is displayed.	-	0.1°C	S	S
Feed temperature HC current	°C	The temperature of the direct HC is displayed ($t_{V,BH}$ with active heating support, otherwise t_V).	-	0.1°C	S	S
Feed temperature HC target	°C	The target leaving water temperature of the direct HC is displayed.	-	0.1°C	S	S
Feed temperature PHX	°C	The current leaving water temperature of the heat generator in the outdoor unit is displayed.	-	0.1°C	S	S

Parameters	Unit	Description	Factory setting	Incre-ment	Access	
					BE	HF
Feed temperature BUH	°C	The current leaving water temperature $t_{V,BH}$ of the heat generator after the optional backup heater is displayed.	-	0.1°C	S	S
Outdoor temperature (optional)	°C	The current outdoor temperature measured by the optional outdoor temperature sensor is displayed.	-	0.1°C	S	S
Refrigerant temperature	°C	The current refrigerant temperature of the outdoor unit (liquid) is displayed.	-	0.1°C	S	S
Volume flow	l/h	The filtered value of the current water-side volume flow is displayed. If glycol is added and the internal flow switch is active, 0 l/h is displayed.	-	1 l/h	S	S
Water pressure	bar	The current water pressure is displayed.	-	0.1 bar	S	S

INFORMATION

Depending on the device type, the system configuration and the status of the device software, individual listed information parameters cannot be displayed or can be displayed at a different parameter level.

7.7.3 Water pressure

[→ Main menu → Information → Pressure]

7–21 Parameter in the "Water pressure" menu

Parameters	Unit	Description	Factory setting	Incre-ment	Access	
					BE	HF
Water pressure	bar	The current water pressure is displayed.	-	0.1 bar	S	S

7.8 Error

[→ Main menu → Error]

7–22 Parameter in the "Error" menu

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Emergency		Emergency heating by backup heater or another external heat generator.		-	E	E
	Yes	In the event of an error, emergency operation is automatically activated.	☐			
	No	In the event of an error, emergency operation by manual activation only.	☑			
Manual operation status	Inactive	Activation of the fixed leaving water temperature control (for diagnostic purposes).	☑	-	E	E
	Active		☐			
Temperature, manual operation	20 – 80°C	Required leaving water temperature for manual operation.	50°C	-	E	E

7.9 Terminal

[→ Main menu → Terminal]

7–23 Parameter in the "Terminal" menu

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Terminal address	Off 0 – 9	Setting of the terminal ID of the control panel for system access. The set value must be unique throughout the entire system. Confirmation of this parameter with the rotary button effects a new initialisation of the controller. All settings except "Off" authorise the user of the control panel to activate the terminal function and thus to operate all RoCon system components with a valid device ID.	Off	1	N	E

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Bus scan	Off	No function	Off	-	E	E
	On	Controller checks which RoCon devices are connected in the system via CAN bus lines. Detected devices are displayed in the menu [→ Main menu → Terminal] with type and data bus ID (e.g. MM#8 = mixer module with bus ID 8).				
Controller BM1/BE1 #X	☐ / ☑	With a detected device only: Activation switches to the heat generator with the bus ID X (see "4.8 Terminal" [▷ 22], [Bus ID heat generator] parameter).	☐	-		
Mixer #X	☐ / ☑	With a detected device only: Activation switches to the mixer module with the bus ID X (see "4.8 Terminal" [▷ 22], [Heating circuit assignment] parameter).	☐	-	E	E

7.10 Statistics

[→ Main menu → Statistics → Month/Total]

▦ 7–24 Parameter in the "Statistics" menu

Parameters	Unit	Description	Factory setting	Increment	Access BE	Access HF
Energy HP, cooling	kWh	The amount of heat given off by the heat pump for cooling operation is displayed.	-	1 kWh	S	S
Energy HP, heating	kWh	The amount of heat given off by the heat pump for heating operation is displayed.	-	1 kWh	S	S
Energy, hot water	kWh	The amount of heat given off by the heat pump for domestic hot water preparation is displayed.	-	1 kWh	S	S
Energy HP total	kWh	The total volume of heat given off by the heat pump is displayed.	-	1 kWh	S	S
Electr. energy total	kWh	The total electrical power consumed is displayed.	-	1 kWh	S	S
Ext. energy source, hot water	kWh	The amount of heat of the additional heat generator for domestic hot water preparation is displayed.	-	1 kWh	S	S
Ext. energy source, heating	kWh	The amount of heat of the additional heat generator for heating operation is displayed.	-	1 kWh	S	S
Runtime, compressor	h	The running time of the refrigerant compressor is displayed.	-	1 h	S	S
Runtime, pump	h	The runtime of the internal heating circulation pump is displayed.	-	1 h	S	S
Reset	-	All parameters listed in the Statistics menu are reset to "0". (Specialist code required).	-	-	S	E

INFORMATION

Depending on the device type, the system configuration and the status of the device software, individual listed information parameters cannot be displayed or can be displayed at a different parameter level.

7.11 Configuration Wizard

Only after hardware reset.

▦ 7–25 Parameter in the "Configuration Wizard" menu

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Direct circuit configuration	0 – 15	Setting of the HC ID for the direct HC of the indoor unit. The HC ID must be unique throughout the entire RoCon system. There must be no overlap with the HC IDs of optional mixer circuits.	0	1	N	E
Bus ID heat generator	0 – 7	The setting must not be changed if more than 1 heat generator is integrated in the RoCon system. Several heat generators integrated in the heating system must be regarded as a special application. If necessary, contact a service technician.	0	1	N	E

Parameters	Setting range Min/Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Time master	No	Activation of a system-wide time master. The time master synchronises all controllers in the RoCon system with the time and date set on the time master. For all other control panels in the system, it is no longer possible to enter the time and date. There must only be one time master in the entire system. The parameter is not available if the time master parameter is activated on another controller in the RoCon system.	☐	-	N	E
	Yes		☑			

8 Errors and faults

DANGER: RISK OF ELECTROCUTION

Electrostatic charges can lead to voltage arcing that can destroy the electronic components.

- Ensure potential equalisation prior to touching the switching panel PCB (e.g. by touching the switching panel holder).

The electronics of the indoor unit indicate an error by red illumination of the status indicator, the appearance of the error screen on the display (see "8.4 Error screen" [▸ 48]) and the appearance of the error symbol on the start screen. An integrated error memory stores up to 15 error messages (see "8.3 Error protocol" [▸ 47]).

INFORMATION

A list of all error codes can be found in the reference guide for the installer, chapter "Errors and faults".

Troubleshooting: Error code E90XX

An error reset can be performed. This can be started from the currently displayed error screen. If the error screen has been exited, it can be recalled via [→ Main menu → Error → Screen].

If the same error is displayed again shortly, the cause of the error must be found and rectified by a specialist. In the meantime, emergency operation may be maintained. Emergency operation can be permitted via [→ Main menu → Error → Emergency], see "8.1 Emergency operation" [▸ 47]. If emergency operation has not been permitted ([Emergency] parameter = "No"), it can be started from the current error screen.

Troubleshooting: Other error codes

The cause of the error must be found and rectified by a specialist. In the meantime, emergency operation may be maintained. Emergency operation can be permitted via [→ Main menu → Error → Emergency], see "8.1 Emergency operation" [▸ 47]. If emergency operation has not been permitted ([Emergency] parameter = "No"), it can be started from the current error screen.

INFORMATION

To ensure that the error has not been caused by incorrect settings, set all the parameters back to the factory settings before possible replacement of components (see "4.5.9 Parameter reset" [▸ 21]).

If it is not possible to determine the cause of the fault, please consult a service technician.

Please have the essential device data ready for this:

Type and manufacturer number of the indoor unit (see heat pump nameplate) as well as the software versions of:

a: Control panel RoCon+ B1 [→ Main menu → Information → Values → Software no. B1/U1]

b: PCB RoCon BM2C [→ Main menu → Information → Values → Software no. controller]

On optional RoCon system components:

RoCon U1 (EHS157034) [Software no. B1/U1]

RoCon M1 (EHS157068) [Mixer software number]

8.1 Emergency operation

[→ Main menu → Error → Emergency]

If the heat pump fails, the backup heater or another external heat generator can be used as an emergency heater. If [Emergency] is set to "Yes", emergency operation is automatically activated in the event of an error. Otherwise, emergency operation can only be started in the event of an error via the error screen.

If emergency operation is started via the error screen, the [Emergency] parameter remains set to "Yes", i.e. emergency operation is also started automatically in the event of future errors. If this is not desired, the [Emergency] parameter must be reset to "No" after the error has been corrected.

8.2 Manual operation

[→ Main menu → Error → Manual operation]

In manual operation, the heat pump is controlled to a fixed leaving water temperature. Manual operation should only be used for diagnostic purposes. Manual operation is started by setting the [Manual operation status] parameter to "Active". The desired leaving water temperature is set by [Temperature, manual operation] parameter.

With hydraulically controlled priority operation for domestic hot water preparation, it must be ensured that the target leaving water temperature set in manual operation is sufficient to achieve the stored hot water target temperature ([Hot water temperature target 1] parameter).

8.3 Error protocol

[→ Main menu → Error → Protocol]

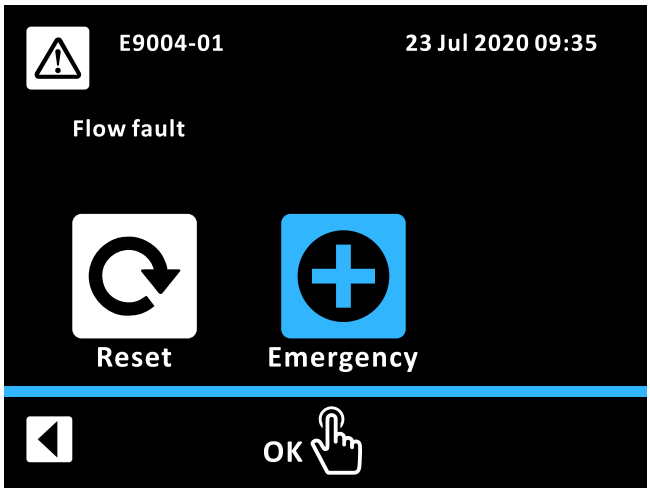
The error protocol can be read in this menu. The most recent error message comes first. All previous messages are moved backwards with each new entry in the position. The 16th error message is deleted if a new error message arrives. The error protocol can only be deleted by a service specialist.

The protocol lists

- the error code,
- the PCB associated with the error (A1P or BM2, see installation instructions for indoor unit)
- Date and time when the error occurred.

8.4 Error screen

[→ Main menu → Error → Screen]



8–1 Error screen

If an error occurs, the error screen is displayed. This displays the error code, an explanatory text and the date and time when the error occurred. Depending on the type of error, a reset can be carried out in the error screen by selecting the corresponding icons and/or emergency operation can be started (see "8.1 Emergency operation" [▶ 47]). Selecting the Back icon closes the error screen and the display returns to the start screen.

If an error has occurred, the error screen can be called up manually via [→ Main menu → Error → Screen].

8.5 Error codes

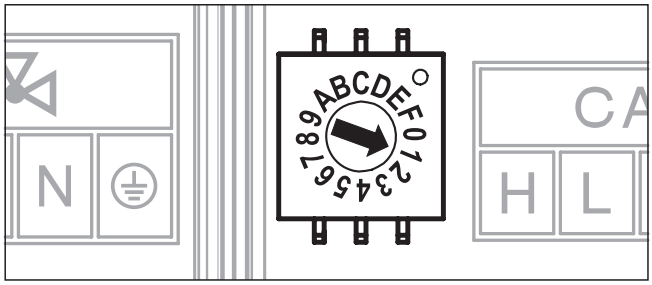
See reference guide for the installer, chapter "Errors, faults, messages".

9 Mixer module

In addition to the direct HC, the heating system can be extended by additional HCs using RoCon M1 (EHS157068) mixer modules. These additional HCs can be configured independently of the direct HC. The configuration is similar to the configuration of the direct HC (see "4 Function" [▶ 11]). Only a limited selection of parameters and functions is available (see "9.2 Mixer valve parameter overview" [▶ 49]).

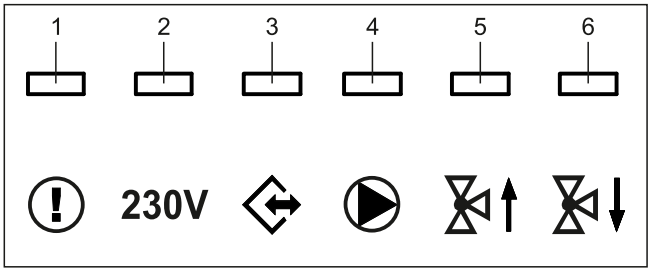
The optional RoCon M1 (EHS157068) mixer module does not have its own control unit. For configuration and operation, it must be connected via a CAN bus line to the RoCon+ HP1+ controller installed in the heat generator or a RoCon U1 (EHS157034) room station. The mixer module can be operated in terminal mode from both operating units (see "4.8 Terminal" [▶ 22]).

A unique device ID (≥ 1) must be set on the address switch of the mixer module (see "9–1 Setting the device ID for the RoCon M1 (EHS157068) mixer module" [▶ 48]) for the HC to be controlled by this mixer module, which must be synchronised with the [Heating circuit assignment] parameter of the mixer module (see "4–6 Functional IDs in the RoCon system" [▶ 22]]).



9–1 Setting the device ID for the RoCon M1 (EHS157068) mixer module

The current operating status can be determined directly on the RoCon M1 (EHS157068) mixer module (see "9–2 Status indicator on the mixer module" [▶ 48]).

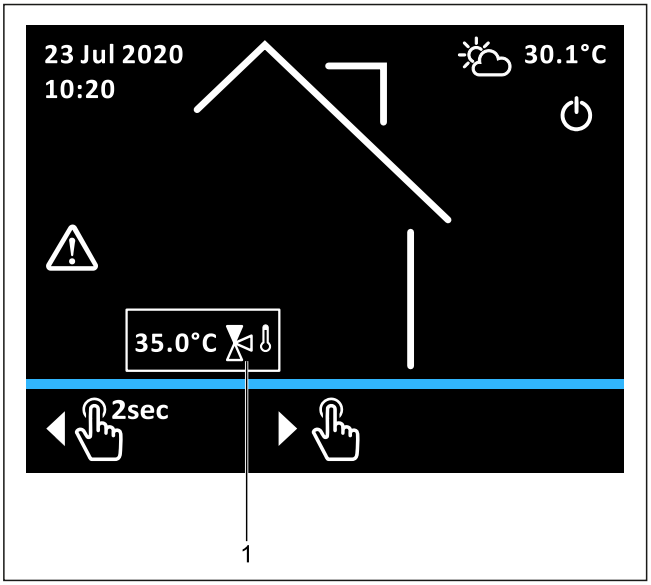


9–2 Status indicator on the mixer module

9–1 Explanation of symbols for RoCon M1 (EHS157068) status indicators

Item	LED	Description
1	Red	Flashing: Internal error (The error code is communicated to the relevant control unit via the CAN bus)
		On: Undervoltage of the internal clock after a power failure (>10 h)
2	Green	On: Display during operation, mixer module switched on
3	Green	On: CAN communication
4	Green	On: Mixer circuit pump switched on
5	Green	On: Mixer valve "Open" is activated
6	Green	On: Mixer valve "Closed" is activated

9.1 Mixer module start screen (terminal function)



9–3 Mixer module start screen

1 Mixer circuit leaving water temperature

The start screen for the mixer module ("9–3 Mixer module start screen" [▶ 49]) is a reduced version of the RoCon+ B1 start screen. The meaning of the icons corresponds to "3–3 Display icons on the start screen" [▶ 7], but the mixer circuit leaving water temperature is the only system temperature displayed.

The start screen for the mixer module is displayed in the menu [→ Main menu → Terminal → Mixer #X]. Briefly pressing the rotary switch switches to the mixer menu. A long press of the rotary switch switches to the menu of the local control panel.

9.2 Mixer valve parameter overview

Menu: Operating mode

See "6.1 Menu: Operating mode" [▶ 25].

Menu: User

- Room
  - Room temperature target 1
  - Room temperature target 2
  - Room temperature target 3
- Reduce
  - Reduce room temperature
- Absent
  - Room temperature absent

9–4 Parameters in menu: "User"

Menu: Time program

- Party
- Absent
- Holiday
- Public holiday
- HC auto 1
  Heating circuit auto. 1
- HC auto 2
  Heating circuit auto. 2

9–5 Parameters in menu: "Time program"

Menu: Access

Menu: System

- Min. mixer valve pump
- Max. mixer valve pump

9–6 Parameters in menu: "System"

Menu: Sensors

- Outside temperature sensor
- Outside temperature correction

9–7 Parameters in menu: "Sensors"

Menu: HC config

- Weather-compensated
- Frost protection temperature
- Building insulation

9–8 Parameters in menu: "HC config"

Menu: Heating

- Heat limit, heating mode
- Heat limit, reducing mode
- Heating curve
- Feed temperature, heating mode
- Feed temperature, reducing mode
- Max. feed temperature
- Min. feed temperature
- Room influence
- Room sensor adaptation
- Heating curve adaptation
- SlopeOffset

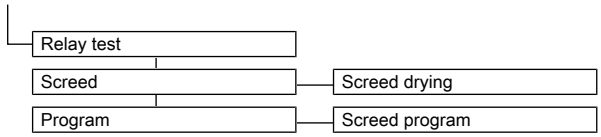
9–9 Parameters in menu: "Heating"

Menu: Cooling

- Cooling curve
  - Target flow cooling, start
  - Target flow cooling, max.
  - Start cooling outside temp.
  - Max. cooling outside temp.
- Cooling parameters
  - Feed temperature lower limit
  - Feed temperature, cooling mode
  - Cooling setpoint correction

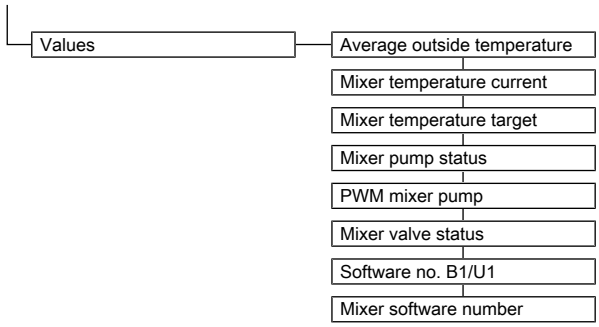
9–10 Parameters in menu: "Cooling"

Menu: Special



9–11 Parameters in menu: "Special"

Menu: Information



9–12 Parameters in menu: "Information"

9.3 Mixer module parameter settings

The parameters available for the mixer module are largely identical to the parameter described in "7 Parameter settings" [▶ 28]. "9–2 Parameters of the mixer module" [▶ 50] lists the additional parameters available for the mixer module.

9–2 Parameters of the mixer module

Parameters	Setting range Min/Max	Description	Factory setting	Increment	Access BE	Access HF
Min. mixer valve pump	10 – 100%	[→ Main menu → System] Minimum power of the pump in the mixer circuit.	30%	1%	N	E
Max. mixer valve pump	20 – 100%	[→ Main menu → System] Maximum power of the pump in the mixer circuit.	100%	1%	N	E
SlopeOffset	0 – 50 K	[→ Main menu → Heating] Setting of the slope offset of the target leaving water temperature on the indoor unit in comparison with the target leaving water temperature determined for the mixer circuit.	5 K	1 K	N	E
Mixer temperature current	–	[→ Main menu → Information → Values] Current leaving water temperature in the mixer circuit in °C	-	-	S	S
Mixer temperature target	–	[→ Main menu → Information → Values] Current target leaving water temperature in the mixer circuit in °C	-	-	S	S
Mixer pump status	On Off	[→ Main menu → Information → Values] Current status of the mixer pump	-	-	S	S
PWM mixer pump	0 – 100%	[→ Main menu → Information → Values] Current modulation of the mixer pump	-	-	S	S
Mixer valve status	Neutral Close Open	[→ Main menu → Information → Values] Current status of the mixer valve	-	-	S	S

10 Glossary

Operating mode	Request by the user or controller for the function of the heat generator (e.g. room heating, domestic hot water preparation, standby, etc.)
Backup request	Operating situation in which the required leaving water temperature cannot be reached efficiently or at all using the heat pump process. A heater booster (e.g. a backup heater) is therefore integrated to support the heat pump in generating heat.
Backup heater	Optional electric heater booster for general support of the heat pump during heat generation.
Heating curve	Mathematical relationship between the outside temperature and the target leaving water temperature in order to achieve the required room temperature at all outside temperatures.
Refrigerant	A substance used for heat transfer in the heat pump process. At low temperature and low pressure, heat is absorbed (refrigerant evaporates) and at higher temperature and pressure, heat is released (refrigerant condenses).
Anti-legionella protection	Periodic heating of the storage water to >60°C for the preventative elimination of pathogenic bacteria (so-called legionella) in the hot water circuit.
Low rate mains connection (HT/NT)	A special mains connection to the energy supplier that offers various cheaper rates during so-called low-load periods for electrical current (day-, night-, heat pump current, etc.).
Parameters	A value that influences the execution of programs or processes or defines specific states.
Controller	Device electronics that are used to control the processes for the heat generation and heat distribution of the heating system. The controller consists of a number of electronic components. The most important component for the operator is the control panel in the front area of the heat generator, which includes rotary buttons and display.
Return flow	Part of the hydraulic HC that directs the cooled water from the heating surfaces in the rooms back to the heat generator via the piping system.
Switching time program	Program for setting the times on the controller in order to determine the regular heating, reducing and hot water cycles.
Smart Grid (SG)	Intelligent use of energy for inexpensive heating. By using a special electricity meter, it is possible to receive a "Smart Grid signal" from the utility company. Depending on the signal, the heat pump is shut off or operated as normal or at higher temperatures.
Feed	Part of the hydraulic HC that diverts the heated water from the heat generator to the heating surfaces.
Domestic hot water circuit	This is the water circuit in which domestic cold water is heated and diverted to the hot water tap.
Domestic hot water preparation	Operating status of the heat generator in which heat with elevated temperatures is generated and fed to the hot water circuit, e.g. loading of the hot water storage tank.
Heat pump process	In a closed-loop refrigerant circuit, the refrigerant absorbs the heat from the ambient air. By means of compression, the refrigerant achieves a higher temperature that is transferred to the heating system (thermodynamic cycle).
Heat exchanger	A component that transfers thermal energy from one circuit to another. The two circuits are hydraulically separated from one another by a wall in the heat exchanger.
Weather-compensated leaving water temperature control	A suitable leaving water temperature is determined from the measured value for the outside temperature and a defined heating curve; this temperature is used as the setpoint for temperature control in the heating unit.
Circulation pump	The circulation pump is an additional electrical circulation pump that permanently circulates the hot water in the hot water lines, thus providing it immediately at every tap. This circulation is especially useful in extensive pipeline networks. In systems without a circulation line, first the water cooled in the sampling line escapes during the sampling process until the sampling line has been sufficiently heated by the inflowing hot water.
Heater booster	Additional heat generator (e.g. backup heater or external boiler) integrated in the heating system to achieve the required target leaving water temperature in the case of an inadequate or inefficient heat pump process.

11 User-specific settings

11.1 Timers

The factory settings of the timers are indicated in "4.3 Time program" [▶ 13].

Enter your timer settings in the table below.

11–1 Individual settings in the heating timer programs

		Switching cycle 1		Switching cycle 2		Switching cycle 3	
	Temperature setting	**[Room temperature target 1]: ____ °C**		**[Room temperature target 2]: ____ °C**		**[Room temperature target 3]: ____ °C**	
	Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
Heating circuit auto. 1	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						
Heating circuit auto. 2	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						

11–2 Individual settings in the hot water switching timer programs

		Switching cycle 1		Switching cycle 2		Switching cycle 3	
	Temperature setting	**[Hot water temperature target 1]: ____ °C**		**[Hot water temperature target 2]: ____ °C**		**[Hot water temperature target 3]: ____ °C**	
	Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
Hot water auto. 1	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						
Hot water auto. 2	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						

11–3 Individual settings of the switching time program of the circulation pump

		Switching cycle 1		Switching cycle 2		Switching cycle 3	
	Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
Circulation program	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						

11–4 Individual settings of the sound program

		Switching cycle 1			Switching cycle 2			Switching cycle 3		
	Time period	**On**	**Off**	**Stage**	**On**	**Off**	**Stage**	**On**	**Off**	**Stage**
Sound program	Monday									
	Tuesday									
	Wednesday									
	Thursday									
	Friday									
	Saturday									
	Sunday									

11.2 Parameters

Enter the parameter changes that were made in the table below and in the operating manual of the heat generator.

11–5 Individual parameter changes

Menu path	Parameters	Old value	New value	Date	Comments

11.3 Data bus addresses

11–6 Data bus addresses in the RoCon system

RoCon Device	Terminal address	Comments

List of keywords

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