DAIKIN

Operating Instructions

RoCon+ HP
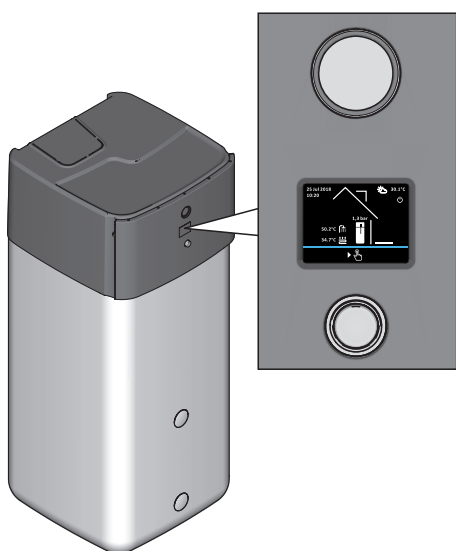
| ETSH(B)16P30D | ETSX(B)16P30D |
| ETSH(B)16P50D | ETSX(B)16P50D |

Operating Instructions
Daikin controller RoCon+ HP1

English

09/2019

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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 commissioning) 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 separator device which exhibits contact separation in all poles with a contact opening distance that provide full disconnection in accordance with overvoltage category III.
>
> - All 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. Ensure that a suitable electrical circuit is 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 instructions for the indoor unit (format: paper – included in the indoor unit scope of delivery)

- Operating instructions 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 instructions 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)

▪ Reference manual for the installer of the indoor unit (format: digital)

▪ Reference manual for the installer of the outdoor unit (format: digital)

The reference manuals 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 to 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.

ℹ	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.

➔   Results of actions are identified with an arrow.

[Operating mode]: Parameters are shown in square brackets.

[→ 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, which 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.

Avoiding danger

The Daikin Altherma EHS(X/H) is state of the art and is built in accordance with all recognised technical regulations. However, improper use may result in serious physical injuries or death, as well as property damage.

To avoid hazards, only operate the Daikin Altherma EHS(X/H):

▪ as stipulated and in perfect condition,

▪ with an awareness of safety and the dangers 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 of the RoCon+ controller

Certain screen displays or menu items may deviate from those shown in these instructions depending on the national or equipment variant of the Daikin Altherma EHS(X/H) or the user status logged onto the controller.

1.2.2   Intended use

The RoCon+ HP controller must only be used in Daikin Altherma EHS(X/H) heat pumps that are approved for the regulating system. The RoCon+ HPcontroller must only be operated in accordance with the specifications in these instructions.

Any other use outside the intended use is considered as improper. 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+ HP controller is part of the Daikin Altherma EHS(X/H).

It consists of the switching panel PCB RoCon BM2Cto which the actuators and sensors as well as other components in the regulating system are connected and the operating unit RoCon+ B1.

These operating instructions only explain the functions and possible settings of the controller. More detailed information on other device components can be found in the other applicable documents.

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

It undertakes all safety management for the Daikin Altherma EHS(X/H). In the event of a water shortage or undefined operating states, this executes a safety switch-off. A corresponding error message shows the operator all the information regarding fault causes.

All function settings for the Daikin Altherma EHS(X/H) 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 Daikin Altherma EHS(X/H) via the controller data bus:

▪ Room controller EHS157034

▪ EHS157068 mixer module

In addition, the RoCon+ HP controller has a frost protection function for the direct heating circuit and the storage tank charging circuit as well as an automatic function for heating support (integration of an additional 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, switching to bivalent operating mode, external status display, 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 outside temperature sensor installed on the north side of the building can be used to further optimise the weather-compensated feed temperature controller.

If the optional EHS157056 gateway is installed and connected to the Internet, the Daikin Altherma EHS(X/H) 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 Daikin Altherma EHS(X/H).

Certain menu items of the RoCon+ HP 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 allocated heating circuit can be carried out in the same way as the operating unit. If the terminal function is activated, all operating possibilities that are available on the integrated operating unit are available with the exception of certain special functions (e.g. manual operation).

After appropriate assignment, a connected EHS157068 mixer module is also operated using the RoCon+ B1 control panel and/or the 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 indoor unit 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" (see Controller operating instructions).

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 a danger of frost for only a few days with uncertainly in the gas and power supply, the oes not need to be drained because the heat insulation is very good as long as the storage tank temperature is observed regularly and does not fall below + 3 °C.

However, this provides no frost protection for the connected heat distribution system.

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[1] The energy supply company (EVU) sends signals that are used for controlling the power mains loading 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 control unit must be protected against the effects of moisture.
- To clean the control unit, use a dry cotton cloth. The use of aggressive cleaning agents and other fluids can cause damage to devices or lead to an electric shock.

ℹ **INFORMATION**

The Daikin Altherma EHS(X/H) 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 feed target temperatures above 50 °C, the efficiency (COP) of the Daikin Altherma EHS(X/H) can deteriorate (depending on the outside temperature).

3.2   Display and operating elements
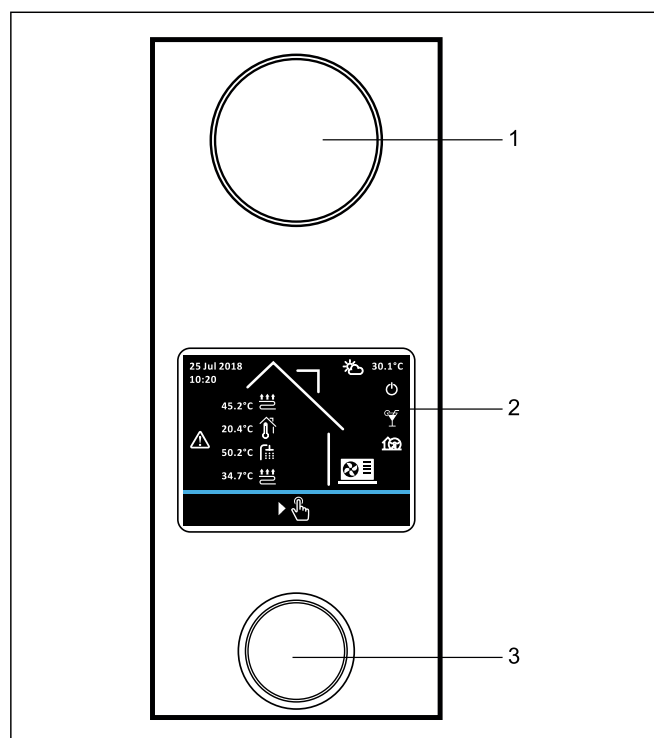
Fig. 3-1   RoCon+ HP display and operating elements
1   Status display
2   Display
3   Rotary button

3.2.1   Status display

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

LED	Mode	Description
Flashes blue	STANDBY	The device is not in operation.
Lights up blue	Operation	The device is in operation.
Flashes red	Error	A malfunction occurred. For further details, see Chap. 8.

Tab. 3-1   Status display

3.2.2   Display

During normal operation the display is deactivated (completely dark). The activity of the system is indicated by the status display. 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.

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

Tab. 3-2   Function of the rotary button

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.
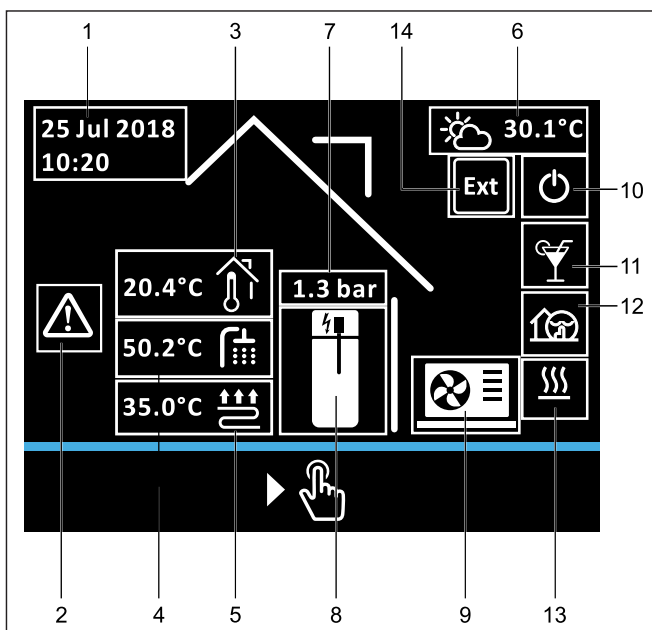
Fig. 3-2 Display position on the start screen

Item	Icon	Explanation
1		Date and time
2	⚠	Error message
3		Only with connected room unit: Room temperature
4		Hot water temperature
5		Floor heating feed temperature
		Convector heating feed temperature
		Radiator heating feed temperature
6		Outside temperature
7		Pressure in the heating circuit
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

Item	Icon	Explanation
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)

Tab. 3-3 Display icons on the start screen

> **ℹ INFORMATION**
>
> If the local control panel is used as a remote control for a mixer module, both the standard screen and the menu structure are changed (see Chap. 9).

3.3   Operating concept

The operating concept of the controller enables fast navigation in the menu, clear display of information and convenient selection of parameters as well as the 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 Chap. 4.

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.
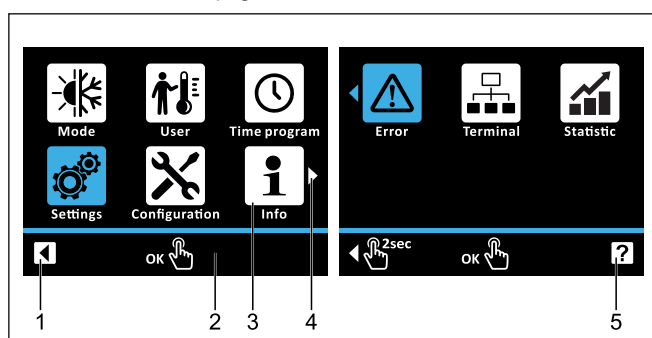
Fig. 3-3   Example: Elements in a two-page menu
   1   Back icon
   2   Menu bar
   3   Menu icon
   4   Page change arrow (for multi-page menus)
   5   Help icon

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").
   ➔   The "Statistics" submenu is called up

3.3.2   Help function

A help text is available for each menu icon.
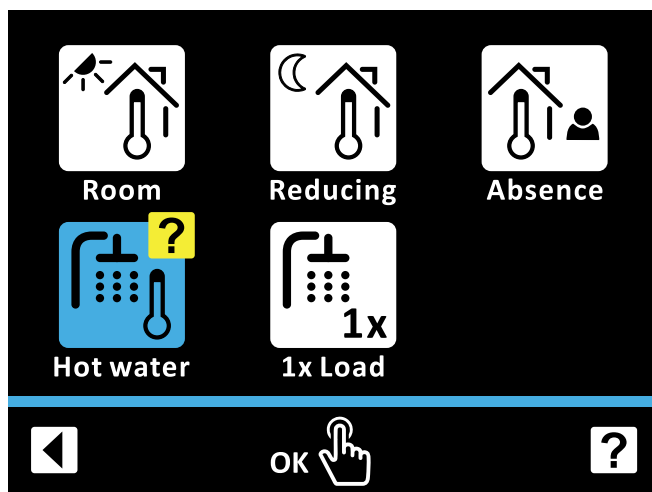
Fig. 3-4   Help function

Example: Call up the help text for the "Hot water" menu and stop 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").
   ➔   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").
   ➔   The help text for the "Hot water" is displayed.

5   Briefly press the rotary button to confirm ("OK").
   ➔   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").
   ➔   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.
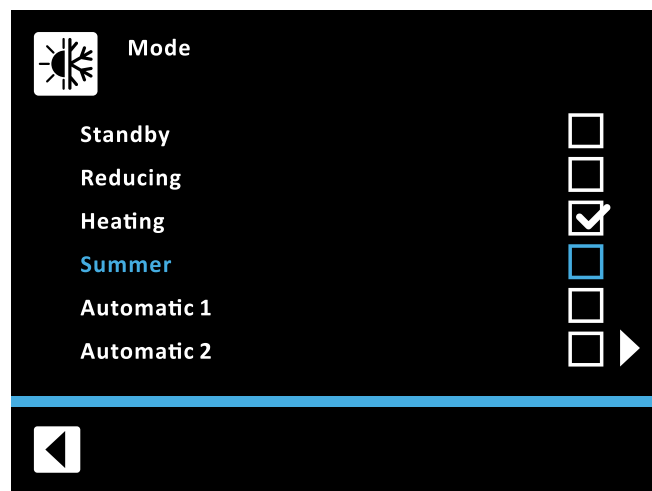
Fig. 3-5   List with selected list entry

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").
   ➔   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").
   ➔   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. Press "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.
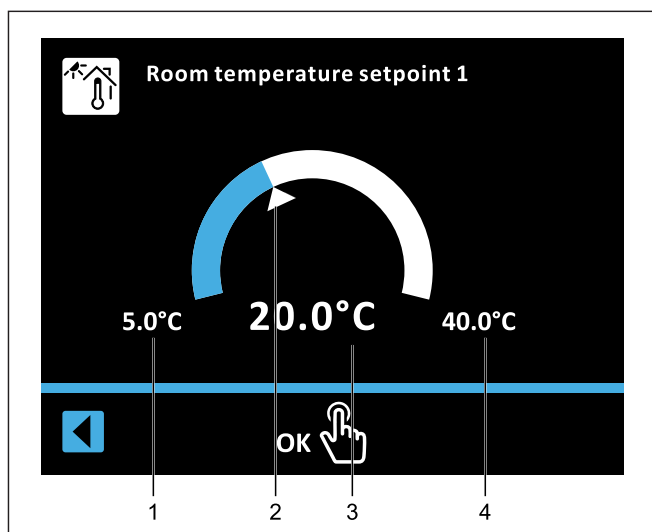
Fig. 3-6   Display of the parameter setting
1   Minimum value
2   Default value
3   Currently selected value
4   Maximum value

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").
   → 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.
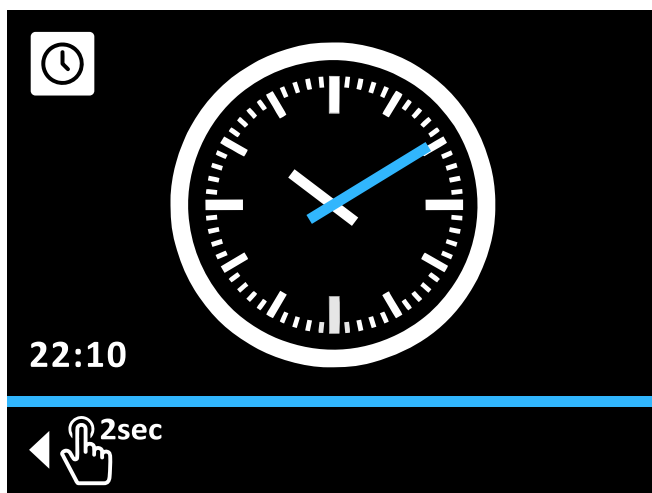
Fig. 3-7   Setting the times

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").
   → 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").
   → 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").
   → The Confirm icon in the menu bar is displayed in blue.

7   Briefly press the rotary button to confirm ("OK").
   → 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.
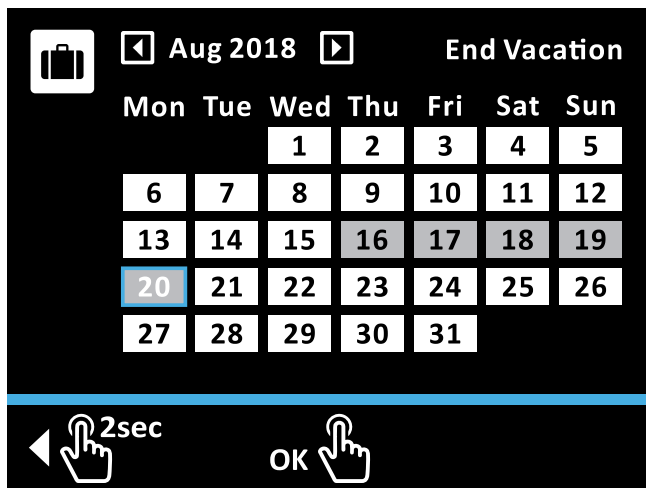
Fig. 3-8   Setting the period with the calendar function

Example: Set [Holiday] from 25th August, 2018 – 2nd September, 2018 [→ Main menu → Time program → Holiday]:

1   Turn the rotary button clockwise until the month selection is Aug 2018.

2   Briefly press the rotary button to confirm ("OK").
   → August 1 is shown with a blue border.

Turn the rotary button clockwise until 25th August is highlighted in blue.

3   Briefly press the rotary button to confirm ("OK").
   → August 25 is shown on a grey background.

4   Turn the rotary button clockwise until 2nd September is highlighted in blue.

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

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

7   Briefly press the rotary button to confirm ("OK").
   → The last selected day of the holiday is displayed with a blue border.

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

9   Briefly press the rotary button to confirm ("OK").
   → 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 Chap. 4.3.2). 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 (Fig. 3-9) in the overview level of the respective program.

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

Tab. 3-4   Structure of the permanent time programs

ℹ️ 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.
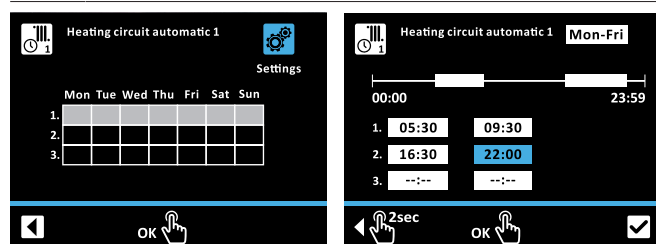
Fig. 3-9   Time program function with overview level (left) and setting level (right)

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 Setting icon turns blue.

2 Briefly press the rotary button to confirm ("OK").
→ 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").
→ 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").
→ 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").
→ 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").
→ 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").
→ 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").
→ 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").
→ 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.
→ The display changes to the Confirm icon.

16 Briefly press the rotary button to confirm ("OK").
→ The programming is saved.
→ The setting level is exited.
→ 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").
→ The menu is exited

3.3.8   External operation

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

Operation via the Internet

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

Operation via the room station

It can also be operated via the optional EHS157034 room controller. For this purpose, observe the operating instructions enclosed with the device.

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+ HP 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 Chap. 4.5.1).

4.1   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 Daikin Altherma EHS(X/H) is switched to standby mode. The frost 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.

> **i 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 outside 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 frost protection function is not active in any connected HC and
>
> ▪ the Daikin Altherma EHS(X/H) 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 Chap. 4.2).

Domestic hot water preparation according to the feed target temperatures and switching cycles in the [Hot water auto. 1] hot water time program (see Chap. 4.2).

Heating operating mode

Heating, cooling mode according to the room target temperature set in the [Room temperature target 1] parameter (see Chap. 4.2).

A connected outside temperature sensor (weather-compensated feed temperature control) or a connected room controller also influence the target temperature.

Domestic hot water preparation according to the feed target temperatures and switching cycles in the [Hot water auto. 1] hot water time program (see Chap. 4.2).

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 Chap. 4.2).

All controllers integrated in the RoCon system via the CAN bus are also switched to the higher-level [Summer] operating mode.

Automatic 1 operating mode (time program)

Automatic heating and setback mode according to the permanent time programs (see Chap. 4.3):

▪ [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 Chap. 4.3):

▪ [Heating circuit auto. 2]

▪ [Hot water auto. 2]

> **i INFORMATION: SWITCHING CONTACT FOR EXTERNAL OPERATING MODE CHANGEOVER**
>
> Switching can also be performed from an external device (e.g. modem, ...) via a floating switching contact connected to terminal J8 of the Daikin Altherma EHS(X/H) to the "Ext" terminals. See Tab. 4-1.
>
> 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.

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

Tab. 4-1   Resistance values for evaluating the EXT signal

> **i INFORMATION**
>
> The resistances specified in Tab. 4-1 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 Daikin Altherma EHS(X/H) (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 Tab. 4-2) are available that are carried out with priority after activation.

Temporary heating program	Setting/activation in the menu	Information
Party	Time program	Chap. 4.3
Absent		
Public holiday		
Holiday		
Screed	Configuration	Chap. 4.5.7

Tab. 4-2   Overview of temporary time programs

ℹ 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 setpoint setting

[→ Main menu → User → Room]

The room target temperatures for room heating in Heating mode 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 Chap. 7.3.

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 Chap. 7.3.

4.2.3   Room temperature absence 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 Chap. 7.3.

4.2.4   Hot water temperature setpoint 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 Chap. 7.3.

4.2.5   Unscheduled domestic hot water generation

[→ 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 control unit automatically jumps back to the previously active operating mode.

Possible settings for this menu can be found in Chap. 7.3.

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

ℹ 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 (Chap. 11.1).

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.

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 mode 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 - min. noise reduction; 2 - med. noise reduction; 3 - max. noise reduction).

Factory settings

The permanent time programs are preset according to .

Time period	Switching cycle 1		Switching cycle 2		Switching cycle 3	
	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]: 60 °C		[Hot water temperature target 2]: 60 °C		[Hot water temperature target 3]: 60 °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	- - : - -	- - : - -	- - : - -	- - : - -	- - : - -	- - : - -

Tab. 4-3   Factory setting of the permanent time programs

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 Chap. 7.5.

> **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 Chap. 7.5.2.

4.4.3   Additional heat generators

[→ 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 WEZ must be fed to the unpressurised storage tank water in the Daikin Altherma EHS(X/H) hot water storage tank.

▪ On use of the optional EKBUxx backup heater, this is carried out due to the design installation situation.

▪ If an alternative WEZ (e.g. gas- or oil-fired boiler) is used, this can be hydraulically integrated

  ▪ unpressurised via the connections (solar feed and solar return) of the hot water storage tank or

  ▪ in the case of Daikin Altherma EHS(X/H) ...B device types, via the integrated pressurised solar system heat exchanger

The setting of the [Config. ext. heat source] parameter is used to define if any additional heat generator (WEZ) is available for domestic hot water preparation and heating support, and which.

▪ No external heat source

▪ Optional backup heater

▪ Ext. heat sources HW and HZU: Alternative WEZ provide domestic hot water preparation and backup heating. To request the WEZ, relay K3 on PCB RTX-EHS is switched.

▪ Ext. heat source HW or HZU: Alternative WEZ 1 (optional backup heater EKBUxx) undertakes domestic hot water preparation and alternative WEZ 2 undertakes heating support. To request WEZ 1, relay K3, and to request WEZ 2, relay K1, on PCB RTX-EHS are switched respectively. 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 Chap. 7.5.3.

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.
>
> Due to such forced charging, the hot water target temperature in the hot water storage tank can exceed 65 °C.
>
> This storage tank charging is carried out even when the [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 Daikin Altherma EHS(X/H) 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 Tab. 4-4 depending on the utility company 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 target storage tank temperature value is increased depending on the [Smart grid mode] parameter.	Switch-on recommendation, and target feed temperature is increased depending on the [Smart grid mode] parameter.
1	1	Very low	Switch-on command and storage tank target temperature is set to 70 °C.	Switch-on command for storage tank charging.

Tab. 4-4   Use of the SG signal

AUX switching function

Setting the [AUX switching function] parameter selects 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 setting is deactivated.

AUX switching contact (toggle switch output **A**) is **switched**, if setting

▪ Storage tank temperature (T_{dhw}) ≥ [Switching threshold TDHW (AUX)] parameter value.

▪ if an error is pending.

---

[1] Switching contacts at input J8 of the RoCon BM2C PCB closed (1) or open (0).
[2] No frost protection function

▪ Outside temperature < [Bivalence temperature] parameter value.

▪ Heat request for domestic hot water preparation.

▪ Heat request for room heating.

▪ Heat request for room heating or domestic hot water preparation.

Interlink function

Setting the [Interlink function] parameter = On offers the possibility that the Daikin Altherma EHS(X/H) two different feed temperature setpoints are included in the controller.

This applies to both weather-compensated control and control according to a fixed feed target temperature (see Chap. 4.5).

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

Prerequisite: 2 switching contacts are connected to Daikin Altherma EHS(X/H) plug connection J16 (e.g. room thermostats).

▪ [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 mode only by switching the operating mode to [Cooling] (see Chap. 4.1). Setting of the [Room thermostat] parameter is no longer evaluated.

  ▪ Open switching contacts: Only frost protection active

  ▪ [Heating] or [Automatic 1] / [Automatic 2] operating mode active during daytime switching cycles.

  ▪ Closed switching contact Heating = IL1

  ▪ It is controlled to the normal feed target temperature according to the parameter settings for [Heating].

  ▪ Closed switching contact Cooling = IL2

  ▪ It is controlled to the increased feed target temperature (normal feed target temperature + value of the [Interlink temperature increase] parameter). Priority if both switching contacts are closed!

▪ [Cooling] operating mode active.

  ▪ Closed switching contact Heating = IL1

  ▪ It is controlled to the normal feed target temperature according to the parameter settings in level [Heating circuit config.] > [Cooling].

  ▪ Closed switching contact Cooling = IL2

  ▪ The system is regulated to the reduced feed target temperature (normal feed target 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 Chap. 7.5.

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

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).

Heating support (HZU)

If the Heating support function ([Heating support (HZU)] parameter = On) is activated, the energy in the Daikin Altherma EHS(X/H)'s integrated storage tank is used to undertake the heating function. If the storage temperature is sufficiently high, the burner remains inactive.

The minimum value (T_{HZUmin}) is calculated as follows: T_{HZUmin} = currently active hot water target temperature [Hot water temperature, target] + [Heating support hysteresis] parameter.

Switch-on condition:

Tdhw > T_{HZUmin} + 4 K **and** Tdhw > [Hot water temperature, target] information parameter + 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.

Switch-off condition:

Tdhw < T_{HZUmin} **or** Tdhw < [Feed temperature, target] parameter (see Chap. 4.5.3)

If the switch-off condition is fulfilled, the heating support from the hot water storage tank is set and the burner takes over the 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 Chap. 7.5.5.

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 privileges (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.
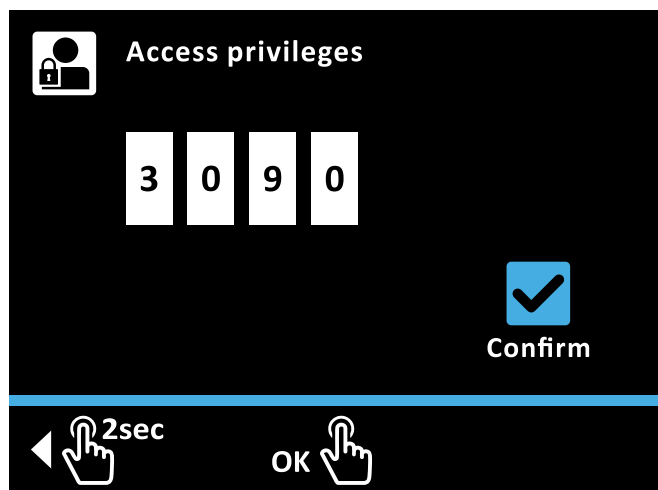
Fig. 4-1   Setting the access code

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").
   ➔ 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").
   ➔ 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").

➜   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").

➜   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").

➜   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 Chap. 7.6.1.

4.5.3   HC configuration

[→ Main menu → Configuration → HC config]

This menu is used to adjust the basic functionality of the heating circuit.

Further explanations and possible settings for the parameters in this menu can be found in Chap. 7.6.2.

Weather-dependent feed temperature control

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

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

If the room controller is also connected (EHS157034) to the RoCon+ HP, 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 feed temperature control

▪   [Weather-compensated] parameter = Feed temperature, fixed: Control based on fixed target temperature

  ▪   For heating mode: [Feed temperature, heating mode] parameter or [Feed temperature, reducing mode] parameter

  ▪   For cooling mode: [Feed temperature, cooling mode] parameter

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

With connected Mixer module (M1)

The setting of the heating/cooling curves and the activation of the weather-compensated feed 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 outside temperature sensor connected to the Daikin Altherma EHS(X/H) external temperature sensor is transmitted to the mixer module via the CAN bus.

or as a

▪   Mixer add-on with zone control
  A separate outside 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 heating circuit undertaken via the RoCon+ B1 control panel of the Daikin Altherma EHS(X/H).

In conjunction with the EHS157034 room control, the mixer module can also control the assigned heating circuit completely autonomously and independently of the heat generator.

Further explanations and possible settings for this menu can be found in Chap. 7.6.

Frost 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 feed temperature falls below 7 °C, the Daikin Altherma EHS(X/H) heats until the heating feed 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**
>
> If low rate functions are activated,
>
> [HT/NT function] parameter = Switch all off
>
> or
>
> [Smart grid] parameter = On
>
> operation of the heat pump can be shut off completely for a limited period of time by the utility company. In these cases, regulation is not possible even in frost protection conditions and the device's internal heating circulation pump is not switched on.
>
> These situations can be recognised if, in the [→ Main menu → Information → Overview] menu in the operating data field: "Ext", the "High rate" value or "SG1" is displayed.

4.5.4   Heating

[→ Main menu → Configuration → Heating]

This menu is used to configure heating times and target feed temperatures for heating mode.

Heating curve

> ⚠ **WARNING: FLAMMABLE MATERIAL**
>
> In the event of malfunction, the floor 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+ HP controller ([Max. feed temperature] parameter) to the maximum permitted system temperature prior to starting the emission measurement.
> - Connect an overheating protection switch (in the building) at the "Ext" plug connection for external operating mode switch-over so that the Daikin Altherma EHS(X/H) is switched to the "Standby" or "Summer" operating mode. If the [Room thermostat] parameter = Yesor the [Interlink function] parameter = On, the overheating protection switch must be connected so that the room thermostat's switching contact is interrupted.
> - If the floor 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 feed temperature to the characteristics of the building independent of the respective outside temperature (weather-compensated feed temperature control, see Chap. 4.5). Generally speaking, the slope of the heating curve describes the ratio of the feed 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. The room temperature measured in the occupied area may differ from the required room temperature; these deviations can be kept to a minimum by installing a room thermostat or a room control.

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 **outside temperature sensor** and the **room controller** (EHS157034) are **connected** (see Chap. 4.5).

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**).

> ℹ **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:
>
>   Heating element: 1.4 to 1.6.
>
>   Floor heating: 0.5 to 0.9.
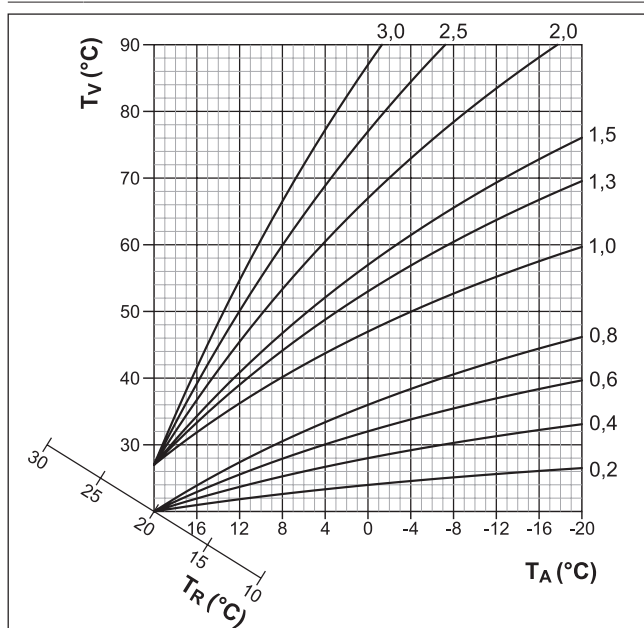
Fig. 4-2   Heating curves
T_A Outside temperature
T_R Room target temperature
T_V T-HS

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 feed temperatures and low required hot water temperatures), the required feed temperature can be higher than the storage tank target temperature. In order to avoid short-term loss of comfort in heating mode 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.

> ℹ **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 Chap. 7.6.

4.5.5   Cooling

[→ Main menu → Configuration → Cooling]

This menu is used to make settings for cooling mode.

> ⚠️ **CAUTION: DANGER OF CONDENSATION**
>
> In the event of malfunction or incorrect parameter settings, the floor heating, the screed or the floor structure could be damaged due to condensation.
>
> ▪ Prior to initial commissioning and activation of cooling mode, set the minimum temperature limit to the minimum permissible system temperature in the RoCon controller (parameter [Feed temperature lower limit]).

Prerequisites for cooling mode:

▪ 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.

> ℹ️ **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 switching 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 feed target temperature in cooling mode depending on the respective outside temperature. (for weather-compensated feed temperature control, see Chap. 4.5.3). Warmer outside temperatures result in a colder feed target temperature and vice versa. The cooling curve can be adapted to the condition of the building by four parameters (see Fig. 4-3).

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 feed temperatures in cooling mode.

During weather-dependent T-HS control, the user can increase or decrease the target feed 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.

> ℹ️ **INFORMATION**
>
> If optional frost protection valves are installed in the system, the [Feed temperature lower limit] parameter must not be set below 7 °C.
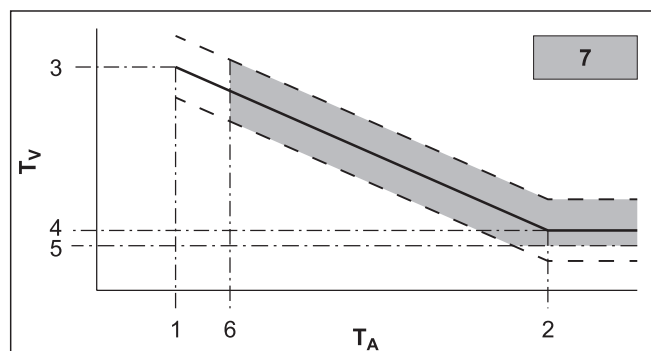
Fig. 4-3   Cooling curve parameter dependency
  1   [Start cooling outside temp.] parameter
  2   [Max. cooling outside temp.] parameter
  3   [Target flow cooling, start] parameter
  4   [Target flow cooling, max.] parameter
  5   [Feed temperature lower limit] parameter
  6   Room target temperature
  7   Cooling mode possible
  T_A Outside temperature
  T_V T-HS
  ------   Cooling curve
  - - - -   Possible parallel cooling curve shift

Further explanations and possible settings for the parameters in this menu can be found in Chap. 7.6.4.

4.5.6   Domestic 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] 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 target value 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= 5K; Building insulation= Normal

To activate the solar function, it must be set to "On" in the menu [→ Main menu → Configuration → DHW → Solar function] and the switching contact EXT (J8) 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 Chap. 4.3). 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 Chap. 7.6.5.

4.5.7   Additional program

[→ Main menu → Configuration → Addition]

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

Air purge function

[→ Main menu → Configuration → Addition → Ventilation]

By activating the ventilation 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 switching valves. Existing air can escape during operation via the automatic ventilation valve.

> **ℹ 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 Chap. 3.3.3). 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.

Floor screed dryout

[→ 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 floor 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.

> **ℹ 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.

Floor screed program

[→ Main menu → Configuration → Addition → Program]

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

Changing the screed program

A separate feed target 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 feed target temperature.

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	-

Tab. 4-5   Default settings of the screed program
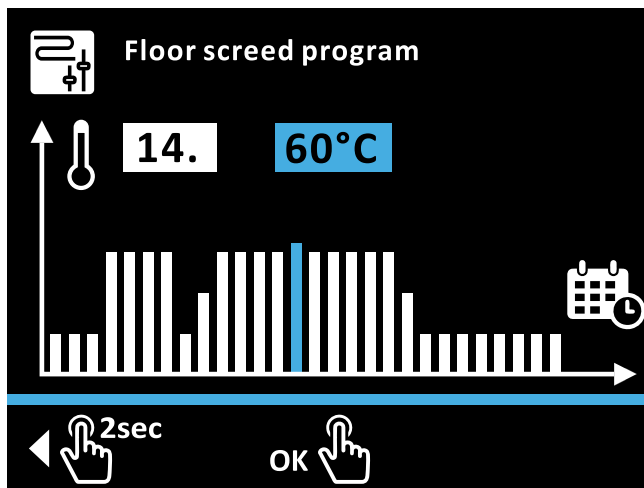
Fig. 4-4   Changing the screed program

Example: Increase the feed 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").
  ➔ 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").
  ➔ 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").
  ➔ 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").
  ➔ 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 relating to floor heating systems can be found on the manufacturer's Internet portal.

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 after 21 days at the earliest and of anhydrite screeds after 7 days at the earliest in accordance with the specifications of the manufacturer. The first

heating begins with a feed temperature of 25 °C that must be maintained for 3 days. Afterwards, the heating is carried out with the maximum set feed temperature for the HC (limited to max. 55 °C), which must be maintained for a further 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.

> **ℹ 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 leak-tightness 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.
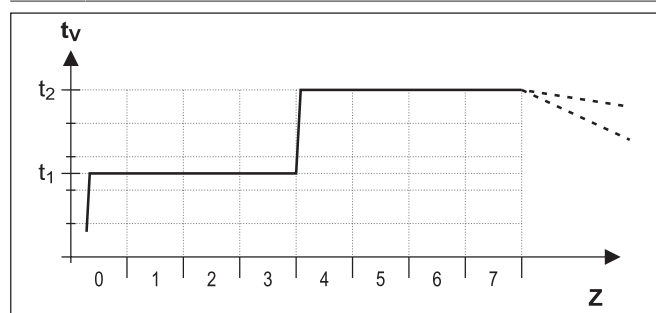
Fig. 4-5   Chronological sequence of the screed program during the function heating
t_1 Start temperature 25 °C
t_2 Maximum HC temperature
T_v T-HS
Z Duration of the screed function in days after starting the function

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 floor 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 Fig. 4-6). However, the residual moisture of the screed must basically be checked metrologically before the flooring can be laid.
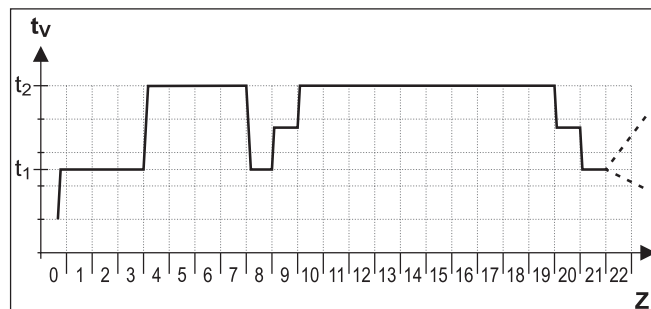
Fig. 4-6   Chronological sequence of the screed program during the combined function and screed curing heating (for legend, see Fig. 4-5)

Detailed explanations and possible setting values of this function can be found in Chap. 7.6.

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 Chap. 5.1.

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 Daikin Altherma EHS(X/H) no longer functions properly and no other causes of malfunction can be identified.

4.6   Info

[→ 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 mixing valves.
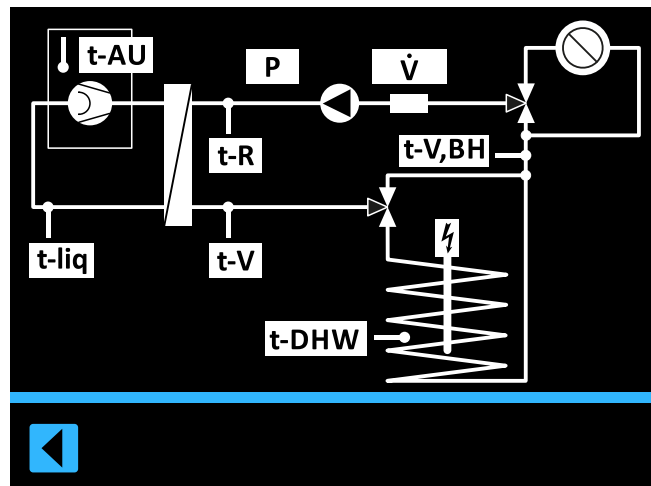
Fig. 4-7   Hydraulic circuit diagram – first page
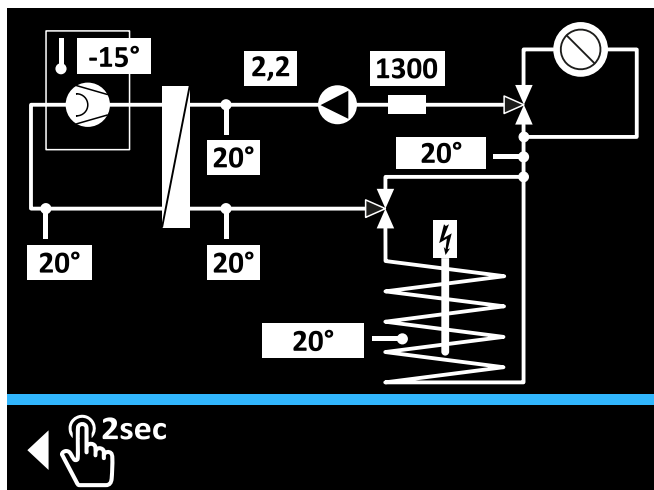
Fig. 4-8   Hydraulic circuit diagram – second page

Item	Designation
t-AU	Outside temperature sensor
P	Pressure
V	Volume flow
t-R	Heating return flow temperature
t-V,BH	Heating feed temperature, if necessary after heating support heat exchanger
t-liq	Refrigerant temperature
t-V	Feed temperature after the plate heat exchanger
T-DHW	Temperature in the hot water storage tank
B1	Current position of mixing valve 3UVB1 (0%: heating network; 100%: internal bypass)
DHW	Current position of the mixing valve 3UV DHW (0%: heating network; 100%: hot water tank)

Tab. 4-6   Legend to the hydraulic circuit diagrams

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 Chap. 7.7.

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 Chap. 7.7.

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 Daikin Altherma EHS(X/H) takes place in this menu. see Chap. 8.

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 unit 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. For this, the RoCon BM2C circuit boards and the RoCon+ B1 control units of the Daikin Altherma EHS(X/H) as well as the optional EHS157034 room station and EHS157068 mixer module are connected with each other via data bus lines if necessary. 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.

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.	Daikin Altherma EHS(X/H) (RoCon BM2C)	[Direct circuit configuration] See Chap. 7.11	Factory setting = 0 Should not normally be changed.[1]
	EHS157034 room station	[Heating circuit assignment] see RoCon U1/M1 instructions	Factory setting = Off Adaptation required if there are different HCs in the system and/or the [Master-RoCon] parameter = On
	EHS157068 mixer module	[Heating circuit assignment] see RoCon U1/M1 instructions	Factory setting = Off Must always be adapted to the setting of the address switch.

[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 installation must be regarded as a special application. If necessary, contact a service technician.

ID / Function	System components	Parameters	Comments
Heat generator ID Unique numbering of a heat generator in the RoCon system.[1]	Daikin Altherma EHS(X/H) (RoCon BM2C)	[Bus ID heat generator] See Chap. 7.11	Factory setting = 0 Should not normally be changed.[1]
	EHS157068 mixer module	[Boiler Assignment] see RoCon U1/M1 instructions	Factory setting = 0 Should not normally be changed.[1] Defines the heat generator that supplies the assigned HC with heat.
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".	Daikin Altherma EHS(X/H) (RoCon BM2C)	[Terminal address] See Chap. 7.9	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.
	EHS157034 room station	[Terminal address] See Chap. 7.9	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.	Daikin Altherma EHS(X/H) (RoCon BM2C)	[Bus ID heat generator] See Chap. 7.11	Identical to heat generator detection. The value must not be the same as the HC ID of a mixer module in the RoCon system.
	EHS157068 mixer module	[Heating circuit assignment] See Chap. 9	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.

Tab. 4-7   Functional IDs in the RoCon system

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 control 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 Daikin Altherma EHS(X/H) or the 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 must be allocated 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").
   ➔ The local control panel acts as a remote control for the heat generator with bus ID 2.

To end terminal operation and switch 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 control for a mixer module, both the standard screen and the menu structure are changed (see Chap. 9).

[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 installation must be regarded as a special application. If necessary, contact a service technician.

4.9 Statistics

> ℹ️ **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 consumption 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 consumption 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 consumption of the heat pump since commissioning (or since the last reset by a specialist).

5   Initial commissioning

> **i INFORMATION**
>
> In addition to the commissioning instructions listed in this chapter, the specific commissioning instructions listed in the respective installation instructions for the Daikin Altherma EHS(X/H) 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 Chap. 3.3. 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 EHS157034 and/or 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 Chap. 4.8)
   ▪ Bus ID heat generator (see Chap. 4.8)
   ▪ Time master (see Chap. 7.11)

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

→ **Time**

1   Setting the current time (see Chap. 3.3.5).

→ **Date**

1   Setting the current date (see Chap. 3.3.6).

→ **System parameters**

The following parameters can be set:
   ▪ [Room thermostat] present? (see Chap. 7.5.4)
   ▪ [Heating support (HZU)] required? (see Chap. 7.5.5)
   ▪ [Continuous heating] required? (see Chap. 7.5.5)

→ **Heating limit**

The following parameters can be set:
   ▪ [Heat limit, heating mode] (see Chap. 7.5.3)
   ▪ [Heat limit, reducing mode] (see Chap. 7.5.3)

→ **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 Chap. 7.5.1)
   ▪ [Heating curve] setting (see Chap. 4.5.4)
   ▪ Only with reversible device type: Setting of the cooling curve (see Chap. 4.5.5)

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 Chap. 7.6.3)
   ▪ Only with reversible device type: Setting [Feed temperature, cooling mode] (see Chap. 7.6.4)

→ **Hot water**

The following parameters can be set:
   ▪ [Hot water temperature target 1] (see Chap. 7.3.4)
   ▪ [Hot water hysteresis] (see Chap. 7.6.5)

→ **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 Chap. 7.5.3)
   ▪ [External power stage 1] (see Chap. 7.5.3)
   ▪ [External power stage 2] (see Chap. 7.5.3)
   ▪ Emergency (see Chap. 8.1)

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 Chap. 7.5.3).

2   Confirm the selection with the Confirm icon.

3   Select and set the following list elements as required:
   ▪ [External power hot water] (see Chap. 7.5.3)
   ▪ [External power stage 1] (see Chap. 7.5.3)
   ▪ Emergency (see Chap. 8.1)

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 Chap. 7.5.2).

6   Parameter overview

6.1   Menu: Operating mode
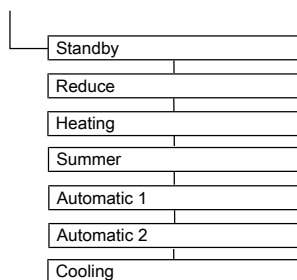
Fig. 6-1   Parameter in menu: "Operating mode"

6.2   Menu: User
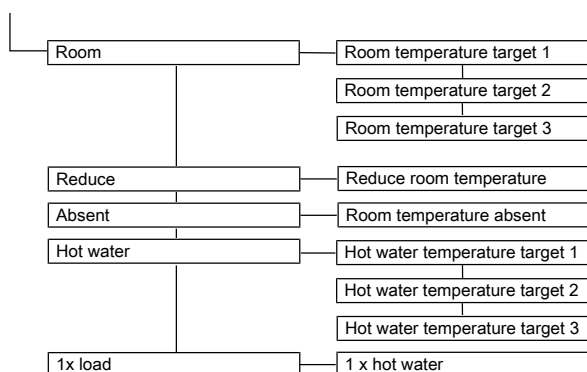
Fig. 6-2   Parameter in menu: "User"

6.3   Menu: Time program

Fig. 6-3   Parameter in menu: "Time program"

6.4   Menu: Settings

Fig. 6-4   Parameter in menu: "Settings"

6.5   Menu: Configuration

Access

Sensors
- Outside temperature sensor
- Hot water sensor
- Water pressure sensor
- Outside temperature correction
- Water pressure, min.
- Water pressure, max.
- Water pressure, target
- Maximum pressure loss

HC config
- Weather-compensated
- Frost protection temperature
- Building insulation
- Switch temp. heating circuit

Heating
- Heat limit, heating mode
- Heat limit, reducing mode
- Heating curve
- Feed temperature, overshoot
- Feed temperature, heating mode
- Feed temperature, reducing mode
- Max. feed temperature
- Min. feed temperature
- Room influence
- Room sensor adaptation
- Heating curve adaptation
- Interlink temperature increase
- Comfort heating

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

DHW
- Max. hot water loading time
- Hot water blocking time
- Hot water hysteresis
- Wait time ext. heat generator
- Solar function
- Circulation pump control
- Circulation pump interval
- Anti-legionella day
- Anti-legionella start time
- Anti-legionella temperature

Addition
- Relay test
- Ventilation
  - Ventilation function
- Screed
  - Screed drying
- Program
  - Screed program

Wizard

Reset
- Parameter reset

Fig. 6-5   Parameter in menu: "Configuration"

6.6   Menu: Information

Current

Overview
- Mode
- External request
- Room thermostat/Interlink
- Quiet mode
- Heating support
- Status, heat circulation pump
- PWM pump
- BUH current output
- 3UVB1 position
- 3UVDHW position
- Heat generator type
- Software no. B1/U1
- Software no. controller
- Glycol

Values
- Feed temperature, current
- Feed temperature, target
- Average outside temperature
- Hot water temperature, current
- Hot water temperature, target
- Return flow temperature
- Feed temperature HC current
- Feed temperature HC target
- Feed temperature PHX
- Feed temperature BUH
- Outdoor temperature (optional)
- Refrigerant temperature
- Volume flow
- Water pressure

Pressure
- Water pressure

Fig. 6-6   Parameter in menu: "Information"

6.7   Menu: Error

Manual operation
- Manual operation status
- Temperature, manual operation

Emergency

Protocol

Screen
- Error screen

Fig. 6-7   Parameter in menu: "Error"

6.8   Menu: Terminal

Address
- Terminal address

Bus scan

Controller BM1/BE1 #X

Mixer #X

Fig. 6-8   Parameter in menu: "Terminal"

6 Parameter overview

> **ℹ INFORMATION**
>
> If the local control panel is used as a remote control for a mixer module, both the standard screen and the menu structure are changed (see Chap. 9).

6.9 Menu: Statistics

Fig. 6-9   Parameter in menu: "Statistics"

7   Parameter settings

7.1   Explanation of the parameter tables

The parameter tables listed in Chap. 7.2 to Chap. 7.10 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 right 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 Chap. 4.5.1)

Status:

N   Not visible

E   Visible and configurable

S   Visible

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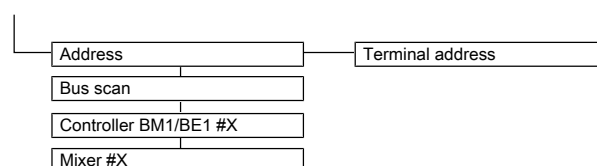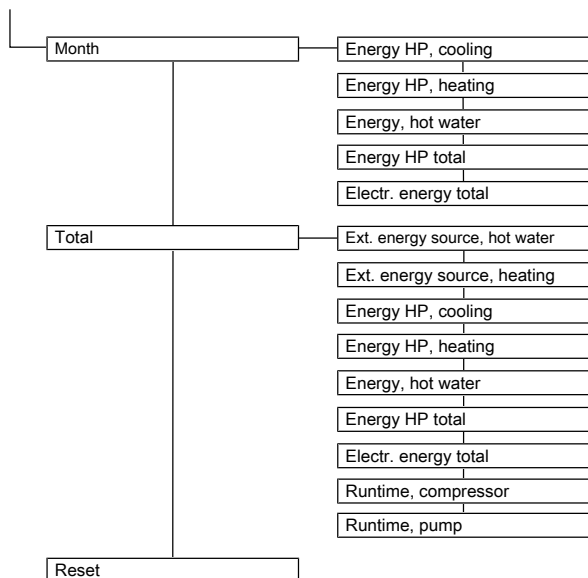
Parameters that require a restart are marked with (*) in the following tables

7.2   Operating mode

[→ Main menu → Operating mode]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Standby	☐ / ☑	In this operating mode all internal functions are switched off. Frost 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 feed 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 feed 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. Frost 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 heating circuits 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 heating circuits 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 heating circuit continuously regulates to the required feed 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]. Frost protection remains active and a blocking protection for the pump is guaranteed.	☐	-	E	E

Tab. 7-1   Parameter in the "Operating mode" menu

7 Parameter settings

7.3 User

[→ Main menu → User]

7.3.1 Menu: Room temperature target

[→ Main menu → User → Room]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Room temperature target 1	5 – 40 °C	Target value 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	Target value 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	Target value 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

Tab. 7-2   Parameter in the "Room temperature target" menu

7.3.2 Menu: Reduce room temperature

[→ Main menu → User → Reduce]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Reduce room temperature	5 – 40 °C	Target value 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

Tab. 7-3   Parameter in the "Reduce room temperature" menu

7.3.3 Menu: Room temperature absent

[→ Main menu → User → Absent]

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

Tab. 7-4   Parameter in the "Room temperature absent" menu

7.3.4 Menu: Hot water temperature, target

[→ Main menu → User → Hot water]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access	
					BE	HF
Hot water temperature target 1	35 – 70 °C	Target value 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.	48 °C	0.5 °C	E	E
Hot water temperature target 2	35 – 70 °C	Target value 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	Target value 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

Tab. 7-5   Parameter in the "Hot water temperature, target" menu

7.3.5 Menu: 1 x hot water

[→ Main menu → User → 1x load]

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

Tab. 7-6   Parameter in the "1 x hot water" menu

7.4   Time Program

[→ Main menu → Time program]

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	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 heating circuit.	0 min	15 min	E	E
Absent	0 – 360 min	This operating mode can be used to set a one-off time for temporary regulation to the parametrised absence temperature.	0 min	15 min	E	E
Holiday	Date 1st day - Date last day	The internal heating circuit 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 Chap. 4.3	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 Tab. 4-3	15 min	E	E
Heating circuit auto. 2	See Chap. 4.3	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 Tab. 4-3	15 min	E	E
Hot water auto. 1	See Chap. 4.3	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 Tab. 4-3	15 min	E	E
Hot water auto. 2	See Chap. 4.3	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 Tab. 4-3	15 min	E	E
Circulation program	See Chap. 4.3	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 Tab. 4-3	15 min	E	E
Sound program	See Chap. 4.3 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: Min. noise reduction, 2: Med. noise reduction , 3: Max. noise reduction). Note: This program can therefore only be set by the installer.	0	15 min	N	E

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Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Time program reset	Party	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
	Absent					
	Holiday					
	Public holiday					
	Heating circuit auto. 1					
	Heating circuit auto. 2					
	Hot water auto. 1					
	Hot water auto. 2					
	Circulation pro-gram					
	Sound program					

Tab. 7-7   Parameter in menu: "Time program"

7.5 Settings

[→ Main menu → Settings]

7.5.1 Menu: Display settings

[→ Main menu → Settings → Display]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	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 cal-culated automatically from the date.			E	E
LCD bright-ness	10 – 100%	Brightness of the display	80%	10%	E	E
LCD illumina-tion duration	1 – 60 s	Lighting duration of the display	30 s	1 s	E	E

Tab. 7-8   Parameter in the "Display settings" menu

7.5.2 Menu: System

[→ Main menu → Settings → System]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Outdoor unit	No selection	Heat pump outdoor unit type	-	-	N	E
	14 kW					
	16 kW					
	18 kW					

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Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	HF
Indoor unit	No selection	Heat pump interior unit type.	-	-	N	E
	ETS(H/X) (B)16P30D	Adaptation of the set value important, as the device types have different defrosting logics.				
	ETS(H/X) (B)16P50D					
Heating sys- tem (*)	Floor heating	Heat exchanger type in the heating system.	☑	-	N	E
	Convector	If "Radiator" is selected and high feed temperatures are desired, it may make sense to increase the [Max. feed temperature] parameter to 65 °C ([→ Main menu → Configuration → Heating]).	☐			
	Radiator		☐			
Pump dT heat- ing (*)	3 – 10	Required temperature difference between return and feed temperature. If a minimum temperature difference is required for good heat distribution sys- tem operation in heating mode.	5	1	N	E
Pump dT cool- ing (*)	3 – 10	Required temperature difference between return and feed temperature. If a minimum temperature difference is required for good heat distribution sys- tem operation in cooling mode.	5	1	N	E
Glycol (*)	No glycol added	Adding glycol to the water circuit is recommended to guarantee frost pro- tection in the event of a power failure. If glycol has been added to the sys- tem, the RoCon+ controller setting must be adapted accordingly.	☑	-	N	E
	Glycol added		☐			
HP Power lim- itation	20 – 50 A	The permanent power limitation is useful to ensure maximum power con- sumption of the system. In some countries, legislation limits the maximum power consumption for room heating and domestic hot water.	50 A		N	E
Pump limit		This parameter defines the maximum pump speed. Under normal condi- tions, 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 and maintenance instructions Daikin Altherma EHS(X/H))	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%				

Tab. 7-9   Parameter in the "System" menu

7.5.3   Menu: External heat source

[→ Main menu → Settings → Ext. source]

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	HF
Config. ext. heat source		Setting of whether there is an additional external heat generator for do- mestic hot water preparation (DHW) and/or heating support (HZU).		-	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 prepara- tion	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

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Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	HF
Bivalence function (*)		The bivalence function is only relevant to operation of the optional heater booster due to a backup request (room heating mode).		-	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 = heating up T-bivalence: 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 mode). The temperature of the temperature sensor (information value Temperature$_A$) integrated in the heat pump outdoor unit is used for this.	0 °C	1 °C	N	E

Tab. 7-10   Parameter in the "External heat source" menu

7.5.4   Menu: Inputs/Outputs

[→ Main menu → Settings → Inputs/Outputs]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	HF
Smart grid		Evaluation of the SG signal (see Chap. 4.4).		-	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 frost 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 feed target temperature by 2 K and increase of the hot water target temperature by 5 K	☐			
	Eco	Increase of the feed target temperature by 5 K and increase of the hot water target temperature by 7 K	☐			
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 frost protection function, see Chap. 4.5.3)	☐			
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.	☐			

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Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Room thermo-stat		Configuration of a room thermostat with potential-free contacts connected to Daikin Altherma EHS(X/H) connection J16.		-	N	E
	No	Deactivated	☑			
	Yes	Only if [Interlink function] parameter = Off:	☐			
		Evaluation of the heating and cooling switching contacts at plug connection J16 on the RoCon BM2C PCB (only if none of the "Standby", "Reduce", "Summer", "Holiday", "Public holiday" or "Screed" is 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".				
		Open contacts: Only frost protection active.				
Interlink func-tion		Configuration for systems that are operated with 2 different feed target temperatures (see Chap. 4.4.4).		-	N	E
		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 Daikin Altherma EHS(X/H) plug connection J16.				
	Off	Deactivated	☑			
	On	Evaluation of the heating nd cooling switching contacts at plug connection J16 on the RoCon BM2C PCB.	☐			
		Activation of cooling mode only by switching the operating mode to "Cooling" (see Chap. 4.1).				
		Setting of the [Room thermostat] parameter is no longer evaluated.				
		▪ Open switching contacts: Only frost protection active				
		▪ "Heating" and "Automatic 1" / "Automatic 2" operating mode active during the switching cycles in day mode.				
		▪ Closed heating switching contact = IL1:				
		▪ It is regulated to the normal feed target temperature in accordance with the parameter settings in [→ Main menu → Configuration → Heating].				
		▪ Closed cooling switching contact = IL2:				
		▪ The system is regulated to the increased feed target temperature (normal feed target temperature + value of the [Interlink temperature increase] parameter. Priority if both switching contacts are closed!				
		▪ "Cooling" operating mode active.				
		▪ Closed heating switching contact = IL1:				
		▪ It is regulated to the normal feed target temperature in accordance with the parameter settings in [→ Main menu → Configuration → Heating].				
		▪ Closed cooling switching contact = IL2:				
		The system is regulated to the reduced feed target temperature (normal feed target 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 heating circuit (e.g. mixer circuit) of the system reports a heat request to the heat generator.	☐			
	Circulation re-quest	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 Chap. 4.3).	☑			
	Direct heating circuit request	Feeder pump – The output becomes active as soon as a heat requirement is pending for the direct heating circuit of the heat generator.	☐			
Func. burner blocking con-tact	Resistance val-ues	Selection of the functionality of the EXT switching contact (J8) (see Chap. 4.1)	☑	-	N	E
	Burner blocking contact		☐			

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Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
AUX switching function		Setting assigns the switching conditions for the potential-free AUX switching contact (toggle switch output A, see Chap. 4.4.4).		-	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 mode 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 Daikin Altherma EHS(X/H) (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 mode 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 frost protection function must be deactivated on the Daikin Altherma EHS(X/H) ([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

Tab. 7-11 Parameter in the "Inputs/Outputs" menu

7.5.5 Menu: Intelligent Storage Mgmt

[→ Main menu → Settings → ISM]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	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.	☑			
Heating support (HZU)		Heating support from hot water storage tank if minimum temperature is exceeded (see Chap. 4.4 and [Heating support hysteresis] parameter).		-	N	E
	Off	No heating support	☐			
	On	Heating support function active	☑			

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
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 [Feed temperature, target] + set [Heating support hysteresis] parameter value. Tdhw = current hot water storage tank temperature [Feed temperature, target] = currently active feed target temperature (see Chap. 4.5)	5	1	N	E
Heating support max. temp.	5 – 85 °C	The setting limits the target feed 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 Chap. 7.5.2.	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 Chap. 7.5.2.	80%	1%	N	E

Tab. 7-12   Parameter in the "Intelligent Storage Mgmt" menu

7.6   Configuration

[→ Main menu → Configuration]

7.6.1   Menu: Sensors

[→ Main menu → Configuration → Sensors]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Outside temperature sensor (*)	Integrated sensor	Selection of whether the sensor integrated in the outdoor unit or an optional outside temperature sensor is used to determine the target feed 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
Water pressure, min.	0.1 – 5.0 bar	Defines the minimum water pressure. Pressure monitor function (only with activated pressure sensor, [Water pressure sensor]= On): If the measured value falls below the set value, the Daikin Altherma EHS(X/H) is switched off and an error message generated.	0.5 bar	0.1 bar	N	E

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Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
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

Tab. 7-13   Parameter in the "Sensors" menu

7.6.2   Menu: Heating circuit config.

[→ Main menu → Configuration → HC config]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Weather-compensated		Selection of the method for determining the target feed temperature.		-	N	E
	Feed temperature, fixed	Feed temperature, fixed: Control to a fixed flow value (depending on operating mode)	☐			
	Weather-compensated	Weather-compensated: Weather-compensated control based on the heating curve	☑			
Frost protection temperature	Off	No frost 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 frost 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 mode.		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	☐			

Tab. 7-14   Parameter in the "Heating circuit config." menu

7.6.3   Menu: Heating

[→ Main menu → Configuration → Heating]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Heat limit, heating mode	Off / 10 – 40 °C	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
Heat limit, reducing mode	Off / 10 – 40 °C	Setting the heating limit for the "switch-off" of the heating circuit 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 dependence of the target feed temperature of the HC on the outside temperature (see Chap. 4.5).	0.5	0.1	E	E

Parameters	Setting range Min / Max	Description	Factory setting	Increment	Access BE	Access HF
Feed temperature, overshoot (*)	0 – 4	This function defines how far the water temperature may exceed the feed target temperature before the compressor is stopped. The compressor resumes operation when the feed temperature falls below the target feed temperature. This function ONLY applies to heating mode.	3	1	N	E
Feed temperature, heating mode	20 – 90 °C	Only if [Weather-compensated] parameter = Weather-compensated: Setting of the target feed temperature for the heating circuit 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 = Weather-compensated: Setting the target feed temperature for the heating circuit during the setback time for the operating mode: "Automatic 1", "Automatic 2", "Heating".	10 °C	1 °C	E	E
Max. feed temperature	20 – 90 °C	The setting limits the feed temperature (measured at t_{V2}) with active heating support function. The determined target feed temperature of the HC 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 floor 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 flow target temperature of the heating circuit is limited to the minimum value set here.	10 °C	1 °C	N	E
Room influence		Only with the room control connected and assigned to the HC: The setting of what influence the deviation of the room temperature measured by EHS157034 from the current target value (see Chap. 4.2) has on the feed temperature.		1 K	E	E
	Off	Purely weather-compensated feed temperature control	☑			
	0 K	Purely weather-compensated feed 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 feed temperature (parallel shift of the heating curve) by the set factor. If the measured temperature lies 2 K below the target value, the target feed temperature is increased by 2x the set value.	☐			
Room sensor adaptation	-5 – +5 K	Only with room control 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 EHS157034 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
Heating curve adaptation		The function can only be carried out with a room controller 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 target value for the following 4 hours. The heating curve that is required to maintain this room temperature is determined from the target feed temperature by the controller. 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: Feed target 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

7 Parameter settings

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
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 (see Chap. 4.5.4)			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.	☐			

Tab. 7-15   Parameter in the "Heating" menu

7.6.4   Menu: Cooling

[→ Main menu → Configuration → Cooling]

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 feed target temperature at the start of cooling mode (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 feed target 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 mode starts with the highest cooling feed target 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 feed target temperature [Target flow cooling, max.] is specified (setting condition: "Cooling" operating mode).	35 °C	1 °C	E	E
Feed temperature lower limit	5 – 25 °C	Setting of the absolute lower limit of the cooling feed target temperature. Limitation acts if a lower cooling feed target temperature is determined from other parameter settings. If optional frost 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 feed target temperature (fixed value) for active cooling mode.	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 feed target temperature is reduced by the set value (see [Interlink function] parameter). Request, e.g. by HP convector.	5 K	1 K	N	E

Tab. 7-16   Parameter in the "Cooling" menu

7.6.5   Menu: Hot water

[→ Main menu → Configuration → DHW]

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 target value in the [Hot water temperature target 1] parameter.	60 min	10 min	N	E

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	HF
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 pre- paration is operated after this blocking time has elapsed at the earliest.	30 min	10 min	N	E
Hot water hys- teresis	2 – 20 K	Hot water charging switching threshold	7 K	1 K	E	E
		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] before the heat pump for hot water charging is to be activated.				
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 Chap. 4.5).	50 min	1 min	E	E
Solar function		Used to reduce the target temperature of the hot water storage tank in or- der to increase the yield of a connected solar system. The target value of the hot water temperature is set as a function of the outside temperature and in compliance with the safety functions. The following parameters are also defined: Hot water hysteresis = 5 K; building insulation = Normal		-	E	E
	Off	Deactivated	☑			
	On	Activated if the switching contact EXT (J8) 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 switch- ing time program for domestic hot water preparation.	☑			
	On	Optional circulation pump is controlled according to the [Circulation pro- gram] 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 = set- ting value each 15 min).				
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

Tab. 7-17   Parameter in the "Hot water" menu

7.6.6 Menu: Additional programs

[→ Main menu → Configuration → Addition]

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 relays 1 – 9 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 (internal heating circulation pump), output pump				
	Output J14	Output J14 (circulation pump), mixer "Open"				
	Output J2 contact A	Contact A on output J2 (switching valve 3UVB1), mixer "Closed"				
	Output J2 contact B	Contact B on output J2 (switching valve 3UVB1)				
	Output J12 3UV DHW open	Output J12, switching valve 3UV DHW "Closed"				
	Output J12 3UV DHW closed	Output J12, switching valve 3UV DHW "Open"				
	Connection J3 N/O contact B	Connection J3 (potential-free relay: normally open B-B1) – AUX				
	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 automatic ventilation of the Daikin Altherma EHS(X/H) and the connected HC.		-	N	E
	Off	Deactivated	☑			
	On	Start of the ventilation function	☐			
Screed		Function for screed drying		-	N	E
	Off	Deactivated	☑			
	On	The feed target temperature is regulated according to the set [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 feed target temperature of the program of the first day (see Chap. 4.5.7).	☐			
Screed program	10 – 70 °C per heating day	Setting of the sequence program of the screed heating. An individual feed target 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 target value setting "Off" (see Chap. 4.5.7).	See Chap. 4.5.7	1 °C	N	E

Tab. 7-18   Parameter in the "Additional programs" menu

7.7   Information

[→ Main menu → Information]

7.7.1   Overview

[→ Main menu → Information → Overview]

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	Access HF
Mode	No request	Current mode of the heating pump.	-	-	S	S
	Heating					
	Cooling					
	Domestic hot water prepara- tion					
	Defrost					
External re- quest		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 frost 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 thermo- stat/Interlink		Room thermostat/Interlink:	-	-	S	S
	Off	If [Interlink function] = On: frost protection only; otherwise: Off				
	Request	If [Room thermostat] = Yes				
	No heat request	If [Room thermostat] = Yes				
	IL1	If [Interlink function] = On: Normal feed target temperature				
	IL2	If [Interlink function] = On: In heating mode increased feed target temperat- ure, in cooling mode reduced feed target temperature				
Quiet mode		Status of the Quiet mode	-	-	S	S
Heating sup- port	Off	Status of the heating support	-	-	S	S
	On					
Status, heat circulation pump	Off	Output of the internal heating circulation pump (on/off)	-	-	S	S
	On					
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 posi- tion	-	The current position of the 3-way mixer valve 3UVB1 is displayed in %.	-	1%	S	S
3UVDHW pos- ition	-	The current position of the 3-way mixer valve 3UV DHW 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 version of the operating unit are displayed.	-	-	S	S
Software no. controller	-	The software number and version of the controller PCB are displayed.	-	-	S	S
Glycol	No glycol added	No glycol present in the heating circuit				
	Glycol added	Glycol present in the heating circuit				

Tab. 7-19   Parameter in the "Overview" menu

7.7.2 Values

[→ Main menu → Information → Values]

Parameters	Unit	Description	Factory setting	Incre- ment	Access BE	Access HF
Feed temperature, current	°C	The current feed temperature of the heat generator (t_{V1}) is displayed in °C.	-	1 °C	S	S
Feed temperature, target	°C	The current target temperature of the heat generator is displayed in °C.	-	0.1 °C	S	S
Average outside temperature	°C	The current outside temperature is displayed in °C.		0.1 °C	S	S
Hot water temperature, current	°C	The current temperature of the hot water storage tank is displayed in °C. 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 in °C. If no hot water function is activated, "----" is displayed. Here, the current target value 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 in °C. 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 (t_{V2} is displayed with active heating support, otherwise t_{V1}) in °C.	-	0.1 °C	S	S
Feed temperature HC target	°C	The (feed) target temperature of the direct HC is displayed in °C.	-	0.1 °C	S	S
Feed temperature PHX	°C	The current feed temperature of the heat generator in the outdoor unit is displayed.	-	0.1 °C	S	S
Feed temperature BUH	°C	The current feed temperature 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

Tab. 7-20   Parameter in the "Values" menu

ℹ 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]

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

Tab. 7-21   Parameter in the "Water pressure" menu

7.8   Error

[→ Main menu → Error]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access 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 opera-tion status	Inactive	Activation of the fixed feed temperature control (for diagnostic purposes).	☑	-	E	E
	Active		☐			
Temperature, manual opera-tion	20 – 80 °C	Required feed temperature for manual operation.	50 °C	-	E	E

Tab. 7-22   Parameter in the "Error" menu

7.9   Terminal

[→ Main menu → Terminal]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Terminal ad-dress	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
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 Chap. 4.8, [Bus ID heat generator] parameter).	☐	-		
Mixer #X	☐ / ☑	With a detected device only: Activation switches to the mixer module with the bus ID X (see Chap. 4.8, [Heating circuit assignment] parameter).	☐	-	E	E

Tab. 7-23   Parameter in the "Terminal" menu

7.10   Statistics

[→ Main menu → Statistics]

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	Access HF
Energy HP, cooling	-	The amount of heat delivered by the heat pump for cooling operation is dis-played in kWh (per month).	-	kWh	S	S
Energy HP, heating	-	The amount of heat delivered by the heat pump for heating operation is displayed in kWh (per month).	-	kWh	S	S
Energy, hot water	-	The amount of heat delivered by the heat pump for domestic hot water pre-paration is displayed in kWh (per month).	-	kWh		
Energy HP total	-	The total amount of heat delivered by the heat pump is displayed in kWh (per month).				
Electr. energy total	-	The total electrical power consumed is displayed in kWh (per month).				
Ext. energy source, hot water	-	The volume of heat of the additional heat generator for domestic hot water preparation in kWh is displayed.	-	kWh	S	S

7 Parameter settings

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	Access HF
Ext. energy source, heat-ing	-	The volume of heat of the additional heat generator for heating mode in kWh is displayed.	-	kWh	S	S
Runtime, com-pressor	-	The running time of the refrigerant compressor in h is displayed.	-	1 h	S	S
Runtime, pump	-	The runtime of the internal heating circulation pump is displayed in h.	-	1 h	S	S
Reset	-	All parameters listed in the Statistics menu are reset to "0". (Specialist code required).	-	-		

Tab. 7-24   Parameter in the "Statistics" menu

> **INFORMATION**
>
> Depending on the device type, the system configuration and the status of the device software, individual listed in-formation parameters cannot be displayed or can be dis-played at a different parameter level.

7.11 Configuration wizard

Only after hardware reset.

Parameters	Setting range Min / Max	Description	Factory setting	Incre- ment	Access BE	Access HF
Direct circuit configuration	0 – 15	Setting of the heating circuit ID for the direct heating circuit of the Daikin Altherma EHS(X/H). The heating circuit ID must be unique throughout the entire RoCon system. There must be no overlap with the HC IDs of op-tional 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 integ-rated in the RoCon system. Several heat generators integrated in the heat-ing system must be regarded as a special application. If necessary, contact a service technician.	0	1	N	E
Time master	No / Yes	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 ac-tivated on another controller in the RoCon system.	☐ No ☑ Yes	-	N	E

Tab. 7-25   Parameter in the "Configuration Wizard" menu

8   Faults and malfunctions

⚠ **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 Daikin Altherma EHS(X/H) indicate an error by red illumination of the status display, the appearance of the error screen on the display (see Chap. 8.4) and the appearance of the error symbol on the start screen. An integrated error memory stores up to 15 error messages (see Chap. 8.3).

ℹ **INFORMATION**

A list of all error codes can be found in the Daikin Altherma EHS(X/H) installation and maintenance instructions, chapter "Errors, malfunctions, messages".

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 Chap. 8.1. If emergency operation has not been permitted, 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 Chap. 8.1. If emergency operation has not been permitted, it can be started from the current error screen.

ℹ **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 Chap. 4.5.9).

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 Daikin Altherma EHS(X/H) (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:

EHS157034 [Software no. B1/U1]

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 feed 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 feed temperature is set by [Temperature, manual operation] parameter.

With hydraulically controlled priority operation for domestic hot water preparation, it must be ensured that the feed target 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 Service.

The protocol lists

- ▪ the error code,
- ▪ the PCB associated with the error (A1P or BM2, see Daikin Altherma EHS(X/H) Installation and maintenance instructions)
- ▪ Date and time when the error occurred.

8.4   Error screen
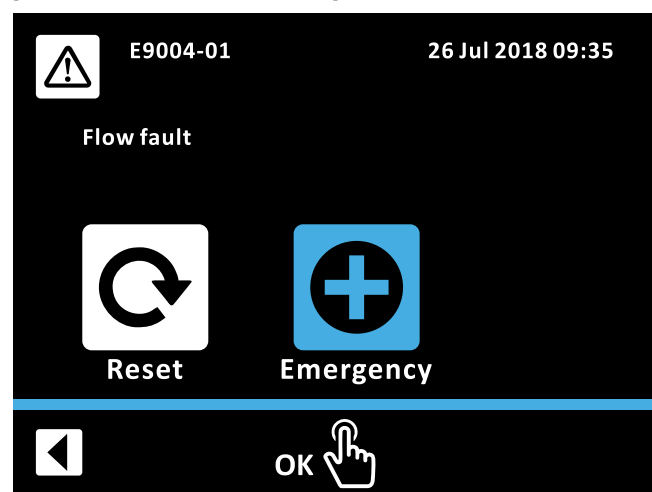
[→ Main menu → Error → Screen]

Fig. 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 Chap. 8.1). 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 Daikin Altherma EHS(X/H) Reference manual for the installer, chapter "Errors, malfunctions, messages".

9   Mixer module

In addition to the direct HC, the heating system can be extended by additional HCs using 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 Chap. 4). Only a limited selection of parameters and functions is available (see Chap. 9.2).

The optional 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+ controller installed in the heat generator or a EHS157034 room station. The mixer module can be operated in terminal mode from both operating units (see Chap. 4.8).

A unique device ID (≥ 1) must be set on the address switch of the mixer module (see Fig. 9-1) 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 Tab. 4-7]).

Fig. 9-1   Setting the device ID for the EHS157068 mixer module

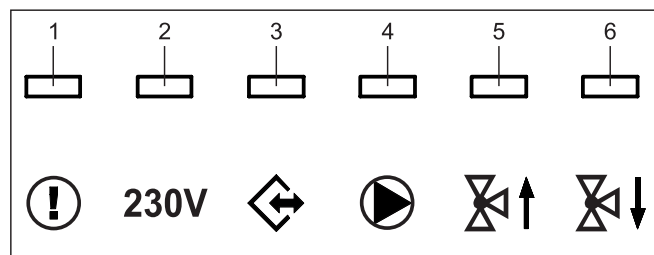The current operating status can be determined directly on the EHS157068 mixer module (see Fig. 9-2).

Fig. 9-2   Explanation of symbols for EHS157068 status displays

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

Tab. 9-1

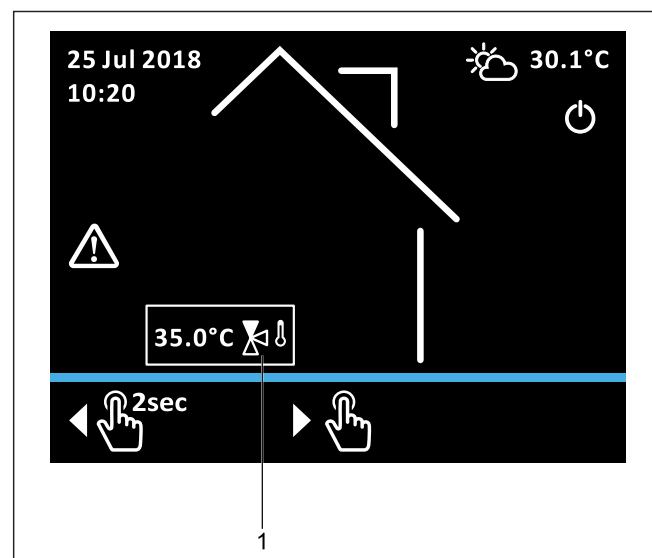## 9.1   Mixer module start screen (terminal function)

Fig. 9-3   Mixer module start screen

The start screen for the mixer module (Fig. 9-3) is a reduced version of the RoCon+ HP start screen. The meaning of the icons is the same Tab. 3-3, but the mixer temperature is the only system temperature displayed (Fig. 9-3, item 1).

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
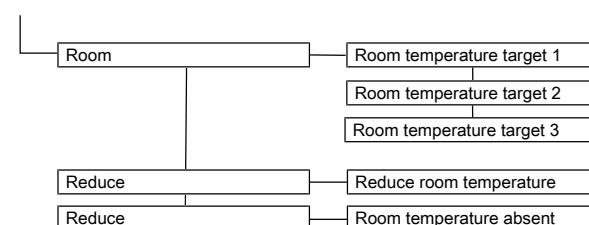
see Chap. 6.1.

Menu: User

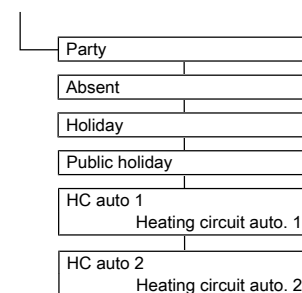*Fig. 9-4   Parameter in menu: "User"*

Menu: Time program

Fig. 9-5   Parameter in menu: "Time program"

9 Mixer module

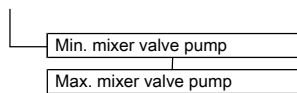**Menu: Access**

Menu: System

Min. mixer valve pump

Max. mixer valve pump

Fig. 9-6   Parameter in menu: "System"

Menu: Sensors

Outside temperature sensor

Outside temperature correction
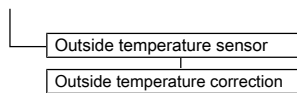
Fig. 9-7   Parameter in menu: "Sensors"

Menu: HC config

Weather-compensated

Frost protection temperature

Building insulation
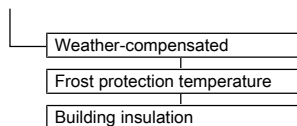
Fig. 9-8   Parameter in menu: "HC config"

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
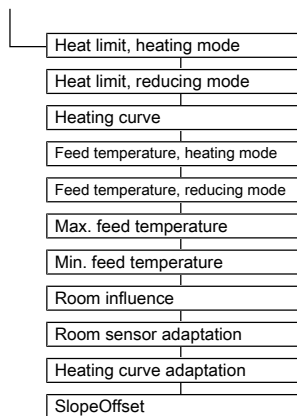
Fig. 9-9   Parameter in menu: "Heating"

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
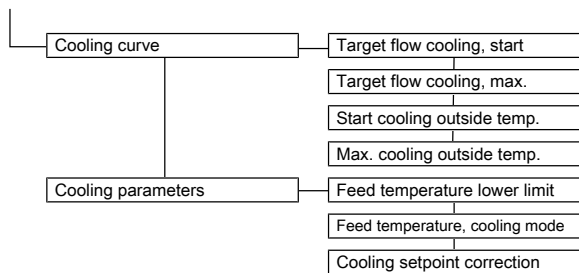
Fig. 9-10   Parameter in menu: "Cooling"

Menu: Special

Relay test

Screed → Screed drying

Program → Screed program
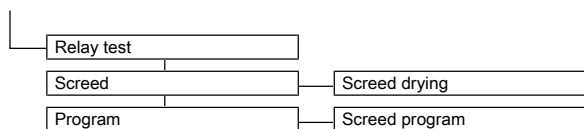
Fig. 9-11   Parameter in menu: "Special"

Menu: Information

Values → Average outside temperature

Mixer temperature, current

Mixer temperature, target

Mixer pump status

PWM mixer pump

Mixer valve status

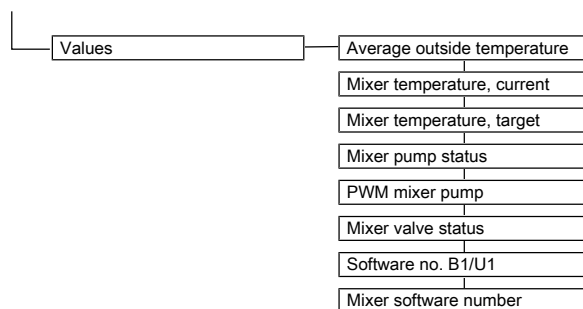Software no. B1/U1

Mixer software number

Fig. 9-12   Parameter in menu: "Information"

9.3   Mixer module parameter settings

The parameters available for the mixer module are largely identical to the parameter described in Chap. 7. Tab. 9-2 lists the additional parameters available for the mixer module.

Parameters	Setting range Min / Max	Description	Factory setting	Incre-ment	Access BE	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 feed target temperature on the Daikin Altherma EHS(X/H) in comparison with the feed target temperature determined for the mixer circuit.	5 K	1 K	N	E
Mixer temperature, current	0 – 100 °C	[→ Main menu → Information → Values] Current feed temperature in the mixer circuit	-	-	S	S
Mixer temperature, target	0 – 90 °C	[→ Main menu → Information → Values] Current target feed temperature in the mixer circuit	-	-	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

Tab. 9-2   Parameters of the mixer module

10   Glossary

Mode	Request by the user or the control unit for the function of the heat generator (e.g. room heating, domestic hot water generation, standby, etc.)
Backup requirement	Operating situation in which the required feed 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 Daikin Altherma EHS(X/H) in generating heat.
Backup heater	Optional electric heater booster for general support of the Daikin Altherma EHS(X/H) during heat generation.
Heating curve	Mathematical relationship between the external temperature and the feed temperature setpoint in order to achieve the required room temperature at all external temperatures.
Refrigerant	A substance used for heat transfer in the heat pump process. At low temperature and low pressure, heat is absorbed and at high temperature and a high pressure, heat is emitted.
Anti-legionella system	Periodic heating of the storage water to >60 °C for the preventative elimination of pathogenic bacteria (so-called legionella) in the hot water circuit.
Off-peak mains connection (HT/NT)	A special mains connection to the energy supplier, which 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.
Control unit	Device electronics that are used to control the processes for the heat generation and heat distribution of the heating system. The control unit 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 program selection keys, rotary buttons and display.
Return flow	Part of the hydraulic circuit that directs the cooled water from the radiators in the rooms back to the heat generator via the piping system.
Switching time program	Program for setting the times on the control unit 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.
Flow	Part of the hydraulic circuit that diverts the heated water from the heat generator to the heating surfaces.
Domestic hot water circuit	This is the water circuit in which cold water is heated and diverted to the hot water tap.
Domestic hot water generation	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-dependent feed temperature control	A suitable feed temperature is determined from the measured value for the external temperature and a defined heating curve; this temperature is used as the target value 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 feed temperature setpoint in the case of an inadequate or inefficient heat pump process.

11 User-specific settings

11.1 Switching time program

The factory settings of the timer programs are indicated in Chap. 4.3.

Enter your timer settings in the table below.

		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						

Tab. 11-1 Individual settings in the heating 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						

Tab. 11-2 Individual settings in the hot water timer programs

		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						

Tab. 11-3 Individual settings of the switching time program of the circulation pump

11 User-specific settings

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

Tab. 11-4   Individual settings of the sound program

11.2 Parameters

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

Menu path	Parameters	Old value	New value	Date	Comments

Tab. 11-5   Individual parameter changes

11.3 Data bus addresses

RoCon device	Terminal address	Comments

Tab. 11-6   Data bus addresses in the RoCon system

12   Notes

DAIKIN

List of keywords

DAIKIN EUROPE N.V.