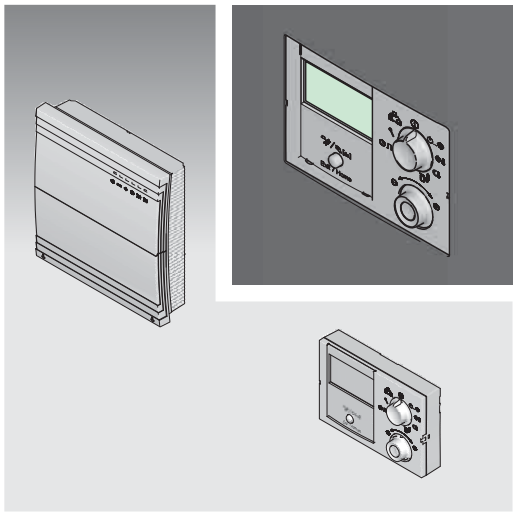
For the qualified installer

a member of DAIKIN group

ROTEX

ROTEX Controller RoCon HP, RoCon U1, RoCon M1 Operating instructions



Electronic controller for heat pumps

CE

For the types

HPSU compact 304
HPSU compact 308
HPSU compact 508
HPSU compact 516

GB
Output 01/2016

List of contents

1 Safety

1.1 Observing instructions

These instructions are a >> ***translation of the original version*** << in your language.

All the activities required for operation and setting the parameters are described in this instruction manual. All parameters needed for trouble-free operation have been configured at the factory.

- Please read through this manual carefully before operating the heating system or before adjusting the settings for it.
- Make a note of the preset values before you make any changes to the unit configuration.

Relevant documents

– ROTEX HPSU compact:
  – Installation and maintenance instructions
  – Operating instructions for the user/owner
  – Commissioning checklist
  – The operating manual for the user/owner
– External unit for ROTEX HPSU compact; the associated installation and operating instructions.
– When connecting to a ROTEX solar system; the associated installation and operating instructions.
– If a ROTEX HP convector is connected; the associated installation and operating instructions.
– If a different ROTEX heater or optional accessories are connected; the associated installation and operating instructions.

The guides are included in the scope of supply for the individual units.

1.2 Warning signs and explanation of symbols

1.2.1 Meaning of the warnings

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

DANGER!

Draws attention to imminent 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 may cause damage to property and the environment.

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 burning or scalding

1.2.2 Validity

Some information in this manual has limited validity. The validity is highlighted by a symbol.

- Only valid for ROTEX HPSU compact with cooling function
- Valid/available only if a room station (RoCon U1) is connected
- Valid/available only if a mixer module (RoCon M1) is connected

1.2.3 Order number

Notes related to order numbers are identified by the shopping cart symbol .

1.2.4 Handling instructions

- Handling instructions are shown as a list. Actions of which the sequential order must be maintained are numbered.
  ➔ Results of actions are identified with an arrow.

Display readouts of the RoCon-Controller

Entry into a setting procedure

Exit from a setting procedure

Certain screen displays or menu points may differ from those shown in these instructions due to country or equipment variations in the ROTEX HPSU compact or the status of the user logged onto the Controller.

1.3 Avoiding danger

The ROTEX HPSU compact is state-of-the-art and is built to meet all recognised technical requirements. However, improper use may result in serious physical injuries or death, as well as property damage.

To avoid danger, only operate the ROTEX HPSU compact:
– as stipulated and in perfect condition,
– with an awareness of safety and the hazards involved.

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

WARNING!

This equipment must 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 therefrom. **Children** must not play with the equipment. Cleaning or **user maintenance** must not be carried out by **children** without supervision.

1.4 Proper use

The RoCon HP may be used only in ROTEX HPSU compact heat pumps that have been approved for ROTEX the regulating system RoCon. The ROTEX RoCon HP may only operated only according to the indications in this manual.

Any other use outside the intended use is considered as improper. The operator alone shall bear responsibility for any resulting damage.

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

2 Product description

The Controller RoCon HP is part of the ROTEX HPSU compact.

It consists of the **RoCon BM1** control panel to which the actuators and sensors, as well as other components in the ROTEX RoCon regulating system, are connected, and the **RoCon B1** operating unit.

In this instruction manual we explain just the functions and setting possibilities of the Controller. More information on the ROTEX HPSU compact and other equipment components can be found in the supplementary documents.

The electronic, digital Controller is able to automatically control all heating, cooling and hot water functions for a direct heating circuit, a storage tank charging circuit and optionally connectable mixer module, depending on the heating unit in question.

It is responsible for all safety management functions of the ROTEX HPSU compact. This executes a safety switch-off in the event of a water shortage or undefined operating states. A corresponding fault message shows the operator all the information for fault causes.

All function settings for the ROTEX HPSU compact and the optional RoCon devices connected via the data bus are carried out with the operating elements of the integrated RoCon B1 control panel and displayed in clear text display on a coloured backlit display.

The regulation data bus can be used to connect the ROTEX HPSU compact to the following optional equipment:
– Room station **RoCon U1** (🛒 **15 70 34**).
– Mixer module **RoCon M1** (🛒 **15 70 68**).

In addition, the RoCon HP control unit 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 (inclusion of an additional source of heat such as a wood-burning boiler or solar installation).

The potential-free AUX switching contact can be used to carry out different control functions in conjunction with external devices (demand 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 demand, SMART GRID- and low-tariff EVU functions(1.

(1 Energy supply company (EVU) sends signals that are used for controlling the power mains loading, and which have an influence on the cost of the power and availability.

With the optional outside temperature sensor **RoCon OT1** (🛒 **15 60 70**), which is installed on the north side of the building, you can optimise the weather-dependent flow temperature control.

If the optional gateway **RoCon G1** (🛒 **15 70 56**) is installed and connected to the Internet, the ROTEX HPSU compact can be conveniently monitored and operated by remote control using a mobile phone (App).

The Controller RoCon HP contains a timer which can be used to set:
– 2 individually-adjustable timer programmes (2 for room heating and room cooling ❄ (direct heating circuit),
– 2 individually-adjustable timer programmes for hot water generation,
– 1 individually-adjustable timer programme for an optional circulation pump.

(2 Use of the timer programme for room cooling only possible in combination with a connected room thermostat

Initial commissioning of the heating system is described in the installation manual for the ROTEX HPSU compact.

Certain menu items in the Controller RoCon HP are only accessible to the specialist heating technician. This security measure ensures that no undesirable malfunctions arise during operation of the system through incorrect settings.

The RoCon U1 room station has the same operating panel as the ROTEX HPSU compact B1 operating element integrated in the RoCon.

All settings for the allocated heating circuit can be carried out in the same way as the operating unit. With activated terminal function, all operating possibilities that are available on the integrated operating unit are available, with the exception of certain special functions (e.g. Manual Operation).

An RoCon M1 connected mixer module will also be operated, after appropriate allocation, by the RoCon B1 control unit and/or the RoCon U1 room station.

3 Operation

3.1 General

DANGER!

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

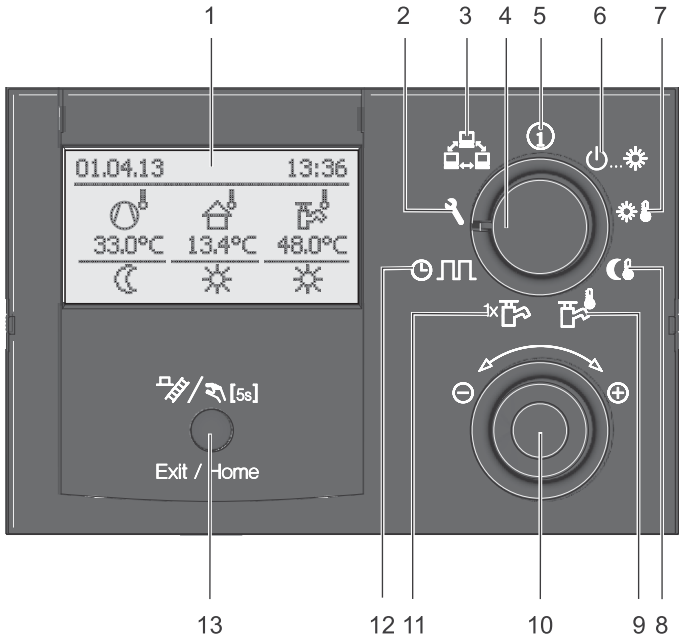
- The **displays and** the **buttons** on the Controller **must be protected from the** effects of **moisture**.
- To **clean** the Controller use a **dry cotton cloth**. Using aggressive **cleaning agents** and other **liquids** can cause **damage to equipment or lead to an electric shock**.

Maximum energy utilisation

The most effective energy utilisation is achieved by the ROTEX HPSU compact at the lowest possible return flow and hot water temperatures.

If an external heat generator (e.g. the optional Backup Heater) is used at inflow target temperatures of over 50 °C, the efficiency (COP) of the ROTEX HPSU compact can be affected negatively (depending on the outside temperature).

3.2 Display and operating elements



1	*Clear text display*	*7*	*Setting: Set Temp Day*
2	*Setting: Configuration*	*8*	*Setting: Set Temp Night*
3	*Setting: Remote Param*	*9*	*Setting: DHW Set Temp*
4	*Rotary switch*	*10*	*Rotary button*
5	*Setting: Info*	*11*	*Setting: DHW Install*
6	*Setting: Operating Mode*	*12*	*Setting: Time Program*
		13	*Exit button*

Fig. 3-1 Arrangement of display and operating elements

3.2.1 Display

All the operating steps are supported by appropriate displays in a clear text display on a coloured background.

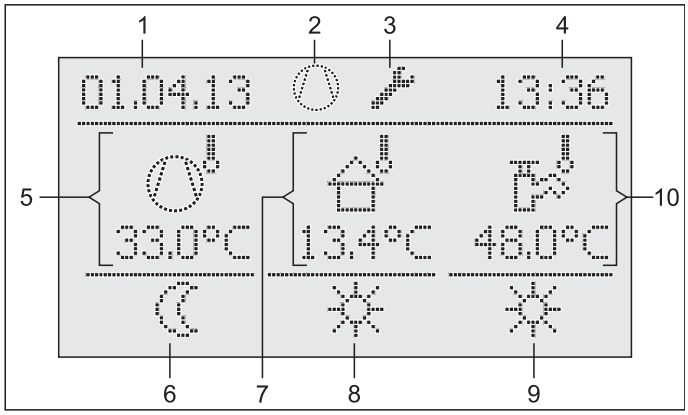
Menu navigation is available in 7 different languages (see section 3.4.8).

Malfunctions are generally indicated by a fault code and a clear text fault message on the display.

For troubleshooting instructions refer to chapter 7.

The colour of the backlighting indicates the operational status and the operational mode:

White:	Standard lighting, normal operational display.
Red:	Fault status, depending on the type of fault, the ROTEX HPSU compact continues to function with restrictions.
Green:	Operating mode with operator authorisation.
Blue:	Operating mode with expert technician authorisation.



1 Date display
2 Status of refrigerant compressor
3 Status display (e.g. Technician access rights active)
4 Display time
5 Current flow temperature
6 Status heating circuit
7 Current outdoor temperature
8 Active operating mode
9 Status of hot water generation
10 Current storage tank temperature

Fig. 3-2 Display of the Controller - Standard display

Explanation of symbols

Item fig. 3-2	Symbol	Explanation
2		Flashing: Heat pump demand active Permanently on: Refrigerant compressor is working
2		No connection to the external heat pump unit
3		Access Rights Expert active (see section 3.6.1)
2 / 3		Air Purge active (see section 3.6.10)
2 / 3		Terminal function active (see section 3.4.9)
2 / 3		Frost protection function active (see section 3.6.5)
2 / 3		"Party" temporary timer programme active (see section 3.4.7)
2 / 3		"Away" temporary timer programme active (see section 3.4.7)
2 / 3		"Holiday" temporary timer programme active (see section 3.4.7)
2 / 3		"Vacation" temporary timer programme active (see section 3.4.7)
2 / 3		Screed Program active (see section 3.6.13)
5		Direct heating circuit – Under normal conditions, the current inflow temperature $t_{V, BH}$ is displayed. – In the case of no demand from the heat pump, the abbreviation "ES" is displayed instead of the current flow temperature. ➔ The control system has switched to **energy saving mode** (see section 3.4.2). Superfluous electronic components are switched off.
5		Mixer circuit (M1) The current inflow temperature of the selected heating circuit is displayed.
5		Room temperature sensor (U1) The current room temperature is displayed.
6		Heating circuit status – Heating circuit active (room heating function) – Heating circuit active (room cooling function) – Heating circuit not active (currently no heat transfer in the heating circuit)
7		Outside temperature sensor The current outside temperature is displayed.
8		Current operating mode (see section 3.4.2)
		Standby active.
		Reducing active.
		Heating active.
		Cooling active.
		Summer active.
		Automatic 1 active.
		Automatic 2 active.
9		Domestic hot water generation active Domestic hot water generation not active
10		Domestic hot water circuit status The current storage tank temperature t_{DHW1} is displayed.

Tab. 3-1 Explanation of display symbols

3.2.2 Operating elements

CAUTION!

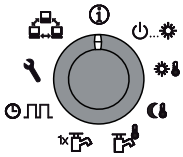
Never operate the operating elements on the controller with a hard, pointed object. This can cause damage and can cause the control unit to malfunction.

If special key combinations or extended key pushes are required for certain function, a separate note is made in each specific section of this description.

Rotary switch

The rotary switch is used to gain rapid direct access (main function level) to frequently required functions and setting options.

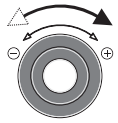
Independent of the setting of the rotary switch, the ROTEX HPSU compact operates in accordance with the operating mode set in the ***"Operating Mode"*** switch position or that has been activated by a special programme.

Action	Result
Rotating 	Direct selection of the main function level allocated to this switch position.

Tab. 3-2 Function of rotary switch

Rotary switch

The rotary switch can be used to navigate in the individual levels, setting values can be selected, changed and these changes can then be accepted by pressing briefly.

Action	Result
Rotating 	To the right (+): Increased regulation To the left (–): Reduced regulation
Pressing 	Confirm, accept, selection and execute the function.

Tab. 3-3 Functions of the rotary switch

Exit button

This button can be used to jump back to the previous display within a menu display or a function / input can be interrupted.

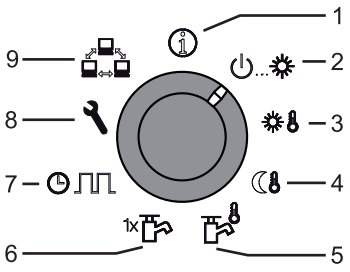
This button can also be used to call up the special level (see section 3.5).

Action	Result
Brief pressing. 	– Jump back to the previous display or previous level or – Cancellation of a special function or an active temporary timer programme.
Pressfor more than 5 secs. 	– Special level is called up.

Tab. 3-4 Functions of the exit button

3.3 Operating concept

The operating concept for controlling the RoCon HP is structured in such a way that the frequently required settings options are accessible quickly and directly at the **main function level** (selection using the **rotary switch**), while the less frequently required settings options are arranged at a lower parameter level.



1 Info (section 3.4.1)
2 Operating Mode (section 3.4.2)
3 Set Temp Day (section 3.4.3)
4 Set Temp Night (section 3.4.4)
5 DHW Set Temp (section 3.4.5)
6 DHW Install (section 3.4.6)
7 Time Program (section 3.4.7)
8 Configuration (section 3.4.8)
9 Remote Param (section 3.4.9)

Fig. 3-3 Illustration of main function level (rotary switch position)

Certain functions and parameters are restricted by access authorisation and can only be adjusted by the heating technician (see section 3.6.1).

In normal operating mode the rotary switch should be in position ⓘ.

After switching on and successful initialisation, the display automatically shows the standard display with rotary switch position ⓘ.

In the first commissioning, the setting for language selection is displayed first.

- Select the language using the rotary switch.
- Confirm the changes with a brief push of the rotary switch.

Adaption to the special installation configuration is carried out in the ***"Configuration"*** rotary switch position (see section 3.4.8).

When the system is switched on, based on the stipulations set in the Controller RoCon HP, it fully automatically regulates the operation of the

– room heating, room cooling and the
– sanitary hot water generation.

Independent of the setting of the rotary switch, the ROTEX HPSU compact operates in accordance with the operating mode set in the ***"Operating Mode"*** ⏻...☼ switch position or that has been activated by a special programme.

If the user enters a value manually, this setting remains active until the user changes it or until the programme clock forces another operating mode.

The operating mode can be affected by additional functions such as:
– Weather-controlled flow temperature regulation
– Switching time program
– Setting the temperature target value
– Setting at the room station
– Setting on room thermostat
– Switch status at EXT input (external operating mode switchover)
– Switch status at EBA input (external demand request)
– Quite Mode
– Interlink fct
– Switch status at SMART GRID input (EVU function SMART GRID)
– Switch status at EVU input (EVU function HT/NT (low tariff) or SMART GRID)
– Defrosting function
– Frost protection function
– Screed function
– Air Purge
– Manual Operation

Button block

The operating panel on the RoCon HP can be blocked to prevent inadvertent actuation (see fig. 3-4).

Unlocking can be carried out in the same way.

The prerequisite for this function is that, in the level *"Setup"*, the parameter [Keylock Function] is set to "On" (see chapter 6.2.1 tab. 6-1).

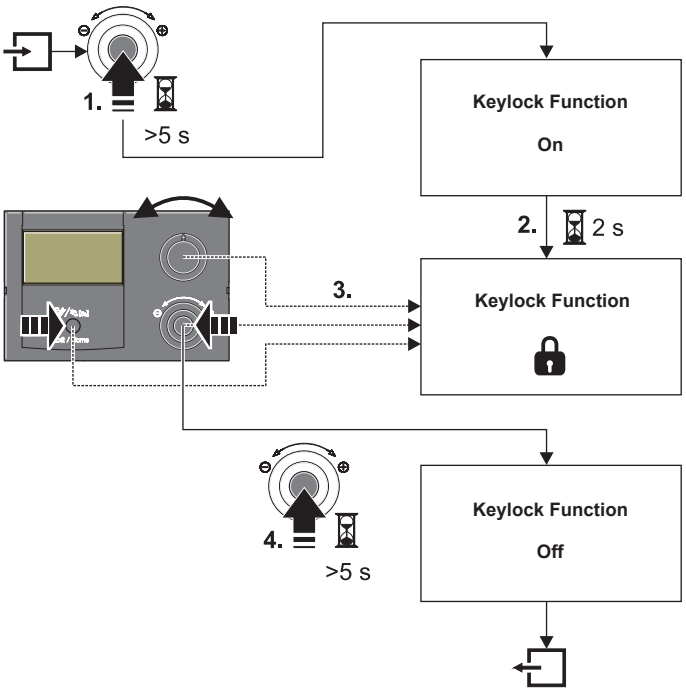


Fig. 3-4 Activating button lock (1.) and deactivating (4.)

3.4 Basic functions and operating modes

If the storage temperature falls below a certain minimum value, the safety settings of the ROTEX HPSU compact prevent the operation of the heat pump in the case of low external temperatures:
– **External temperature < -2 °C**, minimum **storage temperature = 30 °C**
– **External temperature < 12 °C**, minimum **storage temperature = 23 °C**.

Without backup heater:
The storage tank water must be heated to the minimum required storage temperature by an external heater.

With Backup Heater (BUxx):
With an outdoor temperature < 12 °C and a storage tank temperature < 35 °C, the Backup Heater (BUxx) is switched on automatically on in order to heat up the storage tank water to at least 35 °C.

- In order to **accelerate the heating process** with the **back-up heater**, **temporarily**
  – Parameter **[Function Heating]** = "1" and
  – Set parameter **[Power DHW]** to the **maximum value of the back-up heater**.
  – Set rotary switch to the operating mode and Parameter [1x Hot Water] to "On".

Automatic defrosting function

At low outdoor temperatures and corresponding humidity values, the external heat pump unit may ice up. This icing impairs efficient operation. The system detects this condition automatically and starts the defrosting function.

During the defrosting function, heat is drawn from the hot water storage tank and the backup heater is turned on if required. Depending on the heat demand for the defrosting function, heating of the direct heating circuit may be interrupted temporarily.

After 8 minutes at most, the system returns to normal mode.

3.4.1 System information (Info)

In this rotary switch position, the rotary switch can be used to call up all the system temperatures, the type of ROTEX HPSU compact, various software information and the operating statuses of all system components, one after the other. The number of displayed parameters depends on the connected components.

No settings can be made to these values.

- Place the rotary switch in the ***"Info"*** position.
  ➔ Standard display is shown (see fig. 3-2).
- Press the rotary switch briefly.
  ➔ The parameter overview is displayed.
- Select the desired information level with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ The value is displayed (for example, see fig. 3-6).
- Select the individual information with the rotary switch.

More detailed explanations and possible setting values for this rotary switch setting can be seen in tab. 3-5 and in chapter 6.10.

Display operating data overview

The current operating data for the ROTEX HPSU compact are shown on the RoCon HP Controller in the "Overview" information level.

The display of the operating data is not divided into several windows. By adjusting the rotary switch it is toggled between the windows.

Short designation		Explanation of the displayed value
Page 1	Mode	Current mode of the heat pump: - - -: No heating or cooling demand : Heating : Cooling : Domestic hot water generation : Automatic defrosting function active
	Ext	Current energy mode of the heat pump: LT: EVU function HT/NT active and low tariff. HT: EVU function HT/NT active and high tariff. SGN: EVU function SMART GRID active, normal mode. SG1: EVU function SMART GRID active, disconnection: no heat pump operation, no frost protection function. SG2: EVU function SMART GRID active, switch-on recommendation, mode with higher set temperatures, cheap power. SG3: EVU function SMART GRID active, switch-on command and storage tank charging to 70 °C, cheap power - - -: No external mode active, heat pump works in normal mode.

	RT	Parameter [Room thermostat] / [Interlink fct] = Off: - - -
		
		Parameter [Room thermostat] = On:
		– : Heating or cooling demand
		– : No heating demand
		
		Parameter [Interlink fct] = On (priority):
		– - - -: only frost protection
		– IL1: normal inflow target temperature
		– IL2:
		  – increased inflow target temperature in heating operation
		  – decreased inflow target temperature in cooling operation

	Pump	Actual output of the internal heating circulation pump in %
	EHS	Current output of the backup heater in kW
	BPV	Current position of the mixing valve 3UVB1 (100% = A, 0% = B)
Page 2	TV	Current inflow temperature after the plate heat exchanger (t_{V1})
	TVBH	Current heating inflow temperature or temp. after heating support heat exchanger ($t_{V, BH}$)
	TR	Current heating return flow temperature (t_{R1})
	Tdhw	Current temperature in domestic hot water storage tank (t_{DHW1})
	TA	Actual outdoor temperature (measured by optional temperature sensor RoCon OT1)
	V	Actual volume flow (flow rate) in the heating system
Page 3	TVBH2	= TVBH
	TR2	Current heating return flow temperature, secondary sensor (t_{R2})
	Tdhw2	Current temperature in domestic hot water storage tank, secondary sensor (t_{DHW2})
	Tliq2	Current coolant temperature (t_{L2})
	TA2	Actual outdoor temperature (measured by temperature sensor of the external heat pump)
	quiet	Shows the status of the whisper mode

Tab. 3-5 Description of the operating data displayed as an overview

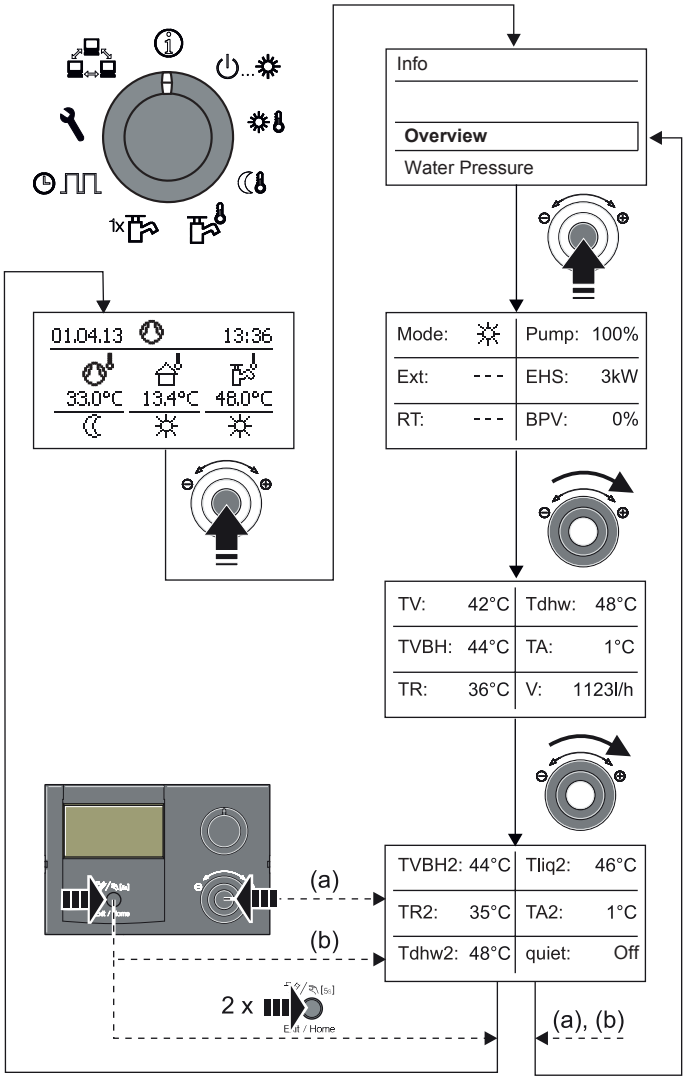


Fig. 3-5 Display operating data overview

Displaying the water pressure

On the Controller RoCon HP, when it is switched on, you can display the system pressure (water pressure) in the internal circuit (direct heating circuit). The water pressure is available as the first info parameter after the operating data overview (see fig. 3-6).

The permissible range of water pressure during operation depends on the ROTEX HPSU compact and the heating system. The set values and threshold values must only be changed by the heating technician. If the water pressure falls below the minimum value (set parameter value), it must be increased by topping up the system (see installation instructions of the ROTEX HPSU compact, chapter "Inspection and Maintenance").

The pressure limits for the safety switch-off and the set pressure can be adjusted in the parameter settings in level *"System "*.

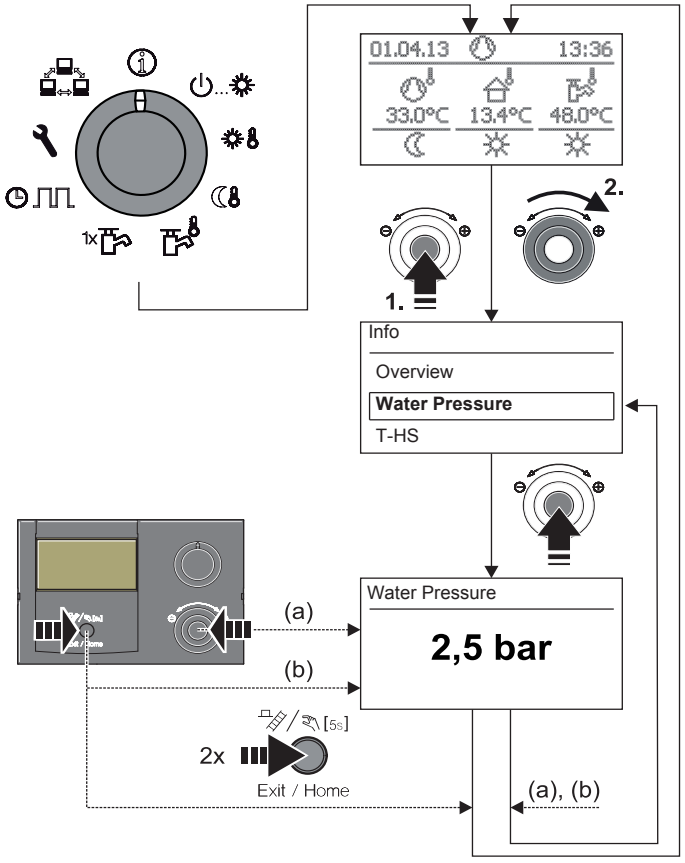


Fig. 3-6 Info values display (e.g. system pressure)

3.4.2 Setting the operating mode

The selection of the operating mode with which the ROTEX HPSU compact is to operate is undertaken on the rotary switch in the setting ***"Operating Mode"*** ⏻...☼.

The selected operating mode is activated by briefly pushing the rotary switch.

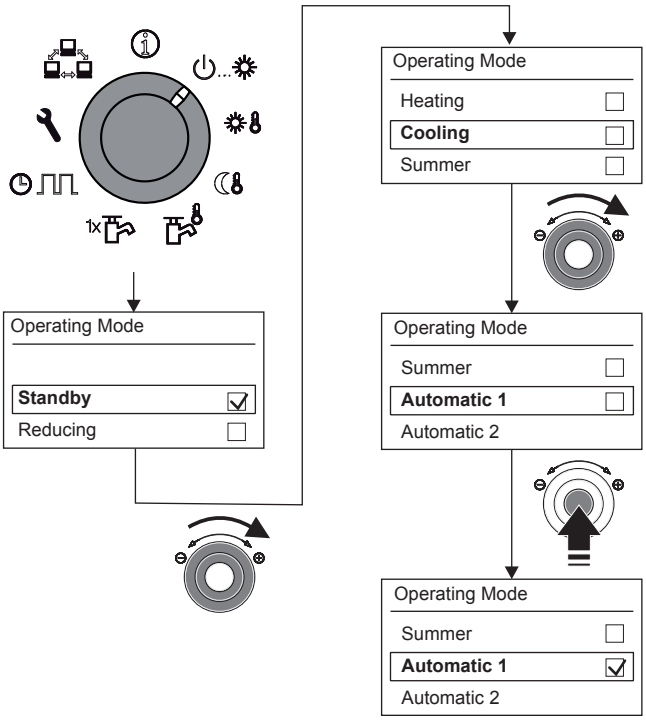


Fig. 3-7 Switching the operating mode (e.g.: from "Standby" to "Automatic 1")

- Place the rotary switch in the ***"Operating Mode"*** ⏻...☼ position.
  - ➔ An overview is displayed.
- Select the desired operating mode with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  - ➔ ROTEX HPSU compact operates in accordance with the set operating mode.
  - ➔ The current operating mode is indicated by an appropriate symbol in the standard display.

Operating mode Standby (Stand-by)

CAUTION!

A heating system that is not frost-protected can freeze in cold weather and be damaged.

- Drain the water out of the heating system if there is a danger of frost.
- If the heating system is not drained and there is a risk of frost, the power supplies must be secured and the external main switch must remain switched on.

In this mode, the ROTEX HPSU compact is shifted to the stand-by mode. The **frost-protection function** (see section 3.6.5) remains in place. In order to maintain this function, the system must not be disconnected from the mains!

All controllers integrated into the RoCon-system via the CAN bus are also switched at a higher level to the operating mode "Standby".

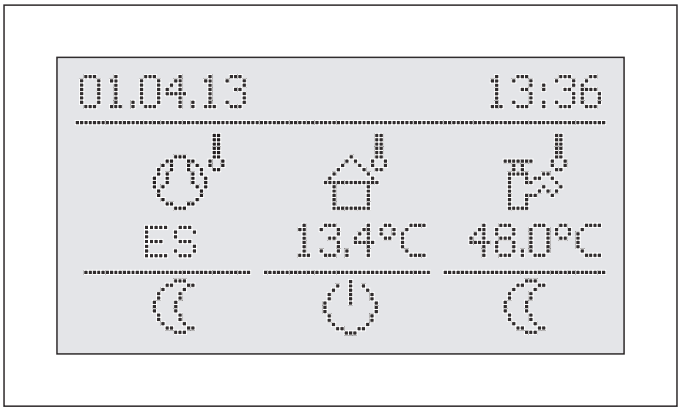


Fig. 3-8 Standard display in "Standby" operating mode (above the frost-protection limit)

In the "Standby" operating mode, the heat pump and any optionally connected backup heaters are isolated from the power supply (**Energy saving mode**) when the following conditions are met:

- The outdoor temperature sensor (RoCon OT1, 15 60 70) is connected and correctly parametrised in the system configuration (parameter [Outside Config] = On),
- The outdoor temperature is over 8 °C,
- There is no heating command,
- The frost protection function is not active in any of the connected heating circuits, and
- ROTEX HPSU compact has been switched on for at least 5 mins.

Operating mode Reducing

Reduced heating mode (lower set room temperature) in accordance with the target flow temperature set for economy mode in the parameter [T-Reduced] (see section 3.4.4).

Hot water generation according to the set target domestic hot water temperatures and switching cycles in the hot water time programme [DHW Program 1] (see section 3.4.5).

Operating modes Heating, Cooling

Heating or cooling operation in accordance with the room temperature set in the parameter [T-Room 1 Setpoint] (see section 3.4.3).

A connected outdoor temperature sensor (weather-controlled flow temperature regulation) or a connected room station will also influence the set flow temperature regulation (requirements: Parameter [HC Function] = On).

Hot water generation according to the set target domestic hot water temperatures and switching cycles in the hot water time programme [DHW Program 1] (see section 3.4.5).

Operating mode Summer

Hot water generation according to the set target domestic hot water temperatures and switching cycles in the hot water time programme [DHW Program 1] (see section 3.4.5).

All controllers integrated into the RoCon-system via the CAN bus are also switched at a higher level to the operating mode "Summer".

Operating mode Automatic 1 (Timer programme)

Automatic heating and economy mode in accordance with the permanent timer programmes (see section 3.4.7):

- [HC Program 1]
- [DHW Program 1]

Operating mode Automatic 2 (Timer programme)

Automatic heating and economy mode in accordance with the permanent timer programmes (see section 3.4.7):

- [HC Program 2]
- [DHW Program 2]

If, in the active operating mode, the hot water generation is in setback, you can use the rotary switch to set temporary ***"DHW Reheating"*** without having to change any other standard settings (see section 3.4.6).

Switching contact for external operating mode switching

Via a potential-free switching contact connected to connection J8 of the ROTEX HPSU compact at terminals "EXT" and switched with a resistance we can also carry out a changeover of the operating mode from an external device (e.g. a modem, …) (see tab. 3-6).

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

Tab. 3-6 Resistance values for the evaluation of the EXT signal

The resistances specified in tab. 3-6 work at a tolerance range of 5 %. Resistances outside of this tolerance ranges are interpreted as open input. The heat generator resets to the previously active operation mode.

At resistance values higher than the value for "Automatic 2", the input is not considered.

If several switching contacts are to be connected to the ROTEX HPSU compact (e.g. SMART GRID, Room thermostat), the associated functions can have a higher priority than the external operating mode switching. The operating mode requested by the EXT switching contact might then not be activated or may be activated later.

In addition to these operating modes there are various different temporary heating programmes available (see tab. 3-7), which run according to priority after they have been activated.

Temporary timer programme	Setting / activating in level	Rotary switch setting	Note
DHW Install	DHW Install		section 3.4.6
Party	Time Program		section 3.4.7
Away			
Holiday			
Vacation			
Screed*	Configuration > HC Configuration		section 3.6.13

** only with expert code.*

Tab. 3-7 Overview of temporary timer programmes

If a temporary timer programme (DHW Install, Party, Away, Holiday, Vacation, Screed) is started during the selected operating mode, the regulation will take place with preference according to the settings of this timer programme.

3.4.3 Temperature setting Daytime room temperature

The set room temperatures for room heating during the day are determined in the rotary switch setting .

- Place the rotary switch in the ***"Set Temp Day"*** position.
  ➔ An overview is displayed.

The end figures of the parameter designations (1 - 3) within this rotary switch setting designate the association with each individual cycle of the timer programme.

- Select the temperature block to be set with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Settings are displayed.
- Set the temperature.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.5.

3.4.4 Temperature setting Economy mode

The set room temperatures for room heating in economy mode are determined in the rotary switch setting .

- Place the rotary switch in the ***"Set Temp Night"*** position.
  ➔ An overview is displayed.
- Select the parameter to be set with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  – [T-Reduced]: Set value for "Reducing" operating mode or setback by a permanent timer programme.
  – [T-Absence]: Set value for temporary heating / cooling programmes ("Away" and "Vacation").
  ➔ Settings are displayed.
- Set the temperature.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.6.

3.4.5 Temperature setting hot water generation

The hot water set temperatures for hot water generation for each individual timer programme are determined in the rotary switch setting .

- Place the rotary switch in the ***"DHW Set Temp"*** position.

The end figures of the parameter designations (1 - 3) within this rotary switch setting designate the association with each individual cycle of the timer programme.

- Select the temperature block to be set with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Settings are displayed.
- Set the temperature.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.7.

3.4.6 Unscheduled hot water generation

You can charge the hot water up manually outside a hot water timer programme to the preset temperature set in parameter [T-DHW Setpoint 1] in the rotary switch position . Heating up is carried out as a priority and independently of any other heating programmes.

- Place the rotary switch in the ***"DHW Install"*** position.
  ➔ An overview is displayed.
- Select the parameter to be set with the rotary switch.
  – [1x Hot Water]: Activating one-off hot water generation.
- Confirm the changes with a brief push of the rotary switch.
- Setting parameters
- Confirm the changes with a brief push of the rotary switch.
  ➔ Begin unscheduled hot water generation.

After this temporary function has expired, the Controller automatically jumps back to the previously active operating mode. The rotary switch should therefore be returned to the position ***"Info"*** after activation.

The function is subject to time limits.

It is interrupted at the latest after the maximum charging time set in the parameter [Max DHW loading] and cannot be restarted once more until the blocking time set in the parameter [DHW Off Time] has expired (see chapter 6.2.4).

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.3.

3.4.7 Switching time program

Various different timer programmes are available, that are set in the factory, but which can be adjusted to suit, to provide convenient and individual room and hot water temperature control.

The timer programmes regulate the associated heating circuit, the storage tank charging circuit and an option connected circulation pump in accordance with the stipulated switching times.

Adjustment

In the rotary switch position ⏲⎍ we set the time intervals for the heating circuit, the integrated hot water generation and the optional circulation pump.

- Place the rotary switch in the ***"Time Program"*** ⏲⎍ position.
  ➔ An overview is displayed.
- Select the timer programme to be set with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Settings are displayed.
- Select and change the value to be set with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.8.

Permanent timer programmes

For the connected heating circuits and the storage tank charging circuit, timer programmes regulate the heating circuit temperatures or the operating times for the circulation pump in accordance with the stipulated switching cycles. The switching cycles are saved in time blocks for which various set temperatures apply.

In the switching cycles the heating system is regulated differentiated into **day** and **economy mode**.

The target room temperatures for these timer programmes are set in the rotary switch settings ***"Set Temp Day"*** ☼🌡, ***"Set Temp Night"*** ☾🌡 and ***"DHW Set Temp"***.

The following switching time programmes are available:

– **2 timer programmes for the heating circuit**, each with 3 possible time cycles
  – [HC Program 1]
  – [HC Program 2]

A separate input for each individual day of the week is possible, or in blocks of "Monday to Friday", "Saturday to Sunday" and "Monday to Sunday".

Programme	Time period	switching cycle	
HC Program 1	Single day of the week (Monday, Tuesday ...)	1st . 2. 3.	06:00 -> 22:00 --:-- -> --:-- --:-- -> --:--
	Working week (Monday to Friday)	1st . 2. 3.	06:00 -> 22:00 --:-- -> --:-- --:-- -> --:--
	Weekend (Saturday to Sunday)	1st . 2. 3.	07:00 -> 23:00 --:-- -> --:-- --:-- -> --:--
	Entire week (Monday to Sunday)	1st . 2. 3.	06:00 -> 22:00 --:-- -> --:-- --:-- -> --:--
HC Program 2	See HC Program 1	1st . 2. 3.	See HC Program 1

Tab. 3-8 Menu structure heating circuit timer programme

Time settings for one switching cycle in one weekday or block programme are also adopted for other time periods, provided that they affect the same weekdays. Examples referring to tab. 3-8:

a) For the single working day "Monday" the start time for the 1st switching cycle changed from 06:00 to 05:00.
   ➔ In the time period "Working week" and "Entire week", the 1st. time block switching cycle also changed from 06:00 to 05:00.

b) For the time period "Weekend", the start time for the 1st switching cycle changed from 07:00 to 08:00.
   ➔ In the individual weekdays "Saturday" and "Sunday", the 1st switching cycle also automatically changed from 07:00 to 08:00.

c) For the time period "Entire week", the end time in the 1st. time block switching cycle changed from 22:00 to 21:30.
   ➔ In all the weekdays the 1st switching cycle is also changed from 22:00 to 21:30.

– **2 timer programmes for the hot water circuit**, each with 3 possible switching cycles
  – [DHW Program 1]
  – [DHW Program 2]

The setting and input structure of the timer programmes are identical to the ones for the heating circuit timer programme (see also tab. 3-8).

– **1 timer programme for one optionally connected** circulation pump with 3 individual possible switching cycles
  – [Circulation Time]

The setting and input structure of the timer programmes are identical to those for the heating circuit timer programme (see also tab. 3-8).

For further instructions concerning settings for an optional circulation pump, see section 3.6.15.

Saved switching time programmes can be changed at any time. To provide a better overview, we recommend making a record of the programmed switching times and keeping it in a safe place (see chapter 9.1.1).

The permanent timer programmes are preset as per tab. 3-9.

	Switching cycle 1		Switching cycle 2		Switching cycle 3	
Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
Room heating / room cooling						
Temperature setting	[T-Room 1 Setpoint]: 20 °C		[T-Room 2 Setpoint]: 20 °C		[T-Room 3 Setpoint]: 20 °C	
	[T-Reduced]: 10 °C					
"HC Program 1"						
Monday - Friday	06:00	22:00	- - : - -	- - : - -	- - : - -	- - : - -
Saturday, Sunday	07:00	23:00	- - : - -	- - : - -	- - : - -	- - : - -
"HC Program 2"						
Monday - Friday	06:00	08:00	- - : - -	- - : - -	- - : - -	- - : - -
Saturday, Sunday	07:00	23:00	- - : - -	- - : - -	- - : - -	- - : - -
Domestic hot water generation						
Temperature setting	[T-DHW Setpoint 1]: 48 °C		[T-DHW Setpoint 2]: 48 °C		[T-DHW Setpoint 3]: 48 °C	
"DHW Program 1"						
Monday - Sunday	00:00	24:00	- - : - -	- - : - -	- - : - -	- - : - -
"DHW Program 2"						
Monday - Friday	05:00	21:00	- - : - -	- - : - -	- - : - -	- - : - -
Saturday, Sunday	06:00	22:00	- - : - -	- - : - -	- - : - -	- - : - -
"Circulation Time"						
Monday - Friday	05:00	21:00	- - : - -	- - : - -	- - : - -	- - : - -
Saturday, Sunday	06:00	22:00	- - : - -	- - : - -	- - : - -	- - : - -

Tab. 3-9 Factory setting for the permanent switching time programmes

Temporary timer programmes

For a specific situation there are 4 **temporary programmes** available, **which deactivate the permanent timer programmes** or the current operating mode for **the duration of their validity**.

The symbol of the temporary time program is displayed in the header line of the standard display, as long as the time program is active.

The following temporary time programmes may be interrupted at any time by manually changing the operating mode.

1. [Party]: **Immediate one-off extension of the room heating**
   a) If an automatic programme is activated, the last applicable switching cycle is always extended. In the time before switching cycle 1, the target room temperature set in the parameter [T-Room 1 Setpoint] applies.
   b) In all other operating modes, the target room temperature set in the parameter [T-Room 1 Setpoint] applies.
   – The hot water generation is not affected.
   – The time programme runs for the set time period after activation.
2. [Away]: **Immediate one-off setback** up to 6 hours
   – The system operates in economy mode according to the room temperature set in the rotary switch setting ***"Set Temp Night"*** in the parameter [T-Absence].
   – The hot water generation is not affected.
   – The time programme runs for the set time period after activation.
3. [Holiday]: **One-off calendar-controlled presence.**
   – The system operates exclusively in accordance with the "Sunday" settings in the [HC Program 1].
   – The hot water generation operates exclusively in accordance with the "Sunday" settings in the [DHW Program 1].
4. [Vacation]: **One-off calendar-controlled reduction.**
   – The system only operates in economy mode according to the room temperature set in the rotary switch setting ***"Set Temp Night"*** in the parameter [T-Absence].
   – Hot water generation according to the set temperatures and switching cycles in the hot water time programme [DHW Program 1] (see section 3.4.5).
   – The calendar-controlled programme [Vacation] is **not started** if the operating mode [Standby] or [Manual Operation] is active on the set start date.

3.4.8 System settings

We undertake the basic settings for the Controller RoCon HP and the system configurations for the installation environment of the ROTEX HPSU compact, the direct heating circuit, the hot water generation and any optionally connected components in the rotary switch setting ***"Configuration"*** .

Depending on access authority (user or expert), various different parameters are available. Certain parameters are only accessible to the heating expert.

LCD Display, Language, Date, Time setting

An internal pre-programmed calendar ensures automatic time reset at the annually recurring summer/winter time changes.

- Place the rotary switch in the ***"Configuration"*** position.
  ➔ An overview is displayed.
- Select the *"Setup"* level with the rotary switch.
  ➔ An overview is displayed.
- Select the parameter [LCD Brightness] and [LCD Illum Time] using the rotary switch and change if required.
- Use the rotary switch to select and confirm the [Language], [Date] or [Time] parameters.
- Select and change the value to be changed within the individual display using the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this rotary switch setting can be seen in section 3.6 and in chapter 6.2.

3.4.9 Terminal function

In the rotary switch setting ***"Remote Param"*** we can also operate and parametrise other devices integrated via the CAN bus in the RoCon system (regulating components mixer module or heat exchanger), provided that the individual component has the necessary authority (see also chapter 4.3).

After activation of the "Bus - Scan" a list of the equipment that was recognised is shown for selection in the display (external equipment and local equipment).

After selection and confirming an external device, the terminal function for this device is activated and the associated standard display for this device is shown in the display.

The operating component is then in terminal mode.

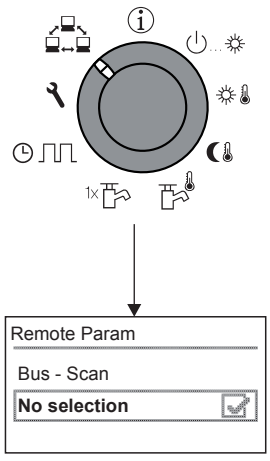
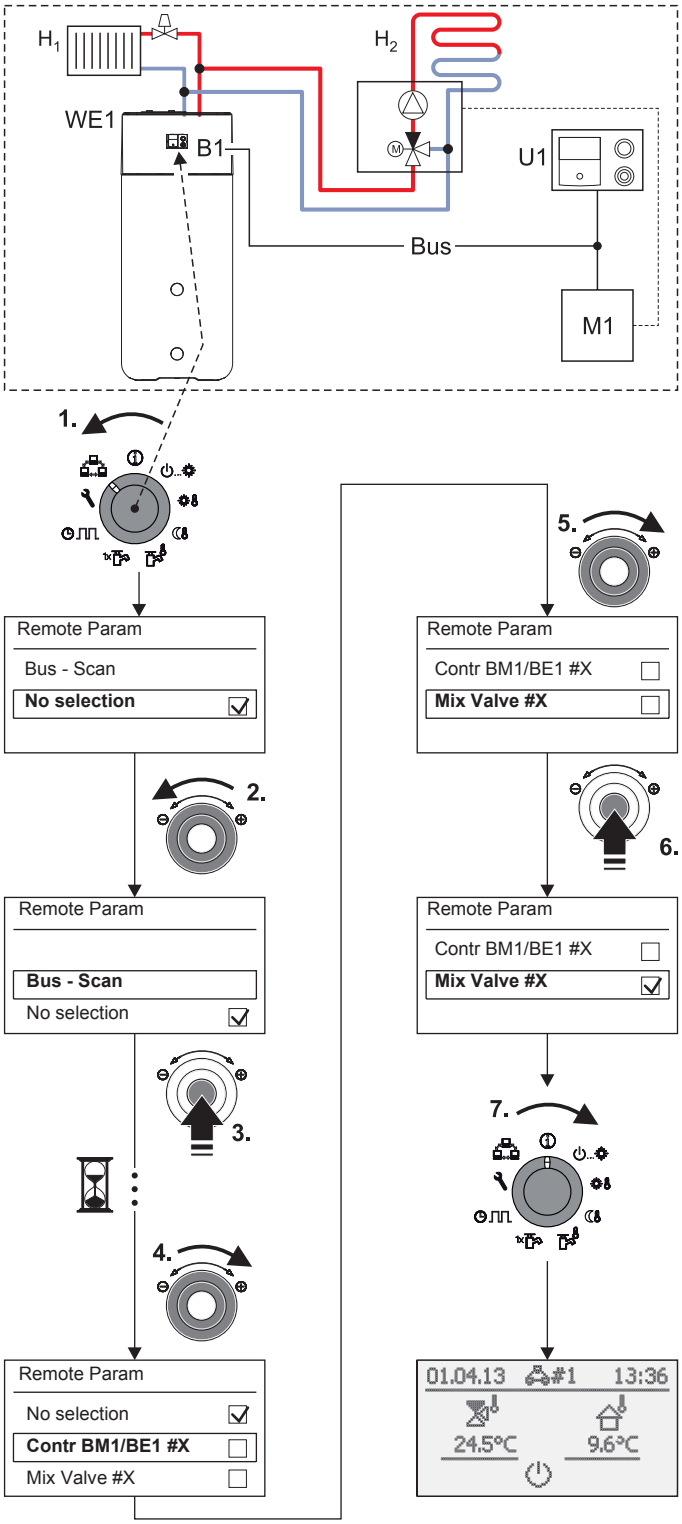


Fig. 3-9 Display of the level "Remote Param" at commissioning or temporary disconnection from the mains

The local control element acts as the remote control for the external equipment. In this case all the control functions are provided and saved 1:1 as on the external equipment.

The various different application and parametrisation possibilities for using the devices and operating components combined in the RoCon system are described in chapter 4.3.



B1	*Operating component RoCon B1 of the HPSU compact*
Bus	*CAN-Bus (connection line between RoCon devices and operating components)*
H_1	*Direct heating circuit (e.g. radiators)*
H_2	*Mixed heating circuit (e.g. underfloor heating)*
M1	*Mixer module RoCon M1*
U1	*Room station RoCon U1*
WE1	*Heat generator HPSU compact*

Fig. 3-10 Example for "Bus - Scan" on a heating system with 1 heat generator, 1 mixer, 1 room station and activation of the terminal function for remote control of the mixer module

During this activated terminal function, the header of the display carries additional information on the remotely controlled equipment; the symbol #X is displayed, where "X" indicates the bus ID setting for the remotely controlled equipment.

The displayed values and symbols are always taken over from the selected equipment (such as the mixer circuit infeed temperature of the mixer module RoCon M1 with device ID 1).

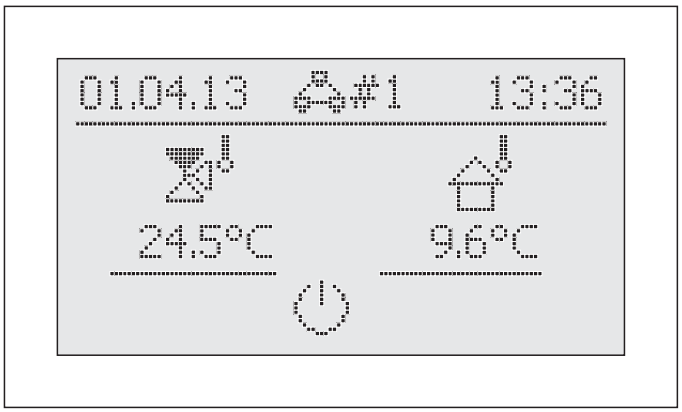


Fig. 3-11 Display example for a remotely controlled mixer module

For operation of the local equipment, this must be activated again in the selection list (parameter [No selection]).

If the message "n. A." is displayed at rotary switch setting , the control unit has yet to be assigned a valid terminal address.

If the message "n. A." is still displayed it may be necessary to update the device software before the terminal function can be used. Contact the ROTEX Service Team in such cases.

Activating / deactivating normal operation

Requirement: A valid terminal ID has been allocated to the control unit RoCon B1 of the ROTEX HPSU compact or room station RoCon U1 (**15 70 34**).

For setting the terminal address of optional connected equipment, see chapter 4.4 or the instruction handbook supplied for the respective equipment.

- Place the rotary switch in the ***"Remote Param"*** position.
  - ➔ The level "*Remote Param*" is displayed.
- Select the parameter [Bus - Scan] with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  - ➔ The context menu is displayed.
- Use the rotary switch to select the parameter [Bus - Scan] and confirm with "Yes".
  - ➔ Bus - Scan is performed.
  - ➔ An overview of all the equipment found is displayed (example see fig. 3-10).
- Use the rotary switch to select the equipment for which the terminal function is to be performed.
- Confirm the changes with a brief push of the rotary switch.
  - ➔ The local control element acts as the remote control for the external equipment.

To **end terminal mode** and restore operation of the assigned equipment to the control element, at the **level "*Remote Param*"** the **parameter [No selection] must be selected and acknowledged**.

After interim isolation from the power supply, at the level "*Remote Param*", we always show the display as shown in fig. 3-9.

In order to be able to use the terminal function for connected equipment, a new Bus - Scan must be carried out.

Communication between the RoCon system components continues to function, even without a Bus - Scan, and previously made settings remain active.

Activation of the terminal function is carried out as shown in fig. 3-10, but, after confirmation of the display "Bus - Scan", you must select the parameter [New scan?] with the rotary button, and confirmed with "Yes".

3.4.10 Quite Mode

Quite Mode means that the exterior heat pump unit is operating at reduced output. This reduces the operating noise caused by the exterior heat pump unit.

CAUTION!

Active Quite Mode reduces the performance in room heating and room cooling operation with the result that it may no longer be possible to reach the preset target temperatures.

- With outside temperatures below freezing, there is a risk of material damage caused by frost.

Quite Mode activation / deactivation

- Place the rotary switch in the ***"Configuration"*** position.
  - ➔ An overview is displayed.
- Select the *"System "* level with the rotary switch.
  - ➔ An overview is displayed.
- Select the parameter [Quite Mode] with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  - ➔ The setting for the parameter is displayed.
- Setting parameters
  - Parameter [Quite Mode] = 0: deactivated
  - Parameter [Quite Mode] = 1: permanently activated
  - Parameter [Quite Mode] = 2: only activated at night
- Confirm the changes with a brief push of the rotary switch.
  - ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.2.

3.4.11 SMART GRID (SG)

WARNING!

There is a danger of scalding at target hot water temperatures over 60°C. This is possible as the electric utilities company (EVU) is entitled to control the electricity consumption optimally in accordance with supply and demand in the SMART GRID regulations.

Due to the forced charging, the target hot water temperature in the hot water storage tank can reach over 60°C.

This storage tank charging even takes place when the "Standby" operating mode it set.

- Install scald protection in the hot water distribution line (e.g. VTA32, 15 60 15 + Screw connection set 1", 15 60 16).

You will need a special electric meter with an SG receiver for this function, and the ROTEX HPSU compact must be connected to it.

As soon as the function is activated by the parameter [SMART GRID] = 1, the heat pump is moved to an operating mode in accordance with tab. 3-10, depending on the signal from the energy supply company.

Signal [2]		Cost of electricity	Effect on	
EVU	SG		Hot water	Heating
1	0	- - -	No operating mode [1]	No operating mode [1]
0	0	normal	Normal operating mode	Normal operating mode
0	1	low	The switch-on recommendation and set value storage tank temperature is increased, depending on the parameter [Mode SG]	The switch-on recommendation and inflow target temperature are increased depending on the parameter [Mode SG]
1	1	very low	Switch-on command and set value of storage tank temperature is set to 70 °C	Switch-on command for storage tank charging

1) No frost-protection function (see section 3.6.5).
2) Switch contacts at input J8 of the circuit board RoCon BM1 closed (1) or opened (0).

Tab. 3-10 Utilisation of the SG signal

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.1.

3.5 Special functions

In the ***"Special Level"*** we can carry out various different functions that are usually used by the heating expert.

The following special functions are possible:
– Manual mode (see section 3.5.1).
– Message display (see section 7)
– Resetting to factory settings (see section 3.6.12)

More detailed explanations of these functions can be found in chapter 6.11.

The call-up of special functions does not depend on the setting on the rotary switch.

- Depress the exit button for at least 5 secs.
  ➔ Menu ***"Special Level"*** is displayed.
- Select the programme to be started with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ The selected programme starts.
- Cancellation and jump back by:
  – Pressing the exit button again, or
  – Briefly pressing the rotary switch or
  – Selecting a different menu using the rotary switch.

3.5.1 Manual Operation

Manual Operation is used to regulate the ROTEX HPSU compact manually to a specific flow temperature. The manual mode should only be used for diagnostic purposes.

With hydraulically controlled priority operation for the hot water generation you must make sure that the inflow target temperature set in manual mode is adequate to achieve the stored hot water set temperature (parameter [T-DHW Setpoint 1]).

- Depress the exit button for at least 5 secs.
  ➔ Menu ***"Special Level"*** is displayed.
- Select the programme *"Manual Operation"* with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ *"Manual Operation"* active.
- Set the inflow target temperature with the rotary switch.

  Do **not** confirm the setting with the **rotary switch**, as this will close the programme.

  ➔ During active manual mode the hot water is consistently regulated to the parameter value for the first target hot water temperature ([T-DHW Setpoint 1]).
  ➔ The button block (if it was activated from the start of this function), is activated again within 2 seconds in order to prevent inadvertent termination of the function by operating the Controller RoCon HP.

- Cancellation and jump back by:
  – Pressing the exit button again, or
  – Briefly pressing the rotary switch or
  – Selecting a different menu using the rotary switch.
  ➔ If the manual mode is closed, the Controller RoCon HP automatically switches to the operating mode "Standby".

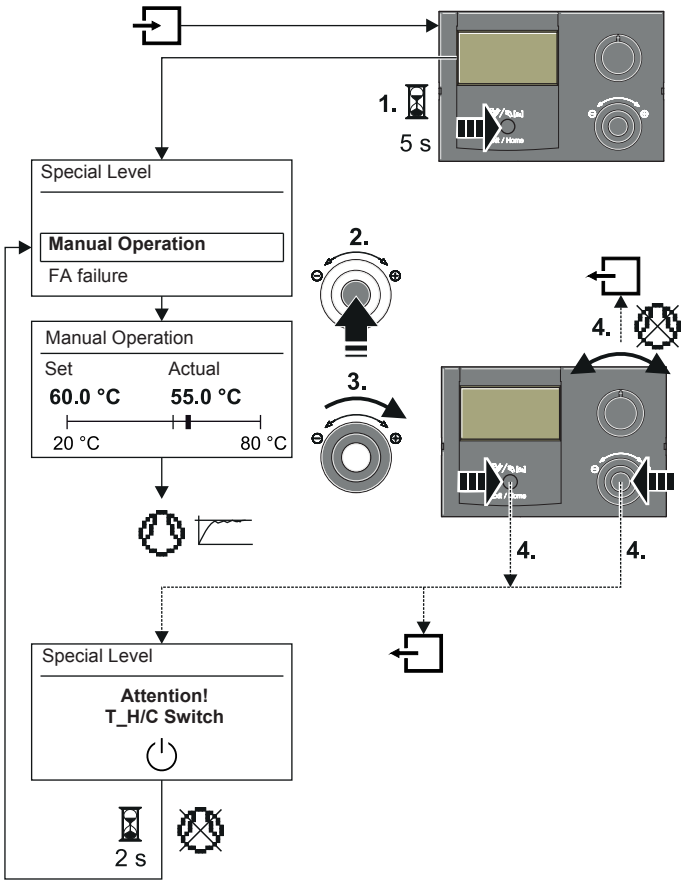


Fig. 3-12 Brief symbol-based instructions for manual mode

3.5.2 Reference run 3-way diverter valve

The positions of the two 3-way diverter valves 3UVB1 and 3UV DHW in the ROTEX HPSU compact are regulated between their two basic settings in a step-less manner for optimised energy utilisation (e.g. heating support function).

The two 3-way diverter valves are always automatically moved, on days of the week "Monday", "Wednesday" and "Friday", by 11:00 in each case, to their base position (bypass - way AB-A open).

This function can take up to 5 minutes. It is rigidly programmed and cannot be changed.

3.6 Special system settings

The Controller RoCon HP already has the basic configuration for the ROTEX HPSU compact. However, it needs to be adapted to the optionally connected accessories and the installation environment during initial commissioning.

Adaption is carried out via the setting of parameters in the rotary switch setting ***"Configuration"*** .

Navigating with the rotary switch accesses either the next deeper level or directly to the appropriate parameter.

3.6.1 Access Rights (Technician password)

Certain settings are restricted by Controller access rights.
In order to gain access to these setting values (parameters) you need to enter the expert *"Setup"* code in the level.

The fig. 3-13 shows the fundamental procedure for entering the access code. The expert code will be advised to the expert company in a separate letter.

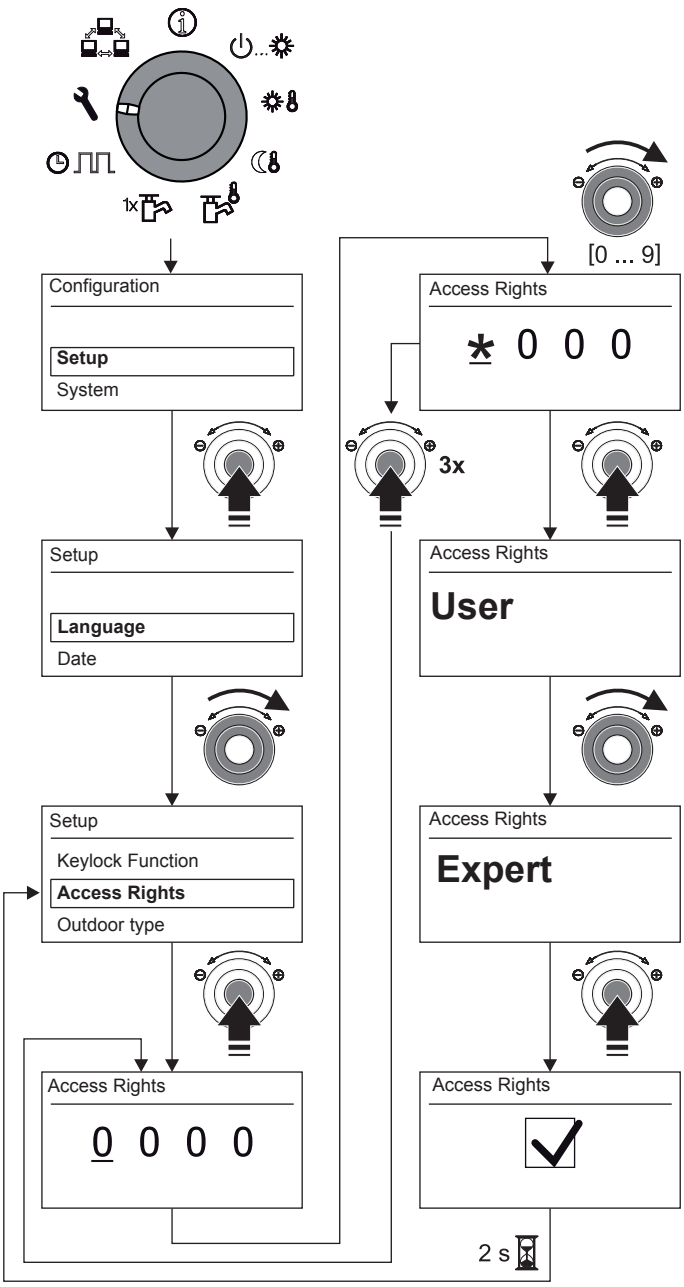


Fig. 3-13 Entering the access code

3.6.2 Heat curve

Caution - danger of overheating with underfloor heating!

In the event of a fault, or in hand mode, damage may be caused to the screed, the structure of the floor and the underfloor heating system by overheating.

- Before initial commissioning of the underfloor heating system, set the maximum permissible system temperature Controller RoCon HP (parameter [T vbh1 max]) in the maximum temperature limit in the Control RoCon HP (parameter [Max T-Flow]).
- Connect the overheat protection switch (customer) on the "EXT" plug connection to the external operating mode switch so that the ROTEX HPSU compact is in operating mode "Standby" or "Summer" (see section 3.4.2). In parameter [Room thermostat] = On or parameter [Interlink fct] = On, the overheat protection switch must be connected so that the switching contact of the room thermostat is interrupted.
- If the underfloor heating system is also used for room cooling, the connection notes from the previous section are also valid for the connection of a customer-provided humidity protection switch.

With the heating characteristic curve, the inflow target temperature is adjusted to building conditions in accordance with the relevant external temperature (weather-controlled flow temperature regulation, see section 3.6.4). Generally speaking, the steepness of the heating characteristics describes the ratio of the flow temperature change to the external temperature change.

The heating characteristic curve applies within the minimum and maximum temperature limits that have been set for the corresponding heating circuit. The room temperature measured in the living area may differ from the desired room temperature; these deviations can be kept to a minimum by installing a room station or a room thermostat.

The **Controller** is **configured in the factory** so that the **heating curve does not adjust itself** during operation.

The **automatic heat curve adaptation** can be activated (parameter [HC Adaption]), **if** the **room station** (RoCon U1, 15 70 34) **is connected** (see section 3.6.4).

Starting conditions for the automatic heating curve adaption:
– Outdoor temperature < 8 °C
– Operating mode is automatic (I or II)
– Duration of setback phase at least 6 hours

If **an automatic heat curve adaption** is not activated, the heat curve can be set **manually** by **adjusting** the **parameter [Heat-Slope]**).

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 additional heat sources (e.g. fireplaces, direct solar radiation, open windows).
- Fully open any existing radiator thermostat valves or setting drives.
- Activate the operating mode "Heating". Approximate setting values:
  – Radiator and system 70: 1.4 to 1.6.
  – Underfloor heating system: 0.5 to 0.9.

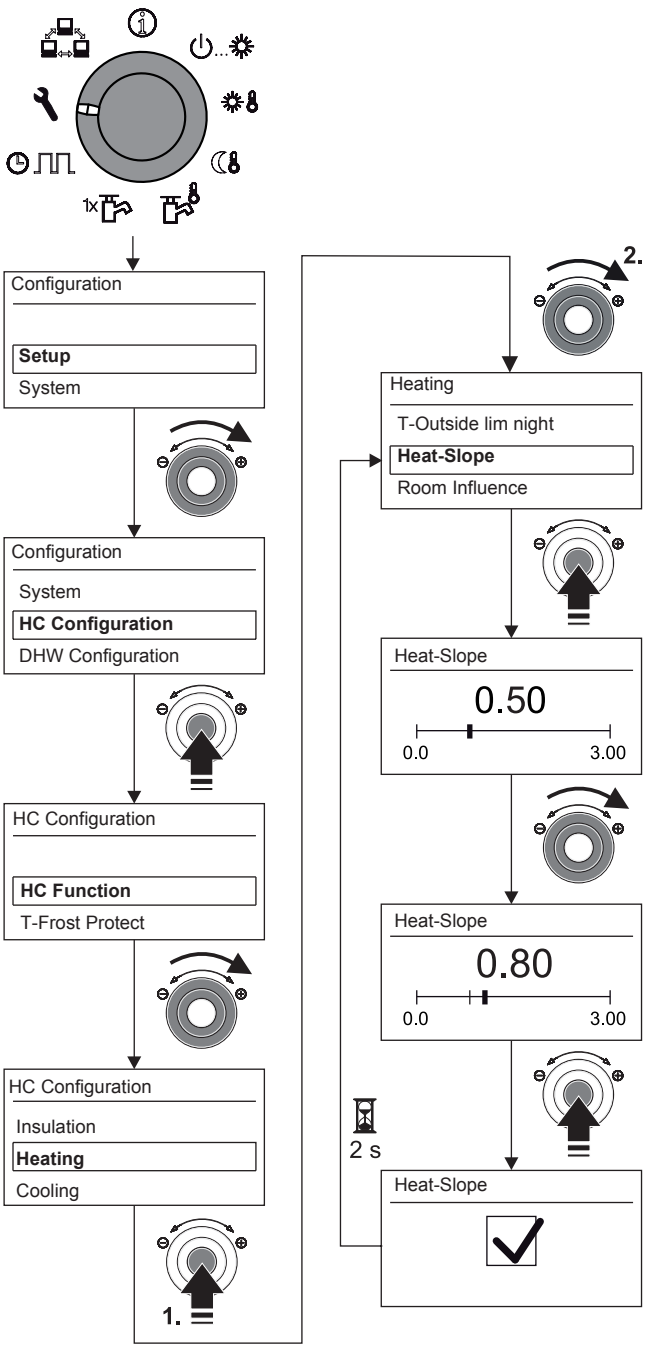
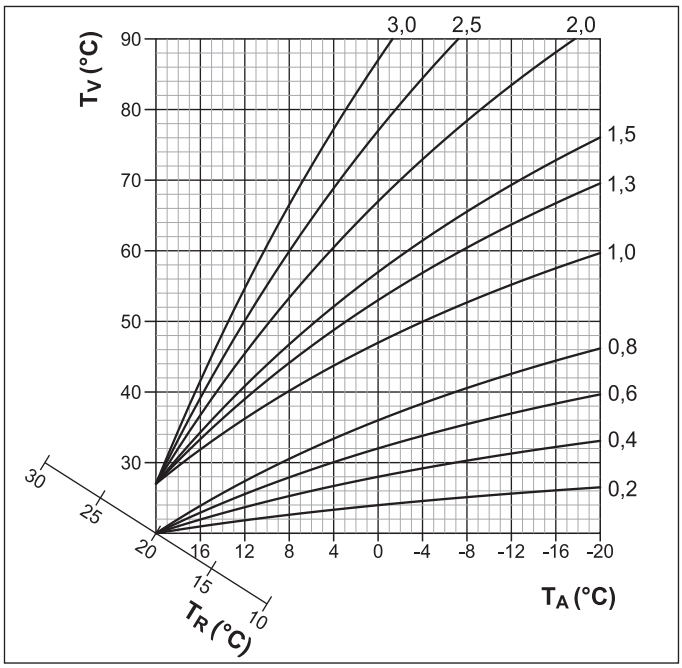


Fig. 3-14 Manual setting of the heat curve (shown for "User" access rights)



T_A *External temperature* T_V *Flow temperature*
T_R *Room temperature set value*

Fig. 3-15 Heat curves

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.

3.6.3 Cooling characteristic curve

Caution! - risk of condensation!

In the event of a fault or wrong setting of parameters, damage may be caused to the screed, the structure of the floor and the underfloor heating system by condensation.

- Before initial commissioning and activation of cooling operation, set the maximum permissible system temperature in the minimum temperature limit in the Controller RoCon HP (parameter [Min T-Flow Cooling]).

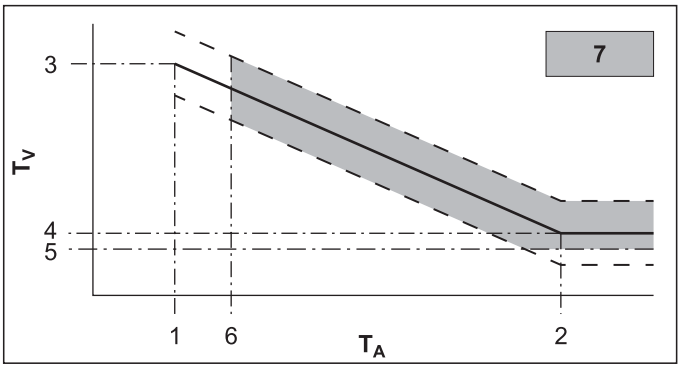
With the cooling characteristic curve, the inflow target temperature is adjusted to suit building conditions in accordance with the relevant external temperature (weather-controlled flow temperature regulation, see section 3.6.4). Warmer outdoor temperatures result in a colder inflow target temperature and vice versa.

Conditions for **cooling operation**:
– Outside temperature > target room temperature setting
– Outside temperature > [Start T-Out Cooling] parameter setting
– Operating mode *"Cooling"* activated.
  a) with the rotary switch in the ***"Operating Mode"*** position or
  b) via the room thermostat function (cooling switching contact closed)
– No heating demand in the RoCon system of the heating installation.

The cooling characteristic curve is specified using the following four parameters:

1. [Start T-Out Cooling]
2. [Max T-Out Cooling]
3. [T-Flow Cooling start]
4. [T-Flow Cooling max]

During the weather-controlled flow temperature regulation, the user can adjust the inflow target temperature using the parameter [Cooling Setpoint adj] by a maximum of 5 K up or down.
The lower temperature limit is limited by the parameter [Min T-Flow Cooling].



1	*Parameter [Start T-Out Cooling]*	T_A	*External temperature*
2	*Parameter [Max T-Out Cooling]*	T_V	*Flow temperature*
3	*Parameter [T-Flow Cooling start]*	—	*Cooling characteristic curve*
4	*Parameter [T-Flow Cooling max]*		
5	*Parameter [Min T-Flow Cooling]*	---	*Possible parallel displacement of the cooling characteristic curve*
6	*Target room temperature*		
7	*Cooling operation possible*		

Fig. 3-16 Parameter-dependency of characteristic cooling curve

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.3.

If the average outdoor temperature, with the activated operating mode *"Cooling"*, falls below 4 °C, the operating mode automatically switches to *"Heating"*.

Automatic switching of the operating mode to *"Cooling"* again can only take place if:

– a room thermostat is connected to the plug connection J16 (cooling) and
– the switch contact on the room thermostat is closed and
– the average outdoor temperature is over 10 °C again.

3.6.4 Weather-controlled flow temperature regulation

If the weather-controlled flow temperature regulation is active, the inflow target temperature (see info parameter [T-HS Setpoint], section 6.10) is determined automatically in accordance with the set heating/cooling curve depending on the outside temperature.

In delivery status, this function is activated. It can only be deactivated or reactivated with the technician code (set point control). With the optional outside temperature sensor **RoCon OT1** (**15 60 70**), which is installed on the north side of the building, you can optimise the weather-dependent flow temperature control. If no **RoCon OT1** is installed, the Controller RoCon HP uses the value for the outside temperature measured in the exterior heat pump unit.

If the room station (**RoCon U1,** **15 70 34**) is additionally connected to the ROTEX HPSU compact, the inflow target temperatures will be controlled dependent on the weather and room temperature (see tab. 6-3 / tab. 6-16, parameter [Room Influence]). Activation and deactivation of this function takes place via the parameter [HC Function] in the rotary switch position ***"Configuration"*** in level *"HC Configuration"*.

– Parameter [HC Function] = 0: Weather-controlled flow temperature regulation
– Parameter [HC Function] = 1: Regulation according to fixed inflow target temperature
  – In heating mode: parameter [T-Flow Day] or parameter [T-Flow Night]
  – In cooling mode: parameter [T-Flow Cooling]

The weather-controlled flow temperature regulation has no influence on the set flow temperature in the event of a demand from the hot water circuit.

If a mixer module (M1) is connected

The setting of the heating/cooling curves and the activation of the weather-based flow temperature regulation for the assigned heating circuit is performed in the same way as described above.

There is the option of operating the assigned heating circuit as a

a) Mixer extension
   The outside temperature determined by the outside temperature sensor connected to the ROTEX HPSU compact is transmitted to the mixer module via the CAN bus.

or as

b) mixer extension with zone regulation
   A separate outside temperature sensor (**RoCon OT1,** **15 60 70**) must be connected to the mixer module. The assigned heating circuit is regulated based on the relevant outside temperature for this zone.

When the terminal function is activated, the mixer module is operated via the RoCon B1 control element of the ROTEX HPSU compact, and the settings for the assigned heating circuit are performed.

In connection with the room station RoCon U1 (**15 70 34**), the mixer module can also autonomously control the assigned heating circuit, independently of the ROTEX HPSU compact.

If the message "n. A." is displayed at the rotary switch setting , the control unit has yet to be assigned a valid terminal address.

If the message "n. A." is still displayed it may be necessary to update the device software before the terminal function can be used. Contact the ROTEX Service Team in such cases.

More detailed explanations and possible setting values for this function can be seen in sections 6.2.3 and 6.13.2.

3.6.5 Frost protection function

If the outdoor temperature is below the parameter value [T-Frost Protect], the integrated heating circulation pump is switched on in order to prevent the heating system from freezing.

In addition, the inflow, storage tank and connected room temperature sensors are continually monitored. If the temperature measured by any of these sensors drops below 7°C (in the case of room temperature: 5°C), the frost protection function is automatically activated.

When the frost protection function is active, the Controller RoCon HP standard display shows the symbol alongside the time.

If the inflow heating temperature drops below 7°C, the ROTEX HPSU compact heats up until the temperature reaches at least 12°C once more.

The function ceases once the outside temperature has risen to the set parameter value [T-Frost Protect] + 1 K is reached and there are no other activation conditions present.

Off-peak tariff activated;
– parameter [HT/NT Function] = 3
or
– parameter [SMART GRID] = 1,
the heat pump operation can be completely switched off by the energy supply company for a limited period of time. In such cases, no additional heating is carried out and the internal device heating circulation pump is not switched on, even in frost-protection conditions.

These situations can arise when the "Overview" information level (see section 3.4.1) in the operating data field "Ext" displays the value "HT" or "SG1".

3.6.6 Interlink function

Caution!

Incorrect flow temperatures can result in damage to the underfloor heating system or the build-up of condensation on cooling surfaces.

- Limit infeed target temperatures to suitable ranges.
- Heat distribution areas with different design temperatures should be installed as hydraulically separate heating circuits.
  Heating circuits with limited infeed target temperatures should possibly be installed as mixing circuits controlled by mixer modules.

Setting of the parameter [Interlink fct] = On offers the possibility of the ROTEX HPSU compact integrating two different infeed target temperatures into the control system.

This applies both to a weather-controlled controller and a controller using a fixed inflow target temperature (see section 3.6.4).

A possible use for this might be the additional integration of aHP convector in a surface heating and cooling system.

Requirement: 2 switching contacts (e.g. room thermostats) need to be connected to plug connection J16 on the ROTEX HPSU compact.

– Parameter [Interlink fct] = Off: deactivated

– Parameter [Interlink fct] = On: Evaluation of ♨ and cooling ❄ switching contacts at plug connection J16 on the RoCon BM1 circuit board.
  Activation of cooling mode only possible by changing operating mode to "Cooling" (see section 3.4.2).
  Setting for the parameter [Room thermostat] no longer evaluated.
  a) Open switching contacts: only frost protection active.
  b) Operating modes "Heating" or "Automatic 1" / "Automatic 2" active during switching cycles in day mode.
  – Closed switching contact heating ♨ = IL1:
  ➔ The system operates according to the normal infeed target temperature according to the parameter settings in *"HC Configuration" > "Heating"*.
  – Closed switching contact cooling ❄ = IL2:
  ➔ The system operates according to the increased inflow target temperature (normal inflow target temperature + value of parameter [T-Flow CH adj]. Priority if both switching contacts are closed.
  c) "Cooling" operating mode active.
  – Closed switching contact heating ♨ = IL1:
  ➔ The system operates according to the normal infeed target temperature according to the parameter settings in *"HC Configuration" > "Cooling"*.
  – Closed switching contact cooling ❄ = IL2:
  ➔ The system operates according to the reduced inflow target temperature (normal inflow target temperature - value of parameter [T-Flow Cooling adj]. Priority if both switching contacts are closed.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.1.

3.6.7 Additional alternative heat generator

The heat supplied by an alternative heat generator must be added to the unpressurised storage tank water in the ROTEX HPSU compact hot water storage tank.

– When the optional Backup Heater BUxx is used, this is managed by the design of the installation location.

– In the case of using an external heat generator (e.g. gas or oil boiler) this can be integrated hydraulically
  a) unpressurised via connections (solar infeed and solar return) of the hot water tank
  or
  b) on devices type ROTEX HPSU compact …Biv, via the integrated pressurised solar heat-exchanger.

Adjustment of the [Function Heating] sets whether and which additional heat generators (WEZ) are available for domestic hot water generation and heating support.

– 0: No additional WEZ
– 1: Optional backup heater EKBUxx (connected via XBUH1 plug)
– 2: Alternative WEZ takes over the hot water generation and heating support. To demand from the heat generator, relay K3 on the RTX-EHS circuit board is switched on.
– 3: Alternative WEZ 1 (optional backup heater EKBUxx) takes over hot water generation and alternative WEZ 2 takes over heating support To demand by WEZ 1 and WEZ 2, relay K3 and relay K1 respectively on the RTX-EHS circuit board are switched on!

The operation of additional heat generators are also influenced by the setting of the parameter [Equilibrium Func.] (see chapter 6.2.1) and the parameter [Equilibrium Temp] (see chapter 6.2.2).

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.1.

3.6.8 Heating support

If the heating support function (parameter [HZU] = On) is activated, the energy in the ROTEX HPSU compact integrated storage tank is used to take over the heating function. At a sufficiently high storage tank temperature, the heat pump (refrigerant circuit) remains out of use.

The minimum value (T_{HZUmin}) is calculated as follows:
T_{HZUmin} = current active target hot water temperature [T-DHW Setpoint] + parameter [TDiff-DHW CH].

Switch-on condition:
Tdhw > T_{HZUmin} + 4 K **and** Tdhw > info parameter [T-HS Setpoint] + 1 K

If the switch-on condition is fulfilled, heat is taken from the storage tank for the heating system.

Switch-off condition:
Tdhw < T_{HZUmin} **or** Tdhw < info parameter [T-HS Setpoint] (see section 3.6.4)

If the switch-off condition is fulfilled, the heating support is stopped in the domestic hot water storage tank and the heat pump takes over the heating operation.

Parameter [Power BIV] limits the maximum power which can be removed. Parameter [T vbh1 max] limits the maximum temperature which the heating system can reach.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.2.

3.6.9 Special function: Switching contacts

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

If one of the switching conditions is fulfilled, the potential-free switching contact changes over after the time set in the parameter [AUX time] has passed.

AUX switching contact (toggle switch output **A**) is **not switched** if setting =

0: Function deactivated.

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

1: When storage tank temperature (Tdhw) ≥ value of parameter [T-DHW 1 min].

2: When there is a cooling or heating demand.

3: When there is a hot water demand to the Backup Heater (EKBUxx) or the configured Backup Heater is required for heating support.

4: When there is a malfunction.

5: When sensor value (TVBH) > 60°C.

6: When the outdoor temperature < parameter value [Equilibrium Temp].

➔ Heat pump continues to operate = parallel bivalence operation.

7: When the outdoor temperature < parameter value [Equilibrium Temp] + there is a heating or hot water demand.

➔ Heat pump does not continue to operate = alternative bivalence operation.

8: When there is a hot water demand.

9: When outside temperature < parameter value [Equilibrium Temp] + heat demand "Room heating" (not for hot water demand). Heat pump no longer operates in room heating mode below the value set in parameter [Equilibrium Temp] - only in hot water mode.

Use: An alternative bivalency operation room heating, if the boiler is incorporated hydraulically in such a way that it heats the depressurised storage tank water in the ROTEX HPSU compact directly (connection via solar connections).

10: "Multi-Oil" - if outside temperature < parameter value [Equilibrium Temp] + heat demand "Room heating" (not for hot water demand). Heat pump no longer operates in room heating mode below the value set in parameter [Equilibrium Temp] - only in hot water mode.

Use: An alternative bivalency operation room heating, if the boiler is hydraulically incorporated in the flow of the heat pump. For this type of application, the frost protection function must be deactivated on the ROTEX HPSU compact (parameter [T-Frost Protect] = Off).

The frost protection must be provided via the boiler in this option.

The potential-free **AUX switching contact** (switching output **B**) always closes if the heat pump is in "Cooling" mode.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.2.

3.6.10 Air Purge

By activating the Air Purge the RoCon HP Controller starts a defined sequence program with Start-Stop operation of the integrated heat circulation pump and various settings for the 3-way diverter valve integrated into the ROTEX HPSU compact.

Existing air can leak from the automatic venting valve during the Air Purge and the heating circuit connected to the ROTEX HPSU compact is evacuated.

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

Prior to activating this function, the heating circuit must be completely filled.

1. Enter the expert code (see section 3.6.1).
   ➔ The ***"Setup"*** level is displayed after entering.
2. Select the [**Air Purge**] parameter using the rotary switch.
3. Confirm the changes with a brief push of the rotary switch.
   ➔ The setting for the parameter is displayed.
4. Using the rotary switch, set the parameter for the function to ***"On"*** and confirm by pressing it quickly.
   ➔ *"Air Purge"* starts (3-way diverter valves into middle position, heating circulation pump modulated - see fig. 3-17).
   ➔ After the programme is completed (approx. 10 min), the ROTEX HPSU compact switches to "Standby" operating mode.

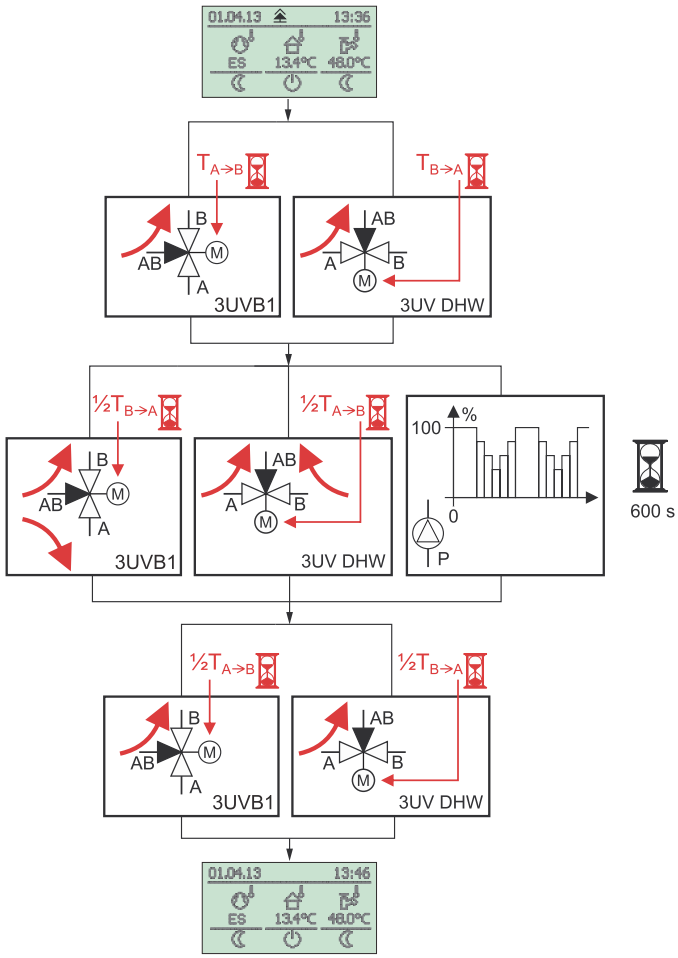


Fig. 3-17 Air Purge procedure

5. Place the rotary switch in the ***"Operating Mode"*** position and set the desired operating mode (see section 3.4).

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.1.

3.6.11 Legionella protection

WARNING!

There is a danger of scalding at target hot water temperatures over 60°C. This is possible when solar energy is used and when Legionella protection or SMART GRID is activated or when the domestic hot water target temperature is set higher than 60°C.

- Install scald protection in the hot water distribution line (e.g. VTA32, 15 60 15 + Screw connection set 1", 15 60 16).

This function serves to prevent bacterial contamination in the hot water storage tank. For accurate controllers for drinking water hygiene, refer to the national provisions.

The Legionella protection function in the ROTEX HPSU compact is deactivated when leaving the factory as the possibility of bacterial contamination is very low:

- Low volume of heat exchanger (stainless steel) used for heating drinking water.
- Frequent complete water replacement "first-in-first-out".
- No stagnant water areas in drinking water storage.

An active Legionella protection function (parameter [Anti-Legionella day]) involves heating the connected storage tank to a disinfection temperature 1 x a day or 1 x a week. The legionella protection function is active for an hour.

The maximum hot water temperature set by the user or the heating technician is ignored when hot water is heated for disinfection purposes.

A connected circulation pump is automatically switched on during thermal disinfection.

Setting the parameters for legionella protection is carried out in the rotary switch setting ***"Configuration"*** in level *"DHW Configuration"*.

Using the factory settings, the storage tank is heated at 03:30 hours if the target hot water temperature is below 65°C at that time.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.4.

3.6.12 Reset to factory settings (Reset)

If the ROTEX HPSU compact no longer works properly and any other cause for the malfunction cannot be detected, it may be helpful to reset all the controller settings to the factory settings. There are 3 options for this.

Option 1

User access rights allow the **switching time program** in the "Special Level" to be reset to the factory setting according to tab. 3-9.

1. Depress the exit button for at least 5 secs.
   ➔ Menu ***"Special Level"*** is displayed.
2. Select the programme *"Timeprog Reset"* with the rotary switch.
3. Execute the programme by briefly pressing on the rotary switch.
   ➔ The respective values are reset to the factory setting.
4. Select *"Return"* with the rotary switch.
5. Confirm the changes with a brief push of the rotary switch.

Possibility 2

Technician access rights permit all **customer-specific parameter settings** in the "Special Level" to be reset to the factory setting according to tab. 6-1 to tab. 6-11.

1. Enter the expert code (see section 3.6.1).
   ➔ The *"Setup"* level is displayed after entering.
2. Depress the exit button for at least 5 secs.
   ➔ Menu ***"Special Level"*** is displayed.
3. Select the programme *"Reset?"* with the rotary switch.
4. Execute the programme by briefly pressing on the rotary switch.
   ➔ The respective values are reset to the factory setting.

5. Select *"Return"* with the rotary switch.
6. Confirm the changes with a brief push of the rotary switch.

Possibility 3
If fundamental changes to the ROTEX HPSU compact equipment for the function within the RoCon system are necessary, the **Basic Configuration** can be reset using **Technician access rights** to the **factory settings** or can be redefined.

1. Enter the expert code (see section 3.6.1).
   ➔ The *"Setup"* level is displayed after entering.
2. Select the *"System Config"* level with the rotary switch.
3. Confirm the changes with a brief push of the rotary switch.
   ➔ An overview is displayed.
4. Select the programme *"Delete"* with the rotary switch.
5. Confirm the changes with a brief push of the rotary switch.
   ➔ Restart of the ROTEX HPSU compact is performed.
   ➔ The message "No Basic " is displayed.
6. Place the rotary switch in the ***"Info"*** ⓘ position.
   ➔ The message "Basic Configuration " is displayed.
7. There is now the facility either to select manual mode for the equipment individually (a) or to load the factory settings automatically (b).
   a) Press the rotary switch briefly.
   ➔ A parameter overview is displayed at the level ***"Basic Configuration"*** and the settings can performed manually as desired according to tab. 6-14.
   b) Turn the ROTEX HPSU compact off and restart it.
   ➔ After the has restarted the question will be ROTEX HPSU compactposed whether the standard configuration should be used. If it is confirmed with **"Yes"**, the preset **basic configuration is loaded**. If the answer given is **"No"** the settings must be performed manually, **see a)**.

More detailed explanations and possible setting values for this function can be seen in chapter 6.12.

After a reset to the factory settings via option 2 or 3, the system must be configured again by the heating technician to the installation environment and all the customer-specific parameters reset.

3.6.13 Screed Program

The Screed Program is intended exclusively for specified drying of newly created screed in underfloor heating systems. This operates the heat generator for several days according to a predefined temperature profile (the predefined temperature profile is based on the recommendations of the Bundesverbandes Flächenheizungen (Federal Association of Surface Heating Systems) for heating to cure the floor).

The temperatures and the duration of the Screed Program can be adjusted as required, after entering the expert code, in the rotary switch setting ***"Configuration"*** 🔧 in the level *"HC Configuration"* in the parameter [Screed Program].

The **Screed Program** is a special function and is not interrupted by any other operating mode. It can be activated **only** by the **heating expert** for the **direct heating circuit** and/or the optionally connected mixed heating circuits. Each heating circuit must be separately activated.

Prior to start of the Screed Program, the parameters [Interlink fct] and [Room thermostat] must have been deactivated.

In the event of a brief power failure the system continues with a previously activated screed function in place of shutting down.

After activation of the Screed Program (parameter [Screed] = On) all the weather-controlled regulating functions of the relevant heating circuit are switched off. The relevant heating circuit operates independently of the operating mode (switching times) as a constant temperature regulator.

An already started Screed Program can be deactivated at any time. At the end of Screed Program the screed function the parameter is automatically set to "Off" and the heating circuit once again operates according to the currently set operating mode.

Function heating
Function heating verifies that the installation is fault-free for the heating engineer. A pre-prepared heating up protocol for ROTEX underfloor heating can be found in the ROTEX Internet portal.

In this case, function heating (identical with "Heating up" in EN 1264, section 5.2) does not constitute a heating up process for drying and curing. Normally you need to carry out separate heating process to cure the floor and/or performmechanical drying.

Heating up should be carried out no earlier than after 21 days for cement screed, and no earlier than after 7 days for anhydrite screed in accordance with the details provided by the manufacturer. The first heating up starts at a feed temperature of 25 °C, which must be maintained for a period of 3 days. Then heating is carried out at the maximum flow temperature set for the heating circuit (limited to max. 55 °C) and this is then held for a further 4 days.

As a result of the insulating effect of the DUO heating pipe on System 70, the screed function is carried out at higher temperatures. The temperature profile must be adapted to this application in the parameter [Screed Program]. On System 70, the heating up starts at a temperature of 38 °C, which is held for a period of 3 days. After that, the set maximum heating circuit temperature (limited to 70 °C) is held for 4 days.

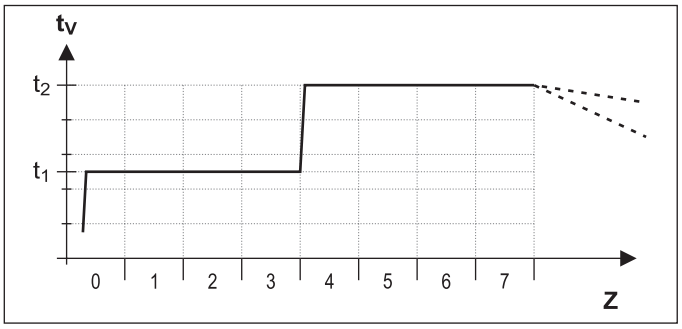
After the heating up process described, there is no guarantee that the screed has achieved the moisture content required to cure the floor.

You must determine the moisture content in the screed by measurement before laying the floor covering.

Procedure in accordance with EN 1264 Part 4:

The heating circuits must be checked for leaks by a water pressure test once the anhydrite and cement screeds are completed. The absence of leaks must be ensured immediately before and during screed laying. The level of the test pressure is at least 1.3 times the maximum permissible operating pressure.

If there is a danger of freezing up, you must take suitable measures, e.g. the use of antifreeze or temperature control in the building. If antifreeze is no longer required for intended use of the installation, you must remove the antifreeze by draining it out and flushing the installation with at least 3 changes of water.



t_1 Starting temperature 25°C (38°C on System 70)
t_2 Maximum heating circuit temperature
t_V Flow temperature
Z Duration of screed function, in days, after function start

Fig. 3-18 Sequence of timings of the Screed Program for function heating

Ready-to-apply heating

The drying out procedure for the screed cannot be predicted exactly in advance. At higher humidity levels in the air this can come to a complete stop under certain circumstances stop under certain circumstances. The drying out process may be accelerated by running the underfloor heating (curing heating) or by using measures such as mechanical drying.

Every curing heating process must be commissioned, separately by the building owner as an extra service in accordance with VOB. For the flooring contractor to achieve fault-free installation, the flooring must be properly cured before work is started on the top flooring layer.

The standard settings can be used to activate the combined function and curing heating programme in order to achieve a residual moisture level in the screed required for curing the floor (see fig. 3-19). The residual moisture level in the screed must, however, always be checked by measurement before the floor-covering is laid.

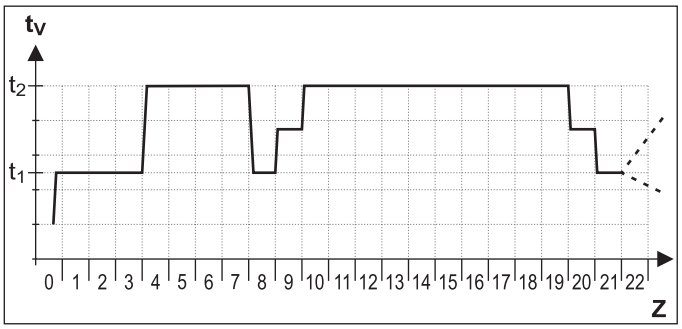


Fig. 3-19 The time sequence of the Screed Program in combined function and curing heating (for legend see fig. 3-18)

More detailed explanations and possible setting values for this function can be seen in sections 6.2.3 and 6.13.2.

Screed Program setting and starting

The Screed Program contains factory-set specifications which can, however, be individually adapted.

The day on which the screed function is activated does not count towards the runtime of the Screed Program. The 1st. day begins with the change of the day at 00:00. On the day of activation we heat the remaining time at the programme of the first day.

- Enter the expert code (see section 3.6.1).
  ➔ The *"Setup"* level is displayed after entering.
- Using the rotary push button, select and check the parameters [Interlink fct] and [Room thermostat] whether they are deactivated (see tab. 6-1).
  ➔ Both parameters must be on "Off" before starting the screed function.
- Press the Exit key briefly.
  ➔ An overview is displayed.
- Select the *"HC Configuration"* level with the rotary switch.
  ➔ An overview is displayed.
- Select the [Screed Program] parameter using the rotary switch.
- Check the Screed Program settings and adjust to the stipulations provided for the screed by the manufacturer, if necessary (see fig. 3-20).
  – The setting range is always between 0.0 and 65°C.
  – The steps are 1°C.

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. 3-11 Presetting Screed Program

- Press the Exit key briefly.
  ➔ An overview is displayed.
- Select the ***"Screed"*** parameter using the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ The setting for the parameter is displayed.
- Using the rotary switch, set the parameter for the function to ***"On"*** and confirm by pressing it quickly (see fig. 3-20).
  ➔ Screed Program starts.
  ➔ The button block (if it was activated from the start of this function), is activated again within 2 seconds in order to prevent inadvertent termination of the function by operating the Controller RoCon HP.

After expiry of the Screed Program the Controller RoCon HP again operates in the previously set operating mode. Unless configured previously, the following tasks need to be carried out in conclusion.

a) When connecting without a room station:
- Set the heating characteristic curve or the inflow target temperature.

b) When connecting with a room station:
- Activate the room station.
- Set the heating characteristic curve or the inflow target temperature. If required, activate the parameter [Room Influence] and set the target room temperature.

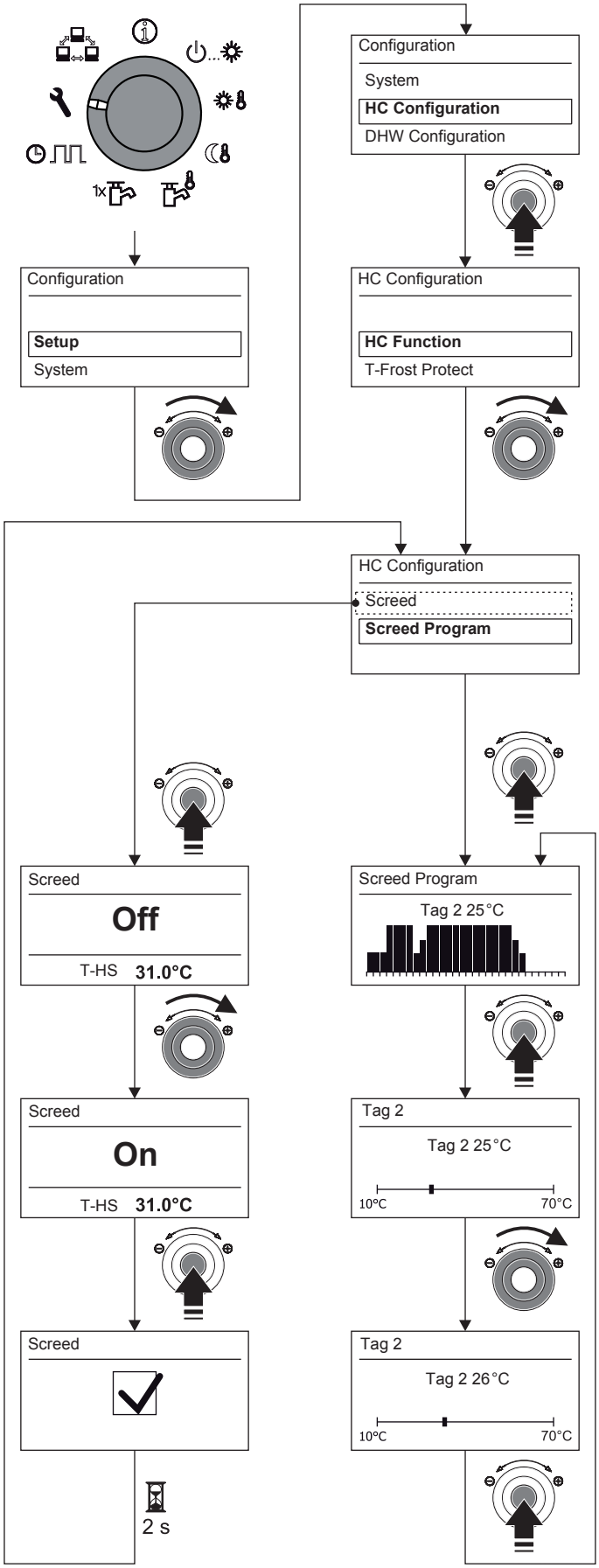


Fig. 3-20 Screed Program Setting

3.6.14 Relay Test

In the event of fault signals, heating problems or in the framework of the annual service, it may be necessary to check the function of internal switching relays.

- Enter the expert code (see section 3.6.1).
  ➔ The *"Setup"* level is displayed after entering.
- Press the Exit key briefly.
  ➔ The level "*Configuration*" is displayed.
- Select the *"System "* level with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ An overview is displayed.
- Select the parameter **[Relay Test]** with the rotary switch.
  ➔ All relays are deactivated.
  ➔ The selection list of all relays is displayed (for allocation of relays see chapter 6.2.2).
  - Select the relay to be tested with the rotary switch.
  - Confirm the changes with a brief push of the rotary switch.

  ➔ The relay is activated.
- Cancellation and jump back by:
  – briefly pressing the exit button or the rotary switch
  – selecting a different menu using the rotary switch.

More detailed explanations and possible setting values for this function can be seen in chapter 6.2.2.

3.6.15 Settings for optional circulation pump

To increase convenience when drawing off hot water we can switch an optional circulation pump using the Controller RoCon HP.

There are 2 switching possibilities:

a) Separate timer programme (see section 3.4.7).
The circulation pump operates according to its own timer programme.

b) Together with a hot water timer programme. The circulation pump is actuated in parallel with the operating periods of the hot water timer programme.

Independent of the set timer programme, the energy consumption of the circulation pump van be minimised by operating it on a cyclic basis. The parameter [Circl-Pump Interval] is used to set how long the circulation pump is operated within a 15-minute interval.

Setting the timer programme for the circulation pump

- Place the rotary switch in the ***"Configuration"*** position.
  ➔ An overview is displayed.
- Select the *"DHW Configuration"* level with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ An overview is displayed.
- Select the parameter to be set with the rotary switch.
  – [Circl-Pump DHW]: Setting as to whether the circulation pump is actuated by the active hot water timer programme [ON] or from a separate timer programme [OFF].
  – [Circl-Pump Interval]: Setting the interval control for an optional circulation pump.
- Confirm the changes with a brief push of the rotary switch.
- Setting parameters
- Confirm the changes with a brief push of the rotary switch.
  ➔ The circulation pump is actuated in accordance with the settings made by the Controller RoCon HP.

Possible setting values for this rotary switch setting can be seen in chapter 6.2.4.

3.6.16 Remote control via Internet

Using an optional gateway (**RoCon G1, 15 70 56**), the Controller RoCon HP BF can be connected to the internet. This means that the ROTEX HPSU compact can be controlled remotely via mobile phone (using an App).

Intuitive operation is possible.

4 Initial start-up

In addition to the commissioning instructions listed in this chapter, the specific commissioning instructions listed in the installation instructions for the ROTEX HPSU compact must be complied with.

The RoCon system offers a very wide range of application and extension possibilities.

The individual RoCon system components communicate via the CAN data bus. For this reason, the circuit boards RoCon BM1 and the control units RoCon B1 of the ROTEX HPSU compact, and possibly the optional system components room station **RoCon U1** (**15 70 34**) and mixer module **RoCon M1** (**15 70 68**) are connected together via data bus lines.

These system components must be allocated unique functional IDs, so that the data exchange and the allocation functions without any problems within the RoCon system.

In many applications, nothing needs to be changed on the basic settings. The more RoCon system components that are integrated in the RoCon system, the more adjustments that need to be made during the initial commissioning or when extending the heating system.

The allocation of the functional IDs is easiest carried out via the installation menu "Setup Wizard". Most IDs can also be adapted subsequently to the conditions by means of individual parameter settings in the specific parameter levels (see chapter 6).

a) If **no optional RoCon system components are connected to the ROTEX HPSU compact**, in the RoCon system, just the circuit board RoCon BM1 and the integrated control unit RoCon B1 communicate with each other.
   ➔ Adaption of the IDs is not necessary.
   ➔ The question displayed during initial commissioning "Use standard configuration?" can be confirmed by "Yes".

b) If **optional RoCon system components** such as **RoCon U1** and / or **RoCon M1** are connected, adaption to the IDs may be necessary.

4.1 Fundamental aspects of the IDs and authorisations in the RoCon system

In the RoCon system, the following functional IDs exist, which are relevant for data exchange of the RoCon system components:

ID / function	System components	Parameter	Comments
Heating circuit IDs Unique numbering of a heating circuit in the heating system in the RoCon system. A maximum of 16 heating circuits can be controlled.	ROTEX HPSU compact (RoCon BM1)	[Unmixed Circ Config] see tab. 6-14	Factory setting = 0 Should not normally be changed.[1)]
	Room station RoCon U1	[HC Assignment] see tab. 6-1	Factory setting = Off Adaption necessary because there are different heating circuits in the system and / or the parameter [Master-RoCon] = On
	Mixer module RoCon M1	[HC Assignment] see tab. 6-15	Factory setting = Off Must always be adapted to the setting of the address switch (fig. 4-2).
Heat generator ID Unique numbering of a heat generator in the RoCon system.[1)]	ROTEX HPSU compact (RoCon BM1)	[BUS ID HS] see tab. 6-14	Factory setting = 0 Should not normally be changed.[1)]
	Mixer module RoCon M1	[Boiler Assignment] see tab. 6-15	Factory setting = 0 Should not normally be changed.[1)] Defines the heat generator that supplies the allocated heating circuit with heat.
Terminal ID Unique numbering of a control unit RoCon B1 or RoCon U1, from which a heat generator and / or a mixer module in the RoCon system can be controlled remotely. The authorisation for remote control can be allocated to up to 10 control units in the RoCon system. If remote control in the RoCon system is to be possible, then the control unit must be allocated the ID "0".	ROTEX HPSU compact (RoCon BM1)	[Terminaladress] see tab. 6-1	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.
	Room station RoCon U1	[Terminaladress] see tab. 6-1 or tab. 6-15 - depending on the set heating circuit ID and the current operating mode	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.

ID / function	System components	Parameter	Comments
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 remote controlled device.	ROTEX HPSU compact (RoCon BM1)	[BUS ID HS] see tab. 6-14	Identical to heat generator detection. The value must not be the same as the heating circuit ID of a mixer module in the RoCon system.
	Mixer module RoCon M1	[HC Assignment] see tab. 6-15	Identical to heating circuit ID. The value must not be the same as the heat generator ID of a ROTEX HPSU compact in the RoCon system. The value must be the same as the setting of the address switch (fig. 4-2).

Tab. 4-1 Functional IDs in the RoCon system

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

If several control units are incorporated in the RoCon system of a heating installation, additional parameter settings are relevant for this, which can be used for setting the individual functions and parameters using the appropriate authorisations.

On the room station RoCon U1

– Parameter [RoCon U1 assign]:
  – The setting = "Living Room" can be used to influence the heating circuit defined by the set heating circuit ID.
  – The setting = "Mixing Valve" can be used to carry out all the settings for the mixer circuit defined by the set heating circuit ID.

– Parameter [Master-RoCon]:
  If the heating circuit is set for the direct heating circuit of a ROTEX HPSU compact, the setting = "On" can be used to activate the Master-RoCon function. In addition to the heating circuit functions, the hot water functions of the ROTEX HPSU compact can also be operated with this room station.
  The activation of the Master-RoCon function can also be used for heating installations just made up of a ROTEX HPSU compact (without heating circuit extension) and a room station, and which are to be operated primarily via the room station (see following information).

If the Master-RoCon function is activated, the operating mode of the heat generator is set via the room station, and this is shown in the display.

The settings on the room station are transferred to the heat generator, but not vice versa. The room station has priority.

For example, if the operating mode [Summer] is set, and subsequently, on the control unit of the ROTEX HPSU compact the operating mode [Heating] is set, a heating circuit demand is not generated, because the direct heating circuit, that is allocated to the room station by the heating circuit ID, is still in the operating mode [Summer]. The change in operating mode must therefore be undertaken at the room station.

On heating installations with heating circuit extensions, we recommend not activating the Master-RoCon function (Setting = "Off") and instead using the terminal function.

With all control units RoCon B1 and RoCon U1

– Parameter [Terminaladress]:
  As soon as a control unit is allocated a terminal ID (all settings with the exception of "Off"), the control unit can be used to activate the terminal function.
  After carrying out the [Bus - Scan], all the system components incorporated in the RoCon system can be remotely controlled using a valid device ID (caretaker authorisation).
  If you intend to use the terminal function in the heating system, you need to allocate the terminal ID = 0 to a control unit.

4.2 Operating Support during 1st. Commissioning and during System Extensions

When the ROTEX HPSU compact or the room station RoCon U1 are switched on for the first time, you are normally offered the opportunity of setting the user language.

Then, on the ROTEX HPSU compact you will be asked "Use Standard Config?". This question can normally be answered with "Yes".

Only with special applications (e.g. several heat generators in the RoCon system should the answer be "No"). In this case you will be offered the parameter level *"Basic Configuration",* in order to be able to set the necessary adaptions (see tab. 6-14).

With the room station RoCon U1, after setting the user language, the installation menu *"Setup Wizard"* appears.

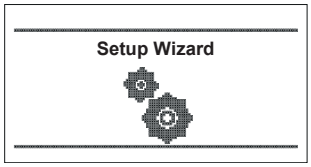


Fig. 4-1 Display "Setup Wizard"

The items for definition of the function, the authorisation and the IDs of the of the room station in the RoCon system are requested and checked for plausibility.

This prevents setting duplicate device and terminal IDs.

We therefore recommend that, when extending or making changes to the RoCon system of the heating installation, you use this installation menu. For this, a room station already incorporated in the heating installation must first be reset.

1. Enter the technician code (see section 3.6.1).
2. Depress the exit button for at least 5 secs.
   ➔ Menu ***"Special Level"*** is displayed.
3. Select the programme *"RoCon B1/U1 Reset"* with the rotary switch.
4. Execute the programme by briefly pressing on the rotary switch.
   ➔ The installation menu *"Setup Wizard"* starts.

4.3 Starting up the ROTEX HPSU compact

A precondition for initial commissioning is the completion of all preparatory installation work in accordance with the installation and maintenance instructions for the ROTEX HPSU compact.

- Turn power supply to ROTEX HPSU compact on.
  ➔ After the start phase, the operating language selector is displayed.
- Use the rotary switch to select the desired language.

The operating language can be changed again at any time.

- Confirm the changes with a brief push of the rotary switch.
  ➔ The message "Use Standard Config?" is displayed.
- Confirm the standard stipulation "Yes" with a brief push on the rotary switch (see also section 4.2).
  ➔ The Basic Configuration of the RoCon device is loaded.
  ➔ The message "Starting Up" is displayed.
  ➔ The message "Initialization" is displayed.
  ➔ The standard display for the current rotary switch setting is displayed.
- At the RoCon device, adjust the settings to suit the configuration of the heating system (see chapter 3.6).

4.3.1 Allocating the terminal ID on the control unit RoCon B1 of the ROTEX HPSU compact

If several control units are connected in the RoCon system via the data bus, you must note that the parameter [Terminaladress] = 0 must be set for a heat generator.

Make sure not to assign a duplicate value as the setting of the [Terminaladress] in the RoCon system.

- Enter the technician code (see section 3.6.1).
  ➔ The *"Setup"* level is displayed after entering.
- Select the parameter [Terminaladress] with the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
- Within the display, use the rotary switch to set the unique terminal address.
  For reasons of clarity, this control unit must be allocated the value = 0.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Change has been accepted. Jump back to previous display.

More detailed explanations and possible setting values for this rotary switch setting can be seen in chapter 6.2.1.

4.4 Commissioning optional RoCon system components

4.4.1 (M1) Mixer module RoCon M1

The mixer module **RoCon M1 (🛒 15 70 68**) has no control unit of its own. For configuration and operation it must be connected using a CAN bus line to a RoCon-Controller or a room station RoCon U1 (🛒 15 70 34).

In conjunction with a room station the mixer module can also be operated as a free-standing heating circuit controller.

To operate the mixer module directly via the control unit RoCon B1 of the ROTEX HPSU compact, it must have a terminal ID allocated to it and the terminal function will have to be activated (see chapter 3.4.9).

After selection and confirming an external device, the terminal function for this device is activated and the associated standard display for this device is shown in the display.

The operating component is then in terminal mode.

In the rotary switch setting , the local control unit operates as a remote control for the external device. In this case all the control functions are provided and saved 1:1 as on the external equipment.

For reasons of clarity, this control unit must be allocated the value = 0.

If, in the rotary switch setting , the message "n. A." is displayed, as yet no valid terminal ID has been allocated to the control unit RoCon B1.

If the message "n. A." is still displayed it may be necessary to update the device software before the terminal function can be used. Contact the ROTEX Service Team for this.

At the address switch (see fig. 4-2) a unique device ID (≥ 1) must be set for the heating circuit to be controlled by this mixer module, which must be synchronised with the (parameter [HC Assignment] of the mixer module (see tab. 4-1]).

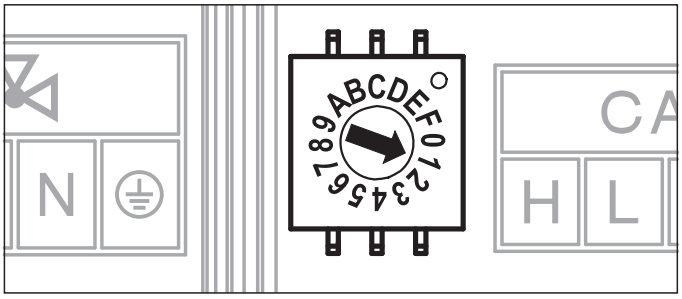
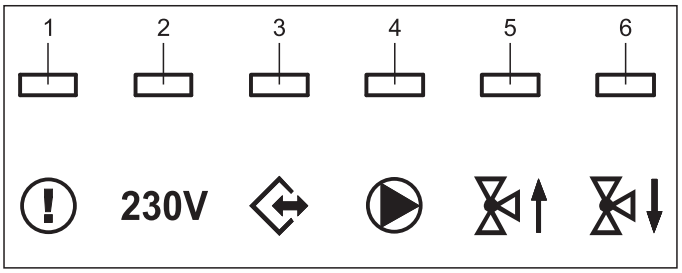


Fig. 4-2 Setting device ID for mixer module RoCon M1

All settings and operating steps for this heating circuit are performed similarly to those for the direct heating circuit.
The overview of the available parameters and their settings can be found in chapter 6.13.

The current operating status can be determined directly at the RoCon M1 mixer module (see fig. 4-3).



1	*LED red*	*- Flashing: Internal fault (the fault code is communicated via the CAN bus to the relevant control unit)*
		- To: Under voltage at the internal clock after a power failure (>10 h)
2	*LED green*	*- To: Display during operation, mixer module switched on*
3	*LED green*	*- To: CAN communication established*
4	*LED green*	*- To: Mixer circuit pump switched on*
5	*LED green*	*- To: Mixer "OPEN" is activated*
6	*LED green*	*- To: Mixer "CLOSED" is activated*

Fig. 4-3 Explanation of symbols for status displays RoCon M1

4.4.2 (U1) Room station RoCon U1

The room station **RoCon U1** (**15 70 34**) can be set as a

a) A remotely controlled unit of the ROTEX HPSU compact,

b) A mixer circuit operating unit (as a mixer circuit extension or as a free-standing mixer circuit controller),

c) Room thermostat for the ROTEX HPSU compact,

d) Remotely controlled unit for the entire RoCon-system (with terminal function activated).

The room station must be connected using a CAN bus line to a RoCon-Controller installed in the ROTEX HPSU compact or to an RoCon M1 mixer module. No separate mains supply is necessary for the room station.

Sequence for initial commissioning (see also section 4.2)

- Set the rotary switch on the RoCon U1 **room station** to position ***"Info"*** (i) .
- Switch on the power to the ROTEX HPSU compact.
  ➔ After the start phase, the operating language selector is displayed on the RoCon U1 **room station**.
- Use the rotary switch to select the desired language.

The operating language can be changed again at any time.

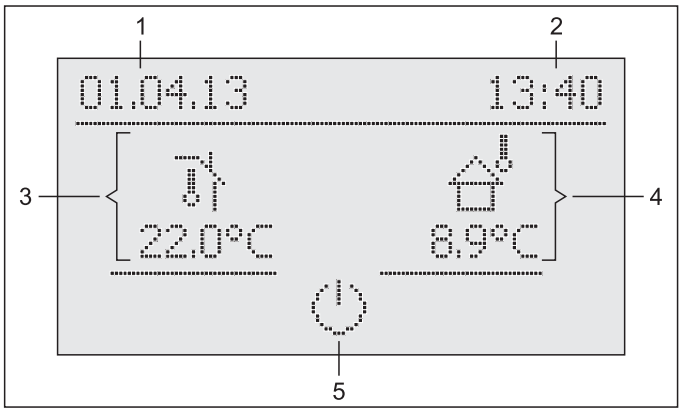
- Confirm the changes with a brief push of the rotary switch.
  ➔ The message "Setup Wizard" is displayed.
- Use the rotary switch to set the desired operating function for the room station.
  – "Living Room": Operating function see a), c), d)
  – "Mixing Valve": Operating function see b)
  ➔ Depending on the application selected, the further configuration is based either A or B in the following sections.

All the operating steps for the assigned heating circuit after initial commissioning are performed similarly to those for the operating element **RoCon B1** of the ROTEX HPSU compact.

However not all functions (such as manual operation, resetting of faults) of the ROTEX HPSU compact can be activated by the room station.

A: Configuration for setting "Living Room"

- Confirm the setting "Living Room" by briefly pressing the rotary switch.
  ➔ Setting of the heating circuit ID (parameter [HC Assignment]) is displayed.
- Use the rotary switch to select the associated heating circuit in the [HC Assignment] parameter.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Setting of the terminal ID (parameter [Terminaladress]) is displayed.
- Use the rotary switch to set the [Terminaladress] parameter.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Standard display is shown (see fig. 4-4).



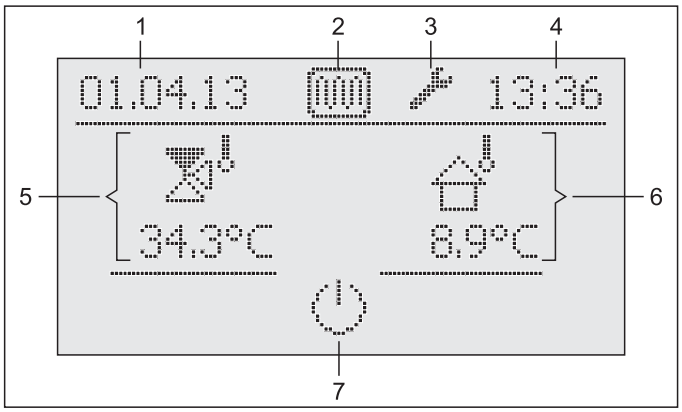
1 Date
2 Time
3 Current room temperature
4 Current outside temperature
5 Operating mode active for the assigned heating circuit

Fig. 4-4 Standard display RoCon M1 - "Living Room"

➔ The settings on the RoCon U1 room station are only valid for the assigned heating circuit (except in the case of active terminal function).

B: Configuration for setting "Mixing Valve"

- Confirm the setting "Mixing Valve" by briefly pressing the rotary switch.
  ➔ Setting of the heating circuit ID (parameter [HC Assignment]) is displayed.
- Use the rotary switch to set the [HC Assignment] parameter. This parameter must be identical to the setting of the address switch in the mixer module (see fig. 4-2), that is allocated to the room station RoCon U1.
- Confirm the changes with a brief push of the rotary switch.
  ➔ Setting of the terminal ID (parameter [Terminaladress]) is displayed.
- Use the rotary switch to set the[Terminaladress] parameter.
  ➔ Standard display is shown (see fig. 4-4).



1 Display date
2 Status display: Screed function active
3 Status display: Technician login
4 Display time
5 Current inflow temperature of the mixer circuit
6 Current outside temperature
7 Operating mode setting for the assigned heating circuit

Fig. 4-5 Standard display RoCon M1 - "Mixing Valve" with example of the status displays

In the setting "Mixing Valve" the room sensor of the RoCon M1 is deactivated.

4.4.3 (M1) Allocating mixing module RoCon M1 to a heat generator

If just 1 heat generator is incorporated in the RoCon system, adaption of the heat generator ID is not necessary (see tab. 4-1).

If adaptions need to be made, the value of the parameter [Boiler Assignment] (see chapter 6, tab. 6-15) must be set to the same value as the heat generator ID of the ROTEX HPSU compact, that is intended to supply the mixer circuit of this mixer module.

4.4.4 Master-RoCon function

Each room station RoCon U1, whose heating circuit ID is set to a direct heating circuit, can be allocated the Master-RoCon function.

- Enter the technician code (see section 3.6.1).
  ➔ The ***"Setup"*** level is displayed after entering.
- Select the [**Master-RoCon**] parameter using the rotary switch.
- Confirm the changes with a brief push of the rotary switch.
  ➔ The setting for the parameter is displayed.
- Using the rotary switch, set the parameter for the function to ***"On"*** and confirm by pressing it quickly.

All settings on the **RoCon U1** room station **act in the same way as** settings on the **RoCon B1** control panel for the assigned heat generator.

As a result, the functions for hot water preparation can also be remotely operated from the room station.

Since, in this setting, the control unit RoCon B1 has control over the allocated heating circuit, the settings made on the control unit of the ROTEX HPSU compact, only have an effect only on the heat generator, but not on the heating circuit (see section 4.1).

4.4.5 Caretaker function

The caretaker function equates to the terminal function (see chapter 3.4.9 and section 4.1 under parameter [Terminaladress]).

5 Parameter Overview

5.1 For first commissioning or resetting to factory settings

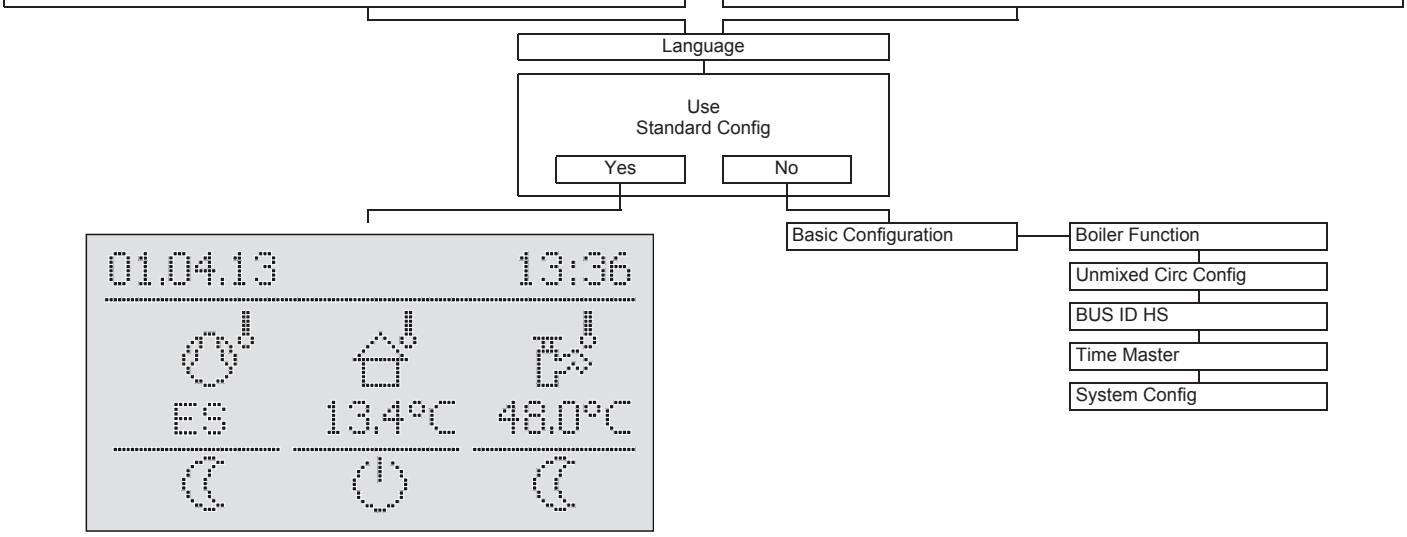
The parameters listed in this section can be accessed when the ROTEX HPSU compact is commissioned for the first time or if it is fully reset.

During initial commissioning:

- Rotary switch setting: Info ⓘ
- Turn power supply to ROTEX HPSU compact on.

After resetting to factory settings:

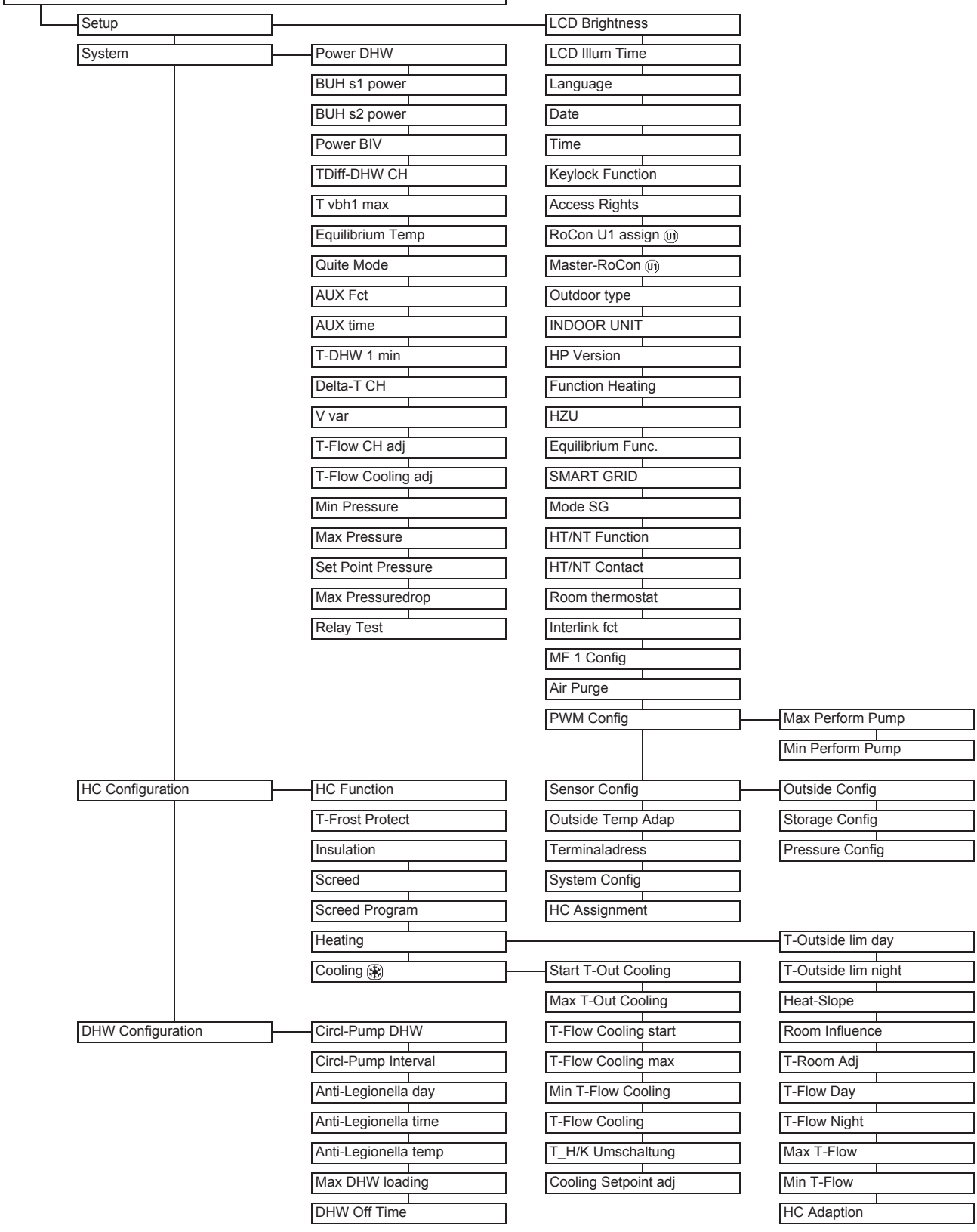
- Resetting to factory settings. (see chapter 3.6.12 - Possibility 3)
- Rotary switch setting: Info ⓘ



Tab. 5-1 Parameter "Basic Configuration"

5.2 After first commissioning / after successful basic configuration

5.2.1 Rotary switch setting: Configuration



Tab. 5-2 Parameter in rotary switch setting "Configuration"

5.2.2 Rotary switch setting: DHW Install

- 1x Hot Water
- Hyst HP
- Timer BOH

Tab. 5-3 Parameter in rotary switch setting "DHW Install"

5.2.3 Rotary switch setting: Operating Mode

- Standby
- Reducing
- Heating
- Cooling
- Summer
- Automatic 1
- Automatic 2

Tab. 5-4 Parameter in rotary switch setting "Operating Mode"

5.2.4 Rotary switch setting: Set Temp Day

- T-Room 1 Setpoint
- T-Room 2 Setpoint
- T-Room 3 Setpoint

Tab. 5-5 Parameter in rotary switch setting "Set Temp Day"

5.2.5 Rotary switch setting: Set Temp Night

- T-Reduced
- T-Absence

Tab. 5-6 Parameter in rotary switch setting "Set Temp Night"

5.2.6 Rotary switch setting: DHW Set Temp

- T-DHW Setpoint 1
- T-DHW Setpoint 2
- T-DHW Setpoint 3

Tab. 5-7 Parameter in rotary switch setting "DHW Set Temp"

5.2.7 Rotary switch setting: Time Program

- Party
- Away
- Vacation
- Holiday
- HC Program 1
- HC Program 2
- DHW Program 1
- DHW Program 2
- Circulation Time

Tab. 5-8 Parameter in rotary switch setting "Time Program"

5.2.8 Rotary switch setting: Remote Param

- Bus - Scan
- No selection
- Contr BM1/BE1 #X
- Mix Valve #X

Tab. 5-9 Parameter in rotary switch setting "Remote Param"

5.2.9 Rotary switch setting: Info

- Overview

Mode:	Pump:
Ext:	EHS:
RT:	BPV:
TV:	tDHW:
TVBH:	TA:
TR:	V:
TVBH2:	Tliq2:
tR2	tA2:
tDHW2:	quiet:

(see also chapter 3, fig. 3-5)

- Water Pressure
- T-HS
- T-HS Setpoint
- T-Outside
- T-DHW
- T-DHW Setpoint
- T-Return
- Flow Rate
- T-HC
- T-HC Setpoint
- Status HS pump
- Runtime Compressor
- Runtime Pump
- Mixer Position
- Qboh
- Qchhp
- Qsc
- Qch
- QWP
- Qdhw
- HS type
- Sw Nr B1/U1
- Sw Nr Controller
- Sw Nr RTX RT

Tab. 5-10 Parameter in rotary switch setting "Info"

5.2.10 Exit button: Sonderfunktion

- Manual Operation
- FA failure
- Protocol
- Delete message
- RoCon B1/U1 Reset
- Parameter Reset
- Timeprog Reset
- Return

Tab. 5-11 Parameter in the level "Sonderfunktion"

5.3 M1 Parameter levels for the RoCon M1 mixer module

5.3.1 Rotary switch setting: Info

see section 5.2.9

5.3.2 Rotary switch setting: Operating Mode

see section 5.2.3

5.3.3 Rotary switch setting: Set Temp Day

see section 5.2.4

5.3.4 Rotary switch setting: Set Temp Night

see section 5.2.5

5.3.5 Rotary switch setting: DHW Set Temp

No function

5.3.6 Rotary switch setting: DHW Install

No function

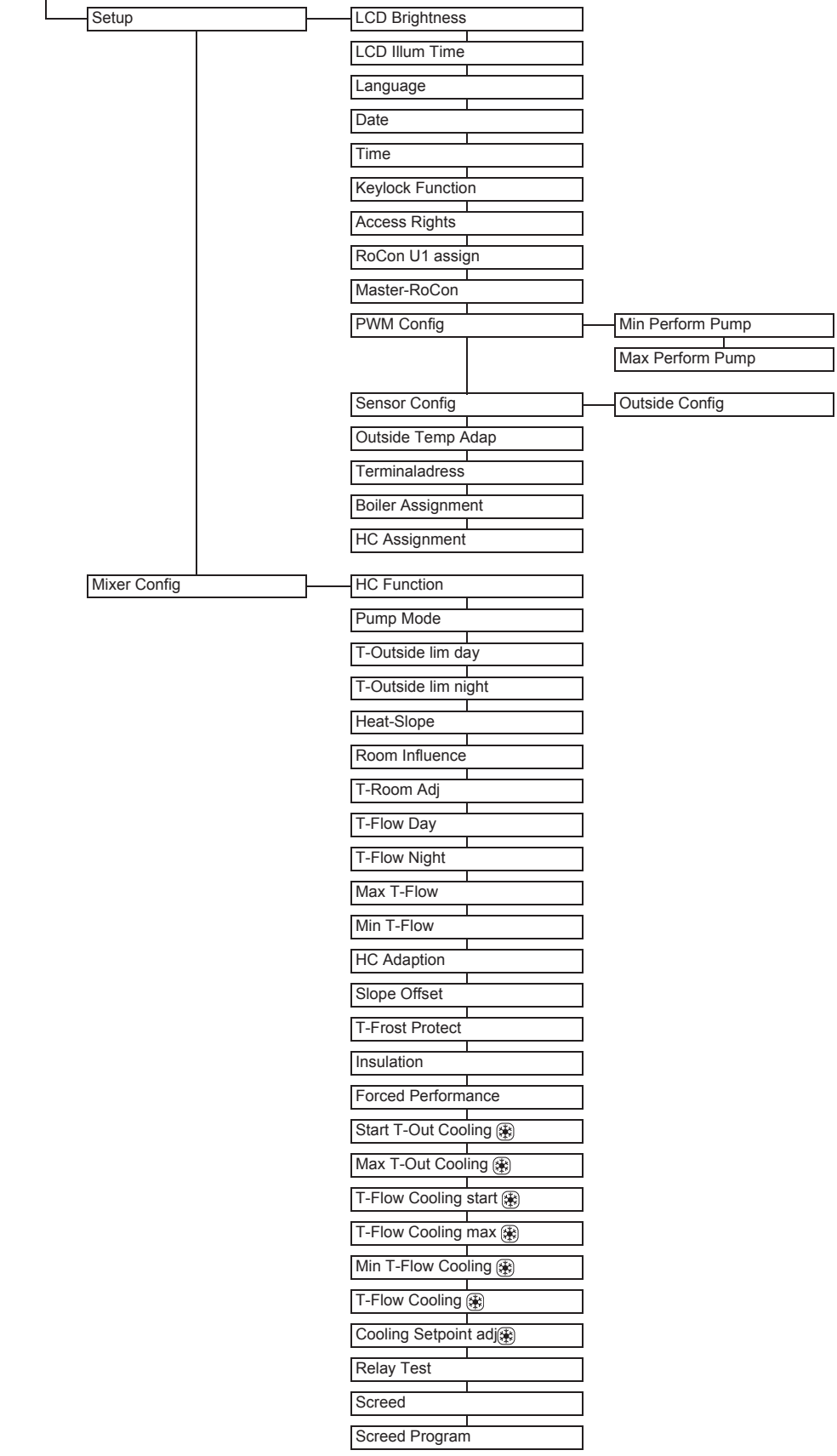
5.3.7 Rotary switch setting: Time Program

see section 5.2.7

5.3.8 Rotary switch setting: Remote Param

see section 5.2.8

5.3.9 Rotary switch setting: Configuration



Tab. 5-12 (M1) Parameter in rotary switch setting "Configuration"

6 Parameter settings

6.1 Explanation of the parameter tables

The parameter tables listed in the sections 6.2 to 6.11 contain important information concerning all parameters that are available in the individual rotary switch setting on the controller (1st. menu level, 2nd. menu level).

In addition to the parameter designations, the tables contain details for the setting ranges, factory settings, setting options or setting step distances and brief function explanations.

In addition, they provide explanation of the access rights for the operation of the controller. The following abbreviations are available for appropriate characterisation:

BE Access right for the operator

HF Access permission with Technician password

If different settings appear in the BF and HF columns, the user must log in as a technician so as to be able to access the parameter level to change the status set in the HF column (see chapter 3.6.1).

Status:

N Not visible

E Visible and configurable

S Visible

6.2 Rotary switch setting: Configuration

6.2.1 Level "Setup"

Sub-level	Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
			BE	HF			
	LCD Brightness	Display brightness	E	E	0 - 100 %	50%	10 %
	LCD Illum Time	Duration of display lighting	E	E	5 - 120 s	30 s	1 s
	Language	Language of the display text in the operating panel	E	E	Deutsch English French Dutch Italian Spanish Portuguese	Deutsch	-
	Date	Current date in format day / month / year. The current day of the week is calculated automatically from the date.	E	E			
	Time	Time in format hours / minutes.	E	E			
	Keylock Function	Release of the keylock function: Off: Button block cannot be activated. On: The button block can be activated using the rotary switch (see chapter 3.3).	E	E	Off On	Off	-
	Access Rights	Entering access code. Setting character by character like a combination lock (see chapter 3.6.1).	E	E	0 - 9	0000	1
	RoCon U1 assign	Display only on connected (U1) room station: Function of the room station RoCon U1 in the CAN-data bus system: Living Room: Control panel for the heating circuit assigned in the parameter [HC Assignment]. Mixing Valve: Mixer circuit operating unit (as a mixer circuit extension or as a free-standing mixer circuit controller) In addition to the aforementioned functions, the room station can be basically used as a remotely controlled unit of the ROTEX HPSU compact and the entire RoCon system (with activated terminal function) (see chapter 4.1 and 4.4.2).	N	E	Living Room, Mixing Valve	Living Room	-
	Master-RoCon	Display only on connected (U1) room station: Setting the Master-RoCon function Off: Deactivated On: Function active On a room station RoCon U1, whose heating circuit ID is set to a direct heating circuit, the Master-RoCon function can be activated (see chapter 4.4.4). Several room stations with active Master-RoCon function in the system are possible, however only one room station is possible that is allocated to the same heat generator. All settings on the room station RoCon U1 act, with activated Master-RoCon function, like settings on the control unit RoCon B1 of the allocated heat generator. As a result, the functions for hot water preparation can also be remotely operated from the room station.	N	E	Off On	Off	-
	Outdoor type	Type exterior heat pump unit 0: no Off selection 1: 4 kW 2: 6 kW 3: 8 kW 4: 11 kW 5: 14 kW 6: 16 kW	N	E	0 - 6	0	1

Sub-level	Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
			BE	HF			
	INDOOR UNIT	Type of interior heat pump unit Adaption of the set value important because the device types have different thawing logic. 0: So far no commissioning has taken place. 1: 304 2: 308 3: 508 4: 516	N	E	0 - 4	0	1
	HP Version	Version of the HPSU indoor unit 4: Version 4 5: Version 5	N	E	4 - 5	5	-
	Function Heating	Setting as to whether there is an additional heat generator (WEZ) for hot water generation and heating support (see chapter 3.6.7). 0: No additional WEZ 1: Optional backup heater 2: Alternative WEZ takes over the hot water generation and heating support 3: Alternative WEZ 1 takes over hot water generation and alternative WEZ 2 takes over heating support	N	E	0 - 3	1	1
	HZU	Heating support from domestic hot water storage tanks when the minimum temperature is exceeded (see chapter 3.6.8 and parameter [TDiff-DHW CH]). Off: No heating support On: Heating support function active	N	E	Off On	On	-
	Equilibrium Func.	The bivalence function is relevant for operation of the optional ancillary heater based on a backup demand (room heating operation). Off: Operation of the backup-heater is always possible. On: The backup heater is only enabled if the temperature falls below the one set in the parameter [Equilibrium Temp].	N	E	Off On	On	-
	SMART GRID	Off: Evaluation of the SG signal (see chapter 3.4.11). 0: SMART GRID function not active; SG signal not evaluated. 1: Depending on the signal from the energy supply company, the heat pump is turned off (no frost-protection function - see chapter 3.6.5) or run in high-temperature mode.	N	E	0 - 1	0	-
	Mode SG	Only if parameter [SMART GRID] = 1: Used for a possible target temperature increase in the case of aSMART GRID start command. 0: Comfort (5 K increase in target domestic hot water temperature) 1: Standard (2 K increase in inflow target temperature and 5 K increase in target domestic hot water temperature) 2: Eco (5 K increase in inflow target temperature and 7 K increase in target domestic hot water temperature)	N	E	0 - 2	1	1
	HT/NT Function	Setting which specifies which heat sources are switched off when the standard signal is received from the energy supply company (EVU) in the case of the customer having an off-peak tariff network connection. 0: Deactivated (no Off effect) 1: Refrigerant compressor switched off 2: Refrigerant compressor and reserve heating switched off 3: Everything switched off (no frost protection - see chapter 3.6.5)	N	E	0 - 3	0	1
	HT/NT Contact	Specifies whether the HT/NT input is an NC or NO contact. 0: NO contact (switching contact closed = standard tariff) 1: NC contact (switching contact closed = off-peak tariff)	N	E	0 - 1	0	-
	Room thermostat	Configuration of a room thermostat connected to the port J16 on the ROTEX HPSU compact using potential-free contacts. – Off: Deactivated – On: (Only when parameter [Interlink fct] = Off) Evaluation of heating and cooling switching contacts at plug connection J16 on the RoCon BM1 circuit board (only when none of the operating modes "Standby", "Economy mode", "Summer", "Vacation", "Holiday" or "Screed" is active): a) Closed switching contact heating: Operating mode is switched to "Heating". Priority if both switching contacts are closed. b) Closed switching contact cooling: Operating mode is switched to "Cooling". c) Open contacts: only frost protection active.	N	E	Off On	Off	-

Sub-level	Parameter	Description	Access BE	Access HF	Setting range Min / Max	Factory setting	Increment
	Interlink fct	Configuration for systems operating with 2 different inflow target temperatures (see chapter 3.6.6). A possible use for this might be the additional integration of aHP convector in a surface heating and cooling system. Requirement: 2 room thermostats need to be connected to plug connection J16 on the ROTEX HPSU compact. – Off: Deactivated – On: Evaluation of heating and cooling switching contacts at plug connection J16 on the RoCon BM1 circuit board. Activation of cooling mode only possible by changing operating mode to "Cooling" (see chapter 3.4.2). Setting for the parameter [Room thermostat] no longer evaluated. a) Open switching contacts: only frost protection active. b) Operating modes "Heating" and "Automatic 1" / "Automatic 2" active during switching cycles in day mode. – Closed switching contact heating = IL1: → The system operates according to the normal infeed target temperature according to the parameter settings in *"HC Configuration" > "Heating"*. – Closed switching contact cooling = IL2: → The system operates according to the increased inflow target temperature (normal inflow target temperature + value of parameter [T-Flow CH adj]. Priority if both switching contacts are closed. c) "Cooling" operating mode active. – Closed switching contact heating = IL1: → The system operates according to the normal infeed target temperature according to the parameter settings in *"HC Configuration" > "Cooling"*. – Closed switching contact cooling = IL2: → The system operates according to the reduced inflow target temperature (normal inflow target temperature - value of parameter [T-Flow Cooling adj]. Priority if both switching contacts are closed.	N	E	Off On	Off	-
	MF 1 Config	Configuring the multi-function output (230 V, connection J14): 0: The output has no function. 1: Gathering pump – the output becomes active as soon as a heating circuit of the system indicates a heat demand to the heat generator. 2: Circulation pump – the output is activated in accordance with the timer programme of the circulation pump or in accordance with the timer programme of the hot water generation, depending on the parametrisation (see chapter 3.4.7). 3: Delivery pump – the output is active as soon as there is a heat demand for the direct heating circuit of the heat generator.	N	E	0 - 3	2	1
	Air Purge	Activation of automatic bleeding of the ROTEX HPSU compact and the connected heating circuit (see chapter 3.6.10). Off: Deactivated On: Start of Air Purge	N	E	Off On	Off	-
PWM Config							
	Max Perform Pump	Upper limit for modulation of the pump output	N	E	20 - 100 %	100 %	1 %
	Min Perform Pump	Lower limit for modulation of the pump output	N	E	10 - 100 %	50%	1 %
Sensor Config							
	Outside Config	Configuration of the optional external temperature sensor RoCon OT1: Off: No sensor evaluation On: Sensor evaluation activated. This sensor is evaluated for determination of the set flow temperatures (see chapter 3.6.4) and displayed in the standard display). An error message is generated if an outdoor temperature sensor is connected.	N	E	Off On	Off	-
	Storage Config	Configuration of water heating: Inactive: No function for hot water generation. Sensor: Function for hot water generation is activated. A circulating tank temperature sensor is evaluated for hot water generation (if no circulating tank temperature sensor is connected, a fault message is generated). Thermostat: function for hot water generation is activated. A thermostatic switch (On / Off) is evaluated for hot water generation, and where "open brackets" are evaluated as "no demand".	N	E	Inactive Sensor Thermostat	Sensor	-
	Pressure Config	Configuring the sensor for assessment of the system water pressure: Off: No sensor evaluation On: Sensor evaluation activated (if no pressure sensor is connected, a fault message is generated.)	N	E	Off On	On	-
	Outside Temp Adap	Individual adapting for the measured value of the outdoor temperature relevant for the Controller.	N	E	-5.0 to +5.0 kW	0,0 K	0.1 K
	Terminaladress	Setting the terminal ID of the control unit for system access. The set value must be applicable for the entire system. Confirmation of this parameter using the rotary switch reinitialises the controller. All settings, except "Off", empower the user of the control unit to activate the terminal function and thus to operate all RoCon system components with a valid device ID (see chapter 3.4.9 and 4.1).	N	E	Off, 0 - 9	Off	1
	System Config	System configuration of the unit, consisting of the sensor configuration and data bus configuration. If you answer "Yes" to the enquiry about using the standard configuration when starting the unit for the first time, the basic configuration for the installed heat generator will be activated automatically. Confirmation of this parameter setting as *"Inactive"* or *"Delete*" using the rotary switch reinitialises the controller. A fault message follows. After this the rotary switch must be set to the position *"Info"*. Use the rotary switch to select the required menu item.	N	E	Inactive Active Delete	Active	-

Sub-level	Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
			BE	HF			
	HC Assignment	Display only on connected (U1) room station: Setting of the heating circuit ID for the room station (see chapter 4.1). This parameter determines which heating circuit is to be operated with it. The direct heating circuit of the ROTEX HPSU compact is set as standard to heating circuit "0" (see chapter 6.12, parameter [Unmixed Circ Config]).	N	E	Off, 0 - 15	Off	1

Tab. 6-1 Parameter in rotary switch setting "Configuration level", "Setup"

6.2.2 Level "System"

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Power DHW	Heating output of electric auxiliary heater for hot water generation	N	E	1000 - 40000 W	3000 W	1000 W
BUH s1 power	Heat capacity of the ancillary electric heater in Stage 1 heating support see operating instructions of immersion heater BUxx.	N	E	-	-	-
BUH s2 power	Heat capacity of the ancillary electric heater in Stage 2 heating support see operating instructions of immersion heater BUxx.	N	E	-	-	-
Power BIV	Setting limits the output of the heating support.	N	E	3000 - 40000 W	15000 W	1000 W
TDiff-DHW CH	Only when parameter [HZU] = On. Heating support activated when Tdhw > T_{HZUmin} + 4 K **and** Tdhw > [T-HS Setpoint] + 1 K. Heating support deactivated when Tdhw < T_{HZUmin} **or** Tdhw < [T-HS Setpoint]. T_{HZUmin} = current active target hot water temperature [T-DHW Setpoint] + set parameter value [TDiff-DHW CH]. Tdhw = current hot water storage tank temperature [T-HS Setpoint] = current active inflow target temperature (see tab. 6-12 and chapter 3.6.4)	N	E	2 - 15	5	1
T vbh1 max	Setting limits the inflow temperature (measured at $t_{V, BH}$) with active heating support function.	N	E	5 - 85°C	60°C	1°C
Equilibrium Temp	Setting affects the operation of the potential-free AUX switching contact (toggle switch output A) defined in the parameter [AUX Fct]. Only when parameter [Equilibrium Func.] = On. Outdoor temperature from which the optional ancillary heating is activated for supporting the room heating. The bivalent temperature is relevant for operation of the optional ancillary heater based on a backup demand (room heating operation). The temperature of the sensor integrated into the external unit for heat pump (info value TA2) is used. The info value TA2 displayed can differ from the value in the standard display depending on parameter [Outside Config].	E	E	-15°C to +35°C	0°C	1°C
Quite Mode	Mode for low-noise operation with reduced output (see chapter 3.4.10). 0: Deactivated 1: Activated 2: Operated in whisper mode only at night between 22:00 and 6:00 hours.	E	E	0 - 2	0	-
AUX Fct	Setting assigns the switching conditions to the potential-free AUX contact (toggle switch output A: see chapter 3.6.9). 0: Function deactivated AUX switching contact changes: 1: When storage tank temperature (Tdhw) ≥ value of parameter [T-DHW 1 min]. 2: When there is a cooling or heating demand. 3: When there is a hot water demand to the Backup Heater (EKBUxx) or the configured Backup Heater is required for heating support. 4: When there is a malfunction. 5: When sensor value (TVBH) > 60°C. 6: When the outdoor temperature < parameter value [Equilibrium Temp]. → Heat pump continues to operate = parallel bivalence operation. 7: When the outdoor temperature < parameter value [Equilibrium Temp] + there is a heating or hot water demand. → Heat pump does not continue to operate = alternative bivalence operation. 8: When there is a hot water demand. 9: When outside temperature < parameter value [Equilibrium Temp] + heat demand "Room heating" (not for hot water demand). Heat pump no longer operates in room heating mode below the value set in parameter [Equilibrium Temp] - only in hot water mode. Use: An alternative bivalency operation room heating, if the boiler is incorporated hydraulically in such a way that it heats the depressurised storage tank water in the ROTEX HPSU compact directly (connection via solar connections). 10: "Multi-Oil" - if outside temperature < parameter value [Equilibrium Temp] + heat demand "Room heating" (not for hot water demand). Heat pump no longer operates in room heating mode below the value set in parameter [Equilibrium Temp] - only in hot water mode. Use: An alternative bivalency operation room heating, if the boiler is hydraulically incorporated in the flow of the heat pump. For this type of application, the frost protection function must be deactivated on the ROTEX HPSU compact (parameter [T-Frost Protect] = Off).	N	E	0 - 9	0	1
AUX time	AUX switching contact (A) switches with a delay when the switching condition (see parameter [AUX Fct]) is pending for longer than the set time.	N	E	0 - 600 s	120 s	5 s
T-DHW 1 min	Switching threshold storage tank temperature (Tdhw) for AUX switching contact (see parameter [AUX Fct]).	N	E	20 - 85°C	50°C	1°C
Delta-T CH	Set outdoor temperature spread The ROTEX HPSU compact heating circulation pump controls the flow rate in order to achieve the set spread between the inflow target temperature and the return flow temperature ($t_{V, BH}$ - t_{R1}).	N	E	2 - 20 K	7 K	1 K
V var	Current minimum necessary volume flow in the system (calculated value, not configurable)	N	S	INFO VALUE	XXX	-
T-Flow CH adj	Only when parameter [Interlink fct] = On. With a closed cooling RT switching contact ❄, the inflow target temperature is increased by the set value (see tab. 6-1, parameter [Interlink fct]). Demand, e.g. from HP convector.	N	E	0 - 50 K	5 K	1 K
T-Flow Cooling adj	Only when parameter [Interlink fct] = On. With a closed cooling RT switching contact ❄, the cooling inflow target temperature is reduced by the set value (see tab. 6-1, parameter [Interlink fct]). Demand, e.g. from HP convector.	N	E	0 - 50 K	5 K	1 K

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Min Pressure	Defines the minimum water pressure. Pressure monitor function (only if the pressure sensor is activated, [Pressure Config] = On, see tab. 6-1): If the measured value falls below the set value, the ROTEX HPSU compact is switched off and an error message is generated.	N	E	0.1 - 5.0 bar	0.5 bar	0.1 bar
Max Pressure	Defines the maximum water pressure. Pressure monitor function (only if the pressure sensor is activated, [Pressure Config] = On, see tab. 6-1): If the measured value exceeds the set value, a warning message is generated.	N	E	0.1 - 5.0 bar	3.0 bar	0.1 bar
Set Point Pressure	Defines the set water pressure. Pressure monitor function (only if the pressure sensor is activated, [Pressure Config] = On, see tab. 6-1): If the measured value falls below the value set in the [Max Pressuredrop] parameter by more than the set amount, a warning message is generated.	N	E	0.1 - 5.0 bar	0.9 bar	0.1 bar
Max Pressuredrop	Defines the maximum acceptable pressure drop in the heating system. Pressure monitor function (only if the pressure sensor is activated, [Pressure Config] = On, see tab. 6-1): If the measured value exceeds the value set in the [Set Point Pressure] parameter by more than the set amount, a warning message is generated.	N	E	0.1 - 5.0 bar	0.5 bar	0.1 bar
Relay Test	Manual actuation of individual relays for test purposes. After confirmation of this parameter using the rotary switch, the list of the relays 1 - 9 Offis displayed with selection boxes. OffFor selection and confirmation of a relay using the rotary switch, a tick is set in the selection box and the respective relay is activated. Off Multiple selections can be made Relay 1: Offoutput J1 (internal heating circulation pump), (M1) Offoutput Relay 2: Offoutput J14 (Circulation pump), (M1) mixer "open" Relay 3: Contact A to output OffJ2 (change-over valve 3UVB1), (M1) mixer "closed" Relay 4: Contact B to output OffJ2 (change-over valve 3UVB1) Relay 5: Offoutput J12, change-over valve 3UV DHW, "closed" Relay 6: Offoutput J12, change-over valve 3UV DHW, "open" Relay 7: Port J3 (potential-free relay: NO contact B-B1) - AUX Relay 8: Port J3 (potential-free relay: Change-over contact A-A1/A-A2) - AUX Relay 9: Offoutput J10 (power supply A1P)	N	E	☐ / ☑	☐	-

Tab. 6-2 Parameter in rotary switch setting "Configuration level", "System"

Depending on the version of the device software certain information parameters for the device, not described in tab. 6-2, can be displayed at this level. For this see tab. 6-12.

6.2.3 Level "HC Configuration"

Sub-level	Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
			BE	HF			
	HC Function	Setting defines the type of inflow temperature control. 0: Weather-controlled flow temperature regulation 1: Regulating to a fixed set flow value, depending on the heating, cooling or setback mode	N	E	0 - 1	0	1
	T-Frost Protect	Off: No frost protection of the heating circuit Otherwise: If the outside temperature falls below the programmed value, the system switches into the frost protection mode (switches the pumps on). The function ceases once the outside temperature has risen to the set value +1 K.	E	E	Off, -15 to +5°C	0°C	1°C
	Insulation	Setting the insulation standard of the building. This affects the way the heating curve and the heating times automatically adapt to the outside temperature.	E	E	Off low Normal Good Very Good	low	-
	Screed	Function for screed drying Off: Deactivated On: The flow temperature is regulated according to the set screed programme. The day on which the screed function is activated does not count towards the running time of the screed programme. The first day starts as the day changes on the first day at 00:00. On the day of activation we heat for the remaining time at the inflow temperature for the first day's program (see chapter 3.6.13).	N	E	Off On	Off	-
	Screed Program	Setting the procedural program for screed heating. An individual inflow temperature can be set for each day for a maximum period of 28 days. The end of the screed programme is defined by the 1st. Day at target value setting "- - - -" (see chapter 3.6.13).	N	E	10 - 70°C per heating day	see tab. 3-11	1°C
Heating							
	T-Outside lim day	Setting the automatic summer shutdown of the heating system. If the outside temperature measured and averaged out by the controller exceeds the set value by 1 K, the heating circuit is switched off. The heating is released again if the outdoor temperature falls below the set heat curve.	E	E	Off, 10 - 40°C	19°C	0,5°C
	T-Outside lim night	Parameter for setting the heating limit for "Switch-off" of the heating circuit during economy mode (functionality as for parameter [T-Outside lim day]).	E	E	Off, 10 - 40°C	10°C	0,5°C
	Heat-Slope	Only if parameter [HC Function] = 0: Setting the heating curve. The heating curve reflects the dependence of the set inflow temperature of the heating circuit on the outside temperature (see chapter 3.6.2).	E	E	0,0 - 3,0	0.5	0.1

Sub-level	Parameter	Description	Access BE	Access HF	Setting range Min / Max	Factory setting	Increment
	Room Influence	Only if the room station (U1) is connected and assigned to the heating circuit. Setting of the impact the deviation of the room temperature measured by the RoCon U1 from the actual set value (see chapter 3.4.3 and 3.4.4) has on the flow temperature. Off: Exclusively weather-controlled flow temperature regulation 0: Purely weather-controlled flow temperature regulation, but internal heat recirculation pump continues to run until the next heating cycle following a heat demand during the setback time. 1-20: Causes a correction of the set flow temperature (parallel shift of the heat curve) by the set factor. For example: If the measured temperature is 2 K below the set value, the set flow temperature is raised 2-times the set value.	E	E	Off, 0 - 20	Off	1
	T-Room Adj	Only if the room station (U1) is connected and assigned to the heating circuit. Individual adaptation of the room temperature relevant for control. Should a systematic deviation of the room temperature as measured by the RoCon U1 from the actual temperature in the living area of this room be detected, the measured value can be corrected by the set value.	E	E	-5.0 to +5.0 kW	0.0 K	1 K
	T-Flow Day	Only if parameter [HC Function] = 1: Setting the inflow target temperature for the heating circuit during the heating time when in operating mode: "Automatic 1", "Automatic 2", "Heating".	E	E	20 - 90°C	40°C	1°C
	T-Flow Night	Only if parameter [HC Function] = 1: Setting the inflow target temperature for the heating circuit during the setback time when in operating mode: "Automatic 1", "Automatic 2", "Reducing".	E	E	10 - 90°C	10°C	1°C
	Max T-Flow	The inflow temperature determined for the heating circuit is limited to the maximum value set here. If an additionally connected mixed heating circuit demands a higher temperature for the ROTEX HPSU compact, this is taken into account. This means that the heat internal circulation pump for the ROTEX HPSU compact runs all the time when this is switched on. If the connected heating circuit supplies under floor heating, a mechanical temperature limiter must be fitted to prevent overheating the screed.	N	E	20 - 90°C	55°C	1°C
	Min T-Flow	The inflow temperature determined for the heating circuit is limited to the minimum value set here.	N	E	28 - 90°C	28°C	1°C
	HC Adaption	Only if the room station (U1) is connected and assigned to the heating circuit. Off: Deactivated On: Activated = Start a one-off automatic adaptation of the heating curve. Requirements: - Outside temperature <8 °C - Setting the operating mode: "Automatic 1" or "Automatic 2" - Duration of the setback phase must be 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 is determined by the Controller from the inflow target temperatures that are necessary to maintain this room temperature. If the automatic adjustment of the heating curve is interrupted, the function pauses until it is performed successfully on the next day or until it is ended by setting the parameter to "Off" or by changing the current operating mode. The hot water generation and the heating-up optimisation are blocked during the automatic heating curve adapting.	N	E	Off On	Off	-
Cooling (❄) Can be used only if the assigned heat generator has a cooling function.)							
	Start T-Out Cooling	Only if parameter [HC Function] = 0: Setting from which outside temperature the cooling operation with the highest cooling infeed target temperature [T-Flow Cooling start] starts (setting condition: operating mode "Cooling").	E	E	15 - 45°C	24°C	1°C
	Max T-Out Cooling	Only if parameter [HC Function] = 0: Setting to determine from which outdoor temperature the lowest cooling flow temperature [T-Flow Cooling max] is stipulated (setting condition: operating mode "Cooling").	E	E	20 - 45°C	35°C	1°C
	T-Flow Cooling start	Only if parameter [HC Function] = 0: Setting the cooling inflow target temperature at the start of cooling mode (outside temperature = parameter [Start T-Out Cooling]).	E	E	5 - 25°C	18°C	1°C
	T-Flow Cooling max	Only if parameter [HC Function] = 0: Setting the minimum cooling inflow target temperature. This is kept constant relative to the outside temperature (parameter [Max T-Out Cooling]).	E	E	5 - 25°C	8°C	1°C
	Min T-Flow Cooling	Only if parameter [HC Function] = 0: Setting the absolute lower limit of the cooling inflow target temperature. The limitation is effective if a lower cooling inflow target temperature is determined based on other parameter settings.	N	E	5 - 25°C	18°C	1°C
	T-Flow Cooling	Only if parameter [HC Function] = 1: Setting the cooling inflow target temperature (fixed value) when cooling mode is active.	E	E	8 - 30°C	18°C	1°C
	T_H/K Umschaltung	Automatic activation of the cooling mode. Off: Deactivated 10 - 40: If the outdoor temperature exceeds the set value, the operating mode "Cooling" is set. If the outdoor temperature falls below the set value by 2 K, the system automatically switches back to the previously activated operating mode.	N	E	Off, 10 - 40°C	Off	1°C
	Cooling Setpoint adj	Parallel displacement of the cooling characteristic curve to match the set value.	E	E	-5.0 to +5.0 kW	0.0 K	1 K

Tab. 6-3 Parameter in rotary switch setting "Configuration level", "HC Configuration"

6.2.4 Level "DHW Configuration"

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Circl-Pump DHW	Setting for activating a circulation pump. Off: Optional circulation pump operates according to the timer programme [Circulation Time]. On: The optional circulation pump operates synchronously with the switching timer program activated for generation of hot water.	E	E	Off On	Off	-
Circl-Pump Interval	Setting the interval control for an optional circulation pump. Off: Deactivated The circulation pump operates continuously throughout the enabled time of the assigned switching timer program (parameter [Circl-Pump DHW]). Otherwise: The circulation pump runs cyclically (duty ratio: pump running time = set value every 15 min).	E	E	Off, 1 - 15 min	Off	1 min
Anti-Legionella day	Setting the day for the thermal disinfection of the circulating tank. Off: No thermal disinfection Monday - Sunday: Day for thermal disinfection Mon - Sun: Daily thermal disinfection	E	E	Off, Monday ... Sunday, Mon - Sun	Off	-
Anti-Legionella time	Setting the start time of the thermal disinfection of the hot water circulating tank (format hh:mm).	N	E	00:00 - 23:45	03:30	15 min
Anti-Legionella temp	Setting the hot water target temperature during thermal disinfection of the hot water circulating tank (format hh:mm).	N	E	60 - 70°C	65°C	1°C
Max DHW loading	Setting limits the time period for hot water generation to the set target value [T-DHW Setpoint]. After expiry of this time period, the controller automatically returns to the previously active operating mode. The hot water generation takes place at the actual set value.	N	E	0 - 240 min	60 min	10 min
DHW Off Time	Setting the block time following completion or interruption of a hot water generation cycle. New demand of hot water generation is satisfied only after expiry of this block time.	N	E	0 - 180 min	30 min	10 min

Tab. 6-4 Parameter in rotary switch setting "Configuration level", "DHW Configuration"

6.3 Rotary switch setting: DHW Install 1x

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
1x Hot Water	Start of the one-off heating up of the hot water and the set value [T-DHW Setpoint 1], independent of the heating programmes.	E	E	Off On	Off	-
Hyst HP	Switching threshold hot water charging Setting of the temperature difference to which the temperature in the domestic hot water storage tank compared to the current target hot water temperature [T-DHW Setpoint] can drop before the heat pump is switched on to provide hot water.	E	E	2 - 20 K	7 K	1 K
Timer BOH	Delay time after which the reserve heating may support the heat pump in hot water charging (see chapter 3.6.7).	E	E	20 - 95 min	50 min	1 min

Tab. 6-5 Parameter in rotary switch setting "DHW Install"

6.4 Rotary switch setting: Operating Mode ⏻...☀

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Standby	In this operating mode, all internal functions are turned 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 also switched at a higher level to the operating mode when this setting is selected. ⚠ Outputs are not free of voltage always.	E	E	☐ / ☑	☐	-
Reducing	The internal heating circuit provides continuous (24 h per day) regulation to the parametrised setback temperature. The hot water generation takes place according to [DHW Program 1].	E	E	☐ / ☑	☐	-
Heating	The internal heating circuit provides continuous (24 h per day) regulation to the parametrised day set room temperature (heating). The hot water generation takes place according to [DHW Program 1].	E	E	☐ / ☑	☐	-
Cooling	The internal heating circuit provides continuous (24 h per day) regulation to the parametrised day room temperature set (cooling). The hot water generation takes place according to [DHW Program 1]. Frost protection remains active and a blocking protection for the pump is guaranteed.	E	E	☐ / ☑	☐	-
Summer	The internal heating circuit is turned off. Frost protection remains active and a blocking protection for the pump is guaranteed. The hot water generation takes place according to [DHW Program 1]. All controllers integrated in the RoCon-system via the CAN bus are also switched at a higher level to the operating mode when this setting is selected.	E	E	☐ / ☑	☐	-
Automatic 1	The internal heating circuit regulates according to the parametrised timer programme [HC Program 1] with the individual day room temperatures set. The hot water generation takes place according to [DHW Program 1].	E	E	☐ / ☑	☐	-
Automatic 2	The internal heating circuit regulates according to the parametrised timer programme [HC Program 2] with the individual day room temperatures set. The hot water generation takes place according to [DHW Program 2].	E	E	☐ / ☑	☐	-

Tab. 6-6 Parameter in rotary switch setting "Operating Mode"

6.5 Rotary switch setting: Set Temp Day

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
T-Room 1 Setpoint	Target room temperature for the 1st switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	5 - 40°C	20°C	0,5°C
T-Room 2 Setpoint	Target room temperature for the 2nd switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	5 - 40°C	20°C	0,5°C
T-Room 3 Setpoint	Target room temperature for the 3rd switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	5 - 40°C	20°C	0,5°C

Tab. 6-7 Parameter in rotary switch setting "Set Temp Day"

6.6 Rotary switch setting: Set Temp Night

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
T-Reduced	Target room temperature for the setback times for the permanent timer programmes [Automatic 1] and [Automatic 2].	E	E	5 - 40°C	15°C	0,5°C
T-Absence	Target room temperature for the setback times for the temporary timer programmes [Away] and [Vacation].	E	E	5 - 40°C	15°C	0,5°C

Tab. 6-8 Parameter in rotary switch setting "Set Temp Night"

6.7 Rotary switch setting: DHW Set Temp

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
T-DHW Setpoint 1	Target hot water temperature for the 1st switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	35 - 70°C	48°C	1°C
T-DHW Setpoint 2	Target hot water temperature for the 2nd switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	35 - 70°C	48°C	1°C
T-DHW Setpoint 3	Target hot water temperature for the 3rd switching cycle of the timer programmes [Automatic 1] and [Automatic 2].	E	E	35 - 70°C	48°C	1°C

Tab. 6-9 Parameter in rotary switch setting "DHW Set Temp"

6 Parameter settings

6.8 Rotary switch setting: Time Program

Parameter	Designation	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Party	The heating circuit operates at the target room temperature set in the [T-Room 1 Setpoint] parameter for the set period of time. If the [Automatic 1] or [Automatic 2] timer programmes are active, the heating cycle is extended or started early. (Target room temperature - see chapter 3.4.7). The hot water generation is not affected.	E	E	00:00 - 06:00	00:00	1 h
Away	The heating circuit operates at the target room temperature set in the [T-Absence] parameter for the set period of time. The hot water generation is not affected.	E	E	00:00 - 06:00	00:00	1 h
Vacation	The heating circuit operates at the target room temperature set in the [T-Absence] parameter permanently (24 h per day). A calendar function can be used to enter a time period for the absence.	E	E	Date on first day - Date on last day	-	1 Day
Holiday	A calendar function can be used to enter a time period for presence. During this time, the system operates exclusively in accordance with the "Sunday" settings in [DHW Program 1] and [HC Program 1].	E	E	Date on first day - Date on last day	-	1 Day
HC Program 1	In this menu we can parametrise the 1st. timer programme for the heating circuit. 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 can be parametrised from Monday to Friday, Saturday to Sunday and Monday to Sunday.	E	E	see chapter 3.4.7	see tab. 3-9	15 min
HC Program 2	In this menu we can parametrise the 2nd. timer programme for the heating circuit. 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 can be parametrised from Monday to Friday, Saturday to Sunday and Monday to Sunday.	E	E	see chapter 3.4.7	see tab. 3-9	15 min
DHW Program 1	In this menu we can parametrise the 1st. timer programme for hot water generation. 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 can be parametrised from Monday to Friday, Saturday to Sunday and Monday to Sunday.	E	E	see chapter 3.4.7	see tab. 3-9	15 min
DHW Program 2	In this menu we can parametrise the 2nd. timer programme for hot water generation. 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 can be parametrised from Monday to Friday, Saturday to Sunday and Monday to Sunday.	E	E	see chapter 3.4.7	see tab. 3-9	15 min
Circulation Time	In this menu we can parametrise a timer programme 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 can be parametrised from Monday to Friday, Saturday to Sunday and Monday to Sunday.	E	E	see chapter 3.4.7	see tab. 3-9	15 min

Tab. 6-10 Parameter in rotary switch setting "Time Program"

6.9 Rotary switch setting: Remote Param

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Bus - Scan	Off: No function On: Controller checks which RoCon devices are connected to the system using the CAN bus lines. Devices that are detected are displayed with their type and device ID (see chapter 4.1, example: MM#8 = Mixer module with device ID 8). The selection and confirmation of a device with the rotary switch (brief pressing of the button places a check mark in the selection box) activates the terminal function. → The control unit then operates as a remote control for the selected device (see chapter 3.4.9).	E	E	Off On	Off	-
No selection	Activation switches to the local device.	E	E	☐ / ☑	☐	-
Contr BM1/BE1 #X	Activation switches to the ROTEX HPSU compact with the device ID X (see chapter 6.12, parameter [BUS ID HS]).	E	E	☐ / ☑	☐	-
Mix Valve #X	Activation switches to the mixer module with the device ID X (see chapter 6.13.1, parameter [HC Assignment]).	E	E	☐ / ☑	☐	-

Tab. 6-11 Parameter in rotary switch setting "Remote Param"

6.10 Rotary switch setting: Info ⓘ

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Overview	Display of different current operating data (see chapter 3.4.1).	S	S	-	-	-
Water Pressure	The current water pressure is displayed in bar.	S	S	0 - 4 bar	-	0.1 bar
T-HS	The current temperature (TVBH) of the heat generator is displayed in°C.	S	S	0 - 100°C	-	1°C
T-HS Setpoint	The current Inflow target temperature of the heat generator is displayed in °C (see chapter 3.6.4).	S	S	0 - 90°C	-	0.1°C
T-Outside	The average external temperature is displayed °C.	S	S	-39 to +50°C		0.1°C
T-DHW	The current temperature of the hot water storage tank is displayed in °C. If there is no hot water function activated, "- - -" is displayed.	S	S	0 - 100°C	-	0.1°C
T-DHW Setpoint	The current target hot water temperature is displayed °C. If there is no hot water function activated, "- - -" is displayed. The current set value is here always the maximum value of all relevant demands for this hot water circuit.	S	S	10 - 70°C	-	0.1°C
T-Return	The current return flow temperature of the heat generator is displayed in °C. If there is no relevant sensor connected to the heat generator, "- - -" is displayed.	S	S	0 - 100°C	-	0.1°C
Flow Rate	The filtered value of the current volume flow in litres per hour is displayed.	S	S	0 - 5100 l/h	-	l/h
T-HC	The inflow temperature in the direct heating circuit is displayed in °C.	S	S	0 - 100°C	-	0.1°C
T-HC Setpoint	The set temperature of the flow in the direct heating circuit is displayed in °C.	S	S	0 - 90°C	-	0.1°C
Status HS pump	The current status of the internal heat circulation pump in the ROTEX HPSU compact is displayed.	S	S	Off On	-	-
Runtime Compressor	The running time of the refrigerant compressor is displayed in h.	S	S	-	-	h
Runtime Pump	The running time of the internal heating circulation pump is displayed in h.	S	S	-	-	h
Mixer Position	The current position of the 3UV DHW 3-way switch valve is displayed. 0%: position A (room heating) 100%: position B (domestic hot water generation)	S	S	0 - 100 %	-	1 %
Qboh	The amount of heat in the additional heat generator for hot water generation is displayed in kWh.	S	S	-	-	kWh
Qchhp	The amount of heat in the additional heat generator for heating mode is displayed in kWh.	S	S	-	-	kWh
Qsc	The quantity of heat in the heat pump for cooling is displayed in kWh.	S	S	-	-	kWh
Qch	The quantity of heat in the heat pump for heating is displayed in kWh.	S	S	-	-	kWh
QWP	The total amount of heat in the heat pump is displayed in kWh.	S	S	-	-	kWh
Qdhw	The quantity of heat for hot water generation is displayed in kWh.	S	S	-	-	kWh
HS type	The heat generator type ROTEX HPSU compact detected is displayed.	S	S	-	-	-
Sw Nr B1/U1	The software and version of the control unit RoCon B1 / (U1) of the room station RoCon U1 is displayed.	S	S	-	-	-
Sw Nr Controller	The software number and the version of the RoCon BM1 circuit board are displayed.	S	S	-	-	-
Sw Nr RTX RT	The software number and the version of the RTX-AL4 circuit board are displayed.	S	S	-	-	-

Tab. 6-12 Parameter in rotary switch setting "Info"

6.11 Exit button: Sonderfunktion

Depress the exit button for at least 5 secs. for access.

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Manual Operation	The direct heating circuit and the target hot water temperature are controlled according to the temperature set in this parameter (see chapter 3.5.1).	E	E	20 - 80°C	50°C	1°C
FA failure	Display of a current heat pump malfunction in the ROTEX HPSU compact. If "----" is displayed there is no fault (see chapter 7).	E	E	-	-	-
Protocol	Display of protocol (error and information messages). Here we display the saved messages of the ROTEX HPSU compact and the connected RoCon system components with date and code as a menu entry in each case. By selecting an entry to using the rotary switch, all other corresponding information is displayed concerning the selected message: - Date and time of the message - Code number (Information for the heating technician) - Device type from which the message comes - Device ID for the RoCon unit where the message originates	E	E	-	-	-
Delete message	By setting this parameter to "On" and briefly pressing the rotary switch, all entries in the report, including the faults from connected RoCon system components, are deleted.	E	E	Off On	Off	-
RoCon B1/U1 Reset	Resets all parameter settings to factory setting. Required for software updates or changes to the RoCon system (see chapter 4.2). Complete reconfiguration subsequently required.	N	E	Off On	Off	-
Parameter Reset	Resets all customer-specific parameter settings to factory setting.	N	E	Off On	Off	-
Timeprog Reset	Resets all permanent time programmes to factory setting (see tab. 3-9).	E	E	Off On	Off	-
Return	This parameter is used only to exit the special level.	E	E			

Tab. 6-13 Parameter in the level "Sonderfunktion"

6.12 Parameter level "Basic Configuration"

This parameter level appears only if:
– during initial commissioning, during the question "Use Standard Config?" the answer "No" has been selected or
– after, in the rotary switch position ***"Configuration"*** , level *"Setup"* the parameter [System Config] has been set to "Inactive" or "Delete".

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
Boiler Function	Setting of system functionality of the device in the RoCon system (factory setting not present). The standard value of this parameter is "Single" and thus applies to a ROTEX HPSU compact in self-contained operating mode. With value settings "Slave 1" to "Slave 8" the ROTEX HPSU compact works as a heater module and waits for the demand for an optional cascade regulator. These settings are not currently usable.	N	E	Single, Slave 1 ... Slave 8	Single	-
Unmixed Circ Config	Setting the heating circuit ID for the direct heating circuit of the ROTEX HPSU compact. The heating circuit ID must be unique in the entire RoCon system. There should be no overlap with the heating circuit IDs of optional mixer circuits (parameter [HC Assignment], see tab. 6-15).	N	E	0 - 15	0	1
BUS ID HS	Settings can only be changed if more than 1 heat generator is incorporated in the RoCon system. Several heat generators incorporated in the heating installation must be regarded as a special application. If necessary contact ROTEX service technician.	N	E	0 - 7	0	1
Time Master	Activation of a system-wide time master. RoConThe time master synchronises all controllers in the Can system with the date and time set at the time master. The input of time and date can no longer be set at any other control unit in the system. There may be only one time master in the entire system. The parameter is not available if the time master parameter is activated at a different controller in the RoCon system.	N	E	Off On	On	-
System Config	The system configuration of the unit, consisting of the sensor configuration and data bus configuration, can be deleted, activated and deactivated with this parameter. If you answer "Yes" to the enquiry about using the standard configuration, when starting the unit for the first time, the settings required for the basic equipment of the heat generator are activated automatically (see chapter 6.2.1, tab. 6-1).	N	E	Inactive Active Delete	Inactive	-

Tab. 6-14 Parameter in the level "Basic Configuration"

6.13 (M1) Parameter levels for the RoCon M1 mixer module

The parameter levels, parameter priorities, setting ranges and associated functions are essentially the same as those described in the preceding sections.

In some cases there exist at individual levels a restricted scope of available parameters.

The description below relates only to the sections indicated. Areas where there are significant differences are described in greater detail.

Rotary switch setting: Info ⓘ
see section 6.10

When setting the control unit to "Mix Valve #X" (terminal function), the displayed values refer to the components connected (pump, mixer valve,...) connected to the RoCon M1 of the mixer circuit allocated using the device ID.

When setting a room station RoCon U1 to "Living Room", that has been allocated to the mixer module via the heating circuit ID, the parameter [T-Room adj] is available. The rotary switch can be used to change the room target temperature to the range -5 K to +5 K. This function is not available if the RoCon U1 is used as a remote control in terminal function.

Rotary switch setting: Operating Mode
see section 6.4

Rotary switch setting: Set Temp Day
see section 6.5

Rotary switch setting: Set Temp Night
see section 6.6

Rotary switch setting: DHW Set Temp
No function

Rotary switch setting: DHW Install
No function

Rotary switch setting: Time Program
see section 6.8

Rotary switch setting: Configuration
see section 6.13.1 and 6.13.2.

Rotary switch setting: Remote Param
see section 6.9

6.13.1 (M1) Rotary switch setting: Configuration , level "Setup"

Sub-level	Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
			BE	HF			
	LCD Brightness	Display brightness	E	E	0 - 100 %	50%	10 %
	LCD Illum Time	Duration of display lighting	E	E	5 - 120 s	30 s	1 s
	Language	Language of the display text in the operating panel	E	E	Deutsch English French Dutch Italian Spanish Portuguese	Deutsch	1
	Date	Current date in format day / month / year. The current day of the week is calculated automatically from the date.	E	E			
	Time	Time in format hours / minutes.	E	E			
	Keylock Function	Release of the key lock function: Off: Button block cannot be activated. On: The button block can be activated using the rotary switch (see chapter 3.1).	E	E	Off On	Off	-
	Access Rights	Entering access code. Setting character by character like a combination lock (see chapter 3.6.1).	E	E	0 - 9	0000	1
	RoCon U1 assign	Display only on connected (U1) room station: Function of the room station RoCon U1 in the CAN-data bus system: Living Room: Control unit for the heating circuit assigned in the parameter [HC Assignment] (heating circuit ID). Mixing Valve: Mixer circuit operating unit (as a mixer circuit extension or as a free-standing mixer circuit controller) In addition to the aforementioned functions, the room station can be basically used as a remotely controlled unit of the ROTEX HPSU compact and the entire RoCon system (with activated terminal function) (see chapter 4.1 and 4.4.2).	N	E	Living Room, Mixing Valve	Living Room	-
PWM Config							
	Min Perform Pump	Lower limit for modulation of the pump output	N	E	0 - 100 %	50%	1 %
	Max Perform Pump	Upper limit for modulation of the pump output	N	E	0 - 100 %	100%	1 %
Sensor Config							
	Outside Config	Configuration of the outside temperature sensor: Off: Take-over of outdoor temperature of heat generator, to which the mixer module is allocated by the heat generator ID (Parameter [Boiler Assignment]), or no sensor evaluation On: Sensor evaluation activates (if an outdoor temperature sensor is not connected to the RoCon M1 mixer module, an error message is generated.)	N	E	Off On	On	-
	Outside Temp Adap	Individual adapting for the measured value of the outdoor temperature relevant for the Controller.	N	E	-5.0 to +5.0 kW	0,0 K	0.1 K
	Terminaladress	Setting the terminal ID of the control unit for system access. The set value must be applicable for the entire system. Confirmation of this parameter using the rotary switch reinitialises the controller. All settings, except "Off", empower the user of the control unit to activate the terminal function and thus to operate all RoCon system components with a valid device ID (see chapter 3.4.9 and 4.1).	N	E	Off, 0 - 9	Off	1
	Boiler Assignment	Setting the heat generator ID. Allocation of the RoCon M1 to the heat generator. The setting must correspond to the value of the parameter [BUS ID HS] (see chapter 6.12, tab. 6-14).	N	E	0 - 7	0	1
	HC Assignment	Setting the heating circuit ID of the mixer module. Off: Automatic allocation when there is just one mixer module in the system (system takes over the value of the address switch as the heating circuit ID, irrespective of the set value). The setting must always match the heating circuit ID on the address switch of the mixer module (see chapter 4.4.1, fig. 4-2). 0 - 9 = 0 - 9 10 = A 11 = B 12 = C 13 = D 14 = E 15 = F	N	E	Off, 0 - 15	Off	1

Tab. 6-15 (M1) Parameter in rotary switch setting "Configuration level", "Setup"

6.13.2 (M1) Rotary switch setting: Configuration , level "Mixer Config"

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
HC Function	Setting defines the type of inflow temperature control. 0: Weather-controlled flow temperature regulation 1: Regulating to a fixed set flow value, depending on the heating, cooling or setback mode	N	E	0 - 1	0	1
Pump Mode	Setting the operating mode of the mixer circuit pump. 0: Standard mixer circuit pump switching according to weather conditions / room temperature 1: Mixer circuit pump switching according to heating limits (optional room thermostat switch-off also effective). 2: Mixer circuit pump switching according to heating programme 3: Mixer circuit pump in continuous running mode	N	E	0 - 3	0	1

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
T-Outside lim day	Only if parameter [Pump Mode] = 1: Setting the automatic summer shutdown of the heating system. If the outside temperature measured and averaged out by the controller exceeds the set value by 1 K, the heating circuit is switched off. The heating is enabled again once the outside temperature falls below the set heating curve.	E	E	Off, 10 - 40°C	19°C	0,5°C
T-Outside lim night	Only if parameter [Pump Mode] = 1: Parameter for setting the heating limit for switch-off of the heating circuit during economy mode (functionality as for parameter [T-Outside lim day]).	E	E	Off, 10 - 40°C	10°C	0,5°C
Heat-Slope	Only if parameter [HC Function] = 0: Setting the heating curve. The heating curve reflects the dependence of the set inflow temperature of the heating circuit on the outside temperature (see chapter 3.6.2).	E	E	0,0 - 3,0	0.5	0.1
Room Influence	Only if the room station (U1) is connected and assigned to the heating circuit. Setting of the impact the deviation of the room temperature measured by the RoCon U1 from the actual set value (see chapter 3.4.3 and 3.4.4) has on the flow temperature. Off: Exclusively weather-controlled flow temperature regulation 0: Purely weather-controlled flow temperature regulation, but internal heat recirculation pump continues to run until the next heating cycle following a heat demand during the setback time. 1-20: Causes a correction of the set flow temperature (parallel shift of the heat curve) by the set factor. For example: If the measured temperature is 2 K below the set value, the set flow temperature is raised 2-times the set value.	E	E	Off, 0 - 20	Off	1
T-Room Adj	Only if the room station (U1) is connected and assigned to the heating circuit. Individual adaptation of the room temperature relevant for control. Should a systematic deviation of the room temperature as measured by the RoCon U1 from the actual temperature in the living area of this room be detected, the measured value can be corrected by the set value.	E	E	-5.0 to +5.0 kW	0.0 K	1 K
T-Flow Day	Only if parameter [HC Function] = 1: Setting the inflow target temperature for the heating circuit during the heating time when in operating mode: "Automatic 1", "Automatic 2", "Heating".	E	E	20 - 90°C	40°C	1°C
T-Flow Night	Only if parameter [HC Function] = 1: Setting the inflow target temperature for the heating circuit during the setback time when in operating mode: "Automatic 1", "Automatic 2", "Reducing".	E	E	10 - 90°C	10°C	1°C
Max T-Flow	The inflow temperature determined for the heating circuit is limited to the maximum value set here.	N	E	20 - 70°C	50°C	1°C
Min T-Flow	The inflow temperature determined for the heating circuit is limited to the minimum value set here.	N	E	10 - 70°C	10°C	1°C
HC Adaption	Only if the room station (U1) is connected and assigned to the heating circuit. Off: Deactivated On: Activated = Start a one-off automatic adaptation of the heating curve. Requirements: - Outside temperature <8°C - Setting the operating mode: "Automatic 1" or "Automatic 2" - Duration of the setback phase must be 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 is determined by the Controller from the inflow target temperatures that are necessary to maintain this room temperature. If the automatic adjustment of the heating curve is interrupted, the function pauses until it is performed successfully on the next day or until it is ended by setting the parameter to "Off" or by changing the current operating mode. Heating-up optimisation is blocked during automatic adaptation of the heating curve.	N	E	Off On	Off	-
Slope Offset	Setting the increase in the inflow target temperature for the ROTEX HPSU compact compared to the set flow temperature determined for the mixer circuit.	N	E	0.0 - 50.0 K	5,0 K	1 K
T-Frost Protect	Off: No frost protection of the heating circuit Otherwise: If the outside temperature falls below the programmed value, the system switches into the frost protection mode (switches the pumps on). The function ceases once the outside temperature has risen to the set value +1 K.	E	E	Off, -15 to +5°C	0°C	1°C
Insulation	Setting the insulation standard of the building. This affects the way the heating curve and the heating times automatically adapt to the outside temperature.	E	E	Off low normal good very good	normal	-
Forced Performance	Not applicable.	N	E	Off On	Off	-
Start T-Out Cooling	Can be used only if the assigned heat generator has a cooling function (❄). Only if parameter [HC Function] = 0: Setting from which outside temperature the cooling operation with the highest cooling infeed target temperature [T-Flow Cooling start] starts (setting condition: operating mode "Cooling").	E	E	20 - 45°C	24°C	1°C
Max T-Out Cooling	Can be used only if the assigned heat generator has a cooling function (❄). Only if parameter [HC Function] = 0: Setting to determine from which outdoor temperature the lowest cooling flow temperature [T-Flow Cooling max] is stipulated (setting condition: operating mode "Cooling").	E	E	20 - 45°C	35°C	1°C
T-Flow Cooling start	Can be used only if the assigned heat generator has a cooling function (❄). Only if parameter [HC Function] = 0: Setting the cooling inflow target temperature at the start of cooling mode (outside temperature = parameter [Start T-Out Cooling]).	E	E	5 - 25°C	18°C	1°C

Parameter	Description	Access		Setting range Min / Max	Factory setting	Increment
		BE	HF			
T-Flow Cooling max	Can be used only if the assigned heat generator has a cooling function ❄. Only if parameter [HC Function] = 0: Setting the minimum cooling inflow target temperature. This is kept constant relative to the outside temperature (parameter [Max T-Out Cooling]).	E	E	5 - 25°C	18°C	1°C
Min T-Flow Cooling	Can be used only if the assigned heat generator has a cooling function ❄. Only if parameter [HC Function] = 0: Setting the absolute lower limit of the cooling inflow target temperature. The limitation is effective if a lower cooling inflow target temperature is determined based on other parameter settings.	N	E	5 - 25°C	18°C	1°C
T-Flow Cooling	Can be used only if the assigned heat generator has a cooling function ❄. Only if parameter [HC Function] = 1: Setting the cooling inflow target temperature (fixed value) when cooling mode is active.	E	E	8 - 30°C	18°C	1°C
Cooling Setpoint adj	Can be used only if the assigned heat generator has a cooling function ❄. Parallel displacement of the cooling characteristic curve to match the set value.	N	E	-5.0 to +5.0 kW	0.0 K	1 K
Relay Test	See chapter 6.2.2, tab. 6-2.	N	E	☐ / ☑	☐	-
Screed	Function for screed drying Off: Deactivated On: The flow temperature is regulated according to the set screed programme. The day on which the screed function is activated does not count towards the running time of the screed programme. The first day starts as the day changes on the first day at 00:00. On the day of activation we heat for the remaining time at the inflow temperature for the first day's program (see chapter 3.6.13).	N	E	Off On	Off	-
Screed Program	Setting the procedural program for screed heating. An individual inflow temperature can be set for each day for a maximum period of 28 days. The end of the screed programme is defined by the 1st. Day at target value setting "- - - -" (see chapter 3.6.13).	N	E	10 - 70°C per heating day	see tab. 3-11	1°C

Tab. 6-16 (M1) Parameter in rotary switch setting "Configuration level", "Mixer Config"

7 Errors, malfunctions and messages

CAUTION!

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

- Secure potential equalisation before touching electronic parts (e.g. by touching an earthed metallic part).

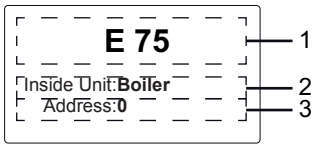
7.1 Recognising errors, correcting malfunctions

Electronic control of the ROTEX HPSU compact:
– signals an error by means of the background of the display lighting up red and shows an error code in the display (see section 7.3).
– shows information messages regarding the operating status (not signalled by red background lighting).

An integrated Protocol saves up to 15 error-related or other information messages regarding the operating status that last occurred.

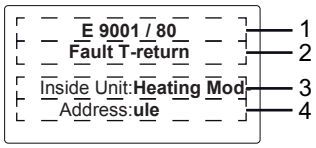
Depending on the operating mode, messages are also forwarded to connected room stations or room thermostats.

7.1.1 Current fault display



1 Error message as a code (see section 7.3)
2 Location information (equipment) of the detected fault
3 Device ID for the RoCon unit where the message originates

Fig. 7-1 Displays an active error message (controller fault)



1 Error message as a code (see section 7.3)
2 Fault message as plain language (see section 7.3)
3 Location information (equipment) of the detected fault
4 Device ID for the RoCon unit where the message originates

Fig. 7-2 Display of a current error message (heat pump fault)

7.1.2 Read Protocol

The Protocol can be read in the *"Special Level"* (see fig. 7-3).

The last received (latest) message is in the first position. All other previous messages are then pushed backwards by one place when a new entry is made. The 15th message will be deleted any time a new message is received.

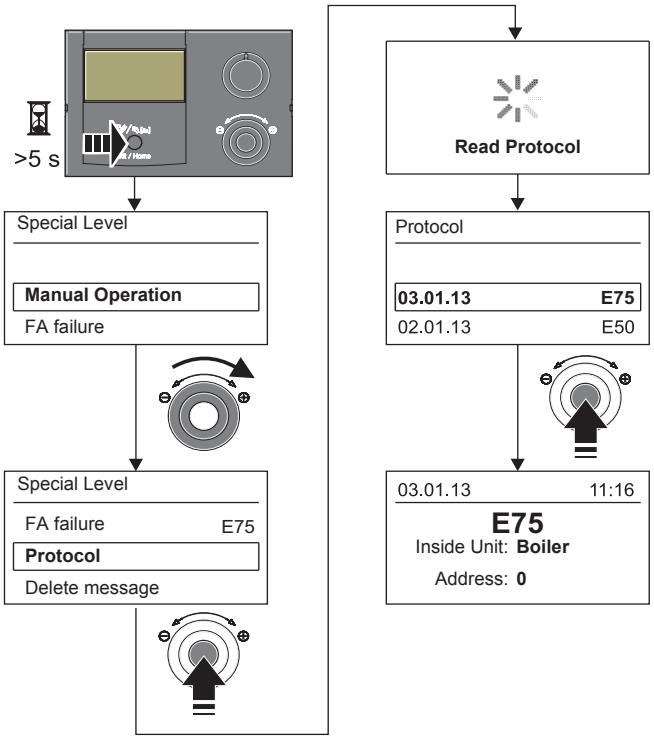


Fig. 7-3 Reading the protocol

7.1.3 Troubleshooting

Information messages, which are displayed **without red back-lighting**, normally result in **no permanent limitations** on the operation of the ROTEX RoCon.

Messages that are displayed **with an error code E.... and red back-lighting** required error correction by an **authorised and trained expert heating technician**.

For information on warning messages see section 7.3.

- Detecting and remedying the cause of the malfunction.

– Contactor triggered:
  Nothing shown on the display in the controller. Ascertain cause of triggering the contactor and remedy fault. Start up system again.
  ➔ Once the cause has been remedied, the system will resume operations as normal.

– Contactor not triggered:
  a) No fault codes are shown but the system is not working properly. Troubleshooting and eliminating faults (see section 7.3).
  ➔ Once the cause has been eliminated, the system continues to work normally.
  b) Fault codes are displayed as long as the fault conditions are present. Troubleshooting and eliminating faults (see section 7.3). If the fault message is still displayed after the cause of the fault has been corrected, the system must be disconnected from the power supply for at least 10 in order to unlock it.
  ➔ Once the cause has been eliminated, the system continues to work normally.

In order to ensure that the fault has not been caused by incorrect setting, set all the parameters back to the factory settings before possible replacement of components (see chapter 3.6.12).

If you are unable to determine the cause of failure yourself, ROTEX please consult a service technician.

Have the significant equipment data to hand (see fig. 7-4 for the procedure):

- Type and manufacturer number of the ROTEX HPSU compacts (see heat pump identification plate).
- Software versions (see fig. 7-4) of:
  a: Control unit RoCon B1 [Sw Nr B1/U1]
  b: Circuit board RoCon BM1 [Sw Nr Controller]
  c: RTX-AL4 circuit board [Sw Nr RTX RT]
- On optional RoCon system components:
  (U1) RoCon U1 [Sw Nr B1/U1]
  (M1) RoCon M1 [Sw Nr mixing valve]

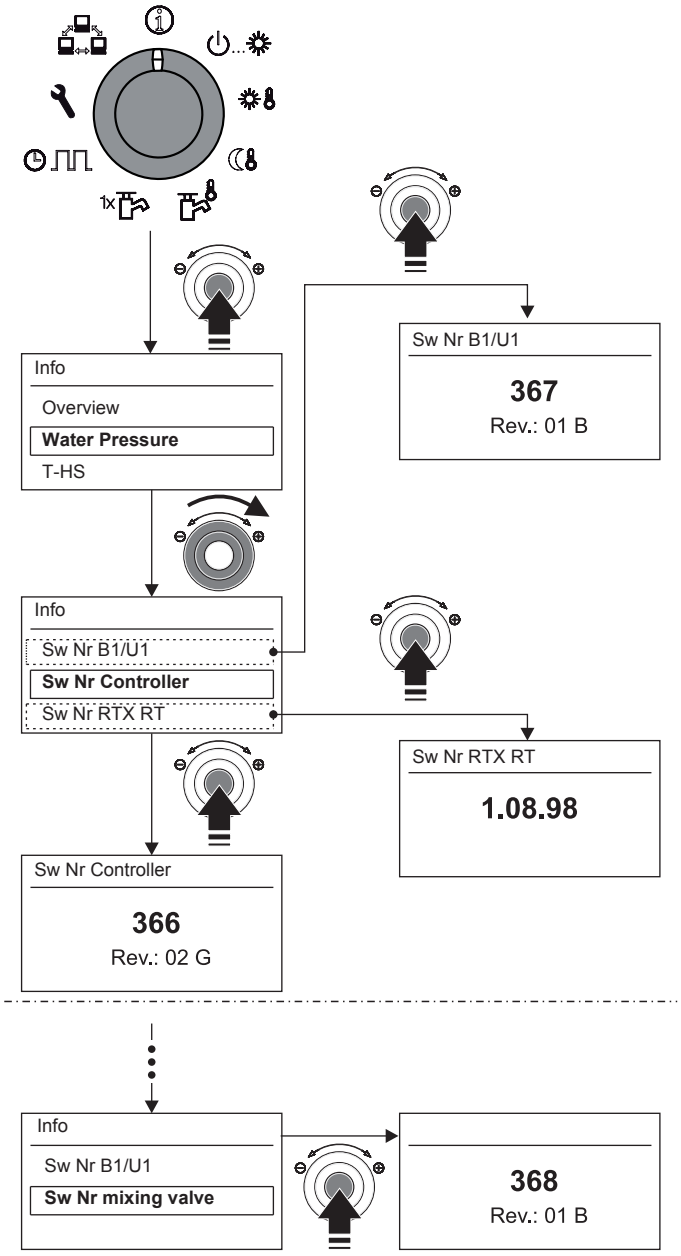


Fig. 7-4 Software information of the controller components

7.2 Emergency operation

In the case of incorrect setting in the electronic control system or malfunction of the 3-way diverter valves, emergency heating operation can be maintained by activating the **special "Manual Operation" function** on the control unit (see chapter 3.5.1 and the **supplementary instructions in the installation and maintenance manual** of the ROTEX HPSU compact.

7.3 Malfunctions and fault codes

See ROTEX HPSU compact installation and maintenance manual; section "Faults, malfunctions, messages".

8 Glossary

Ancillary heater	An additional heat generator (e.g. backup heater or external heating boiler) which is part of the heating system and which helps bring the system up to the inflow target temperature in case of an insufficient or ineffective heat pumping process.
Anti-legionella system	Periodic heating of storage water to >60°C for preventative elimination of pathogenic bacteria (legionella) in the hot water circuit.
Backup demand	Operating situation in which the desired infeed temperature cannot be reached or cannot be achieved efficiently through the heat pump process. As a result, an extra heater (e.g. backup heater) is used to support the ROTEX HPSU compact to generate heat.
Backup heater	Optional electric ancillary heater for general support of the ROTEX HPSU compact during heat generation.
Circulation pump	An optional electrical circulation pump which permanently recirculates the hot water in the hot water pipes (feed from the tap connection back to the domestic hot water storage tank) and thus provides it at each draw-off point without delay. Circulation is particularly effective in widely branched piping networks. In hot water distribution systems without a circulation pipe, at first the water cooled in the outlet pipe escapes during the tapping process until the outlet pipe is sufficiently heated by the hot water flowing subsequently.
Control	Device electronics, with which the processes for heat generation and heat distribution for the heating system are controlled. The Controller consists of many electronic components. The component that is most important to the operator is the operating element at the front of the heat generator which has operating elements (rotary switch, rotary button and Exit key) and a display.
Domestic hot water generation	Operating status of the heat generator, in which heat is generated at increased temperatures and supplied to the hot water circuit, e.g. filling the hot water storage tank.
Flow pipe	Part of the hydraulic circuit that directs the heated water from heat generator to the heating surfaces.
Heat exchanger	A part that transfers thermal energy from one circuit to another. Both circuits are separated from each other hydraulically by a wall in the heat exchanger.
Heat pumping process	In a closed coolant circuit, the coolant absorbs heat from the surrounding air. Compressing this coolant results in a higher temperature which can then be transferred to the heating unit (thermodynamic circuit).
Heating characteristic curve	Mathematical relationship between the external temperature and the target flow temperature (synonym = heating curve), in order to achieve the desired room temperature at all outside temperatures.
Hot water circuit	Is the water circuit in which the cold water is heated and directed to the hot water discharge point.
Low tariff 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.).
Modulation	Automatic and continuous adjustment of the thermal / pump output to the particular heat requirement, without having to switch various heating / pumping stages or cycles.
Nominal output	Maximum heat output given by the heat generator at certain operating temperatures under test conditions.
Operating mode	User or Controller-demanded function of the heat generator (e.g. room heating, hot water heating, stand-by, etc.).
Parameter	A value that influences the execution of programs or processes or defines specific states.
Refrigerant	A material which is used for thermal transfer in a heating system. At low temperature and low pressure, heat is absorbed and at high temperature and a high pressure, heat is emitted.
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.
SMART GRID (SG)	Intelligent energy utilisation for economical heating. Using a special electricity meter it is possible to receive a "SMART GRID signal" from the energy supply company. Depending on the signal from the energy supply company, the heat pump is turned off, put into standard mode or run in high-temperature mode.
Switching time programme	Programme for setting dates and times on the Controller to define regular heating, cooling, economy and hot water cycles.
Water shortage/ overheating protection	Safety device which switches off the heat generator automatically if there is a water shortage, in order to avoid over-heating.
Weather-controlled flow temperature regulation	The inflow target temperature for temperature control in the heating unit is calculated from the measured value for the external temperature and a defined heating curve.

9 Notes

9.1 User-specific settings

9.1.1 Switching time program

The factory settings of the timer programs are stated in chapter 3.4.7, tab. 3-9.

- Enter your switching time settings in the table below.

		Switching cycle 1		Switching cycle 2		Switching cycle 3	
	Temperature setting	[T-Room 1 Setpoint]: ____ °C		[T-Room 2 Setpoint]: ____ °C		[T-Room 3 Setpoint]: ____ °C	
	Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
HC Program 1	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						
HC Program 2	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						

Tab. 9-1 Individual settings in the heating timer programmes

		Switching cycle 1		Switching cycle 2		Switching cycle 3	
	Temperature setting	[T-DHW Setpoint 1]: ____ °C		[T-DHW Setpoint 2]: ____ °C		[T-DHW Setpoint 3]: ____ °C	
	Time period	**On**	**Off**	**On**	**Off**	**On**	**Off**
DHW Program 1	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						
DHW Program 2	Monday						
	Tuesday						
	Wednesday						
	Thursday						
	Friday						
	Saturday						
	Sunday						

Tab. 9-2 Individual settings in the hot water timer programmes

9 Notes

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

Tab. 9-3 Individual settings of the circulation-switching time programme

9.1.2 Parameter

- Enter your parameter changes you have made in the table below and in the operating logbook of the ROTEX HPSU compact.

Rotary switch setting	Parameter levels / Parameter	Old value	New value	Date	Comments

Tab. 9-4 Individual parameter modifications

9.1.3 IDs in the RoCon CAN bus system

RoCon-appliance	ID	Comments

Tab. 9-5 IDs in the RoCon CAN bus system

9.2 Other items

9 Notes

10 List of keywords

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