

Installation and servicing instructions



Programming unit RC35

For qualified profes-
sionals

Please read carefully
prior to commission-
ing and servicing

Buderus

Contents

Contents	2
1 Safety instructions and symbols	4
1.1 Safety instructions and explanation of symbols	4
1.2 Explanation of symbols	6
2 Information about the product	6
2.1 Correct use	6
2.2 EU Declaration of Conformity	6
2.3 Included in delivery	6
2.4 Specifications	7
2.5 Validity of these instructions for function modules (accessories)	8
2.6 Accessories	8
3 Installation	9
3.1 Choosing the right installation position	9
3.1.1 Installation in reference room	9
3.1.2 Installation on boiler	10
3.2 Types of installation	10
3.3 Installation and connection	11
3.4 Attaching or removing the programming unit	12
4 Operating basics	13
4.1 Overview of operation	13
4.2 Introduction to the Service menu	14
4.3 Overview of the Service menu	16
5 Commissioning	17
5.1 General commissioning	17
5.2 Checklist: important parameters for commissioning	18
5.3 Quick commissioning (Quick operation menu)	19
5.4 Detailed commissioning	20
5.5 System handover	20
5.6 Shut-down / switching off	21
5.7 Operating tips	21

6	Entering system settings (Service menu – Settings)	22
6.1	System data	22
6.1.1	Building type ("damping" of outside temperature)	23
6.1.2	Minimum ("lowest expected") outside temperature	24
6.2	Boiler data	25
6.3	Heating circuit data	26
6.3.1	Assignment of programming unit / remote control unit in the software	30
6.3.2	Control mode (outside temp. controlled / room influence)	30
6.3.3	Heating characteristics	31
6.3.4	Reduction modes (night setback)	32
6.3.5	Frost protection	33
6.4	Domestic hot water (DHW)	35
6.5	Solar data (not with UBA1.x)	37
6.6	RC35 calibration	38
6.7	Contact data	39
7	Diagnosis	40
7.1	Function test (not with UBA1.x)	40
7.2	Monitor value	41
7.3	Error message	42
7.4	Htg. charact. curve	42
7.5	Versions	42
8	Servicing	43
9	Reset	44
10	Troubleshooting	45
	Index	51

1 Safety instructions and symbols

1.1 Safety instructions and explanation of symbols

Installation and commissioning

- Observe all instructions to ensure satisfactory operation.
- Installation and commissioning must only be carried out by qualified system installers.

Use

- Always use this device correctly and in conjunction with the stated control systems.
- This device must not be used with control systems using the UBA-H3 controller.
- Observe all regulations and standards applicable to installation and operation of the system in your country.



Read and observe the safety information and instructions:

Risk of death from electric shock

- The electrical supply must be connected by a qualified electrician. The terminal diagram must be followed.
- Before installation: isolate all poles of the power supply (230 V AC). Undertake measures to prevent power from being switched back on unintentionally.
- Do not install this device in rooms with high moisture exposure (e.g. bathrooms, saunas).
- Never connect this device to the 230 V power mains.

Warning: frost

The heating system can freeze up in cold weather, if switched off.

- Leave the heating system permanently switched on.
- Switch on frost protection.
- In the event of a fault: remedy the fault immediately.

1.2 Explanation of symbols



Safety instructions throughout the text are indicated by a warning triangle inside a rectangular frame.

The terms indicate the seriousness of the ensuing risk if measures for minimising damage are not taken.

- **Caution** means that minor property damage may occur.
- **Warning** means that minor injury or severe property damage may occur.
- **Danger** means that severe injury may occur. Very serious cases may result in death.

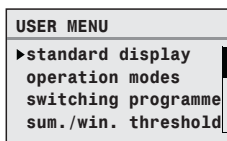


Notes throughout the text are identified with this symbol. They are bounded by horizontal lines above and below the text.

Notes contain important information for situations in which there is no risk to the user or the device.

Display text: Words appearing on the display are shown in **bold** in the text.

Example: **USER MENU**



Action sequences: Each step in an action sequence is marked with a bullet point.

Example: ● Press .

If action sequences have more than two steps and the order of the steps is important, they are numbered (1., 2., ...).



Note on using this manual: Section 4.2 "Introduction to the Service menu" explains in detail the steps needed for programming all the settings in the Service menu. In the sections which come after it, programming is only explained in outline.

2 Information about the product

2.1 Correct use

The RC35 programming unit must only be used to operate and control Buderus heating systems in residential buildings.

The boiler must be equipped with EMS (energy management system) or UBA1.x (universal burner control).

The programming unit must not be used in conjunction with Logamatic 2000/4000 control panels.

We recommend that the heating system is always operated with a programming unit (only emergency operation is possible without a programming unit).

If RC20 remote control units manufactured before 2006 are being used, only two remote control units can be connected. If you have any questions about this, please contact your local Buderus office.

2.2 EU Declaration of Conformity



The design and operation of this product conforms to European Directives and the supplementary national requirements. Its conformity is confirmed by the CE marking. You can view the Declaration of Conformity on the internet at www.buderus.de/konfo or request a copy from your local Buderus office.

2.3 Included in delivery

- RC35 programming unit
- Operating instructions
- Installation and servicing instructions
- Wall bracket, mounting materials

2.4 Specifications


	Unit	RC35
Power supply via bus system	V	16 V DC
Power consumption	W	0.3
Power consumption with backlighting	W	0.6
Dimensions (width/height/depth)	mm	150/90/32
Weight	g	233
Operating temperature	°C	0 to +50
Storage temperature	°C	0 to +70
Relative humidity	%	0 to 90
CE marking		

Table 1 Specifications for the RC35 programming unit

Temperature sensor characteristics

When measuring temperature sensor resistance, observe the following requirements:

- Isolate the system before measuring.
- Measure the resistance at the cable ends.
- The resistances represent mean values and are subject to tolerances.

Outside temperature sensor		Boiler/flow temperature sensor DHW temperature sensor			
°C	kΩ	°C	kΩ	°C	kΩ
-20	96.358	10	19.872	60	2.49
-15	72.51	16	15.699	65	2.084
-10	55.054	20	12.488	70	1.753
-5	42.162	25	10.001	75	1.481
±0	32.556	30	8.060	80	1.256
5	25.339	35	6.535	85	1.070
10	19.872	40	5.331	90	0.915
15	15.699	45	4.372	95	0.786
20	12.488	50	3.606	100	0.677
25	10.001	55	2.989		
30	8.060				

Table 2 Resistances of the temperature sensors, for EMS only

2.5 Validity of these instructions for function modules (accessories)

These instructions also apply to the programming unit when used in conjunction with the MM10 mixer module and the WM10 low loss header module.

If the heating system is equipped with other function modules (e.g. SM10 solar module), you will find additional setting options in some menus. These are described in separate instructions.

2.6 Accessories

For precise information regarding suitable accessories, refer to the catalogue.

- MM10 mixer module¹ for controlling a three-way mixing valve. The instructions for the MM10 form part of the RC35 instructions.
- WM10 low loss header module¹ for operating a hydraulic separator
- Solar module and other EMS modules (e.g. ASM10 connection module)¹
- Remote control unit¹ (e.g. RC20/RC20RF) for controlling a particular heating circuit
- Outside temperature sensor, external room temperature sensor

1) The use of modules is not possible with boilers with UBA1.x and DBA.

3 Installation

3.1 Choosing the right installation position

3.1.1 Installation in reference room

If the system is room-temperature controlled, the following requirements must be observed:

- Installation position on an internal wall (Fig. 1)
- Maintain the specified distance from the door(s) (to avoid draughts).
- Allow clearance below the programming unit (Fig. 1, shaded area) (to ensure correct temperature measurement).
- The reference room (= installation room) must be as representative as possible of the entire home. External heat sources in the reference room (like sunlight or other heat sources such as an open fire) affect the control's function. This means it may be too cold in rooms without external heat sources.
- The thermostatic valves on the radiators in the reference room must always stay fully open so that the two temperature controls do not affect one another.



If there is no suitable reference room, we recommend setting the system to outside temperature control instead (this requires an outside sensor). Alternatively you could install an external room sensor in the room with the greatest heating requirements (e.g. living room).

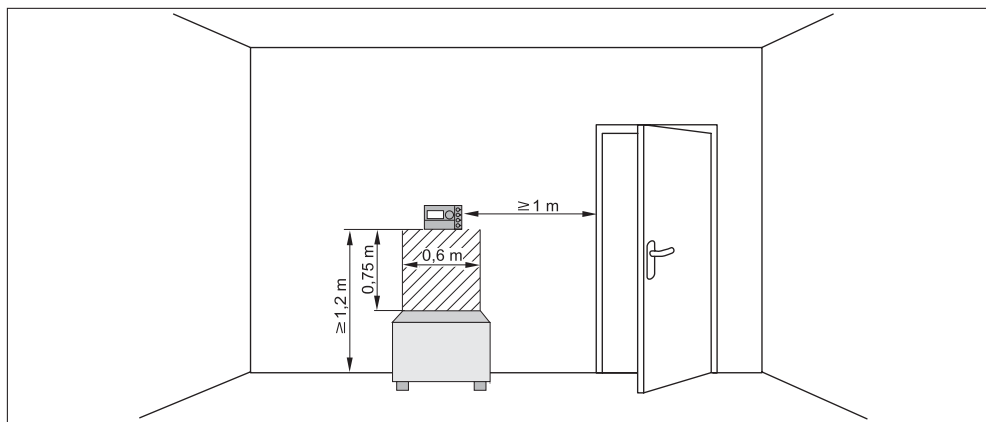


Fig. 1 Minimum clearances for installation in a reference room

3.1.2 Installation on boiler

The unit can be installed directly on boilers equipped with EMS (Energy Management System).

The outside temperature sensor for outside temperature control is not delivered as standard, but can be ordered as an accessory.

3.2 Types of installation

The programming unit can be installed in three different ways:

- As the only programming unit in the system (factory setting): the programming unit is mounted in a room in the home (the reference room) or on the boiler.
Example: detached house with one heating circuit.
- As the only programming unit in a heating system with two or more heating circuits¹ (Fig. 2, **1**).
Examples: underfloor heating on one floor, radiators on the others; or a main flat together with a separate annex.
- In conjunction with a remote control unit (e.g. RC20/RC20RF, Fig. 2, **2**). In this case there are always two separate heating circuits. Remote control units cannot be used with boilers with UBA1.x.
Examples: underfloor heating on one floor, radiators on the others; or a main flat together with a separate annex.

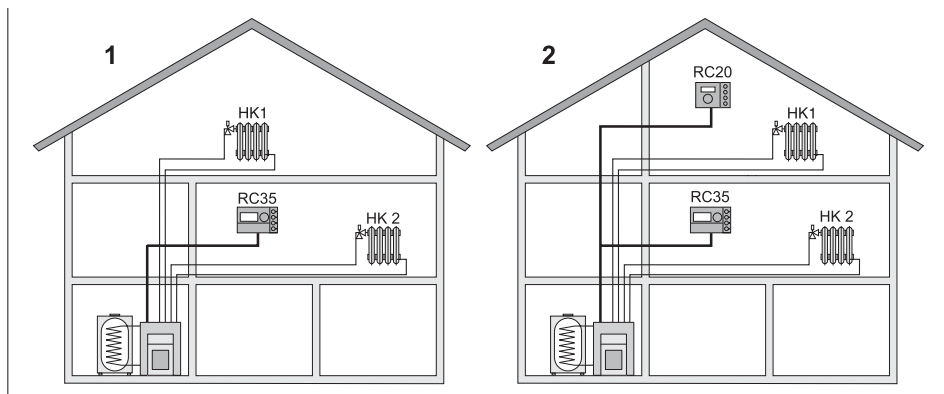


Fig. 2 Options for a heating system with two heating circuits

- 1** Both heating circuits are controlled by one programming unit.
- 2** Each heating circuit has its own programming unit / remote control unit.

1) Not possible with boilers with UBA1.x and DBA.

3.3 Installation and connection



Please use only the wall bracket with screw-type terminals.

- If there is a wall bracket without screw-type terminals already fitted, replace it.

The wall bracket can be attached directly to the wall or on a flush-mounting box.

When mounting on a flush-mounting box, note the following:

- Draughts from the flush-mounting box must not distort room temperature recording in the programming unit (you may need to pack the flush-mounting box with insulation material).
- Use the horizontal or vertical mounting holes (Fig. 3, 4).
- Mount the wall bracket (Fig. 3, left).
- Connect the two-wire bus cable from the Energy Management System (EMS) to the “RC” cable terminals (Fig. 3, 5).
 - Cable type: 2 x 0.75 mm² (0.5 – 1.5 mm²), length max. 100 m
 - The two wires are not polarity sensitive.
 - Do not lay the cables next to power cables.

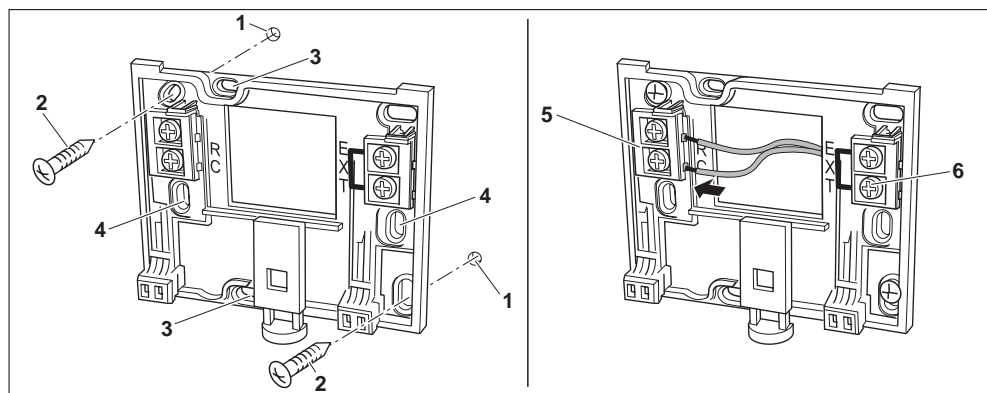


Fig. 3 Mounting the wall bracket (left) and connecting the wires (right)

- 1 Hole drilled in the wall
- 2 Screws (included with the unit) for surface-mounting on the wall
- 3 Vertical mounting holes for mounting on a flush-mounting box
- 4 Horizontal mounting holes for mounting on a flush-mounting box
- 5 “RC” terminals for EMS (boiler)
- 6 “EXT” terminals for external room temperature sensor or for jumper

- If the RC35 is operated without an external room sensor, a jumper is required on the “EXT” terminals (Fig. 3, **6**) (the jumper is factory fitted).
- If the RC35 is operated with an external room sensor, the factory-fitted jumper on “EXT” must be removed and the external room sensor must be connected there instead.

3.4 Attaching or removing the programming unit

Attaching the programming unit

- Hook the top of the programming unit onto the mounting plate in the direction shown by the arrows (Fig. 4, **A1**).
- Push the bottom of the programming unit against the mounting plate in the direction shown by the arrow until it clicks into place (Fig. 4, **A2**).

Removing the programming unit

- Press the button on the underside of the mounting plate in the direction shown by the arrow (Fig. 4, **B1**) and pull the programming unit forward at the same time (Fig. 4, **B2**).
- Remove the programming unit by lifting upward (Fig. 4, **B3**).

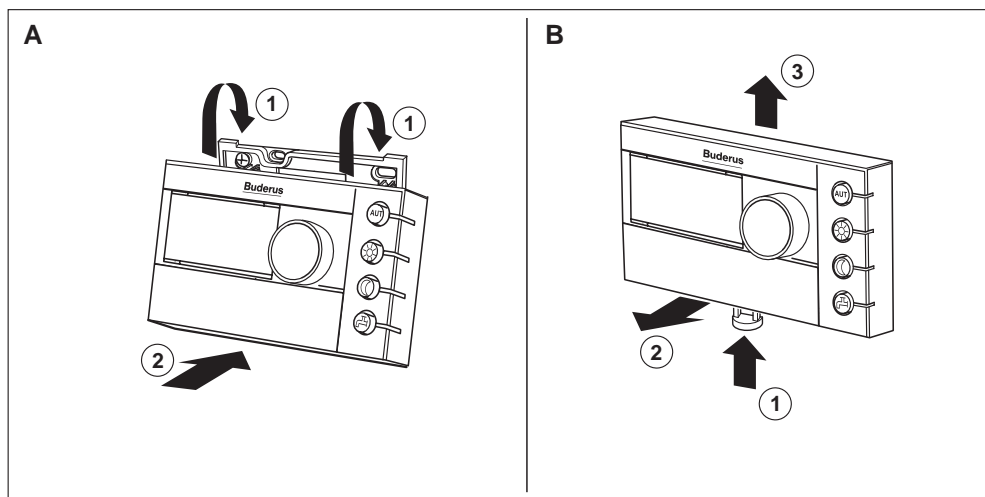


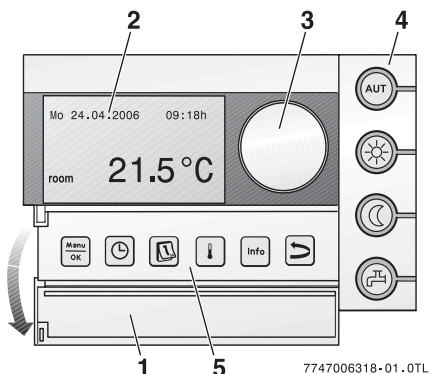
Fig. 4 Attaching the programming unit (left) or removing it (right)

4 Operating basics





4.1 Overview of operation

Legend for illustration:

- 1 Flap: pull the recessed grip on the left to open
- 2 Display
- 3 Rotary selector for changing values and temperatures or for navigating through the menus









4 Buttons for basic functions:

-  "AUT" (automatic)
-  "Day mode" (manual)
-  "Night mode" (manual)
-  "DHW" (domestic hot water)

When the LED lights up ...

- ... the switching program is active (automatic switchover between daytime and nighttime room temperatures).
- ... the heating system operates at the set daytime room temperature. DHW heating is switched on (factory setting).
- ... the heating system operates at the set nighttime room temperature. Frost protection is active. DHW heating is switched off (factory setting).
- ... the DHW temperature has fallen below its set value. The DHW can be heated up again by pressing the button (the LED will then flash). ¹⁾

5 Buttons for additional functions:

-  "Menu/OK"
-  "Time"
-  "Date"
-  "Temperature"
-  "Info"
-  "Back"









Function:

- Open User menu and confirm selection.
- When the rotary selector is turned at the same time: change setting.
- Set the time.
- Set the date.
- Set the room temperature.
- Open the Info menu (to view values).
- Go back one step or one menu item.


1) The LED can also be switched off. In the case of boilers with UBA1.x, the LED does not light up at all.

4.2 Introduction to the Service menu

The **SERVICE MENU** to set the parameters for the system. The Service menu also contains fault functions diagnosis, for maintenance purposes, and performing a reset. The procedure for operation is always the same:

1. Open the flap (by pulling the recessed grip on the left).
2. Press the buttons  +  +  at the same time to open the **SERVICE MENU**.
3. Turn the rotary selector  to change the selected item (marked with ►).
4. Press  to select the marked item.
5. To change the value, hold down the button  (the value starts flashing) and turn the rotary selector  at the same time.
Release the button: the modified value is saved.
6. Press  to go back one step.

-or-

- Press  several times or shut the flap to return to the default display.

Example: Setting the **building type** ("delay" time)

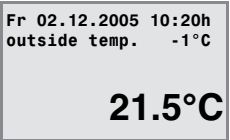



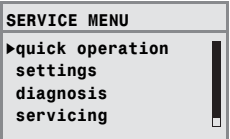

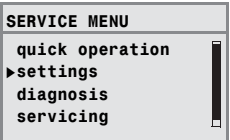
	Operation	Result
1.	Open the flap (by pulling the recessed grip on the left).	
2.	Press the buttons  +  +  at the same time to open the SERVICE MENU .	
3.	Turn the rotary selector  anti-clockwise until settings is selected (marked with ►).	

Table 3 How to use the Service menu (example)


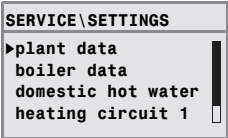


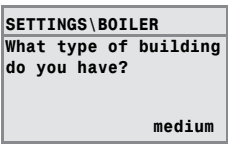


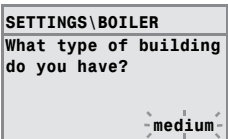

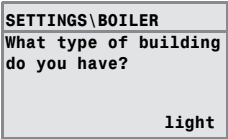
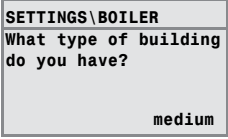


	Operation	Result
4.	Press  to confirm the selection. The SERVICE\SETTINGS menu is opened.	
5.	Turn the rotary selector  anti-clockwise until boiler data is selected (marked with ►). Press  to select boiler data .	
6.	To change the value, hold down the button  (the value starts flashing) and turn the rotary selector  at the same time.	
7.	Release the button  . The value stops flashing. The modified value is saved.	
8.	If you have carried out this example as practice only, make sure that the original setting is retained. To do so, repeat steps 6 and 7 if necessary.	
9.	Press  to go back one step. -or- To finish entering settings, press  several times or shut the flap. The default display re-appears.	
You can enter all settings in the SERVICE MENU using this procedure.		

Table 3 How to use the Service menu (example)

4.3 Overview of the Service menu

The **Service menu** is divided into the following menus and submenus:

Menu	Submenu	Contents/function	Page
Quick operation		The most important parameters from the Settings menu for configuration of the heating system (e.g. number of heating circuits, installed modules)	19
Settings (all parameters)	Plant data ¹⁾	Parameters: language, number of heating circuits, installed modules, building type, minimum outside temperature	22
	Boiler data	Parameters: pump after-run time and modulation	25
	Heating circuit data ¹⁾	Parameters of the installed heating circuits	26
	Domestic hot water (DHW)	Parameters for domestic hot water	35
	Solar data ¹⁾	If solar is installed: see documentation for the solar module	37
	RC35 calibration	Parameters: calibration of the displayed room temperature	38
	Contact data	Entering the heating contractor's name and telephone number	39
Diagnosis	Function test ²⁾¹⁾	Activating individual components for test purposes	40
	Monitor value	Viewing target values and actual values	41
	Error message	Viewing fault messages	42
	Htg. charact. curve	Viewing the set heating characteristics in the form of a graph	42
	Versions	Viewing software versions	42
Servicing ²⁾¹⁾	Service interval	Setting times for maintenance, by number of operating hours or by date	43
	Current messages	Viewing service messages	43
	RESET servicing	Resetting service messages	43
RESET ²⁾¹⁾	Factory setting		44
	Error list		44
	Service message		44
	Operating hours		44

Table 4 Service menu navigator

1) Boilers with DBA: restricted functionality only.

2) Not possible or not available with boilers with UBA1.x.

5 Commissioning

5.1 General commissioning

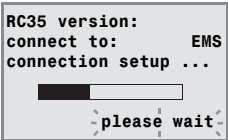

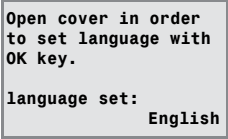


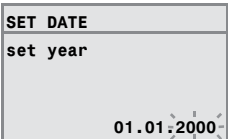



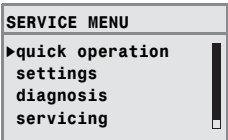
	Operation	Result
1.	<p>Switch on the heating system.</p> <p>While setting up the connection between the RC35 and EMS or UBA1.X, the display shows the message on the right.</p> <p>If the display shows a different message, look it up in section 10, page 45.</p>	
2.	<p>Set the language:</p> <p>Open the flap. Hold down the button  and use the rotary selector to set the language.</p>	
3.	<p>Set the date and time:</p> <p>Hold down the button  and use the rotary selector to set the values which are flashing. Release the button.</p> <p>Hold down the button  and use the rotary selector to set the values which are flashing. Release the button.</p> <p>In the event of a power failure, the date and time are retained for up to 8 hours. All other settings are retained permanently.</p>	
4.	<p>Press the buttons  +  +  at the same time to open the SERVICE MENU.</p>	

Table 5 General commissioning



If necessary, you can change the contrast on the display:

- Hold down the buttons  and  and turn the rotary selector  at the same time.

5.2 Checklist: Important parameters for commissioning

When putting the device into service, ensure the satisfaction of both parties, making sure that the heating system meets the customer's needs and prevents complaints. In our experience, the following parameters are very important for the satisfaction of the system owner.

- Find out the system owner's requirements and preferences regarding ...


	Setting options Factory setting in bold	Service menu \ Settings \
... the desired reduction type (night setback)	Outdoor setback mode , reduced operation, room setback mode, shut-down mode	Heating circuit x, page 27
... the desired control mode	Outside temp. controlled , room temp. controlled	Heating circuit x, page 30
... the correct heating characteristics	By means of the following parameters: standard temperature, minimum outside temperature, offset, und target room temperature	Heating circuit x, page 26
... the correct building type ("delayed" response to outside temp.)	Light, medium , heavy	Plant data (system data), page 23
... the switch-on frequency of the DHW circulation pump¹⁾	Permanent, 1 x, 2 x , 3 x, 4 x, 5 x, 6 x per hour for 3 min each time	Domestic hot water, page 36
... priority DHW	Yes, No	Heating circuit x, page 28
... switching program (times)	Standard program Family , user defined program	Heating circuit x, page 29

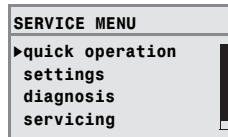
Table 6 Checklist: important parameters for commissioning

1) This function is not available with boilers with UBA1.x and DBA.

- Enter the chosen settings in the **Setup log** (at the end of the operating instructions manual).

5.3 Quick commissioning (Quick operation menu)

- Press  to open the **quick operation** menu.



SHORTCUT\	Menu item	Input range Factory setting in bold	Other information
BASIC SETUP	Which language should be used?	German ...	
HYDR. SEP.	Have you installed a module for the hydraulic separator?	Yes, No	¹⁾
PLANT	Is heating circuit 1 installed (unmixed heating circuit)?	Yes, No	
NO. OF MIXERS	How many mixed heating circuits are installed?	0 0 to 3	Set the address on the rotary encoder on the mixer module (factory setting: HC2). ¹⁾
HTG. CIRC. 1 (and other heating circuits)	Which operating unit is assigned to heating circuit 1?	RC20/RC20RF, RC35 None	To assign programming units to heating circuits, see page 30.
	How should heating circuit 1 be controlled?	Outside temp. controlled, room temp. controlled	For general heating circuit data, see page 26. Set any other heating circuits in the same way as for heating circuit 1.
	Which heating system does heating circuit 1 have?	Radiator, convector, floor	For heating characteristics, see page 31

Table 7 Quick operation menu navigator

SHORTCUT\	Menu item	Input range Factory setting in bold	Other information
DHW	Have you installed domestic hot water?	Yes, No	
	Which heating circuit should be used for domestic hot water?	3-way switching valve Cylinder charge pump	Always set to 3-way switching valve in the case of boilers with DBA.
	To which temperature should your domestic hot water be heated?	60°C 30 to 80°C	To allow the hot water temperature to be changed, set the hot water dial on the boiler controller to Aut.
SOLAR MODULE	Have you installed a solar module?	Yes, No	¹⁾

Table 7 Quick operation menu navigator

1) Not possible or not available for boilers with UBA1.x and DBA.



Use the checklist on page 18 to check whether more settings are needed.

5.4 Detailed commissioning

- Check whether the factory settings in **Service menu \ Settings** are suitable for the customer's heating system.
- Note down modified settings if needed.

5.5 System handover

- Make sure that both dials on the BC10 boiler controller¹ are set to “Aut”, so that DHW temperature and flow temperature are controlled by the RC35 programming unit.
- Explain to the customer how the device works and how to operate it.
- Inform the customer of the settings chosen (using the Setup log at the end of the operating instructions manual).



We recommend giving these installation and servicing instructions to the customer so they can be kept close to the heating system.

1) On boilers with UBA1.x and DBA there is no BC10. See the technical documentation for the boiler for information on its mode of operation.

5.6 Shut-down / switching off

The RC35 programming unit is supplied with power via the heating system and is permanently switched on. It is only switched off if the heating system is switched off, such as for maintenance purposes.

- To switch the heating system on or off: set the ON/OFF switch on the boiler to position 1 (ON) or 0 (OFF).



After switching the unit off or in the event of a power failure, the date and time are retained for up to 8 hours. All other settings are retained permanently.

5.7 Operating tips

Devices on the EMS bus

In a bus system, only **one device** can carry out the calculations for a heating circuit. Therefore only one RC35 can be installed in a heating system. If additional room controllers are required (such as the RC20), they must be installed as remote control units¹ with a set heating circuit address (page 26).

Thermostatic radiator valves in the reference room

Thermostatic valves on radiators in the reference room² are not required for room temperature control. If there are thermostatic radiator valves in the reference room, they must be fully open.

Pump anti-seize³






In all operating modes, all heating circuit pumps are switched on for 10 seconds every Wednesday at 12 noon to prevent pump damage. The mixers are then set to "OPEN" for 10 seconds. After 10 seconds, all pumps and mixers then return to their normal, regulated operation.

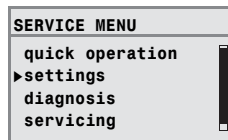
1) This function is not available for boilers with DBA.

2) Room in which an RC35 or RC20/RC20RF is installed

3) This function is not available with boilers with UBA1.x and DBA.

6 Entering system settings (Service menu – Settings)

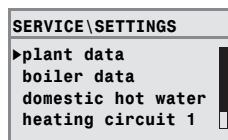
- Press the buttons  +  +  at the same time to open the **SERVICE MENU**.
- Turn the rotary selector  anti-clockwise until **Settings** is selected (marked with ►).
- Press  to open the **SERVICE \ SETTINGS** menu.



Note that the menu items shown will vary depending on the heating system.

6.1 System data

- Press  to select **plant data**.
The menu **SETTINGS \ SYSTEM** is opened.



Menu item	Input range Factory setting in bold	Other information
Which language should be used?	German, ...	
Have you installed a module for the hydraulic separator?	Yes, No	1)
Is heating circuit 1 installed (unmixed heating circuit)?	Yes , No	
How many mixed heating circuits are installed?	0 0 to 3	Set the address on the rotary encoder on the mixer module (factory setting: HC2). 1)
Have you installed a solar module?	Yes, No	1)
Should the outside temp. delay be switched off?	Yes, No	If Yes , the following parameter (building type) is not shown.

Table 8 Navigator for Service menu **SETTINGS \ SYSTEM**

Menu item	Input range Factory setting in bold	Other information
What type of building do you have?	Light, Medium , Heavy	For building type (heat storage capacity), see page 23.
What is the lowest expected outside temp. in your region?	-10°C -30°C to 0°C	See page 24.

Table 8 Navigator for Service menu SETTINGS \ SYSTEM

1) Not possible or not available for boilers with UBA1.x and DBA.

6.1.1 Building type ("delayed" response to change in outside temperature)

A building's heat storage capacity and its characteristic resistance to heat transfer will delay the effect of outside temperature variation on the rooms inside. For this reason, the decisive factor for heating requirements in the rooms is not the current outside temperature, but rather the "delayed" response to the change in outside temperature.

The **building type** parameter can be used to set the level of delay with which variations in outside temperature are registered. This allows heating system control to be adapted to the characteristic behaviour of the building.

The controller calculates the time constant for the delay in response to the outside temperature, using the factor given in Table 9 for the stated building type and an internal multiplier, the "runtime" (= 6 minutes). The time constant is the product of: factor x runtime = damping time constant in hours.

Building type parameter	Type of construction	Factor
Light	e. g. prefabricated building, wood-frame construction	10
Medium	e. g. breeze-block house (factory setting)	30
Heavy	e. g. brick house	50

Table 9 Calculating the delay time constant

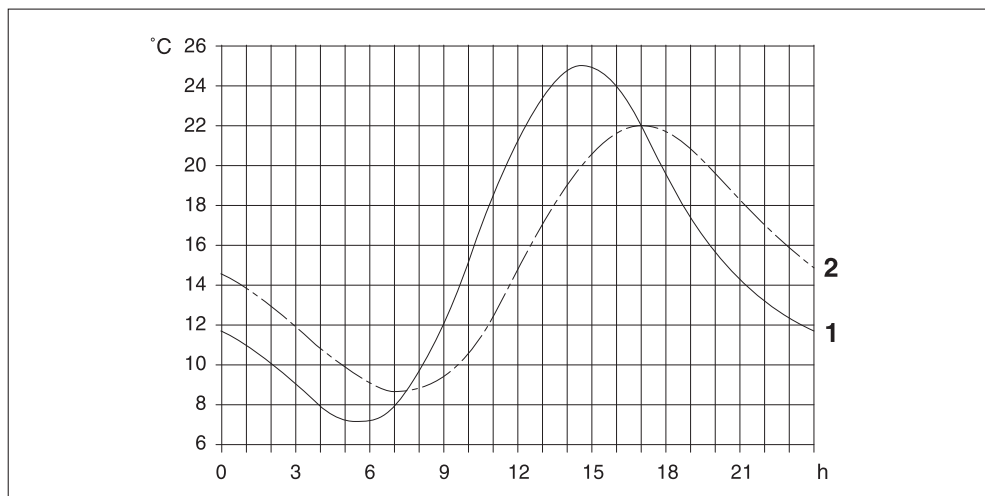
Example:

Fig. 5 This greatly simplified example shows how the delayed response to outside temperature follows the outside temperature, but does not reach its extreme values.

- 1** Current outside temperature
2 Delayed response to outside temperature



With the factory setting, changes in the outside temperature will affect the calculations for outside-temperature-based control after a delay of no more than three hours (30 x 6 minutes = 180 minutes).

- To monitor the calculated, delayed response to outside temperature and the currently recorded outside temperature: open the menu **Diagnosis \ Monitor value \ Boiler/burner** .

6.1.2 Minimum ("lowest expected") outside temperature

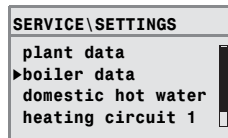
The "lowest expected outside temperature" is the mean of all the coldest outside temperatures of recent years, and helps to determine the heating characteristics. The value can be taken from the heat requirement calculation which should be done for every building, or from the climatic zone chart for your region.

6.2 Boiler data

- Turn the rotary selector  anti-clockwise until **boiler data** is selected (marked with ►).

- Press  to select **boiler data**.

The menu **SETTINGS \ BOILER** is opened.




Menu item	Input range Factory setting in bold	Other information
Boiler pump after-run time after burner stops?	5 min Deactivated, 1 to 60 min	Setting only possible with boilers with internal boiler pump. 1)
Which settings do you wish to have for the modulating pump?	2 0 to 8	Characteristics of the boiler pump, depending on KIM/BIM – 0: if a hydraulic separator (low loss header) has been installed. – 1-8: see boiler documentation 1) 2)

Table 10 Navigator for Service menu **SETTINGS \ BOILER**

- 1) Not possible or not available with boilers with UBA1.x.
- 2) System-dependent

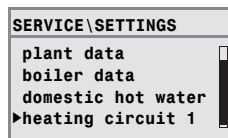
6.3 Heating circuit data

This section explains the settings for all heating circuits: using heating circuit 1 as an example.

- Turn the rotary selector  anti-clockwise until **heating circuit 1** is selected (marked with ►).

- Press  to select **heating circuit 1**.

The menu **SETTINGS \ HTG. CIRC. 1** is opened.



Menu item	Input range Factory setting in bold	Other information
Should heating circuit 1 be activated?	Yes, No	
Which operating unit is assigned to heating circuit 1?	RC20/RC20RF, RC35 , none	See page 30. RC20 cannot be selected with UBA1.x. If none is selected, the control mode is changed to outside temp. controlled and will not be shown.
How should heating circuit 1 be controlled?	Outside temp. controlled , room temp. controlled	Room temp. controlled can only be set if an RC20 or RC35 has been assigned to the heating circuit. Room flow is used if room temp. controlled is selected.
Which heating system does heating circuit 1 have?	Radiator , convector, floor	Floor setting for HC1 only if boiler is of condensing type and there is no mixed heating circuit installed. A safety thermostat must be used with floor heating.
Heating characteristics		
Std. tmp. (-10°C)	75°C (radiator, convector) 45°C (floor) 30°C to 90°C	The value in brackets is the setting for minimum outside temperature (see page 26). Setting entered only if the control mode has been set to outside temp. controlled (see page 31).

Table 11 Navigator for Service menu **SETTINGS \ HTG. CIRC. 1**

Menu item		Input range Factory setting in bold	Other information
	Max flow temp.	Radiator, convector: 75°C 30°C to 90°C	Setting entered only if the control mode has been set to outside temp. controlled (see page 31).
	Enter the maximum flow temperature:	Floor: 50°C 30°C to 60°C	Setting entered only if the control mode has been set to room temp. controlled (see page 31).
	Min flow temp.	5°C 5°C to 70°C	Setting entered only if the control mode has been set to outside temp. controlled (see page 31).
	Enter the minimum flow temperature:		Setting entered only if the control mode has been set to room temp. controlled (see page 31).
	Rm. tmp offset	0.0K -5.0K to +5.0K	Offset of heating characteristic curve. Setting entered only if the control mode has been set to outside temp. controlled (see page 31).
	Enter the maximum room influence:	3K 0K to 10K	Setting entered only if the control mode has been set to outside temp. controlled (see page 30).
	Which type of reduction should be implemented?	Outdoor setback mode , reduced operation, room setback mode (only if RC35 or RC20 has been assigned to the heating circuit), shut-down mode	Night setback (see page 32)
	What outside temperature should be used for reduced operation?	5°C -20°C to +10°C	Temperature threshold for outdoor setback mode (see page 32). Setting entered only if the reduction mode has been set to outdoor setback mode .
Frost protection			
	What temp. should be used to trigger frost protection?	Outside temperature , room temperature, no frost protection	Room temperature can only be set if RC20 or RC35 has been assigned to the heating circuit (see page 33).
	Which frost protection temp. should be used?	5°C -20°C to +10°C	Refers to outside temperature (see page 33).

Table 11 Navigator for Service menu SETTINGS \ HTG. CIRC. 1

Menu item		Input range Factory setting in bold	Other information
	At what outside temp. should reduction be interrupted?	OFF OFF, -30°C to +10°C	Setback in accordance with EN 12831 standard (see page 34).
	Should domestic hot water priority be activated?	Yes, No	
Mixer1)			
	Is a mixer installed?	Yes , No	Can only be set for heating circuits 2 and up. 1)
	What running time does the mixer have?	120 seconds 10 to 600 seconds	1)
	What increase should be used for the boiler?	5K 0 to 40K	1)
Drying floor screed1)			
	Should a drying cycle be carried out?	Yes No	Can only be set if floor heating has been entered as the heating system. DHW heating is not enabled while screed is drying. 1)
	Every how many days should the flow temp. be raised?	Every day , every 2nd day to every 5th day	1)
	By how many degrees Kelvin should the flow temp. be raised each time?	5K 0 to 10K	1)
	What is the desired maximum flow temperature?	45°C 25°C to 60°C	1)
	For how many days should maximum flow temp. be maintained?	4 days 0 to 20 days	1)
	Every how many days should the flow temp. be reduced?	Direct normal operation, every day , every 2nd day to every 5th day	1)

Table 11 Navigator for Service menu SETTINGS \ HTG. CIRC. 1

Menu item	Input range Factory setting in bold	Other information
By how many degrees Kelvin should the flow temp. be reduced each time?	5K 0 to 20K	Can only be set if direct normal operation has not been entered for flow temperature reduction. 1)
Do you wish to change the switching program?	Yes, No	Selecting Yes takes you to the switching program for the heating circuit.
Should the switching program be optimised?	Yes, No	Switch-on and switch-off times are automatically adjusted according to the outside temperature, room temperature and building type (heat storage capacity).
What reduction mode should be used for holiday?	Outdoor setback mode , reduced operation, room setback mode, shut-down mode	See page 32. Room setback mode can only be set if a remote control unit (e.g. RC20) has been assigned to the heating circuit. If reduced operation is selected, the normal night temperature will be used.
What outside temp. should be used?	5°C -20°C to +10°C	Temperature threshold for outdoor setback mode (see page 32). Setting entered only if the reduction mode for holiday has been set to outdoor setback mode .

Table 11 Navigator for Service menu *SETTINGS \ HTG. CIRC. 1*

1) Not possible or not available for boilers with UBA1.x and DBA.

6.3.1 Assignment of programming unit / remote control unit in the software¹

Example: Heating system with heating circuit 1 and heating circuit 2 (page 10)

Variant	Setting: Which operating unit is assigned to the heating circuit?	Effect
A	HC 1 = RC35, HC 2 = RC35 (see Fig. 2, 1 on page 10)	Same room temperatures for HC 1 and HC 2
B	HC 1 = RC35, HC 2 = none (see Fig. 2, 1 on page 10)	Room temperatures for HC 1 and HC 2 can be set separately
C	HC 1 = RC20, HC 2 = RC35 (see Fig. 2, 2 on page 10)	Room temperatures for HC 1 and HC 2 can be set separately; room temperatures for HC 1 are set on RC20

Table 12 Settings for room temperature depending on programming unit

6.3.2 Control mode (outside temp. controlled / room influence)

The temperature of the heating water in the boiler is defined by the heating characteristics determined in the Logamatic controller. A selection can be made whether these heating characteristics will be influenced solely by the outside temperature, or by a mixture of outside temperature and room temperature.

- **Outside temp. controlled:** If this setting is entered, the boiler temperature calculated in the controller will be regulated by variation in the "delayed" response to outside temperature in combination with selected settings for target room temperature, offset, standard temperature and minimum outside temperature. This temperature is then delivered to the radiators or underfloor heating by means of permanent operation of the heating circuit pump.

The only situations in which this setting could result in shut-down of the heating circuit pump are summer operation, night setback (depending on the reduction mode selected) or DHW mode (only with domestic hot water priority).

- **Outside temp. controlled, influenced by room temperature** (factory setting): this form of control works in exactly the same way as pure outside temperature control, except that you can use the **maximum room influence** parameter to determine whether and to what extent the room temperature should influence the heating characteristics.

The programming unit / remote control unit must be installed in a reference room, so that a representative room temperature can be recorded.

The greater the parameter set, the greater the influence of the room temperature on the heating characteristics (factory setting: 3 Kelvin). This applies when the room temper-

1) This function is not available with boilers with UBA1.x and DBA.

ature exceeds or falls below the target room temperature. If the **maximum room influence** parameter is set to **0**, the heating characteristics will be controlled solely by outside temperature.

6.3.3 Heating characteristics

Parameters: Standard temperature, maximum and minimum flow temperature and room temperature offset (parallel shifting of heating characteristic curve)

The heating characteristics form the basis of economical and easy operation of the heating system with outside temperature control. To calculate the heating characteristics, the Logamatic control system requires the entry of a number of parameters for the heating system, from which the optimum heating characteristics are automatically calculated by a mathematical formula.

This calculation takes into account the "delayed" response to outside temperature and the room control temperature. The room control temperature is internally calculated, based on the desired room temperature (target room temperature) and the room influence factor.

This allows the user to influence the heating characteristics directly by modifying the target room temperature.

The heating characteristic curve (Fig. 6, page 32) is determined by the base point and end point. The base point is located at 20°C flow temperature at a room temperature of 20°C with a delayed response to outside temperature of 20°C. The end point of the heating characteristic curve must be set according to the standard temperature (i.e. the design temperature) of the heating system.

The gradient of the heating characteristic curve (the shape of the curve) is determined by the parameters **minimum outside temperature** (the lowest outside temperature expected in a particular region; page 24) and the **standard temperature** (the flow temperature which should be reached when the outside temperature is at minimum) (Fig. 6, left).



The x-axis of the heating characteristic curve shown on the display covers the range from +20°C to -20°C.

For the **std. tmp.** parameter, the minimum outside temperature set in the "plant data" is indicated by a circle. However, the diagram will not be quite correct if a minimum outside temperature below -20°C is entered (the circle will no longer be on the heating characteristic curve).

The **minimum flow temperature** parameter can be used to define a minimum target value (Fig. 6, 4). If the temperature falls below this value, the burner is switched back on.

The heating characteristic curve can be shifted, up or down, in parallel to the original curve, by adjusting the **room temperature offset** parameter and/or the set room tem-

perature (Fig. 6, right). It can be advisable to set an offset if, for example, the room temperature measured with a thermometer differs from the set target value.

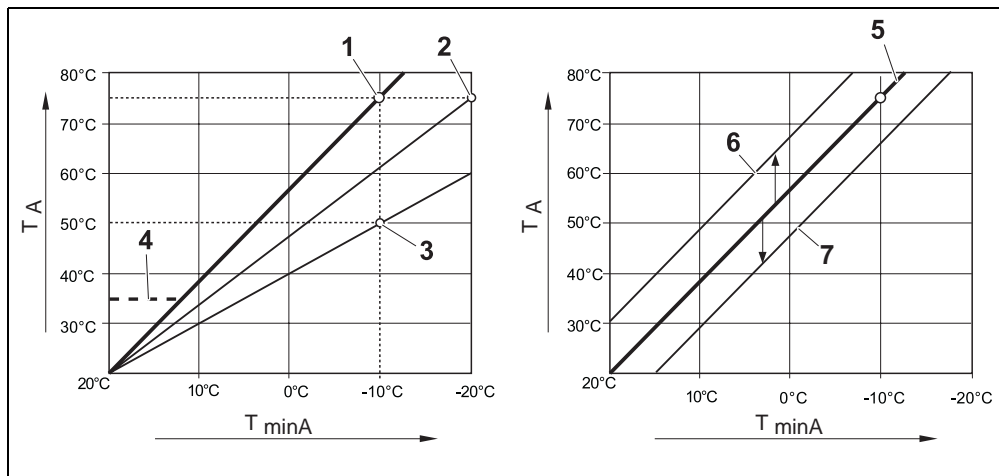


Fig. 6 Setting the heating characteristic curve. Left: setting the gradient by means of standard temperature and minimum outside temperature. Right: parallel shift possible by means of offset or target room temperature

T_{minA} Minimum outside temperature

T_A Standard temperature (i.e. the design temperature – the flow temperature which should be reached when outside temperature is at minimum)

1 Setting: standard temperature 75°C, minimum outside temperature -10°C (base curve)

2 Setting: standard temperature 75°C, minimum outside temperature -20°C

3 Setting: standard temperature 50°C, minimum outside temperature -10°C

4 Setting: minimum flow temperature 35°C

5 Setting: standard temperature 75°C, minimum outside temperature -10°C (base curve)

6 Parallel shifting of base curve by changing the offset +3 or by increasing the target room temperature

7 Parallel shifting of base curve by changing the offset -3 or by reducing the target room temperature

6.3.4 Reduction modes (night setback)

There are a number of different reduction modes available, which allow night setback to be adjusted to suit the differing needs of the user:

- **Reduced operation:** The rooms are maintained at a reasonable temperature by constant heating operation (the heating circuit pump runs constantly). A target room temperature for nighttime can be set. This must be at least 1 K lower than the daytime target room temperature. The heating characteristics will be calculated in accordance with this setting.

This setting is recommended for underfloor heating.

- **Shut-down mode:** The boiler and the heating circuit pump are switched off, and frost protection is activated. The heating circuit pump runs only for purposes of frost protection.
Not recommended if there is a risk that the building could cool down too much.
- **Room setback mode:** If the room temperature falls below the set night temperature (the target value), the heating system will operate in the same way as for reduced heating operation (as described under reduction mode "Reduced operation"). If the room temperature exceeds the target night temperature by more than 1°K, the boiler and the heating circuit pump are switched off (as described under reduction mode "Shut-down mode").
This reduction mode is only possible if a programming unit / remote control unit has been installed in a representative room (the reference room) or if the room temperature is recorded using an external room sensor.
- **Outdoor setback mode:** If the "delayed" response to outside temperature falls below a user-defined outside temperature threshold, the heating system will operate in the same way as for reduced heating operation (as described under "Reduced operation"). Above this threshold, the heating system will be switched off (as described under reduction mode "Shut-down mode"). This reduction mode is suitable for heating circuits which do not have their own programming unit / remote control unit. The operating mode protects the rooms from cooling down too much once a certain outside temperature is reached.

6.3.5 Frost protection

The frost protection function comprises the following options:



Caution: System damage caused by freezing

The settings **no frost protection** and **room temperature** provide either no frost protection or inadequate frost protection. When these settings are selected, the display shows a message indicating the risk of freezing.

- For reliable frost protection, use the **outside temperature** setting.

- **No frost protection** (frost protection is switched off)
- **Outside temperature** (outside sensor required) If the outside temperature falls below the threshold given by the set frost protection temperature, the heating circuit pump is switched on automatically.
- **Room temperature** (room sensor in the RC35 / RC20) If the room temperature falls below the fixed value of 5°C, the heating circuit pump is switched on automatically. If the room temperature rises above 7°C, the heating circuit pump is switched off automatically.



The **room temperature** setting does not provide absolute frost protection because pipes laid in external walls could freeze even though the temperature in the reference room might be clearly above 5°C due to external heat sources (fireplace etc.).

At what outside temp. should reduction be interrupted?

To maintain a comfortable level of warmth, the EN 12831 standard requires that heating surfaces and heat generators be designed to ensure a given level of output when the heating system cools down below a given point as a result of night setback.

In the parameter **At what outside temp. should reduction be interrupted?**, you can set an outside temperature threshold (this threshold applies to the delayed" response to outside temperature; page 23).

Figure 7 shows how the frost protection function works, without this parameter activated and with it activated. Settings selected: frost protection by **outside temperature**; **frost protection temperature** 5°C.

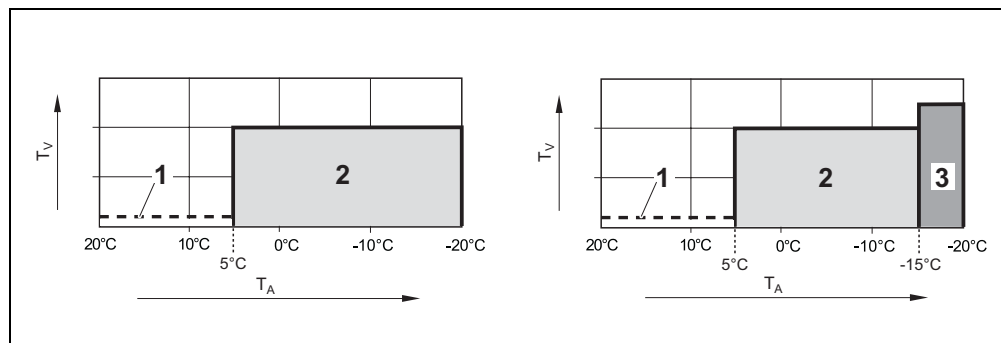


Fig. 7 Effects of the parameter "At what outside temp. should reduction be interrupted?". Left: parameter is set to "OFF" (factory setting). Right: parameter is set to -15°C

- T_A Outside temperature
- T_V Flow temperature
- 1** Shut-down mode
- 2** Reduced operation (at set nighttime room temperature)
- 3** Heating operation (at set daytime room temperature)

If the outside temperature falls below the set value of -15°C, heating switches from reduced operation to heating operation (Fig. 7, **3**). This allows smaller heating surfaces to be utilised.

6.4 Domestic hot water (DHW)



Warning: Risk of scalding at the taps

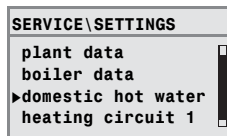
There is a risk of scalding at the taps whenever domestic hot water temperatures can be set to more than 60°C, and also during thermal disinfection.

- Make your customers aware of this so that they do not open any taps for hot water without mixing in cold water as well.

- Turn the rotary selector anti-clockwise until domestic hot water is selected (marked with ►).

- Press to select **domestic hot water**.

The menu **SETTINGS \ DHW** is opened.



Menu item	Input range Factory setting in bold	Other information
Have you installed domestic hot water?	Yes , No	Domestic hot water cannot be de-installed in the case of boilers with DBA.
Limiting value for maximum dom. hot water temp. setting:	60°C 60°C to 80°C	
To which temperature should your domestic hot water be heated?	60°C 30°C to 80°C	If the limit is set to >60°C, it will be possible to set temperatures of that level in the User menu as well.
Which heating circuit should be used for domestic hot water?	3-way switching valve Cylinder charge pump	1)
Do you wish to change the dom. hot water switching program?	Yes, No	Selecting Yes takes you to the switching program for domestic hot water.
Circulation ¹⁾		
Is circulation pump installed?	Yes, No	1)


Table 13 Navigator for Service menu **SETTINGS \ DHW**

Menu item		Input range Factory setting in bold	Other information
	How frequently should the circul. pump be switched on per hour?	Once for 3 minutes, twice for 3 minutes , 3 times for 3 minutes, 4 times for 3 minutes, 5 times for 3 minutes, 6 times for 3 minutes, permanent operation	1)
	Switch on circ. pump		Graphical display of number of times the pump is switched on per hour. 1)
	Do you wish to change the circulation switching program?	Yes, No	Selecting Yes takes you to the switching program for hot water circulation. 1)
Thermal disinfection¹⁾			
	Should a thermal disinfection be carried out?	Yes, No	1)
	What temperature should be used for thermal disinfection? ¹⁾	70°C 60°C to 80°C	At temperatures above 60°C there is a risk of scalding at the taps during and after thermal disinfection. 1)
	On which day should the thermal disinfection be performed? ¹⁾	Monday, Tuesday , Wednesday, Thursday, Friday, Saturday, Sunday, daily	1)
	At what time of day should the th. disinfection be performed? ¹⁾	1:00h 0:00 to 23:00h	Times entered must be whole hours only (no minutes). 1)
	Should the LED of the single charge key be activated?	Yes , No	The single charge function (for one-off heating of hot water) still works but is no longer indicated by an LED. 1)


Table 13 Navigator for Service menu SETTINGS \ DHW

1) Not possible or not available for boilers with UBA1.x and DBA.

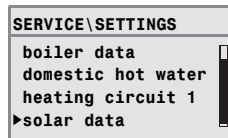
6.5 Solar data¹⁾

- Turn the rotary selector  anti-clockwise until **solar data** is selected (marked with

►).

- Press  to select **solar data**.

The menu **SETTINGS \ SOLAR** is opened.



Menu item	Input range Factory setting in bold	Other information
Which operation mode should be used?	Automatic permanent operation ON, permanent operation OFF	1)
What is the max. stor. cylinder temp. of the solar system?	60°C 30°C to 90°C	1)
What temp. must the storage cylinder not fall below?	OFF 30°C to 54°C, OFF	1)
What is the minimum pump rating?	30% 20% to 100%	1)


Table 14 Navigator for Service menu **SETTINGS \ SOLAR**

1) Not possible or not available for boilers with UBA1.x and DBA.



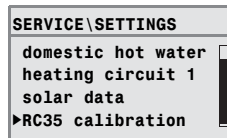
For explanations of the settings, see the documentation for the SM10 solar module.

6.6 RC35 calibration

- Turn the rotary selector  anti-clockwise until **RC35 calibration** is selected (marked with ►).

- Press  to select **RC35 calibration**.

The menu **SETTINGS \ CALIB. RC35** is opened.



Menu item	Input range Factory setting in bold	Other information
Calibration of the room temperature:	0.0K -5.0K to +5.0K	

Table 15 Navigator for Service menu **SETTINGS \ CALIB. RC35**

Calibrating the displayed room temperature (Calibration)

If there is a separate thermometer near the programming unit, it may show a different room temperature to that shown on the programming unit. You can use this function to adjust the programming unit to match the thermometer (i.e. "calibrate" the programming unit).

Before calibrating the room temperature, consider the following:

- Is the thermometer more accurate than the programming unit?
- Is the thermometer located close to programming unit so that they are both subject to the same heat influences (e.g. sunlight, fireplace)?



A thermometer may show temperature changes more slowly or more quickly than the programming unit.

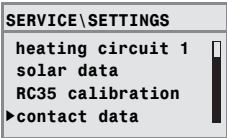
- Never calibrate the programming unit when your heating system is in the process of cooling down or heating up.

Example: if the thermometer is showing a temperature 0.5°C higher than the programming unit, enter "+0.5 K" as the calibration value.

6.7 Contact data

The details entered in "Contact data" are automatically displayed to the customer in the event of a fault.

- Turn the rotary selector  anti-clockwise until **contact data** is selected (marked with ►).
- Press  to select **contact data**.
The menu **SETTINGS \ CONTACT** is opened.







Menu item	Input range	Other information
Name and tel. No. of supplier:	<div>-----</div> <div>-----</div>	

Table 16 Navigator for Service menu *SETTINGS \ CONTACT*

Entering company name and telephone number






Two rows are available, each with 21 characters (capital letters, numbers and some other symbols).

The current cursor position will flash (marked by “_”).

1. Hold down the button  and turn the rotary selector  at the same time to select another character.
Release the button: the modified character is saved.
2. Turn the rotary selector  anti-clockwise or clockwise to move the cursor.
3. To delete a character, enter a space.
4. Press  to save your entries and leave the menu.

7 Diagnosis

The **Diagnosis** Service menu contains a number of diagnostic tools:

- Function test^{1, 2}
 - Monitor value
 - Error message¹
 - Heating characteristic curve
 - Versions
- Press the buttons  +  +  at the same time to open the **SERVICE MENU**.
 - Turn the rotary selector  anti-clockwise until **diagnosis** is selected (marked with ►).
 - Press  to open the **SERVICE \ DIAGNOSIS** menu.




SERVICE MENU	
quick operation	
settings	
►diagnosis	
servicing	



Note that the menu items shown will vary depending on the heating system.

7.1 Function test^{1), 2)}

Use this menu to activate separate EMS components individually in order to test their functions. The available functions and the possible settings vary depending on the system installed.

- Hold down the button  and turn the rotary selector at the same time to change the setting:
e.g. **BURNER OFF** to **BURNER ON**.
The change takes effect when you release the button .
- Turn the rotary selector  to switch between different displays (for function tests).

FCT. TEST \ BOILER	
valve 1 + 2	closed
ignition	OFF
flame	OFF
flame current	0.0µA
►burner	ON

FCT. TEST \ BOILER	
act. boil. tmp.	60°C
air temperature	32°C
flue gas temp.	78°C
flame	OFF
►burner	OFF

1) Boilers with DBA: restricted functionality only.

2) This function is not available with boilers with UBA1.x.



Be mindful of the information which appears on the display when you switch to menus or when you enter settings. Press any of the buttons or turn the rotary selector to confirm the information message.



No settings will be allowed which might result in damage to the components. This is why some settings may not be accepted.

7.2 Monitor value

Use the **Monitor value** menu to view the target and actual values for the heating system. The target value will be displayed first and then the actual value. The values displayed for monitoring purposes vary depending on the system installed.



If the values to be displayed do not all fit on the screen, they are displayed as a list. The list can be scrolled by turning the rotary selector.

DIAGNOSE \ MON. VALUE	Other information
Boiler / burner	The values monitored are displayed as a list; in other words, more values might appear if the rotary selector is turned.
Hydraulic separator¹⁾	
Domestic hot water (DHW)	
Heating circuit 1	Values for other heating circuits are displayed if such circuits are installed.
Solar¹⁾	
Module UM10¹⁾	For solid fuel boilers; EV2 = external locking (input)
Wireless transm.¹⁾	FB = strength of the wireless signal
Bus users¹⁾	

Table 17 Navigator for the Monitor value menu

1) Not possible or not available for boilers with UBA1.x and DBA.

7.3 Error message

Use the **Error message** menu to view the most recent faults in the fault memory, in order to investigate a fault, for example.

The faults are divided into the following categories:

- **Current errors** are all unresolved faults currently present in the system. These can be one of the following types: **locking**, **blocking** or **plant error**.
- **Locking type error**¹: When the fault is remedied, the heating system needs to be unlocked manually. To do so, press the **Reset** button on the boiler.
- **Blocking type error**¹: With blocking faults, the heating system resumes operation automatically as soon as the fault has been rectified.
- **Plant errors** in the heating system are logged in the RC35, with the exception of faults in the boiler or the burner, which are either "locking type errors" or "blocking type errors". The heating system keeps operating as much as possible during the fault; a reset is not required.




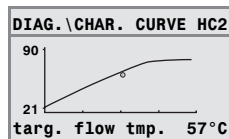
For a list of the locking and blocking faults, which vary depending on the boiler, see the installation and maintenance instructions for the boiler.

- Turn the rotary selector to show the next message.

7.4 Htg. charact. curve

Use the **Htg. charact. curve** menu to view the heating characteristics of each heating circuit in the form of a graph.

- If the system has more than one heating circuit: turn the rotary selector  to view the heating characteristic curve for the next heating circuit.



7.5 Versions

You can use the **Versions** menu to view the software versions for heating system components.

- If the information cannot be displayed in one screen: turn the rotary selector to display the next screen.

1) Not possible with boilers with UBA1.x and DBA.

8 Servicing¹

The **Servicing** menu is used to set a service interval and to view and reset current service messages.

The interval can be set to expire either after a given number of operating hours or when a given date is reached. The RC35 programming unit will then show a service message so that the customer can notify you to arrange an appointment.

Service messages are indicated by an **Hxx** code, e.g. H07.


SERVICE MENU \ SERVICE	Menu item	Input range Factory setting in bold	Other information
Service interval	How should servicing messages be triggered?	No messages, by date, by operation hours	Selecting date or operation hours takes you automatically to the corresponding setting.
	For "by date": Annual servicing, starting on:	2000-01-01	To set the date: hold down  and turn the rotary selector at the same time.
	For "by operation hours": Boiler operation hours until next servicing message	1,000 h 1,000 h to 6,000 h	Number of hours of operation with burner switched on
Current messages	Message + code		To view further messages: turn the rotary selector.
RESET servicing	Do you wish to reset the servicing messages?	No, Yes	If you select Yes the servicing messages will be reset. Note the information displayed.

Table 18 Navigator for the Servicing menu

1) Not possible with boilers with UBA1.x and DBA.



9 RESET

The **SERVICE MENU \ RESET** resets the following:

- All parameters back to their factory settings¹
- The error list¹,
- The service message²
- The operating hours².



After resetting parameters to the factory setting, the parameters may need to be adjusted again to suit the system configuration.

- Turn the rotary selector to select a menu, e.g. **error list**.
- Press  to go to the relevant screen, e.g. **Do you wish to reset the error list?**
- Press  and turn the rotary selector to set the display to **Yes**.

When the button is released, the reset is carried out.

During this process, a corresponding message appears, which disappears again automatically.

- Once reset is complete: confirm the new message by pressing any of the buttons.

1) In the case of boilers with UBA1.x and DBA, only all parameters of the RC35 will be reset, not the parameters of the boiler.

2) This function is not available with boilers with UBA1.x and DBA.

10 Troubleshooting

This fault table lists possible "plant errors", i.e. faults in EMS components. The heating system keeps operating as much as possible in the event of a plant error; in other words, heating of the home can continue.



Use only original Buderus parts. Losses caused by the use of parts not supplied by Buderus are excluded from the Buderus warranty.



The faults displayed will vary depending on the specific type of boiler in use.

Abbreviations used:

SC = Service code; **x** = heating circuit with the number **x**, e.g. **A23** for heating circuit 3

FC = Fault code

HCx = Heating circuit with the number **x**

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A01	800	Outside sensor is defect.	The minimum outside temperature is used instead of the actual outside temperature.	Sensor incorrectly connected or installed. Breakage or short circuit in the sensor lead. Sensor is faulty.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.
A01	808	DHW sensor 1 is defect.	Heating of domestic hot water is stopped.	Sensor incorrectly connected or installed.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.
A01	809	DHW sensor 2 is defect.		Breakage or short circuit in the sensor lead. Sensor is faulty.	
A01	810	DHW stays cold.	The system continuously attempts to heat the DHW tank to the set target temperature for DHW. DHW priority is switched off once this fault message appears.	Constant drawing or system leak.	<ul style="list-style-type: none"> ● Fix any leaks.
				Sensor incorrectly connected or installed. Breakage or short circuit in the sensor lead. Sensor is faulty.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.
				DHW pump incorrectly connected or faulty.	<ul style="list-style-type: none"> ● Check that the DHW pump is working, e.g. by carrying out a function test.

Table 19 Fault table

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A01	811	Thermal disinfection was unsuccessful.	Thermal disinfection has been interrupted.	Water draw too great during the disinfection period.	<ul style="list-style-type: none"> ● Select a time for thermal disinfection when there is no other demand for heat.
				Boiler output is too low for heat to be used for other purposes at the same time (e.g. 2nd heating circuit).	
				Sensor incorrectly connected or installed.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.
				Breakage or short circuit in the sensor lead. Sensor is faulty. DHW pump is faulty.	
A01	816	No communication with UBA/MC10, or DBA.	The boiler no longer receives heat demand signals; the heating system no longer provides heat.	EMS bus system is overloaded.	<ul style="list-style-type: none"> ● Reset by switching the heating system on and off. ● Notify customer support if necessary.
				UBA3/MC10 or DBA is faulty.	
A01	828	Water pressure sensor is defect.		Digital water pressure sensor is faulty.	<ul style="list-style-type: none"> ● Replace the water pressure sensor.
A02	816	No communication with BC10.	BC10 settings are no longer accepted by RCxx devices.	Contact problem on BC10 or BC10 is faulty.	<ul style="list-style-type: none"> ● Check BC10 connection. ● Replace BC10 if necessary.
A11	801	Internal error	Heating system is in emergency mode.	Internal runtime error in the RC35.	<ul style="list-style-type: none"> ● Replace RC35.
A11	802	Time not yet set.	Restricted functionality for: <ul style="list-style-type: none"> – All switching programs – Fault messages 	Time details are missing, e.g. due to lengthy power failure.	<ul style="list-style-type: none"> ● Enter the current time.

Table 19 Fault table

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A11	803	Date is not yet set.	Restricted functionality for: – All switching programs – Holiday function – Fault messages	Date details are missing, e.g. due to lengthy power failure.	<ul style="list-style-type: none"> ● Enter the current date.
A11	804	Internal error.	Heating system is in emergency mode.	Internal runtime error in the RC35.	<ul style="list-style-type: none"> ● Replace RC35.
A11	806	Room temperature sensor is defect.	Since the actual room temperature is missing, the following functions do not work: – Room influence (for outside temperature control) – Switch point optimisation In the case of room temperature control, the system is regulated to max. temperature for HCx.	In-built temperature sensor on the programming unit / remote control unit is faulty.	<ul style="list-style-type: none"> ● Replace the remote control unit.
A11	816	No communication with RC35.	RC20/RF unable to transmit data to RC35. Room temperature control therefore not possible for HC.	RC20/RF has incorrect address.	<ul style="list-style-type: none"> ● Check the address (parameter P1) in RC20/RF.
				RC35 not installed or not correctly connected.	<ul style="list-style-type: none"> ● Check RC35 connection.
A12	815	Sensor separator module is defect.	Effects include inadequate supply to downstream heating circuits as they can no longer be supplied with the requested heat quantity.	Sensor incorrectly connected or installed. Breakage or short circuit in the sensor lead. Sensor is faulty.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.

Table 19 Fault table

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A12	816	No communication with separator module.	Heating circuit pump 1 is permanently activated.	WM10 or bus cable is incorrectly connected or faulty. WM10 not recognised by RC35.	<ul style="list-style-type: none"> ● Check terminals on WM10 and check bus cable. ● Replace WM10.
A18	825	Two master operating units in system.	RC35 and RC20 are both controlling heating circuits and DHW. Depending on the set heating programs and the desired room temperature, the heating system may no longer operate correctly. Faulty DHW heating.	RC20 and RC35 are both registered as master.	<ul style="list-style-type: none"> ● Change parameter P1 in RC20 or remove RC35 from the EMS bus.
A2x	806	Room temperature for HCx is defect.	Since the actual room temperature is missing, the following functions do not work: <ul style="list-style-type: none"> – Room influence (for outside temperature control) – Switch point optimisation In the case of room temperature control, the system is regulated to max. temperature for HCx.	In-built temperature sensor on the programming unit / remote control unit is faulty.	<ul style="list-style-type: none"> ● Replace the remote control unit.
A2x	816	No communication with operating unit HCx.	Since the actual room temperature is missing, the following functions do not work: <ul style="list-style-type: none"> – Room influence – Switch point optimisation 	RC20 has incorrect address, is incorrectly wired or is faulty. Heating circuit has not been registered on the RFM20.	<ul style="list-style-type: none"> ● Check the address in the RC20. ● Check function and connection of the remote control unit. ● Replace the remote control unit.

Table 19 Fault table

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A2x	829	RC20/RF as remote control.	RC20/RF unable to transmit data to RC35. Room temperature control therefore not possible for this HC.	RC20/RF address not correctly assigned in RC35 or not installed in RC35.	<ul style="list-style-type: none"> ● Set the operating unit parameter in RC35 to RC20/RF. ● Check the assignment of the RC20/RF.
A2x	830	Low battery for wireless oper. unit HCx.	No effect if the battery is replaced in time.	Battery in RC20RF for HCx is low.	<ul style="list-style-type: none"> ● Replace batteries.
A2x	839	No wireless comm. with oper. unit HCx. Wireless malfunction.	<p>Since the actual room temperature is missing, the following functions do not work:</p> <ul style="list-style-type: none"> – Room influence – Switch point optimisation <p>The RFM20 operates with the last values set on the remote control unit.</p>	RC20RF is outside the range of reception.	<ul style="list-style-type: none"> ● Bring the RC20RF within the range of reception.
				Heating system has been switched off.	<ul style="list-style-type: none"> ● Switch on the heating system.
				When RFM20 was replaced, the RC20RF was not registered on the new RFM20.	<ul style="list-style-type: none"> ● Register the RC20RF (see documentation for RC20RF).
A2x	842	Frost prot. selected but no rem.contr. HCx.	<p>Since the actual room temperature is missing, the following functions do not work:</p> <ul style="list-style-type: none"> – Room influence 	No programming unit / remote control unit assigned, although frost protection is set to room temperature .	<ul style="list-style-type: none"> ● Check the operating unit parameter. ● Change frost protection to outside temperature if necessary.
A2x	843	Room control selected but no rem.contr. HCx.	<ul style="list-style-type: none"> – Switch point optimisation <p>EMS operates with the last values set on the remote control unit.</p>	No programming unit / remote control unit assigned, although room temp. controlled is set.	<ul style="list-style-type: none"> ● Check the operating unit parameter. ● Change to outside temp. controlled if necessary.

Table 19 Fault table

SC	FC	Fault message	Effect on control characteristics	Possible cause	Remedy
A3x	807	HCx flow sensor is defect.	Heating circuit pump continues to be activated in accordance with the default value. The valve is isolated electrically and remains in the last position set by the controller (it can be adjusted by hand).	Sensor incorrectly connected or installed. Breakage or short circuit in the sensor lead. Sensor is faulty.	<ul style="list-style-type: none"> ● Check the sensor connection and the sensor lead. ● Check that the sensor is correctly mounted. ● Compare resistance values with the sensor characteristic curve.
A3x	816	No communication with HCx mixer module.	Heating circuit x cannot be operated correctly. MM10 and valve (the mixer) run automatically in emergency mode. Heating circuit pump is permanently activated. Monitoring data in RC35 are invalid.	<p>The heating circuit addresses on the MM10 and RC35 do not match.</p> <p>MM10 or bus cable is incorrectly connected or faulty.</p> <p>MM10 not recognised by RC35.</p>	<ul style="list-style-type: none"> ● Check the rotary encoder on the MM10. ● Check terminals on MM10 and check bus cable. ● Replace MM10.
Hxx		Service message; no plant error.	The heating system keeps operating as much as possible.	Example: service interval expired.	Maintenance is required; see boiler documentation.

Table 19 Fault table



Plant errors do not need resetting. Contact your local service engineer or your local Buderus office if you cannot remedy the fault yourself.
Other faults are described in the documentation for the particular boiler in use.

Index

A

- Accessories 8
- Actual values, viewing 41

B

- Boiler data, Service menu – Settings 25
- Building type 23

C

- Calibration, room temperature display 38
- Char. curve, Service menu – Diagnosis 42
- Checklist, parameters for commissioning 18
- Circulation (DHW) 35–36
- Commissioning 17
- Commissioning, quick 19
- Components included in delivery 6
- Connection 11
- Contact data, entering 39
- Contrast on display 17
- Control mode 30
- Controls, overview of 13
- Correct use 6

D

- Damping of outside temperature 23
- Design temperature (“standard temperature”) 31
- DHW
 - Service menu – Settings 35
 - target temperature 35
 - temperature limit 35
- DHW priority 26–29
- Diagnosis, Service menu 40
- Disinfection, thermal 35–36

E

- EMS 6, 21
- EMS bus, devices on 21
- Errors, Service menu – Diagnosis 42

F

- Fault memory, viewing 42

- Flow temperature 31
- Freezing 4
- Frost protection 33
- Function test, Service menu – Diagnosis 40

H

- Heat storage capacity 23
- Heating characteristics
 - instructions for setting 31
 - viewing 42
- Heating circuit
 - installing 22
 - more than one heating circuit 10
 - Service menu – Settings 26
- Hydraulic separator, installing 22

I

- Installation 11

L

- Language, setting 22
- Low loss header module WM10 8

M

- Minimum clearances 9
- Minimum outside temperature 24
- Mixer 26–29
- Mixer module MM10 8
- Modulation, boiler pump 25
- Monitor value, Service menu – Diagnosis 41

N

- Night setback 32

O

- Outdoor setback mode 32
- Outside temperature control 30
- Outside temperature, “damped” 23

P

- Plant data, Service menu – Settings 22
- Power failure 21

Programming unit	
- assignment in software	30
- attaching or removing	12
- for heating circuit	26
- only programming unit in the system	10
Pump after-run time	25
Pump anti-seize	21

Q

Quick operation, Service menu	19
-------------------------------	----

R

Reduced operation	32
Reduction mode (night setback)	32
Reference room	9
Remote control unit	10
Reset, Service menu	44
Room influence	30
Room setback mode	32
Room temperature offset	31

S

Safety instructions	4
Screed, drying	26–29
Sensor characteristics	7
Service interval, setting	43
Service menu, introduction	14
Service menu, overview of the menus	16
Service messages, viewing/resetting	43
Servicing, Service menu	43
Setback, interrupting (frost protection)	33
Shut-down	21
Shut-down mode	32
Single charge LED, switching off	35–36
Solar data, Service menu – Settings	37
Solar module, installing	22
Specifications	7
Switching off	21
Switching program, optimising	26–29
Symbols, explanation of	5
System handover	20

T

Target values, viewing	41
------------------------	----

Temperature sensor	7
Testing components	40
Thermal disinfection	35–36
Thermostatic valves in reference room	21
Troubleshooting	45

V

Versions, Service menu – Diagnosis	42
Versions, viewing	42

W

Weather-dependent control	30
---------------------------	----

Buderus
Cotswold Way, Warndon
Worcester WR4 9SW
Tel.: 01905 752794
Fax: 01905 753130
www.buderus.co.uk

Buderus