

Logamatic 4321/4322

Read carefully prior to
installation and maintenance.

Table of contents

1	Key to symbols and safety instructions	4	7	Settings	16
1.1	Key to symbols	4	7.1	Adjustable parameters and display data	16
1.2	Safety instructions	4	7.2	Calling up the service level	17
			7.2.1	Control system "Press and turn"	17
			7.2.2	Calling up main menus	17
			7.2.3	Calling up submenus	17
			7.3	Calling up and modifying settings	17
2	About the appliance	4	8	General specification data	17
2.1	Determined use	4	8.1	Minimum outside temperature	18
2.2	EU Declaration of Conformity	4	8.2	Type of building	18
2.3	Notes on commissioning	4	8.3	Summer/winter time changeover	19
2.4	Cleaning the control unit	5	8.4	Remote adjustment	19
2.5	Product description	5	8.5	Amount of heat	19
2.6	Scope of supply	5	8.6	Manual switch fault message	20
2.7	Technical data	5	8.7	Automatic maintenance message	20
2.7.1	Logamatic 4321/4322 control unit	5			
2.7.2	FM441 function module	5	9	Module selection	21
2.7.3	FM442 function module	5			
3	Setting instructions	6	10	Boiler parameters	21
3.1	Setting instructions and replacement instructions for high limit safety cut-out (STB)	6	10.1	Select boiler type	21
3.1.1	Setting and installation of the high limit safety cut-out	6	10.1.1	Low temperature boilers	21
3.1.2	Adjusting the high limit safety cut-out	6	10.1.2	Low temperature boiler with minimum return temperature	22
3.2	Setting instructions for boiler water thermostat (TR)	7	10.1.3	Ecostream boilers	23
			10.1.4	Condensing boiler	23
4	Controls and MEC2 programming unit	8	10.1.5	Low-temperature boilers with low end temp.	23
4.1	Control unit controls	8	10.2	Setting the burner type	24
4.2	MEC2 programming unit	9	10.2.1	Determining the boiler output	24
			10.2.2	Single stage burner	25
5	Modules and their function	10	10.2.3	Two-stage burner	25
5.1	CM431 controller module	10	10.2.4	Modulating burner	25
5.2	NM482 power supply module	11	10.2.5	2 x single stage burner	27
5.3	ZM434 burner and boiler circuit module	11	10.2.6	Dual-fuel burner	27
5.3.1	Burner function	12	10.3	General settings regarding boiler parameters	28
5.3.2	Boiler circuit functions	12	10.3.1	Set up the pump function	28
5.4	FM441 function module (accessory)	12	10.3.2	Setting boiler pump run-on time	29
5.4.1	Heating circuit function	13	10.3.3	Setting the minimum burner runtime	29
5.4.2	DHW function	13	10.3.4	Selecting the minimum start temperature	29
5.5	FM442 function module (accessory)	13	10.3.5	Selecting the maximum shutdown temperature	30
			10.3.6	Setting the maximum flue gas temperature limit	30
			10.3.7	Entering the boiler curve	30
6	Commissioning	14	11	Heating circuit data	31
6.1	Commissioning the MEC2 programming unit	14	11.1	Adjusting the heating system	31
6.1.1	New MEC2 installed in a control unit	14	11.2	Rename the heating circuit	32
6.1.2	MEC2 installed in another control unit	14	11.3	Setting the low end temperature	32
6.1.3	MEC2 with set parameters installed in control unit	14	11.4	Setting the design temperature	32
6.2	Checking the high limit safety cut-out (STB)	14	11.5	Setting the Minimum flow temperature	33
6.2.1	Triggering the high limit safety cut-out	14			
6.2.2	Terminating or cancelling the test	15			
6.2.3	Resetting the high limit safety cut-out	15			

11.6	Setting the maximum flow temperature	33		
11.7	Select the remote control	33		
11.8	Maximum room influence setting	34		
11.9	Select the type of setback	34		
11.10	Setting the outside stop temperature	35		
11.11	Setting holiday mode	35		
11.12	Stopping setback at low outside temperatures	35		
11.13	Setting flow setback	36		
11.14	Setting the room temperature offset	36		
11.15	Automatic adaptation setting	36		
11.16	Setting switching optimisation	37		
11.17	Set switch off optimisation time	37		
11.18	Setting frost protection temperature	38		
11.19	Setting DHW priority	38		
11.20	Setting the heating circuit actuator	38		
11.21	Set the actuator run-time	38		
11.22	Setting the Boiler raising	39		
11.23	Setting the external changeover	39		
11.24	External fault message - pump	40		
11.25	Screed drying	40		
11.25.1	Setting the temperature rise	41		
11.25.2	Setting the heat-up time	41		
11.25.3	Setting the maximum temperature	41		
11.25.4	Setting the hold time	41		
11.25.5	Setting the setback temperature	42		
11.25.6	Setting the setback time	42		
12	DHW data	42		
12.1	Select Domestic hot water	42		
12.2	Setting the temperature range	42		
12.3	Selecting switching optimisation	43		
12.4	Selecting residual heat use	43		
12.5	Setting hysteresis	43		
12.6	Raising the boiler temperature	43		
12.7	External fault indication (WF1/WF2)	44		
12.8	External contact (WF1/WF3)	44		
12.9	Thermal disinfection	45		
12.9.1	Setting thermal disinfection	45		
12.9.2	Setting the temperature	45		
12.9.3	Setting the weekday	45		
12.9.4	Setting the time	46		
12.10	Setting range Daily heat-up	46		
12.11	DHW circulation pump	46		
12.11.1	Selecting the DHW circulation pump	46		
12.11.2	Setting intervals	46		
13	Special parameter	47		
14	Heating curve	47		
15	Relay test	47		
16	Carrying out an LCD test	48		
17	Fault log	48		
18	Monitor data	48		
18.1	Boiler monitor data	48		
18.2	Heating circuit monitor data	49		
18.3	DHW monitor data	49		
19	Display version	50		
20	Selecting the control unit	50		
21	Reset	50		
22	Environment / disposal	51		
23	Faults and fault remediation	52		
24	Appendix	55		
24.1	Sensor curves	55		
24.2	Setting specific boiler data	57		
	Keyword index	58		

1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings



Warnings in this document are framed and identified by a warning triangle printed against a grey background.

Keywords at the start of a warning indicate the type and severity of the ensuing risk if measures to prevent the risk are not taken.

- **NOTICE** indicates that material losses may occur.
- **CAUTION** indicates possible minor to medium personal injury.
- **WARNING** indicates possible severe injury.
- **DANGER** indicates that severe personal injury may occur.

Important information



Important information in cases where there is no risk of personal injury or material losses is identified by the symbol shown on the left. It is bordered by horizontal lines above and below the text.

Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Table 1

1.2 Safety instructions

General safety instructions

Failure to observe the safety instructions can result in serious injuries and a risk to life as well as material losses and damage to the environment.

- ▶ Ensure that only a qualified contractor carries out installation, connection of flue gas system, commissioning, maintenance and service.
- ▶ Carry out maintenance at least once a year. As part of this, check that the entire system is working correctly. Immediately remedy all defects found.
- ▶ Read the safety instructions carefully prior to commissioning the system.

Original spare parts

Losses caused by the use of spare parts not supplied by the manufacturer are excluded from the manufacturer's warranty.

- ▶ Use only original spare parts and accessories from the manufacturer.

Risk of scalding

There is a risk of scalding if the required DHW temperature is set higher than 60 °C.

- ▶ Do not draw off DHW unmixed.

Damage due to operator error

Operator errors can result in injury and damage to property.

- ▶ Ensure that children never operate this appliance unsupervised or play with it.
- ▶ Ensure that only personnel who can operate this appliance correctly have access to it.
- ▶ Installation and commissioning as well as servicing and maintenance must only be carried out by a qualified contractor.
- ▶ Before unpacking the device touch a radiator or an earthed metal water pipe to discharge any electrostatic charge in your body.

Risk to life from electric shock

- ▶ Ensure that any electrical work is only carried out by an approved electrician.
- ▶ Observe the relevant requirements when working on electrical installations.
- ▶ Ensure that a circuit breaker in accordance with applicable standards is present to disconnect all poles from the mains power supply. If there is no circuit breaker, you will need to install one.
- ▶ Before opening the control unit, isolate all poles of the heating system via the circuit breaker. Secure against unintentional reconnection.

System damage through frost

When the heating system is switched off, it can freeze up if there is frost.

- ▶ Protect your heating and water system against freezing by draining the heating system and hot water pipes at the lowest point.

2 About the appliance

These service instructions contain important information on the safe and appropriate commissioning and servicing of the Logamatic 4321 and 4322 control units.

These service instructions are designed for heating contractors, who, due to their vocational training and experience, are knowledgeable in handling heating systems and water installations. Only carry out servicing if you have such specialist knowledge and skills.

Explain to the customer the function and operation of the appliance.

2.1 Determined use

The Logamatic 4321 and 4322 control units are only intended to control heating systems in apartment buildings, housing complexes and other buildings.

2.2 EU Declaration of Conformity

The design and operation of this product conforms to the European Directives and the supplementary national requirements. Its conformity is confirmed by the CE designation.

You can view the product Declaration of Conformity on the Internet at www.buderus.de/konfo or request a copy from your local Buderus sales office.

2.3 Notes on commissioning



DANGER: Risk to life and of system damage through excessively high temperatures.

All parts directly or indirectly subject to high temperatures must be designed for use at such temperatures.

- ▶ Ensure that wiring and other lines are routed at a safe distance from hot boiler parts.
- ▶ Route wiring and other lines, in the wiring ducts provided or above the boiler insulation.

- ▶ Before switching the control unit on, check that its manual switches and those on the function modules are set to **AUT**.
- ▶ Enter the settings made during commissioning and the allocation of the heating circuits into the commissioning report in the operating instructions of the control unit.
- ▶ Switch on the control unit first and then the boiler.
- ▶ To shut down, switch off the boiler first and then the control unit.
- ▶ Ensure that there is sufficient heat load, otherwise the boiler will switch off and generate a fault condition.

2.4 Cleaning the control unit

- ▶ Only clean the control unit with a damp cloth.

2.5 Product description

The digital Logamatic 4321 and 4322 control units can regulate any floor standing Buderus oil/gas fired boiler with single-stage, two-stage or modulating burner, and offer optimum control over modulating burners and boiler circuit pumps via the respective 0 – 10 V interface as well as an external changeover facility for dual-fuel burners.

These control units may be extended with up to four function modules to provide an optimum match to an individual heating system. Multi-boiler systems can be controlled using the FM458 strategy module integrated in the Logamatic 4321 control unit.

2.6 Scope of supply

Included in the standard delivery:

- Digital Logamatic 4321 control unit with MEC2 programming unit or digital Logamatic 4322 control unit with boiler display
- FA outside temperature sensor (only Logamatic 4321)
- FK boiler water temperature sensor
- FZ auxiliary temperature sensor for flow or return temperature
- Burner cable, stage 2
- Technical documentation

2.7 Technical data

2.7.1 Logamatic 4321/4322 control unit

	Unit	4321/4322
Dimensions B/H/L	mm	660/240/230
Operating voltage (at 50 Hz \pm 4 %)	V	230 \pm 10 %
Power consumption	W	5
Control unit fuse	A	2 x 10
Maximum switching current	A	8 5
• Burner output		
• Boiler or heating circuit pump output		
Boiler circuit actuator control	V	230
Actuator runtime	sec	120 (adjustable from 10 to 600)
Type of controller		Three-point step controller (PI characteristics)
Ambient temperatures	°C	+5 ... 50 -20 ... 55
• Operation		
• Transport		

Table 2 Technical data for Logamatic 4321 and 4322 control units

Sensor	lower fault limit in °C	smallest display value in °C	highest display value in °C	upper fault limit in °C
FA	-50	-40	50	> 70
FZ	< -5	0	99	> 125
FK	< -5	0	> 108	> 125
FG	< -5	0	250	> 255

Table 3 Sensor measuring range

2.7.2 FM441 function module

	Unit	Value
Operating voltage (at 50 Hz \pm 4 %)	V	230 \pm 10 %
Power consumption	W	2
Control unit fuse	A	10
Maximum switching current	A	5
• Cylinder primary pump output		
• Circulation circuit pump output		
• Heating circuit pump output		
Heating circuit actuator control	V	230
Actuator runtime	sec	120 (adjustable 10 – 600)
Type of controller	–	Three-point step controller (PI characteristics)

Table 4 Technical data for FM441 function module

Sensor	lower fault limit in °C	smallest display value in °C	highest display value in °C	upper fault limit in °C
FV flow temp. HC left	< -5	0	99	> 125
FB flow temp. HC right	< -7	0	99	> 125

Table 5 Sensor measuring range

2.7.3 FM442 function module

	Unit	Value
Operating voltage (at 50 Hz \pm 4 %)	V	230 \pm 10 %
Power consumption	W	2
Maximum switching current - heating circuit circulation pump output	A	5
Heating circuit actuator control	V	230
Actuator runtime	sec	120 (adjustable 10 – 600)

Table 6 Technical data for FM442 function module

Sensor	lower fault limit in °C	smallest display value in °C	highest display value in °C	upper fault limit in °C
FV1 flow temp. HC left	< -5	0	99	125
FV2 flow temp. HC right	< -5	0	99	125

Table 7 Sensor measuring range

3 Setting instructions

3.1 Setting instructions and replacement instructions for high limit safety cut-out (STB)

3.1.1 Setting and installation of the high limit safety cut-out



DANGER: Risk to life from electric shock!

- Before opening the control unit, isolate all poles of the control unit and secure against unauthorised re-connection.

To be able to set the temperatures, the high limit safety cut-out (STB) must be removed from the control unit housing.

- Undo screws [1].
- Remove cover [3].
- Remove protective cap [2].
- Undo the screw connection.
- Remove the STB with its assembly plate and make the adjustments (→ chapter 3.1.2).

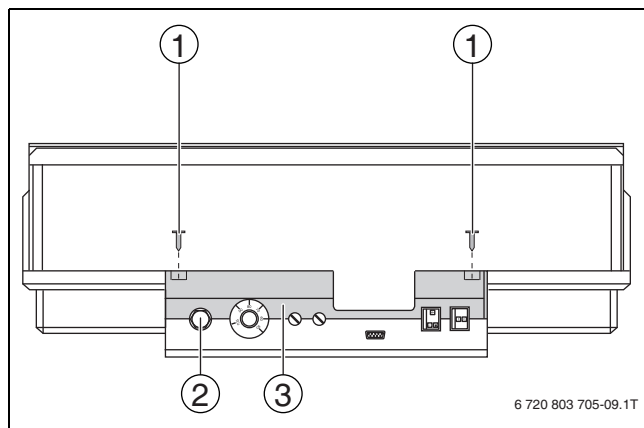


Fig. 1 Remove the high limit safety cut-out

- [1] Screws
- [2] STB protective cap
- [3] Cover



Set the high limit safety cut-out in accordance with local regulations, applicable standards and the boiler certificate to the maximum permissible heating system temperature.



The factory setting is 110 °C.

3.1.2 Adjusting the high limit safety cut-out



DANGER: Risk to life and of system damage through incorrect shutdown of the STB.

- Ensure that the STB is correctly shut down before commissioning.



CAUTION: System damage due to incorrect installation of the STB at the boiler!

The sensor must be pushed into the sensor well as far as possible to ensure a reliable and fast shutdown in case of excess temperature. Ensure an optimum heat transfer from STB sensor to boiler. The sensors must be secured in the sensor wells by means of the sensor locks (standard delivery). The capillaries must not be damaged or kinked.

- Verify the function of the STB before commissioning.
- Regular checks must be performed in accordance with the boiler manufacturer's specifications.



Special regulations and standards apply to boilers with an STB setting of 120 °C. Boilers installed with an STB setting higher than 110 °C have to meet specific requirements.

Version A

- Undo the screw [3].
- Set the thin plate with the temperature scale [2] to mark [1].
- Re-tighten screw [3].
- Install STB into housing.
- Check the high limit safety cut-out (→ chapter 6.2, page 14).

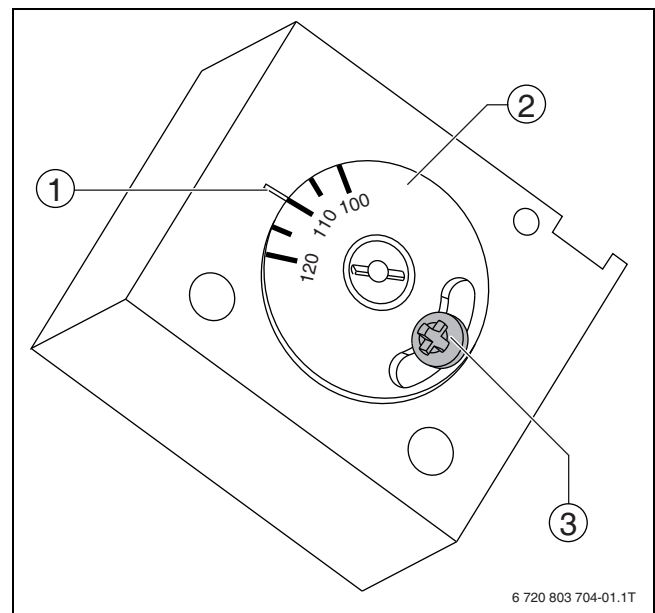


Fig. 2 Adjusting the high limit safety cut-out (STB) - variant A

- [1] Marking
- [2] Temperature scale
- [3] Screw

Version B

- Set the temperature using a screwdriver.

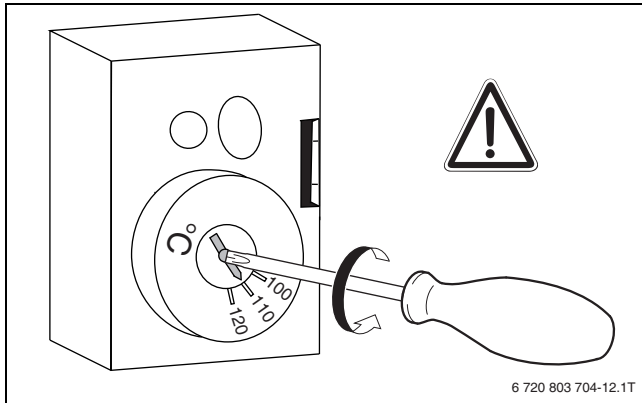


Fig. 3 Adjusting the high limit safety cut-out (STB) - variant B

- Install STB into housing.
- Check the high limit safety cut-out (→ chapter 6.2, page 14).

3.2 Setting instructions for boiler water thermostat (TR)

Changing the boiler water thermostat from 90 °C to 105 °C (only with high limit safety cut-out setting 120 °C).



Logamatic control units can be operated with a maximum temperature of 99 °C (→ chapter 10.3.5, page 30).

For systems requiring a boiler water temperature higher than 90 °C (observe the relevant notice), the boiler temperature controller can be changed from 90 °C to 105 °C.

- Pull off rotary selector.
- Break off the end stop tabs [1].
- Reposition rotary selector.

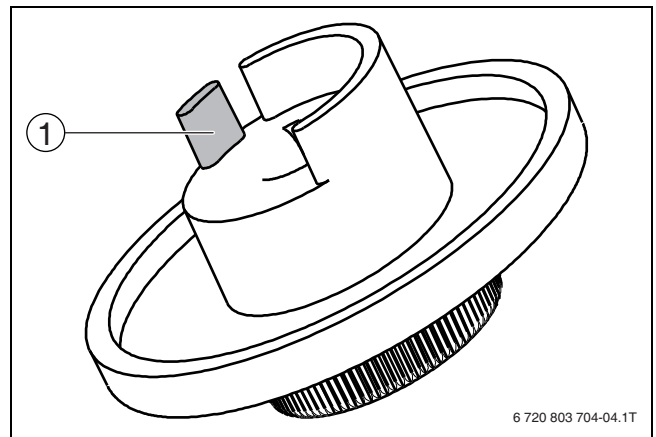
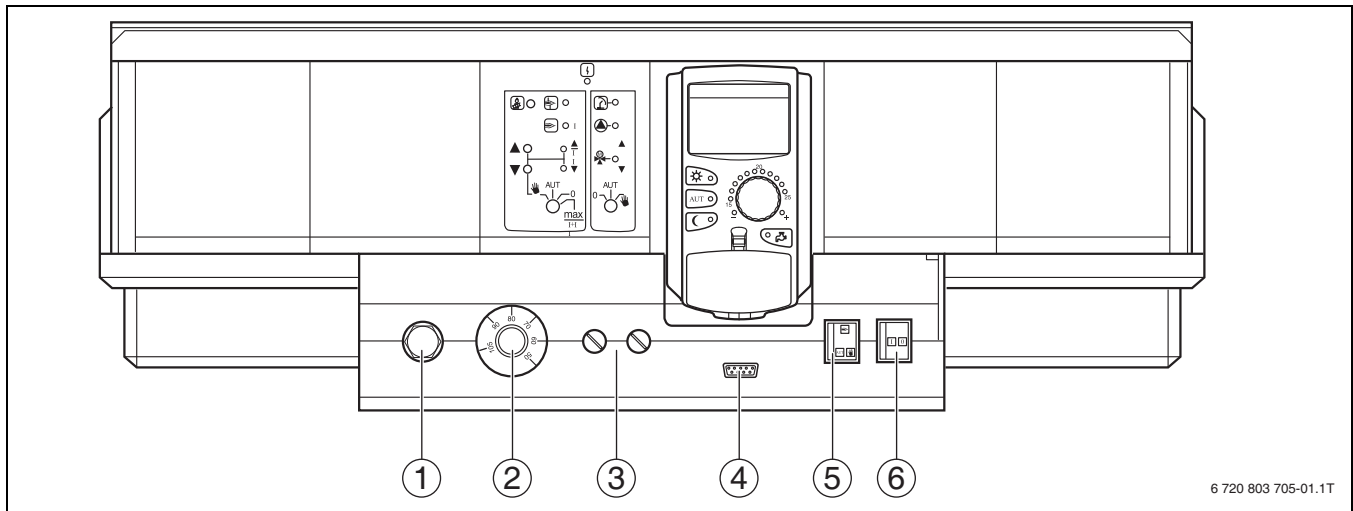


Fig. 4 Boiler water temperature controller

[1] End stop tabs

4 Controls and MEC2 programming unit

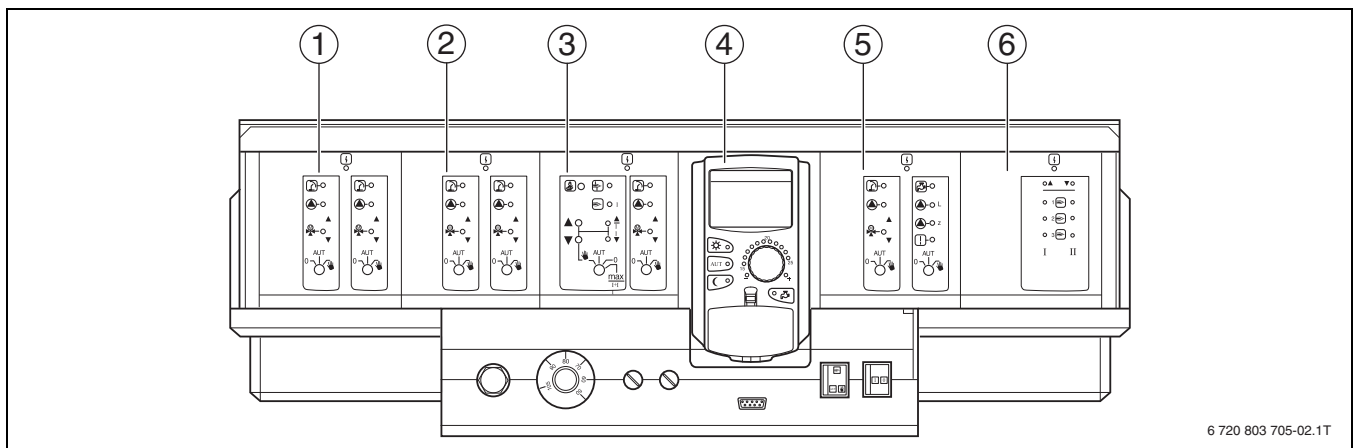
4.1 Control unit controls



6 720 803 705-01.1T

Fig. 5 Control unit controls (delivered condition)

- [1] High limit safety cut-out
- [2] Boiler water temperature controller
- [3] F1, F2 Fuse
- [4] Connection for external service equipment and MEC2
- [5] Burner emergency operation switch
- [6] On/Off switch

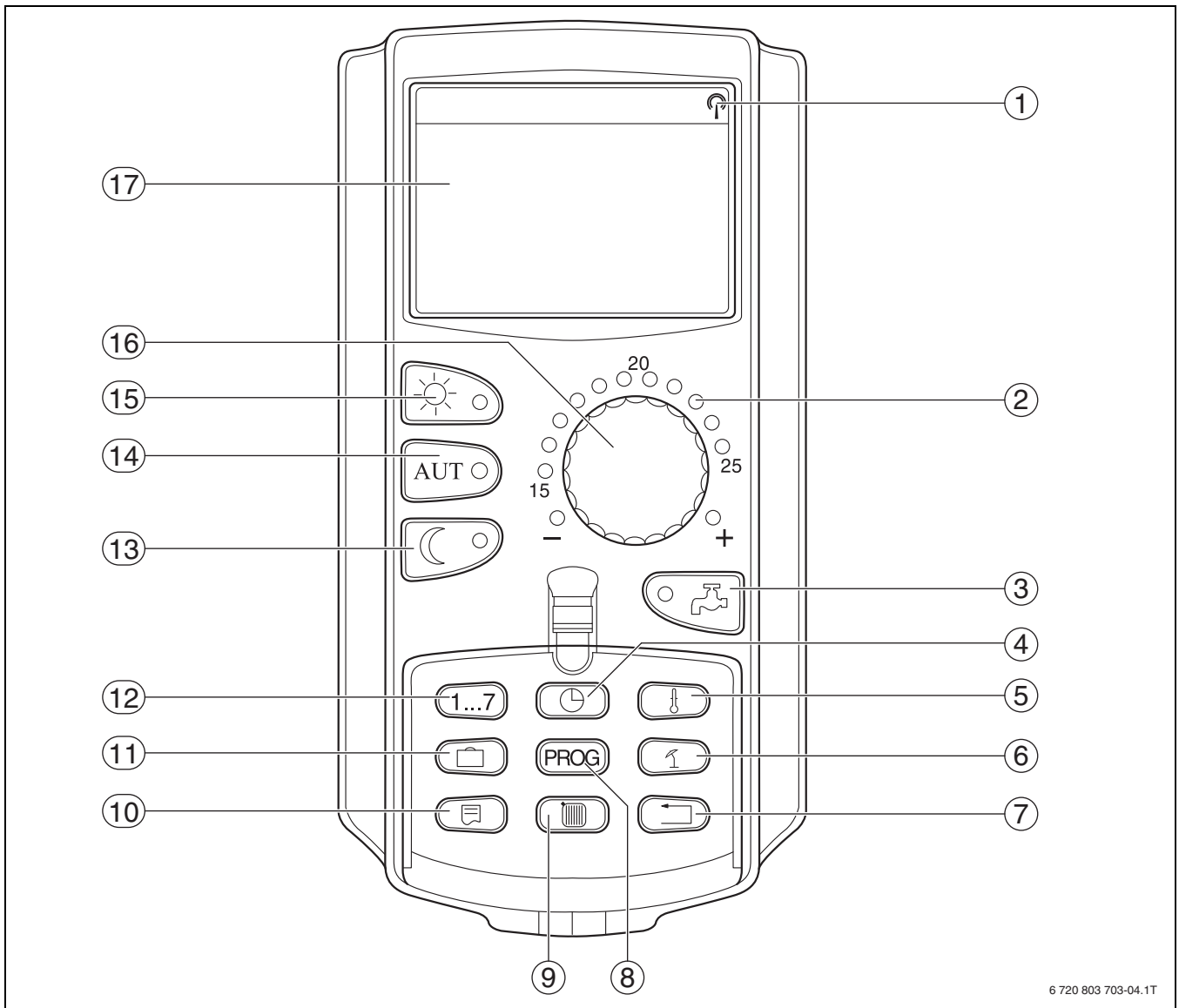


6 720 803 705-02.1T

Fig. 6 Fitted modules (optional accessories)

- [1] Slot 1: e.g. FM442 - heating circuit 1, heating circuit 2
- [2] Slot 2: e.g. FM442 - heating circuit 3, heating circuit 4
- [3] Slot A: ZM434 - boiler circuit, burner
- [4] Slot B: CM431 module and MEC2 programming unit
- [5] Slot 3: e.g. FM441 - heating circuit 5, DHW/DHW circulation pump
- [6] Slot 4: e.g. FM458 - strategy, for multi-boiler systems

4.2 MEC2 programming unit



6 720 803 703-04.1T

Fig. 7 MEC2 programming unit

- | | |
|--|--|
| [1] Radio clock signal (only Germany) | [10] Select standard display |
| [2] Display for set room temperature | [11] Enter holidays |
| [3] Input DHW temperature/heating | [12] Enter the day of the week |
| [4] Setting the time | [13] Constant setback mode |
| [5] Change temperature values | [14] Automatic heating mode in acc. with a time switch |
| [6] Summer/winter time changeover | [15] Constant heating mode |
| [7] Return to the standard display | [16] Rotary selector |
| [8] Select a time switch program | [17] Display |
| [9] Selecting heating circuits/DHW circuit | |

5 Modules and their function

All modules which are or can be fitted into the Logamatic 4321/4322 control units are shown here.

Module	4321	4322
MEC2 programming unit	O	X
CM431 controller module	O	O
Central module ZM434 – burner, boiler circuit functions	O	O
FM441 function module ¹⁾ – 1 heating circuit + 1 DHW circuit	X	X
FM442 function module – 2 heating circuits	X	X
FM443 function module – solar circuit	X	X
FM444 function module – alternative heat source	X	X
FM445 function module ¹⁾ – LAP/LSP (primary system)	X	X
FM448 function module ²⁾ – central fault message	X	X
ZM426 additional module – additional STB	X	X
FM458 function module ²⁾ – strategy module	X	X

Table 8 Modules and their functions

1) Only one DHW module is permitted per control unit.

2) Only one of these two modules may be fitted into the respective control unit.

[O] Standard equipment

[X] Optional equipment

5.1 CM431 controller module

Setting the control unit address

The address settings ([1]) for the Logamatic 4321/4322 control units are made on the CM431 module (behind the MEC2 programming unit).

- Remove the MEC2 programming unit.
- You can now set the control unit address using a screwdriver or similar tool.

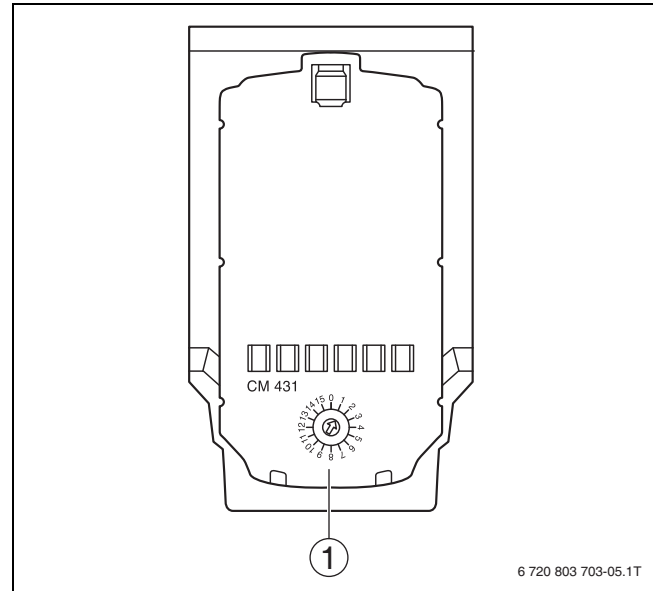


Fig. 8 Address setting

[1] Address setting

Address	Description
0	Stand-alone control unit: Set the address to 0 if the control unit operates as stand-alone equipment (factory setting).
	Each device must be given a different address if several devices are connected to the network. A fault message is displayed by the MEC2 programming unit if the same address is allocated more than once.
1	Master (lead control unit): Address 1 is a special setting since the device with this address acts as the master device. The master controls the boiler. The ambient temperature sensor must always be connected to the master. The master monitors the ECOCAN BUS, which links the control units. The master recognises if an address has been allocated more than once. A fault message is displayed by the MEC2. All networked control units transfer their set values to the master, which uses them to formulate the overall temperature setpoint. Any network must only include one master.
2 – 15	Slave (secondary control unit): All devices with these addresses are described as slaves. No slave may ever have address 1. Each address must only be allocated once.

Table 9 Control unit addresses

5.2 NM482 power supply module

End connection when networking several control units



DANGER: Risk to life from electric shock!

- ▶ Ensure that all electrical work is only carried out by a competent person.
- ▶ Before opening the control unit, isolate all poles of the control unit and secure against unauthorised re-connection.

To ensure fault free data transmission between several control units, close the end connections to the two control units which are furthest apart.

The end connection is fitted to the component side of the NM482 power supply module, and is activated by the wire jumper [2].

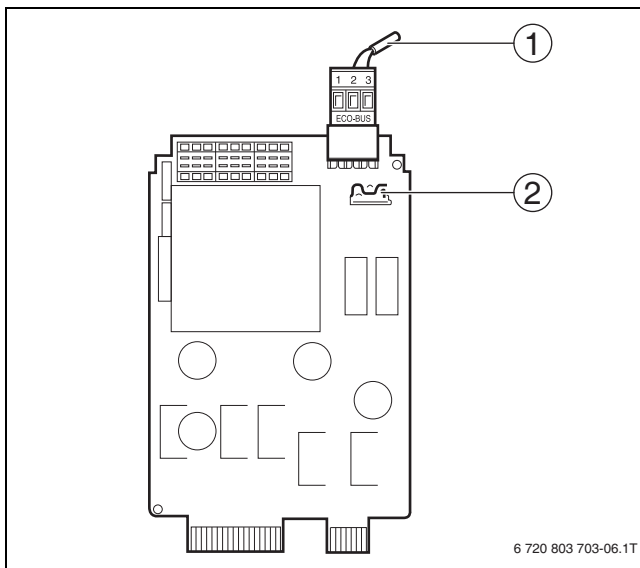


Fig. 9 NM482 power supply module

- [1] ECOCAN BUS
- [2] Jumper S1 (for end connection)
factory setting: open

The factory setting is: Jumper S1 open = end connection not closed.

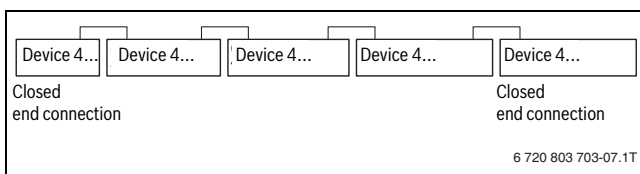


Fig. 10 Example of a closed terminator, in case of several control units

5.3 ZM434 burner and boiler circuit module

The ZM434 module is part of the standard equipment supplied with the Logamatic 4321 and Logamatic 4322 control units. The manual switches on the module are only provided for service and maintenance functions.

If the manual switches are not set to automatic, a corresponding message appears on the MEC2 programming unit and the fault indicator (fig. 11, [1]) illuminates.



Never use the manual switch to shut down the system during temporary absence. Use the holiday function for this purpose (refer to operating instructions for control unit).

The control functions continue to operate in manual mode with restricted functionality.

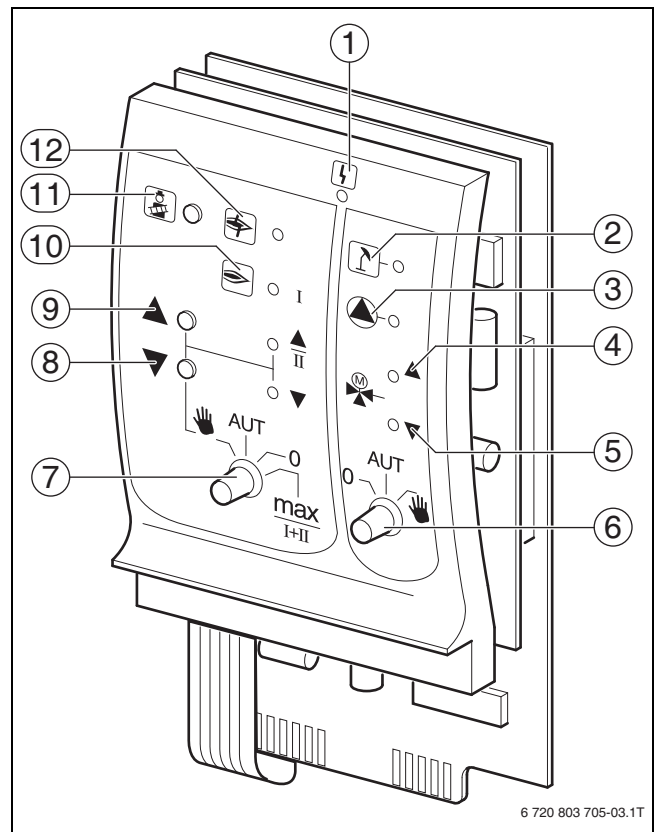


Fig. 11 ZM434

- [1] General fault, e.g. on-site faults, sensor faults, external faults, wiring faults, internal module faults, manual mode. The fault messages appear as plain text on the MEC2 programming unit.
- [2] Boiler circuit in summer mode
- [3] Boiler pump in operation
- [4] Mixing valve opens towards the boiler
- [5] Mixing valve opens towards the boiler bypass
- [6] Manual switch for boiler circuit
- [7] Manual switch for burner
- [8] Modulating output is reduced
- [9] Modulation output is increased/2nd stage operation
- [10] Burner in operation
- [11] "Flue gas test" button
- [12] Burner fault

5.3.1 Burner function

Flue gas test

- Press and hold button **Flue gas test** (→ fig. 11, [11], page 11) for a few seconds.

The heating control unit operates for 30 minutes at a higher flow temperature.

During the flue gas test, the indicators **Fault** (→ fig. 11, [1], page 11) and **Summer mode** (→ fig. 11, [2], page 11) mode flash alternately.

To terminate the flue gas test:

- Press button **Flue gas test** again.

Manual burner switch



In normal operation, the manual switch is set to **AUT**.

Positions **0**, **Manual** and **max I + II** of the burner's manual switch are special settings (→ fig. 11, [7], page 11) reserved for contractors, e.g. in case of failure of the control system or during service and maintenance.

The burner may be directly controlled with the manual switch.



Current functions are indicated by LEDs.

Position	Function
	As base load, only the first stage will be enabled for single and two stage burners. The second stage is at zero volts. For modulating burners, the burner output can be increased using ▲ and reduced using ▼.
	The burner operates in automatic mode.
	The burner is switched OFF. Except when the burner emergency switch is set to Manual .
	The burner operates continuously at maximum output.

Table 10 Burner functions ZM434

5.3.2 Boiler circuit functions



In normal operation, the manual switch is set to **AUT**.

Positions **0** and **Manual** are special settings of the manual switch of the boiler circuit (→ fig. 11, [6], page 11) reserved for contractors.



Current functions are indicated by LEDs.

Position	Function
	Any installed boiler pump will be switched on. The boiler circuit actuator can be manually operated.
	The boiler circuit operates in automatic mode.
	Any installed boiler pump will be switched off. The boiler circuit actuator can be manually operated.

Table 11 Heating circuit and DHW functions ZM434

5.4 FM441 function module (accessory)

The FM441 module regulates one heating circuit (with optional mixing valve) and one DHW heating facility.

The manual switches on the module only have service and maintenance functions and only affect 230 V outputs.

Only fit a single FM441 module in each control unit.

If the manual switches are not set to automatic, a corresponding message appears on the MEC2 programming unit and the **Fault** indicator (→ fig 12, [1]) illuminates.



Never use the manual switch to shut down the heating system during temporary absence. Use the holiday function for this purpose (→ see operating instructions for control units).

The control functions remain operational in manual mode without any restrictions.

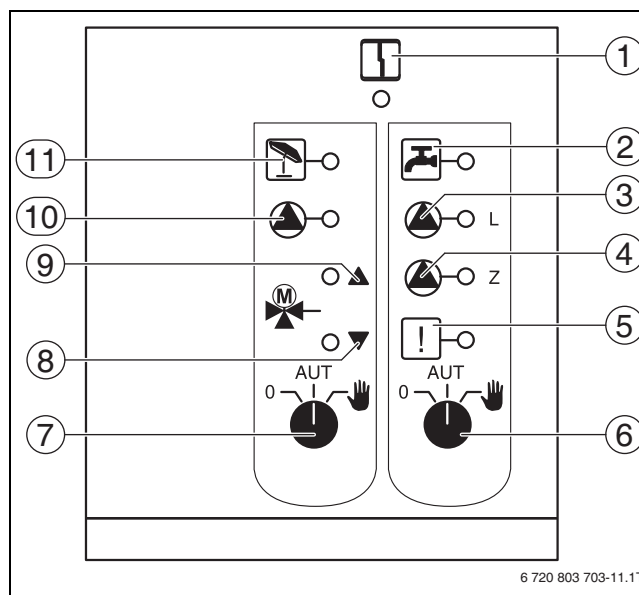


Fig. 12 FM441

- [1] General fault (The error messages appear as plain text in the MEC2 programming unit.)
- [2] DHW in night mode below the set temperature.
- [3] Cylinder primary pump in operation
- [4] DHW circulation pump in operation
- [5] Pasteurisation enabled
- [6] DHW manual switch
- [7] Manual heating circuit switch
- [8] "Mixing valve closes" (colder)
- [9] "Mixing valve opens" (hotter)
- [10] Heating circuit pump in operation
- [11] Heating circuit in summer mode

5.4.1 Heating circuit function



In normal operation the manual switch should be in the **AUT** position.



Current functions are indicated by LEDs.

Positions **0** and **Manual** are special settings of the manual switch for the heating circuit (→ fig. 12, [7], page 12) reserved for contractors.

Position	Function
	The heating circuit pump or primary pump is switched on. The mixing valve is switched volt-free and can be manually operated.
	The heating circuit operates in automatic mode.
	The heating circuit pump is switched off. The mixing valve is switched volt-free. The control functions remain active.

Table 12 Heating circuit and DHW functions FM441

5.4.2 DHW function



In normal operation the manual switch should be in the **AUT** position.



Current functions are indicated by LEDs.

Positions **0** and **Manual** are special settings of the DHW manual switch (→ fig. 12, [6], page 12) reserved for contractors.

Position	Function
	The cylinder primary pump is switched on. The secondary circulation pump is switched OFF.
	The DHW circuit operates in automatic mode.
	The cylinder primary pump and DHW circulation pump are switched off. The control functions remain active.

Table 13 Heating circuit and DHW functions FM441

5.5 FM442 function module (accessory)

The FM442 module regulates two independent heating circuits with optional mixing valves. Several of these modules can be used in one control unit.

The manual switches on the module only have service and maintenance functions and only affect 230 V outputs.

If the manual switches are not set to automatic, a corresponding message appears on the MEC2 programming unit and the **Fault** indicator illuminates.

The control functions remain operational in manual mode without any restrictions.

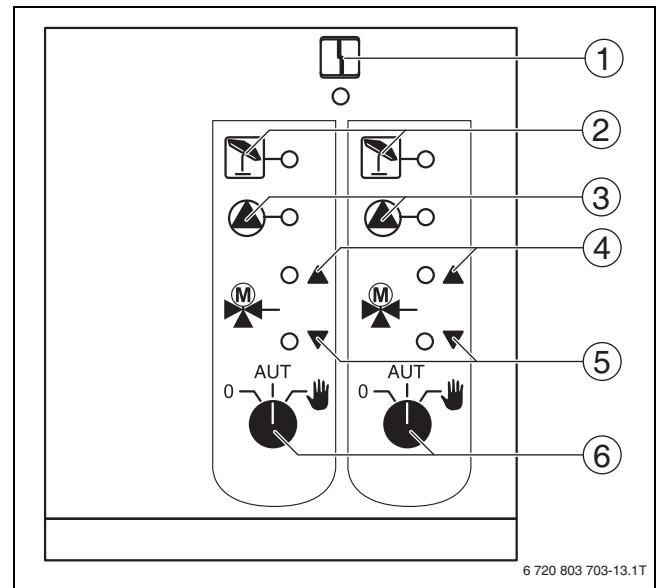


Fig. 13 FM442

- [1] General fault, e.g. on-site faults, sensor faults, external faults, wiring faults, internal module faults, manual mode. The fault messages appear as plain text on the MEC2 programming unit.
- [2] Heating circuit in summer mode
- [3] Heating circuit pump in operation
- [4] "Mixing valve opens" (hotter)
- [5] "Mixing valve closes" (colder)
- [6] Manual heating circuit switch e.g. for heating circuit 1 and 2

Heating circuit function



In normal operation the manual switch should be in the **AUT** position.

Positions **0** and **Manual** are special settings of the manual switch for the heating circuit (→ fig. 13, page [6]) reserved for contractors.



Current functions are indicated by LEDs.

Position	Function
	The heating circuit pump is switched on. The mixing valve is switched volt-free and can be manually operated.
	The central heating or the DHW circuit operates in automatic mode.
	The heating circuit pump is switched off. The mixing valve is switched volt-free. The control functions remain active.

Table 14 FM442 heating circuit functions

6 Commissioning

6.1 Commissioning the MEC2 programming unit

You can use the MEC2 programming unit for all Logamatic 4000 control units.

The MEC2 programming unit can be installed as follows:

- directly in the control unit
- wall-mounted as remote control unit or
- in an adapter with separate power source.

The MEC2 commences initialisation after a power supply has been connected. The display shows **MEC is initialised**.

The control unit address is then briefly displayed.



If the MEC2 is fitted in the control unit or wall mounting plate, it automatically detects the control unit to which it is connected (automatic detection). You do not have to select the control unit.

Depending on the individual application, the display shows various information:

6.1.1 New MEC2 installed in a control unit

If a brand new MEC2 has been installed in the control unit and the connections with the control unit have been established, data is immediately downloaded from the control unit.

The display shows **Monitor data are from ctrl panel taken**.

6.1.2 MEC2 installed in another control unit

If the MEC2 is programmed with a software version that is not able to recognise this type of control unit, the display shows **Unknown Control unit**.

- Remove the MEC2 from the control unit and replace by an MEC2 with a suitable software version.

6.1.3 MEC2 with set parameters installed in control unit

After the MEC2 has been installed in the control unit, the two displays **MEC is initialised** and **Connection with Control unit Address XX established** will initially be shown again.

Alternative control unit type

Initially, only data from the control unit can be downloaded, if the type of control unit varies from that entered in the MEC2 programming unit. The display shows **other Ctrl. unit type, Night button receive**.

- Press the **Night mode** button.
The display shows **Data are from ctrl unit taken**.

Alternative control unit of the same type

If the MEC2 is connected to a different control unit of the same type, the display will show the message **NB Other Control unit** for approximately 3 seconds.

If the MEC2 programming unit is separated from the control unit and data is modified, the display shows **Aut button transmit, Night button receive**, when the unit is reinstalled into a control unit of the same type. The control unit scans whether the new data should be accepted or whether the old data from the control unit should be used again.

To adopt the new data:

- Press **AUT**.
The display shows **Data are to ctrl unit sent**.

To adopt the data from the control unit:

- Press the **Night mode** button.
The display shows **Data are from control unit taken**.

Identical control unit

If the MEC2 programming unit is separated from the control unit and data is also modified, the display shows **Aut button transmit, Night button receive**, when the unit is reinstalled in the same control unit. The control unit scans whether the new data should be accepted or whether the old data from the control unit should be used again.

To adopt the new data:

- Press **AUT**.
The display shows **Data are to ctrl unit sent**.

To adopt the data from the control unit:

- Press the **Night mode** button.
The display shows **Data are from control unit taken**.

6.2 Checking the high limit safety cut-out (STB)



CAUTION: System damage due to incorrect installation of the STB at the boiler!

The sensor must be pushed into the sensor well as far as possible to ensure a reliable and fast shutdown in case of excess temperature. Ensure an optimum heat transfer from STB sensor to boiler. The sensors must be secured in the sensor wells by means of the sensor locks (standard delivery). The capillaries must not be damaged or kinked.

- Verify the function of the STB before commissioning.
- Regular checks must be performed in accordance with the boiler manufacturer's specifications.

During the STB test, the boiler temperature must be constantly monitored at the MEC2, on the ZM435 boiler display or at appropriate measuring points.

The burner must shut down automatically when the set cut-out temperature (chapter 3) of the STB + 2K (example 110°C + 2K = 112°C) is reached. If the burner does not shut down at this point, manually interrupt the checking procedure at once. To shut down, release the lever of button and switch the emergency mode switch of the burner to **AUT**.

After interrupting the checking procedure, check the correct routing of the capillaries and the temperature sensor head as well as the assembly and wiring of the specific boiler water temperature sensor. When in doubt, assume the STB to be broken. In this case the broken high limit safety cut-out must be replaced.

6.2.1 Triggering the high limit safety cut-out



DANGER: Risk to life through boiler excess temperature!

Never perform the STB test without supervision.

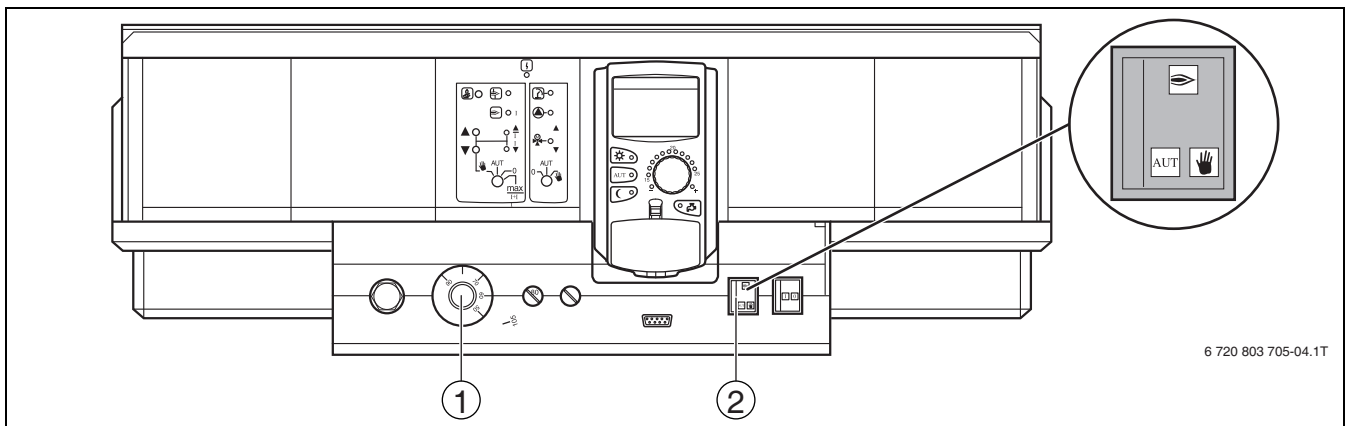
- Immediately interrupt the test if the set STB temperature is exceeded.
- Release the lever or button (depending on controller type) of the temperature controller.
- Set burner emergency switch to **AUT**.

- Set the burner emergency switch (→ fig. 14, [2], page 15) to **Manual**.
The burner starts.
- Pull off the temperature controller dial (→ fig. 14, [1], page 15).
- Depending on the type of controller, push the lever or button (→ fig. 15) back with a screwdriver, etc., and hold until the high limit safety cut-out has triggered.
- Continuously monitor the boiler temperature, and interrupt the test, if required.

6.2.2 Terminating or cancelling the test

To cancel or terminate the test:

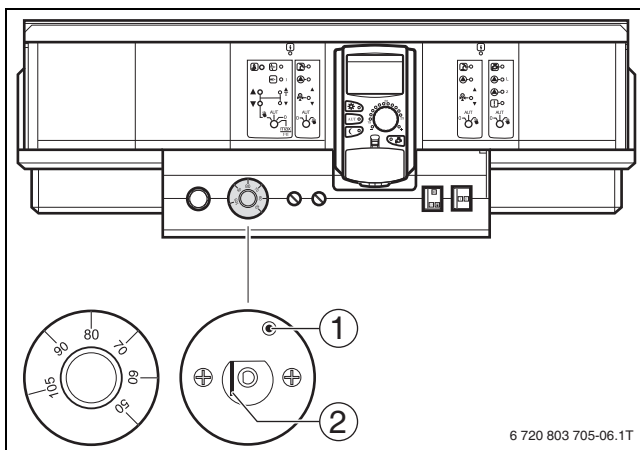
- ▶ Set burner emergency switch (→ fig. 14, [2]) to **AUT**.
- ▶ Depending on controller type, release the lever or button (→ fig. 15).
- ▶ Push on the button of the temperature controller
- ▶ Set the temperature controller to **90**.
- ▶ Set controllers, switches and thermostats to the equipment-specific conditions.



6 720 803 705-04.1T

Fig. 14 Checking the STB using the burner emergency operation switch

- [1] Control thermostat
- [2] Burner emergency operation switch

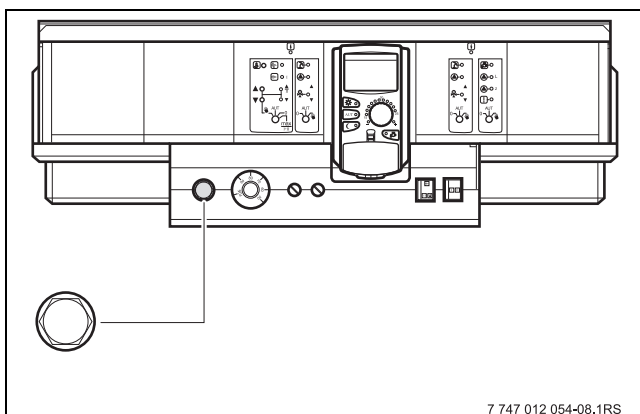


6 720 803 705-06.1T

Fig. 15 Triggering the high limit safety cut-out

- [1] Key
- [2] Lever

6.2.3 Resetting the high limit safety cut-out



7 747 012 054-08.1RS

Fig. 16 Resetting the high limit safety cut-out

- ▶ Undo the cap.
- ▶ Push the reset button underneath.
- ▶ Refit the cap.

7 Settings

7.1 Adjustable parameters and display data

Some options are only displayed subject to the installed modules and prior settings.

Gen. parameters <ul style="list-style-type: none"> Minimum outside temperature Type of building Summer/winter time adjustment Remote adjustment Heat yield Level limit transducer Switch fault message Automatic maintenance message Module selection <ul style="list-style-type: none"> Slot A Slot 1 Slot 2 Slot 3 Slot 4 Boiler param. <ul style="list-style-type: none"> Boiler type Fuel Return control Servomotor runtime Return increase funct Ecostream control Type of burner Maximum boiler output Minimum boiler output Maximum boiler output, oil fired Minimum boiler output, oil fired Sequence change after ... Hours Minimum modulation output Modulation via ... Burner set Motor runtime Communication burner control Load limit from outside temperature Boiler pump function Boiler pump overrun time Minimum burner operating time Pump logic temperature Minimum starting temperature Maximum cut-off temperature Flue gas temperature limit Reset maximum flue gas temperature Boiler curve Low end temp. Design temperature Setback by 	Heating circ. 1 <ul style="list-style-type: none"> Heating system Heat circ desig Low end temp. Design temperature Minimum flow temperature Maximum flow temperature Remote control Maximum room infl Setback type Hold if cold Holiday setback type No setback below ... Flow setback Room temperature offset Autom adaptation Switching optimisation Shutdown optimisation Frost prot from DHW priority Servomotor Servomotor runtime Boil.raising External Day/Night/Aut External fault message, pump Screed drying Screed temperature rise Screed heat-up time Maximum screed temperature Maximum screed time Screed setback temperature Screed setback time Heating circuits 2, 3, 4, etc. see heating circuit 1 DHW <ul style="list-style-type: none"> DHW Yes/No DHW range to Switching optimisation Residual heat use Hysteresis Boiler raising External fault message WF1/WF2 External contact WF1/WF2 Thermal Disinfection Temperature thermal disinfection Weekday thermal disinfection Time thermal disinfection Daily heat-up DHW circulation (switch-on frequency per hour) 	Special parameters Heating characteristic curve <ul style="list-style-type: none"> Heating curve boiler p.circuit Heating curve heating circ. 1 Heating curve heating circ. 2 Heating curve heating circ. 3 Heating curve heating circ. 4 Heating curve heating circ. 5 Heating curve heating circ. 6 Heating curve heating circ. 7 Heating curve heating circ. 8 Relay test <ul style="list-style-type: none"> Boiler Heating circ. 1 Heating circ. 2 Heating circ. 3 Heating circ. 4 Heating circ. 5 Heating circ. 6 Heating circ. 7 Heating circ. 8 DHW Strategy LCD test Error Monitor <ul style="list-style-type: none"> Boiler Heating circ. 1 Heating circ. 2 Heating circ. 3 Heating circ. 4 Heating circ. 5 Heating circ. 6 Heating circ. 7 Heating circ. 8 DHW Version Control unit Reset <ul style="list-style-type: none"> Setting for control unit Burner operating hours Fault log Maximum flue gas temperature Heat yield maint. message
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6 720 802 921-08.1TL

Fig. 17 Adjustable parameters and display data

7.2 Calling up the service level



Access to the Service level is password protected. The service level is intended for the heating contractor only.



Unauthorised access to the service level invalidates your warranty.

- Press buttons **Display**, **Heating circuit** and **Temp** simultaneously and release.

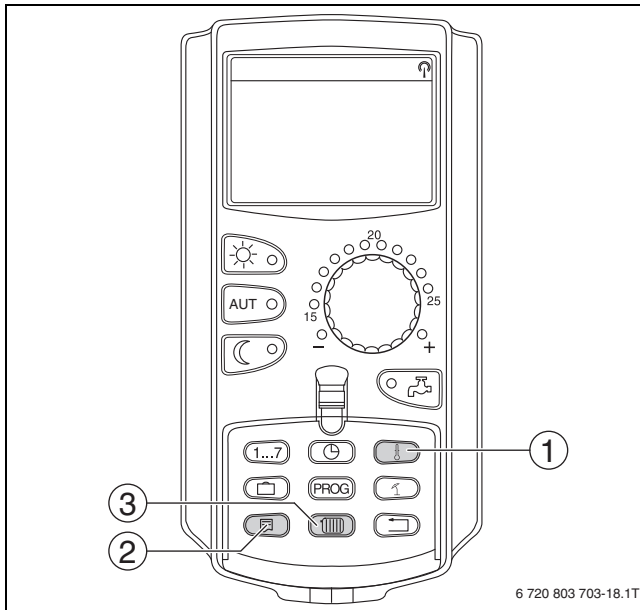


Fig. 18 Calling up the service level

- [1] Temperature key
- [2] Display key
- [3] Heating circuit key

The service level is enabled and the display shows:

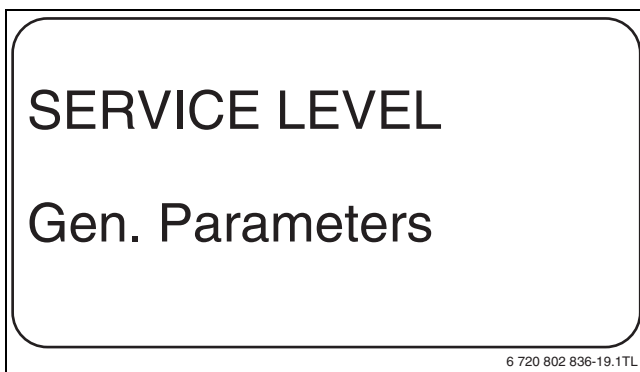


Fig. 19 Service level

7.2.1 Control system "Press and turn"

The control unit is operated by pressing the buttons and turning the rotary selector.

The Service level is split over several main menu levels. If the last line is left blank (without value entry), there are further submenus connected to the main menu selected.

7.2.2 Calling up main menus

The rotary selector is used to scroll through the main menu. The main menus are structured as a loop and recommence after the last main menu.

- General param.
- Module selection
- ...
- General param.

7.2.3 Calling up submenus

- Turn the rotary selector until the main menu containing the submenu is highlighted.
- Press button **Display**.
The submenu is shown.
- Turn the rotary selector to access all submenus of the main menu.

7.3 Calling up and modifying settings



The menus shown on the MEC2 programming unit of the control unit depend on the modules that have been installed and the settings that have been made.

- Calling up the service level (→ chapter 7.2).
The first main menu is **General param.**
- Press **Display** to call up a submenu.
The display shows the selected submenu.
- Press and hold **Display**.
- Turn the rotary selector to the required value.
The display shows the set value.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

To return to the standard display:

- Press **Back** several times.



The control unit automatically reverts to the standard display if no key is pressed for some time or if the flap is shut.

8 General specification data



In the **General param.** main menu, values can be adjusted for the submenus listed above and the building characteristics. The following pages explain how to adjust values relating to the submenus.

- Call up the service level.
The first main menu is **General param.**
 - Press button **Display** to call up a submenu.
 - Turn the rotary selector until the required submenu is shown.
- Turn the rotary selector to scroll through the following submenus:
- Minimum outside temperature
 - Type of building
 - Summer/winter time changeover
 - Remote adjust.
 - Amount of heat
 - Manual switch fault message
 - Automatic maint. message
- Press button **Display** to call up a submenu.
The display shows the selected submenu, and settings can be made.

8.1 Minimum outside temperature

The minimum outdoor temperature is an average value of the lowest outdoor temperatures of the past years and defines together with the design temperature the end point of the heating curve. It affects the steepness of the heating curve (colder: flat curve; warmer: steep curve).

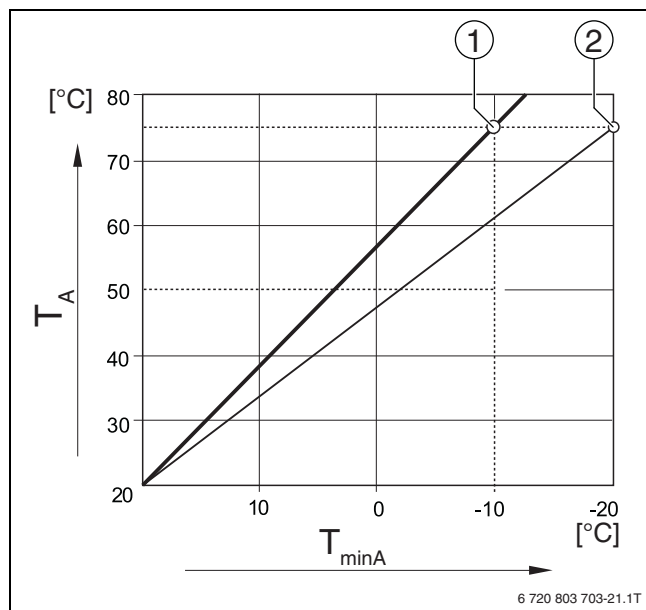


Fig. 20 Heating curve adjustment: Adjustment of gradient via design temperature and minimum outside temperature

- [$T_{\min A}$] Minimum outside temperature
 [T_A] Design temperature (flow temperature that should be achieved at min. outside temperature)
- [1] Adjustment: Design temperature 75 °C, minimum outside temperature -10 °C (standard curve)
 [2] Adjustment: Design temperature 75 °C, minimum outside temperature -20 °C



The minimum outside temperature for your region (average value) is stated in tab. 16 on page 18. If your particular region is not shown in the table, set an average value between the two cities closest to you or take the value from the heat demand calculation for your building.

- Call up the service level.
The first main menu is **General param.**
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Min outside temp** appears.

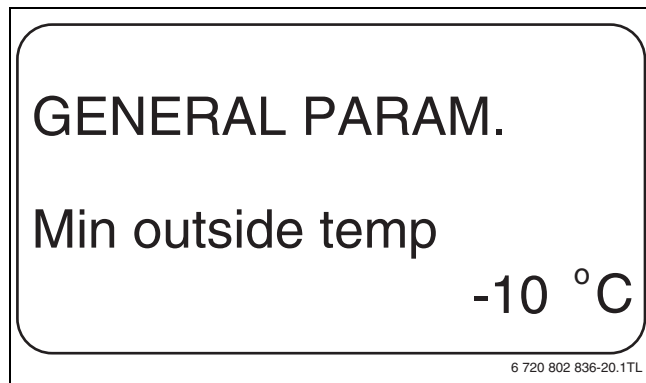


Fig. 21 Minimum outside temperature

- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Min outside temp	-30 °C – 0 °C	-10 °C

Table 15 Setting range Minimum outside temperature

Town	Minimum outside temperature in °C
Athens	-2
Berlin	-15
Brussels	-10
Budapest	-12
Bucharest	-20
Frankfurt/M	-14
Hamburg	-12
Helsinki	-24
Istanbul	-4
Copenhagen	-13
Lisbon	0
London	-1
Madrid	-4
Marseilles	-6
Moscow	-30
Munich	-16
Naples	-2
Nice	0
Paris	-10
Prague	-16
Rome	-1
Sevastopol	-12
Stockholm	-19
Valencia	-1
Vienna	-15
Zurich	-16

Table 16 Minimum outside temperature in Europe

8.2 Type of building

In the **Type of building** submenu, the heat storage capacity of the building is entered. Different types of construction have different heat storage capacities. This function sets the heating system to the specified construction type.

The heat storage capacity is divided into three categories.

Class	Explanation
light	heat storage capacity, e.g. prefabricated building, wood-frame construction
medium	medium heat storage capability, e.g. building built with breeze blocks
heavy	heat storage capacity, e.g. brick building

Table 17 Heat storage capacity

- Call up the service level.
The first main menu is **General param.**
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Type of building** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Type of building	medium heavy light	medium

Table 18 Setting range Building type

8.3 Summer/winter time changeover

Three different date and time setting options are available for all connected control units:

Setting option	Explanation
Radio clock	The adjustment is made completely automatically by the radio time signal.
Automatic	Date and time input with keypad. The change from summer to winter time and vice versa is made automatically on the last weekend in March and October.
Manual	Single date and time input via keypad. There will be no automatic summer/winter time adjustment.

Table 19 Setting options Date and time



The MEC2 contains a radio clock receiver, which constantly monitors and corrects the time switch inside the control unit. You never need to set the time during commissioning, after prolonged power failure, after the heating system has been switched off for longer periods on its mains electrical isolator or for changing from summer to winter time and vice versa. Well screened boiler rooms in cellars can restrict the reception of the radio clock signal, which makes it necessary for you to set the date and time manually.



Do not enable the "Radio clock" function outside Germany.

When using the MEC2 as a remote control, the reception of the radio time signal depends on location and position. Reception of the radio clock signal is indicated by a symbol on the display (→ fig. 7, [1], page 9). Normally, reception is possible within a radius of approx. 1000 miles around Frankfurt/Main [Germany].

In case of reception problems, please observe the following:

- The radio reception is weaker in rooms surrounded by steel-reinforced walls, cellars, high-rise buildings etc.
 - Maintain a minimum distance of 1.5 m from sources of interference, such as computer monitors and TV sets.
 - The radio reception tends to be better at night than during the day.
- Call up the service level.
The first main menu is **General param.**
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Summer / Winter Time adjustment** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

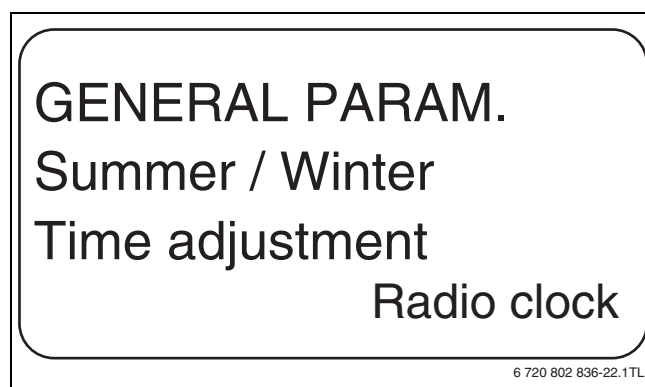


Fig. 22 Summer/winter time changeover

- Release **Display** to save your input.

- Press **Back** to return to the next higher level.



If **Radio clock** is not selected, the reception of the atomic clock signal will be turned off for all networked control units. This also applies to the radio time signals of the BFU/F remote control and other MEC2 programming units with radio clock reception. The last input at a control unit in the network is valid.

	Input range	Factory setting
Summer/winter Time adjustment	Radio clock automatic manual	automatic

Table 20 Setting range Summer/winter time changeover

8.4 Remote adjustment

The remote adjustment offers the option of external data input or modification via telecontrol systems, such as the Logamatic telecontrol system (not available in the UK).

Setting option	Explanation
yes	Optional remote adjustment e.g. via Logamatic telecontrol system.
no	Remote adjustment is not possible, but system data can be downloaded and monitored.

Table 21 Setting options Remote adjustment

- Call up the service level.
The first main menu is **General param.**
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Remote adjust.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
The display shows the set value.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.



This parameter cannot be adjusted via the telecontrol system; it is only intended to be changed in situ.

	Input range	Factory setting
Remote adjust.	yes no	yes

Table 22 Setting range Remote adjustment

8.5 Amount of heat

The heat consumption can be calculated in the **Heat yield** submenu.



The **Heat yield** submenu must not be used for billing purposes and is only for indication purposes. This display is only designed for comparisons. The accuracy of the display depends largely on the precise adjustment of the burner output. Changes of date and time falsify the heat amount display and may result in loss of data.

- Call up the service level.
The first main menu is **General param.**
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Heat yield** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
The display shows the set value.

- ▶ Release **Display** to save your input.
- ▶ Turn the rotary selector one click to the right until submenu **Burner output** appears.
- ▶ Press and hold button **Display**.
The value **0.0 kW** flashes.
- ▶ Turn the rotary selector until the required burner output is shown.



The maximum setting for the burner output is 100 kW.

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Heat yield	no display acc. to burner	no display

Table 23 Setting range amount of heat

8.6 Manual switch fault message

A fault message can be shown in the display of the MEC2 programming unit if a manual switch of a function module is set to **Manual**.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Fault message manual control** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
The display shows the set value.

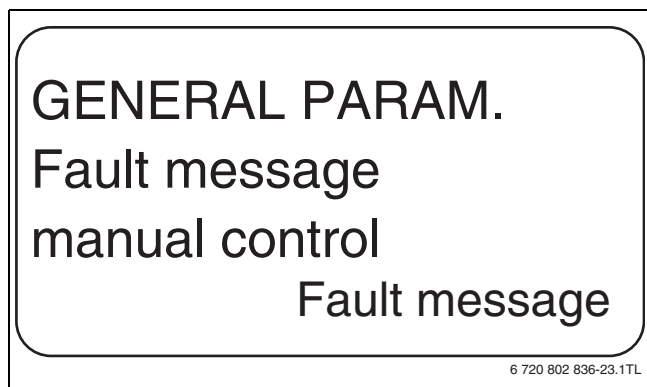


Fig. 23 Manual switch fault message

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.



If **no** is shown, a warning notice appears if the flap is closed.

If **Fault message** is shown an entry also appears in the fault log. Automatic forwarding via the Logamatic telecontrol system is then possible.

In the case of **cent. fault mess**, the output of a central fault message also appears via a volt free contact e.g. via the FM448 function module.

	Input range	Factory setting
Fault message manual control	no fault message cent. fault mess	no

Table 24 Setting range Manual switch fault message

8.7 Automatic maintenance message

At the user level an automatic maintenance message to appear on the MEC2 programming unit display can be generated.

The following settings are possible:

- Maintenance message by date. Entry of the next service date (01.01.2000 – 31.12.2088).
- Maintenance after hours (only for control units with direct boiler control).
- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **automatic maint. message** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

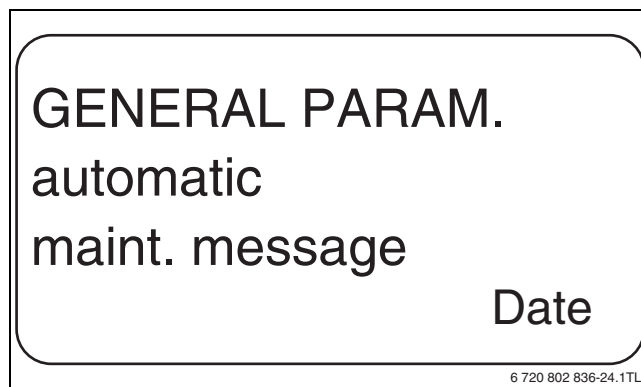


Fig. 24 Automatic maint. message

- ▶ Release **Display** to save your input.
- ▶ Rotate rotary button one click to the right to adjust the service date.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

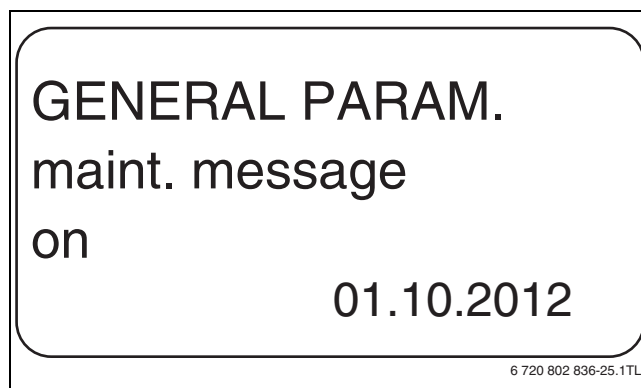


Fig. 25 Setting the automatic service date

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.



The maintenance message is recorded in the fault log and can be transferred via the Logamatic telecontrol system.

The status of the maintenance message can be checked in the **Monitor** menu. The maintenance message can be reset using the **Reset** menu.

	Input range	Factory setting
automatic maint. message	no Hours run Date	no

Table 25 Setting range Automatic maintenance message

9 Module selection

On starting the Logamatic 4321/4322 control units or after a system reset, the modules are automatically recognised and their information downloaded.

Example:

- Slot 1: FM442
- Slot 2, 3 and 4: free

However, these modules can also be set manually if required.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Module selection** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Pos. 1** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.



We recommend the setting **Function module none/auto**. The modules are automatically recognised and installed.

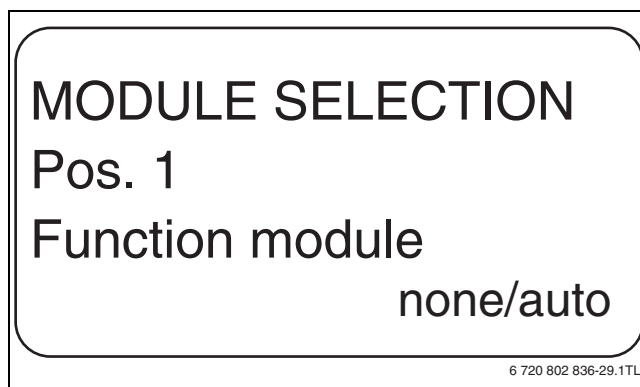


Fig. 26 Module selection

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Slot A Boiler module	none/auto. ZM432, ZM434	ZM434
Slot 1–4 Function modules Auxiliary modules	none/auto. FM441, FM442, FM443, FM444, FM445, FM446, FM447, FM448, FM458	none/auto

Table 26 Setting range Module selection

10 Boiler parameters

10.1 Select boiler type

Subject to the selected boiler type, special setting options will be displayed. For further information regarding the setting of boiler-specific parameters, see → chapter 24.2, page 57.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
Boiler type is shown as the first main menu. The display shows the set value.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Boiler type	Low temperature Low T/min.return Ecostream Condensing boil. LT/Low end temp.	Low temperature

Table 27 Setting range Boiler type



CAUTION: Please refer to the boiler instructions for information on the boiler type to be selected. Setting an incorrect parameter can lead to the boiler being damaged.

10.1.1 Low temperature boilers

The low temperature boiler is operated with a factory-set pump logic, which depends on the selected burner type.

Setting the pump logic temperature

The heating circuit circulation pumps and, if installed, the boiler circuit pump are switched and off to maintain the boiler operating conditions subject to the pump logic temperature. The preset pump logic temperature only needs to be changed in special cases and is only adjustable in case of boiler type = low temperature.

The factory-set pump logic temperature is 5 K below the minimum shutdown temperature of the boiler.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Pump logic Temperature** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Pump logic Temperature	15 °C – 60 °C	single stage: 40 °C two stage: 45 °C modulating: 50 °C

Table 28 Setting range Pump logic temperature

10.1.2 Low temperature boiler with minimum return temperature

The control unit calculates the minimum return temperature via the input of type of fuel and the type of burner.

Under **Return Control via** you are asked whether the return temperature should be controlled by a separate boiler circuit mixing valve or by controlling the heating circuit mixing valves.

The burner control unit operates with an automatic start-up delay, enabling the mixing valves installed on site and connected to the control unit to reduce the volume flow to protect the boiler.

The circulation pumps are automatically switched off for short periods to support the boiler temperature control, when heavy loads are connected. The load connections are recognised by the control characteristics of the mixing valves.

A separate return sensor FZ must be connected for the control of the separate boiler mixing valve or for overriding control of the heating circuit mixing valves. Otherwise the system will issue a fault message.

The set value of the minimum boiler flow temperature for two-stage burners is 10 K higher and for modulating burners it is 20 K higher than the return temperature.

With the raising function enabled, the set return value is raised to 50 °C and the set flow temperature to 75 °C, if the return temperature falls 8 K below its set value.

Return temperature control

For boiler type **Low T/min.return** additional setting screens appear, where you can find an ideal match to the relevant boiler type. With the entry of the fuel type the control unit takes into consideration the various dew point temperatures of the flue gases for each fuel. The system regulates to a factory-set return temperature value via the fuel type.

Type of fuel



For multi-boiler systems with low temperature boilers with minimum return temperature and different fuel types, generally select **Gas** as fuel type on control unit 1. The function **Seq. reversal** is not affected by this adjustment.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Fuel** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Type of fuel	Gas Oil	Gas

Table 29 Setting range Fuel type

Return actuator

The LEDs on the ZM432 boiler circuit module indicate whether the boiler circuit mixing valve is opening or closing.

▲	Mixing valve opens in the direction of the boiler, i.e. boiler is diverted from the heating circuits. Cause may be that the boiler return is too cold.
▼	Mixing valve opens towards the heating circuit if the boiler return is warm enough.

Table 30 Return actuator



For the setting **Act.heat.circ.** all heating circuits must be equipped with a mixing valve (no unmixed heating circuits) and must be controlled by the Logamatic 4000 control system. Identical boiler types are a requirement for the **Act.heat.circ.** setting in multi-boiler systems. If **Act.heat.circ.** has been selected, this setting must be chosen for every control unit.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Return Control via** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Return Control via	Boiler mixer Act.heat.circ.	Boiler mixer

Table 31 Setting range Return flow control via

Actuator operating time

The actuator runtime is preset but can be changed if necessary to suit the actuator run time.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Actuator runtime** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Actuator runtime	10 sec – 600 sec	120 sec

Table 32 Setting range Actuator runtime

Return temperature raising facility

You can activate the return temperature raising facility to optimise the start-up phase for single boiler systems. When the start-up phase has been recognised, all set values for flow and return temperature are raised for a short time. This function is activated in the factory settings.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Return Increase funct.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Return Increase funct	yes no	yes

Table 33 Setting range Return increase function

10.1.3 Ecostream boilers

The boiler operating conditions for the Ecostream boilers are set at the factory and are automatically taken into account. Parameter **Ecostream Control via** is used to ascertain how the boiler operating temperature should be controlled.

The FZ supplementary sensor must be installed in a single-boiler system with Ecostream control by a separate three-way mixing valve in the boiler circuit. This auxiliary sensor lets the control unit know whether the heat demand from consumers is covered or whether a burner stage needs to be kept on. The boiler operating temperature is controlled via the FK boiler sensor together with the boiler circuit mixing valve.

The auxiliary sensor is not required for multi-boiler systems with Ecostream boilers where the FM458 is used to operate the sequencing of the boilers. Its role is taken by the common FVS flow sensor (strategy).

The factory setting provides a boiler operating temperature of 50 °C. The minimum set value for the boiler flow temperature is 4 K higher (54 °C).

At setting **Btfly vlv boiler**, the heating circuit circulation pumps are started when the boiler operating temperature is reached and are stopped 2 K below that value.

According to factory-set defaults and with the setting **Act.heat.circ.**, the heating circuit circulation pump starts 5 K below the boiler operating temperature and stops 7 K below.

Ecostream control via

This setting determines via which mixing valve the preset operating flow temperature should be controlled. The setting must be made in accordance with the existing or planned hydraulic conditions. It affects the control of the respective mixing valves and the pre-determined set values.

Select from the following options:

- **Boiler mixing valve**
must be selected if the Ecostream is to be regulated via a separate boiler circuit mixing valve (three-way type). The control function is designed for a runtime of 120 s.



Special considerations for single boiler systems: Install the FZ auxiliary sensor downstream of the mixing valve on the heat consumer side and connect it to the control unit terminals provided.

- **Btfly vlv boiler**
must be selected if the Ecostream is to be regulated via a separate, external motorised two-port butterfly valve (two-way valve).
 - **Act. heat.circ.**
must be selected if the Ecostream is to be regulated by actuation of the heating circuit mixing valves (three way type). All heating circuits must be equipped with mixing valves that are controlled by heating circuit modules of the Logamatic 4000 series (never use third-party control units). The control function is designed for an actuator runtime of 120 s.
 - **Ext. control**
must be selected if the Ecostream is to be regulated by an external control unit, i.e. if the Logamatic 4321/4322 do not need to fulfil any operating conditions, for example in dual-block boiler systems with integral control unit for regulating the butterfly valves of the boiler blocks.
- ▶ Call up the service level.
The first main menu is **General param.**
 - ▶ Turn the rotary selector until main menu **Boiler param.** appears.
 - ▶ Press **Display** to call up a submenu.
 - ▶ Turn the rotary selector until submenu **Ecostream Control via** appears.
 - ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Ecostream Control via	Boiler mixer Act. heat.circ. Btfly. vlv boiler Ext. control	Boiler mixer

Table 34 Setting range Ecostream control

Set the actuator run-time

The actuator runtime is preset and should generally not be changed.



Incorrect entries may lead to fluctuating flow temperatures during operation.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Actuator runtime** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

The runtimes of the heating circuit actuators are altered separately under parameter **Heating circ.** If the runtimes of the individual heating circuit actuators are different, a representative value (average) must be selected.

	Input range	Factory setting
Actuator runtime	10 sec – 600 sec	120 sec

Table 35 Setting range Actuator runtime

10.1.4 Condensing boiler

Select the boiler type **Condensing** if a condensing boiler has been installed. No operating conditions need to be maintained for this type of boiler.

10.1.5 Low-temperature boilers with low end temp.

The boiler operating conditions for this type of boiler are factory-set and are automatically taken into account. Parameter **LT/low end temp.**

Control via is used to ascertain how the boiler operating temperature should be controlled.

The FZ supplementary sensor must be installed in a single-boiler system with LT/low end temp. control by a separate three-way mixing valve in the boiler circuit. This auxiliary sensor lets the control unit know whether the heat demand from consumers is covered or whether a burner stage needs to be kept on. The boiler operating temperature is controlled via the FK boiler sensor together with the boiler circuit mixing valve.

The auxiliary sensor is not required in multi-boiler systems with LT/low end temp. boilers where the FM458 is used to operate the sequencing of the boilers. Its role is taken by the common FVS flow sensor (strategy).

Factory settings default a boiler operating temperature of 70 °C (gas) or 65 °C (oil). The minimum set value for the boiler flow temperature is 4 K higher.

At setting **Btfly vlv boiler**, the heating circuit circulation pumps are started when the boiler operating temperature is reached and are stopped 2 K below that value.

According to factory-set defaults and with the setting **Act.heat.circ.**, the heating circuit circulation pump starts 5 K below the boiler operating temperature and stops 7 K below.

Setting the fuel type

Set the fuel to be used in this parameter. This setting influences the set value for the actuator and burner control. The fuel type is set to **Gas** at the factory. Lower set values for the low end temp. apply when changing the setting to oil.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Fuel** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Fuel	Gas Oil	Gas

Table 36 Setting range Fuel

LT/low end temp. control via

This setting determines via which mixing valve the preset operating flow temperature should be regulated. The setting must be made in accordance with the existing or planned hydraulic conditions. It affects the control of the respective actuator and the pre-determined set values.

Select from the following options:

- **Boiler mixer**
must be selected if the LT/low end temp. is to be regulated via a separate boiler circuit actuator (three-way actuator). The control function is designed for a runtime of 120 s.



Special considerations for single boiler systems: Install the FZ auxiliary sensor downstream of the servomotor on the heat consumer side and connect it to the control unit terminals provided.

- **Btfly vlv boiler**
must be selected if the LT/low end temp. is to be regulated by actuation of the heating circuit mixing valves (three-way type). The heating circuits must be equipped with mixing valves that are controlled by heating circuit modules of the Logamatic 4000 series (never use third-party control units). The control function is designed for an actuator runtime of 120 s.
- Call up the service level.
The first main menu is **General param.**
 - Turn the rotary selector until main menu **Boiler param.** appears.
 - Press **Display** to call up a submenu.
 - Turn the rotary selector until submenu **LT/low end temp. Control via** appears.
 - Hold down button **Display** and turn the rotary selector until the required value is shown.
 - Release **Display** to save your input.
 - Press **Back** to return to the next higher level.

	Input range	Factory setting
LT/low end temp. Control via	Boiler mixer Act. heat.circ. Btfly. vlv boiler	Boiler mixer

Table 37 Setting range LT/base line temperature control via

Actuator runtime

The actuator runtime is preset and should generally not be changed. Please note that incorrect entries lead to fluctuating operating flow temperatures.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **LT/low end temp. Control via** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Actuator runtime	10 sec – 600 sec	120 sec

Table 38 Setting range Actuator runtime

10.2 Setting the burner type

Additional setting masks will be displayed subject to the selected burner type.

Select from the following options:

- Single stage
- Two-stage
- Modulating
- 2 x Single-stage
This setting must be used in the following cases:
 - For a boiler sequence comprising two single-stage boilers that are operated with only one Logamatic 4321 on the first boiler and a constant temperature control unit on the second boiler.
 - For certain dual block boilers, each equipped with two single stage burners, which operate independently of each other.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Type of burner** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Type of burner	single-stage two-stage modulating 2 x single-stage 2 fuel burner	single stage

Table 39 Setting range Burner type

10.2.1 Determining the boiler output

For boiler output, see the commissioning report or the test report for your boiler or burner.

If these are not available, check the output on the boiler data plate of Unit burners.

If these details are not available, you can also determine the boiler output from its gas consumption, as shown in the following example.

Example: Checking the boiler output for a modulating natural gas fired boiler



During the test ensure that the boiler can transfer its output (circulation pumps running) to prevent the burner shutting down.



This test must only be carried out by a competent person (registered gas engineer).

The maximum boiler output of a modulating gas fired boiler is determined by using the consumption as a guide:

- ▶ Start the burner via the manual switch and hold down button **▲** as long as the burner increases its output.
- ▶ When the burner has reached its maximum output (full load), check the meter reading on the gas meter and let the burner run for six minutes.
- ▶ Read the gas meter again and calculate the gas consumption (difference).
- ▶ Convert the amount of gas consumed in six minutes into consumption per hour (m^3/h) and multiply by the average calorific value of gas in operation (check with your local supplier).

To determine the minimum boiler output of a modulating gas fired boiler, use the consumption as a guide:

- ▶ Hold down **▼** as long as the burner reduces its output.
- ▶ When the burner has reached its minimum output (base load), check the meter reading on the gas meter and let the burner run for six minutes. Read the gas meter again and calculate the gas consumption (difference). Convert the amount of gas consumed in six minutes into consumption per hour (m^3/h) and multiply by the average calorific value of gas in operation (check with your local supplier).

10.2.2 Single stage burner

Setting the maximum boiler output

Selecting the output that the burner delivers in operation.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Maximum Boiler output** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 40 Setting range Maximum boiler output single-stage burner

10.2.3 Two-stage burner

Setting the maximum boiler output

Select that output that the burner delivers when operating at both stages (maximum output).

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Maximum Boiler output** appears.

- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum boiler output	Please adjust 1 kW – 9999 kW	Please adjust

Table 41 Setting range Maximum boiler output two-stage burner

Adjusting the minimum boiler output

Select that output that the burner delivers when operating at stage 1 (minimum output).



This option will only be available if maximum boiler output was previously selected.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Minimum Boiler output** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 42 Setting range Minimum boiler output two-stage burner

10.2.4 Modulating burner

Setting the maximum boiler output

Select the output the burner delivers when operating at maximum output (full load - burner cannot modulate any higher).

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Maximum Boiler output** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 43 Setting range Maximum boiler output modulating burner

Adjusting the minimum boiler output

Select that output that the burner delivers when operating at minimum output (base load - burner cannot modulate any lower).



This option will only be available if maximum boiler output was previously selected.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Boiler param.** appears.

- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 44 Setting range Minimal boiler output modulating burner

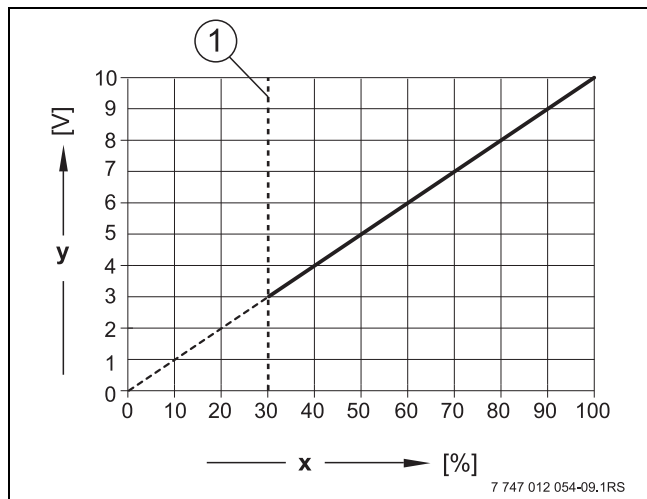
Setting the default modulation

Enter by what means the output of the modulating burner can be changed.

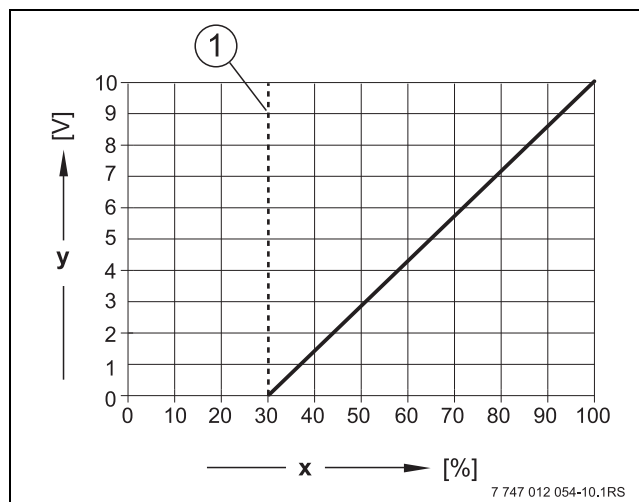
Setting option	Explanation
3-point via BR	Burner modulation is adjusted via terminal BR11 (three step actuation).
0 – 10 V signal 0 V = 0%	Burner modulation is controlled via terminal U _{BR} . The entry curve of the combustion controller is linear and starts at a voltage that corresponds to the minimum output (→ fig. 27).
0 – 10 V signal 0 V = low load	Burner modulation is controlled via terminal U _{BR} . The entry curve of the combustion controller is linear and starts at 0 V at minimum output (→ fig. 28).

Table 45 Setting options Default modulation

i Please consult the burner manufacturer for further information on the modulation of the burner.

Fig. 27 Terminal U_{BR} 0–10 V signal 0 V = 0%

- [1] Minimum output
[x] Output modulation
[y] Output voltage

Fig. 28 Terminal U_{BR} 0–10 V signal 0 V = low load

- [1] Minimum output
[x] Output modulation
[y] Output voltage

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Modulation via** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.

	Input range	Factory setting
Modulation via	3-point via BR 0 – 10 V signal 0 V = 0% 0 – 10 V signal 0 V = low load	3-point via BR

Table 46 Setting range Modulation via

Burner set motor runtime setting

The burner actuator runtime signals to the control unit how long the servomotor takes from position minimum output to maximum output

i This option will only be shown if the burner modulation is adjusted via terminal BR11.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Burner sett. motor runtime** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Burner sett. motor runtime	5 sec – 60 sec	12 sec

Table 47 Setting range Burner set motor runtime

10.2.5 2 x single stage burner

Setting the maximum boiler output

Select that output that the burner delivers when it operates with both boilers (maximum output).

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Maximum Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 48 Setting range Maximum boiler output 2 x single-stage burner

Adjusting the minimum boiler output

Select that output that the burner delivers when it only operates with boiler 1 (minimum output).



This option will only be available if maximum boiler output was previously selected.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum Boiler output	Please select 1 kW – 9999 kW	Please select

Table 49 Setting range Minimum boiler output 2 x single-stage burner

Lead-lag acc. to ... Set Hours

This options allow the selection of the number of hours after which the sequence with the 2 x single stage boiler blocks is reversed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Lead-Lag acc. To** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.

	Input range	Factory setting
Lead-lag acc. To ... Hours	00, 10, 20, ... 1000 Hours	00 Hours

Table 50 Setting range Lead-lag/rotat after ... hours

Load limit

If burner type **2 x single-stage** is selected, an outside temperature can be specified under parameter **Load limit**, from which stage 2 will be automatically blocked.

Example: Above a certain outside temperature, operation will be limited to one boiler stage or one boiler block.

- Turn the rotary selector until submenu **Load limit from outside T.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Load limit from outside T.	–31 °C – 30 °C none	17 °C

Table 51 Setting range Load limit from outside temperature

10.2.6 Dual-fuel burner

A dual-fuel burner consists of a modulating gas burner and a 2-stage oil burner

Setting the maximum gas boiler output

Select the output that the burner delivers when operating at maximum output (full load - burner cannot modulate any higher).

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Max. gas Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Max. gas Boiler output	Please select 1 kW – 9999 kW	Please select

Table 52 Setting range Maximum gas-fired boiler output

Setting the minimum gas-fired boiler output

Select the output that the gas burner delivers when operating at minimum output (base load - burner cannot modulate any lower).



This option will only be available if maximum gas fired boiler output was previously selected.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum gas Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum gas Boiler output	Please select 1 kW – 9999 kW	Please select

Table 53 Setting range Minimum gas-fired boiler output

Setting the maximum oil-fired boiler output

Select the output that the oil burner delivers when operating at both stages (maximum output).

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Max. oil Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Max. oil Boiler output	Please select 1 kW – 9999 kW	Please select

Table 54 Setting range Maximum oil-fired boiler output

Setting the minimum oil-fired boiler output

Select the output that the oil burner delivers when operating at stage 1 (minimum output).



This option will only be available if maximum oil fired boiler output was previously selected.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum oil Boiler output** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum oil Boiler output	Please select 1 kW – 9999 kW	Please select

Table 55 Setting range Minimum oil-fired boiler output

Default modulation

Enter by what means the output of the modulating burner can be changed.

Setting option	Explanation
3-point via BR	Burner modulation is adjusted via terminal BR11 (three step actuation).
0 – 10 V signal 0 V = 0%	Burner modulation is controlled via terminal U _{BR} . The entry curve of the combustion controller is linear and starts at a voltage that corresponds to the minimum output (→ fig. 27).
0 – 10 V signal 0 V = low load	Burner modulation is controlled via terminal U _{BR} . The entry curve of the combustion controller is linear and starts at 0 V at minimum output (→ fig. 28).

Table 56 Setting options Default modulation



Please consult the burner manufacturer for further information on the modulation of the burner.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.

Buderus

- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Modulation via** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.

	Input range	Factory setting
Modulation via	3-point via BR 0 – 10 V signal 0 V = 0% 0 – 10 V signal 0 V = low load	3-point via BR

Table 57 Setting range Modulation via

Burner set motor runtime setting

The burner actuator runtime signals to the control unit how long the servomotor takes from position minimum output to maximum output



This option will only be shown if the burner modulation is adjusted via terminal BR11.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Burner sett. motor runtime** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Burner sett. motor runtime	5 sec – 60 sec	12 sec

Table 58 Setting range Burner set motor runtime

10.3 General settings regarding boiler parameters

10.3.1 Set up the pump function



The pump function can only be set when no heating circuit 0 was chosen.

Subject to the hydraulic system or the operating conditions of certain boilers, the boiler pumps will be utilised as feed, bypass or test point pumps.

The following pump functions can be selected:

Pump function	Explanation
Boiler pump	The control logic and the boiler circuit pump characteristics depend on the selected boiler type, i.e. the possible boiler operating conditions affect the boiler circulation pump control. In exceptional cases the run-on time of the boiler pump can be altered.
Sersnor pump	This pump is primarily used to flood the boiler sensor in dual-boiler systems. The test point pump always operates in parallel with the operation of burner stage 1. The control of the pump depends on the boiler type selected. If you make this selection, the boiler or the test point pump will not be subject to any boiler operating conditions. The operating conditions for the boiler according to worksheet K6 must be fulfilled.
None	–

Table 59 Pump function

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Pump function** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

Control of the boiler circuit pump via 0 - 10 V

There is the option of connecting the variable speed boiler circulation pump modulated via a 0 – 10 V output (terminal U_{PU}). This function is primarily for condensing boilers with modulating burners.

The 0 – 10 V signal is subject to the currently required burner output:

- 100 % burner output = 10 V (maximum pump modulation)
- Minimum burner output = 0 V (minimum pump modulation)

The boiler circuit pump must be sized to suit the system hydraulics to ensure correct operation. For this, also observe the following:

- The minimum pump modulation level (signal = 0 V) should be at least 50 %, i.e. at 0 V, the boiler flow rate should not fall below 50 %.
- The maximum pump rate must only be designed for operation at 10 V and not before (< 10 V), i.e. set the maximum pump head to the maximum system pressure drop (primary circuit). This applies particularly to pumps that accept only a head value as set default.

required temperature differential for boiler [K]	Output [kW]											
		50	75	100	150	200	300	500	750	1000	1500	2000
5		8.6	12.9	17.2	25.8	34.4	51.6	86.0	129.0	172.0	258.0	343.9
10		4.3	6.4	8.6	12.9	17.2	25.8	43.0	64.5	86.0	129.0	172.0
15		2.9	4.3	5.7	8.6	11.5	17.2	28.7	43.0	57.3	86.0	114.6
20		2.1	3.2	4.3	6.4	8.6	12.9	21.5	32.2	43.0	64.5	86.0

Table 60 Recommended flow rates for sizing the boiler circuit pump PK [m³/h]

10.3.2 Setting boiler pump run-on time

In order to maximise the use of the heat stored in the boiler, a time must be specified for which the pump should continue to operate after the burner has been shut down.

Change the factory-set value of 60 min. only in exceptional cases.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Boiler pump overrun time** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.



This parameter cannot be adjusted via this menu in multi-boiler systems (FM 458 installed).
The parameter can then be adjusted in the main menu **Strategy**.

	Input range	Factory setting
Boiler pump Pump function	Boiler pump Sensor pump none	Boiler pump
Boiler pump overrun time	0 min – 60 min Const. operation	60 min

Table 61 Setting range Boiler pump run-on time

10.3.3 Setting the minimum burner runtime

This option determines the minimum burner runtime after a burner start.

The minimum burner operating time tells the system, for how long the burner continues to operate after the burner has been switched on, irrespective of the actual set value. This prevents the burner being frequently cycled on and off under certain system conditions.

Change the factory setting only in exceptional cases.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum burner runtime** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum burner runtime	0 sec – 300 sec	120 sec

Table 62 Setting range Minimum burner runtime

10.3.4 Selecting the minimum start temperature

This setting determines the minimum limit for the cut-in temperature at which the burner starts.

The burner will be switched ON again no later than when the boiler flow temperature falls to the minimum start temperature when there is heat demand.

Modify the minimum start temperature only if necessary.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum on Switch temp** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum on Switch temp.	5 °C – 65 °C	5 °C

Table 63 Setting range Minimum start temperature

10.3.5 Selecting the maximum shutdown temperature

The burner will be switched OFF no later than when the boiler flow temperature reaches the maximum shutdown temperature.

Modify the maximum shutdown temperature only if necessary.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Maximum shutdown temp** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.



At setting >75 °C the thermostat must be set to 90 °C (→ chapter 3.1.2, page 6).

	Input range	Factory setting
Maximum shutdown temp	70 °C – 99 °C	85 °C

Table 64 Setting range Maximum shutdown temperature

10.3.6 Setting the maximum flue gas temperature limit

A flue gas temperature sensor (optional accessory) must be installed to measure the flue gas temperature. A service message may be issued via a telecontrol system if the **Maximum Flue gas temperature** is exceeded. The boiler should then be serviced.

A fault message is issued if the temperature limit at the flue gas sensor (accessory) is exceeded.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Limit Flue gas temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum Flue gas temperature	none 50 °C – 250 °C	none

Table 65 Setting range Maximum flue gas temperature

10.3.7 Entering the boiler curve

Generally, the boiler output is set subject to load, i.e. independent of the consumers that are regulated by the Logamatic 4321 or Logamatic 4322. However, if the consumers in a heating system are wholly or partially regulated by a third party control unit, whilst the boiler is controlled by the Logamatic 4321 or Logamatic 4322, the burner control unit may be defaulted to its own set value in the form of its own curve, to ensure the supply of the consumers.



WARNING: This method of control may not comply with local building regulations.

The curve is determined by connecting the base and design temperatures with a straight line. A setback can be programmed for the boiler curve.

The functions summer/winter changeover and the operating mode change may be applied for the boiler curve.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Boiler curve** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Boiler curve	yes no	no

Table 66 Setting range Boiler characteristic

Setting the low end temperature

The low end provides the set value at an outside temperature of +20 °C. The base point temperature will only be displayed if you have selected **Boiler curve yes**.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Base point temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Base point temp.	20 °C – 90 °C	30 °C

Table 67 Setting range Low end temperature

Setting the design temperature

The design temperature provides the set temperature at a minimum outside temperature of e.g. -10°C .

The minimum outside temperature relates to the **Min. outside temp.** under **General param.** in accordance with the climate chart.

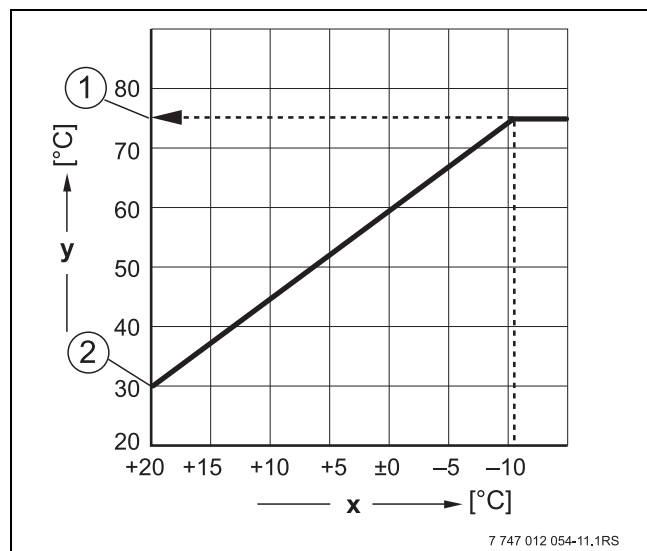


Fig. 29 Setting the design temperature (factory setting)

- [x] Outside temperature
- [y] Heating water temperature
- [1] Design temperature
- [2] Low end temperature

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Design temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Design temp.	$30^{\circ}\text{C} - 90^{\circ}\text{C}$	75°C

Table 68 Setting range Design temperature

Setting the setback

Enter the temperature difference in K (Kelvin) by which the boiler curve should be set back during night mode as against day mode.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Boiler param.** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Setback** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Setback by	$0\text{ K} - 90\text{ K}$	30 K

Table 69 Setting range Setback

11 Heating circuit data

11.1 Adjusting the heating system

The following heating systems can be selected:

Heating system	Explanation
None	The heating circuit function is not required. All subsequent submenu points relating to Heat circ. data no longer apply.
Radiator, Convector	The heating curve is automatically calculated for radiators or convector heaters, subject to the required curve.
Underfloor	A flatter heating curve is automatically calculated for lower design temperatures.
Base point	The level of the flow temperature is a linear consequence of the outside temperature. The resulting heating curve connects as a straight line the low end with a second point that depends on the design temperature.
Constant	This system must be used for the controlling of a swimming pool heating system or to pre-control ventilation circuits, if the heating must always provide the same, set flow temperature, independent from the outside temperature. If this system is selected, it is not possible to install a remote control for this heating circuit.
Room controller	The required CH flow temperature is dependent only on the measured room temperature. For this, you must install a remote control inside the room. The heating system is switched off if the room becomes too hot.

Table 70 Heating systems



We recommend only enabling the **Underfloor** heating system in conjunction with mixed heating circuits.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ. + no.** appears.
- Press **Display** to call up a submenu.
Heating system is shown as first main menu.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

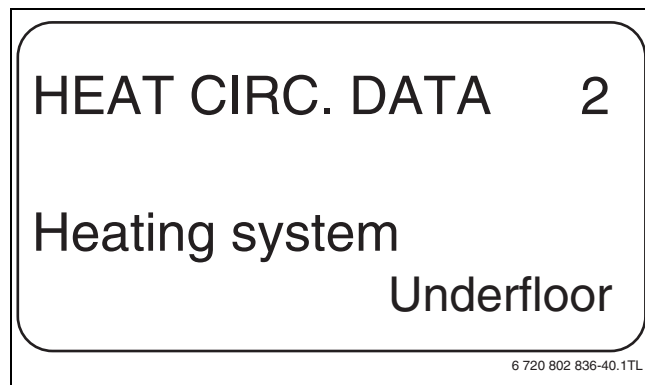


Fig. 30 Select the heating system

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Heating system	none Radiator Convector Underfloor Constant Base point Room controller	Radiator

Table 71 Setting range Heating system

11.2 Rename the heating circuit

Instead of the designation **Heating circ.** + no., another name can be selected from a default list.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Heat circ desig.** appears.

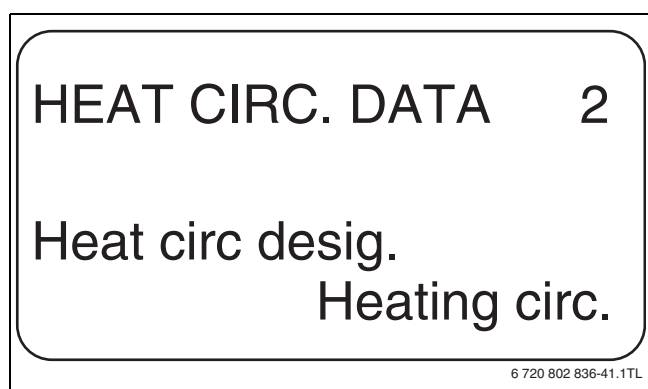


Fig. 31 Rename the heating circuit

- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Heat circ desig.	Heating circ. Apartment Underfloor Bathroom Swimming pool Floor Cellar Building	Heating circ.

Table 72 Setting range Heating circuit name

11.3 Setting the low end temperature

This function will only be displayed for "Base point" heating systems.

With the **Heating system Base point** setting, you have determined a straight heating curve using the base point temperature and the design temperature.

The base point [Low end] temperature determines the start of the heating curve. The low end temperature is applicable for an outside temperature of 20 °C.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Heating system** appears.

- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Turn the rotary selector until submenu **Base point temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

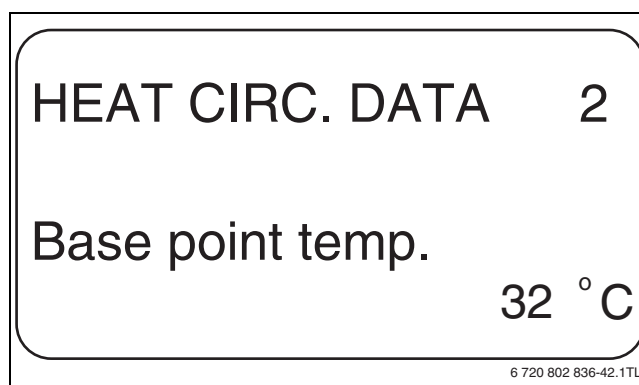


Fig. 32 Setting the low end temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Base point temp.	20 °C – 80 °C	30 °C

Table 73 Setting range Low end temperature

11.4 Setting the design temperature

The design temperature is the flow temperature at the adjusted minimum outside temperature (→ chapter 8.1, page 18).

i If **Room controller** has been selected as the heating system, this parameter cannot be set.

i Changing the design temperature allows the heating system to operate with a flatter or steeper heating curve. For the **Base point** heating system, the set design temperature must be at least 10 °C higher than the low end temperature.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Design temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

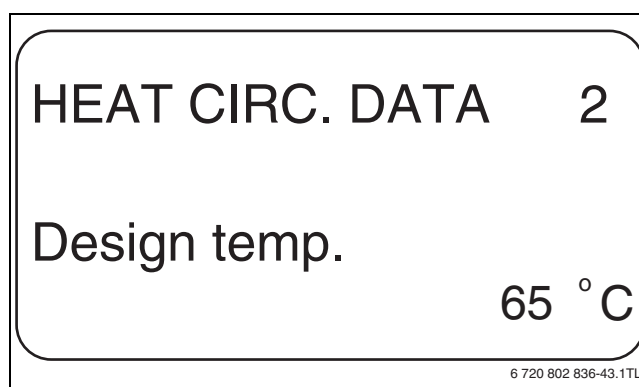


Fig. 33 Setting the design temperature

- Release **Display** to save your input.

- Press **Back** to return to the next higher level.

	Input range	Factory setting
Design temp.	30 °C – 90 °C	75 °C for radiator/ convector/low end/constant 45 °C for underfloor heating

Table 74 Setting range Design temperature

11.5 Setting the Minimum flow temperature

The minimum flow temperature limits the heating curve to a minimum set value.



If **Constant** has been selected as the heating system, this parameter cannot be set.

Change value only if necessary.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Minimum Flow temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.



This value sets the temperature below which the flow temperature must not drop.

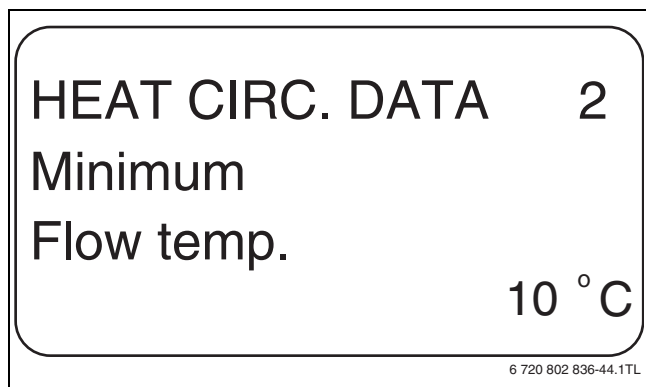


Fig. 34 Setting the Minimum flow temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Minimum Flow temp.	5 °C – 70 °C	5 °C

Table 75 Setting range Minimum flow temperature

11.6 Setting the maximum flow temperature

The maximum flow temperature limits the heating curve to a maximum set value.



If **Constant** has been selected as the heating system, this parameter cannot be set.

Change value only if necessary.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.

- Turn the rotary selector until submenu **Maximum Flow temp.** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

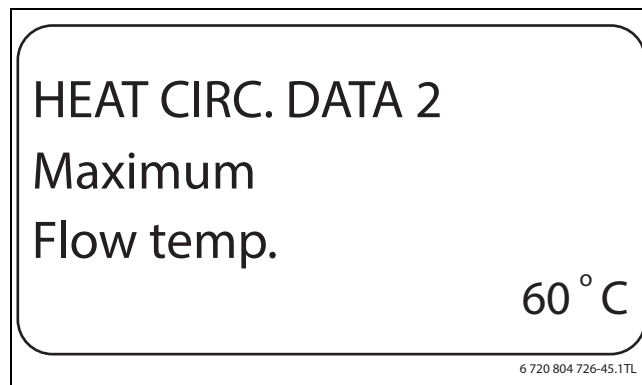


Fig. 35 Setting the maximum flow temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Maximum flow temp. for underfloor heating	30 °C – 60 °C	50 °C
Maximum flow temp. for radiators, convector heaters, base point	30 °C – 90 °C	75 °C

Table 76 Setting range Maximum flow temperature



This value sets the temperature above which the flow temperature must not rise.

11.7 Select the remote control

Under this menu item, it can be determined whether a remote control will be installed for the heating circuit concerned. Here you can select the following:

- No remote control
- Remote control with display (MEC2) "MEC heat. circ."
- Remote control without display (BFU or BFU/F)



A remote control cannot be installed for the **Constant** heating circuit system or if **External changeover** has been activated.

A remote control unit must be installed to enable the following functions, which monitor the room temperature:

- Night setback with hold room temperature
- Max. room influence
- Automatic adaptation
- Optimisation
- **Room controller** heating system

Explanations relating to "MEC heating circuits"

With the MEC2 you can control several heating circuits simultaneously. These are grouped together under the term "MEC heat. circ.".

The following functions can be carried out for "MEC heat. circ.":

- Changing the operating mode
- Adjusting the set value
- Summer/winter time changeover
- Holiday function
- Party function
- Pause function

The heating circuits grouped together under "MEC heat. circ." can, for specific settings, also be selected as "Single heat circ".

The timer program **PROG** function is only available for each individual heating circuit.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Remote control** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.



Turn the rotary selector to **with display** when the selected heating circuit has been assigned to the MEC2.

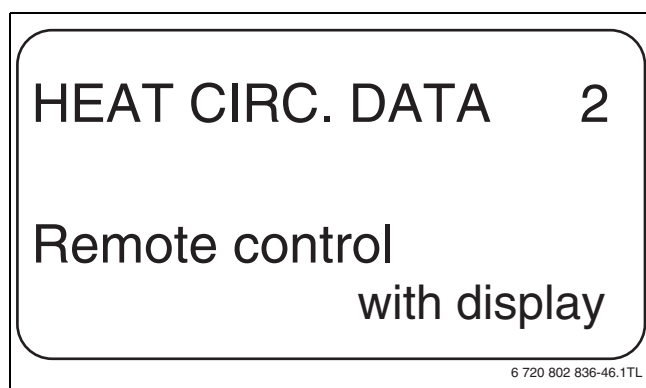


Fig. 36 Select the remote control

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Remote control	none without display with display	none

Table 77 Setting range Remote control

11.8 Maximum room influence setting



This function only appears if a remote control has been selected, but not if the **Room controller** heating system has been set.

The maximum room [ambient] influence limits the influence of the room temperature (room temperature feed back) on the set flow temperature. The value determines the maximum room temperature setback for rooms which are not equipped with remote controls.



Ensure that the MEC2 programming unit and BFU remote control are not exposed to the influence of external heat sources, such as lamps, TV sets or other heat sources.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Max room infl** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

HEAT CIRC. DATA 2

Max room infl

5K

6 720 804 726-47.1TL

Fig. 37 Setting the Maximum room influence

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Max. room infl	0 K – 10 K	3 K

Table 78 Setting range Maximum room influence

11.9 Select the type of setback

The following functions are available for setback mode or night mode:

Reduction mode	Explanation
Outside setback	Outside setback determines the outside temperature limit. The heating circuit is switched off when this value is exceeded. Below this limit, the heating system heats to the set night temperature.
Hold room temp	Hold room temp determines a night temperature as the room temperature. The heating circuit is switched off when this value is exceeded. Below this limit, the heating system heats to the set night temperature. For this function a remote control must be located in the relevant room.
Standby	In Standby mode, the heating circuit is generally switched off in standby.
Reduced	In Reduced mode, the system heats to the set night temperature if setback mode is selected. The heating circuit pumps operate constantly.
Room controller	Setting the heating system to Room controller and setback type to Reduced achieves the same effect for temperature setback as Hold room temp .

Table 79 Reduction modes



If **Constant** has been selected under the Heating system menu item, only setback types **Reduced**, **Outside setback** or **Standby** can be selected.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Setback type** appears.

- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

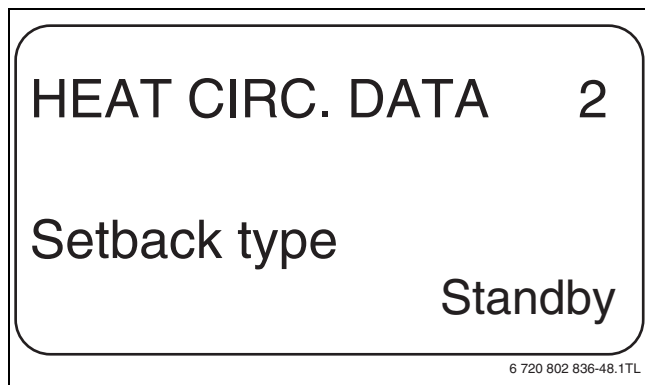


Fig. 38 Select the type of setback

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Setback type	Outside setback Standby Reduced Hold room temp	Outside setback

Table 80 Setting range Reduction mode

11.10 Setting the outside stop temperature

If **Outside setback** has been selected as the setback type, the outside temperature must be entered at which the heating operation should change over from **Standby** to **Reduced**.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Heating circ.** + no. appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Outside hold frm** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

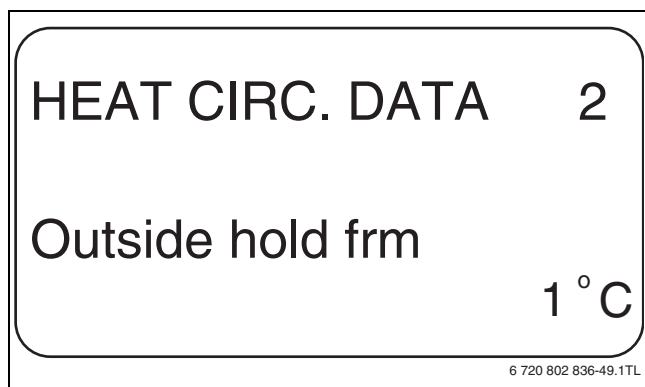


Fig. 39 Setting the outside stop temperature

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Outside hold frm	-20 °C – 10 °C	5 °C

Table 81 Setting range Reduction mode

11.11 Setting holiday mode

A separate setback type can be set for the duration of your holiday. (For explanations of setting options see → chapter 11.9, page).

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Heating circ.** + no. appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Holiday Setback type** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

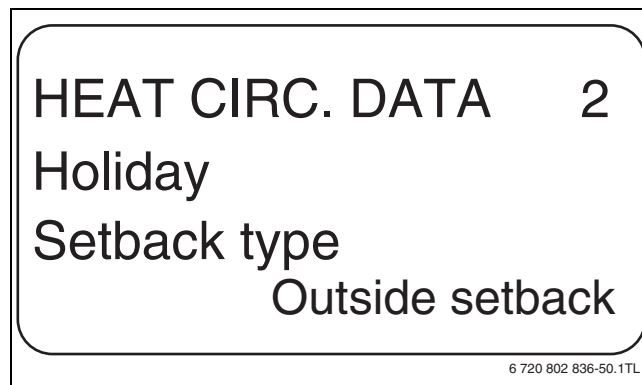


Fig. 40 Setting holiday mode

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Holiday Setback type	Hold room temp Outside setback ¹⁾ Standby Reduced	Hold room temp

Table 82 Setting range Holiday reduction mode

- 1) In setting Holiday outside setback the rotary selector can be used to call the additional menu the temperature setting (between -20 °C and 10 °C).

11.12 Stopping setback at low outside temperatures

In extreme weather conditions the setback can be stopped when the actual temperature falls below a selected adjusted outside temperature, to prevent the living space cooling down excessively.



Setback will not be blocked in manual or in holiday mode.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **Heating circ.** + no. appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **No setback Below outs temp** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

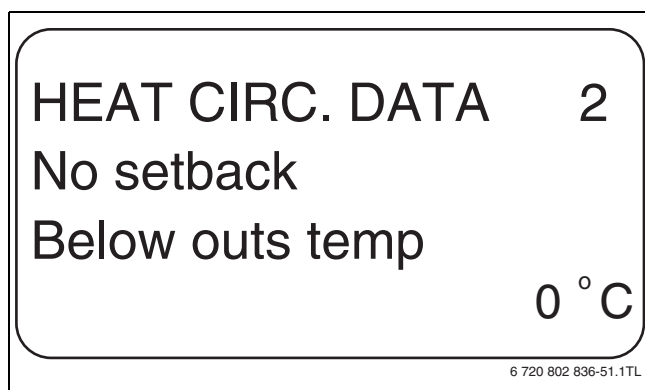


Fig. 41 Switching off the setback

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
No setback	disabled	disabled
Below outs temp	-30 °C – 10 °C	

Table 83 Setting range No setback below outside t.

11.13 Setting flow setback

Since you cannot connect a remote control to heating systems set to **Constant**, you may enter a setback setting for the **Reduced** and **Outside setback** types.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Heating system** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Turn the rotary selector until submenu **Flow Setback by** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

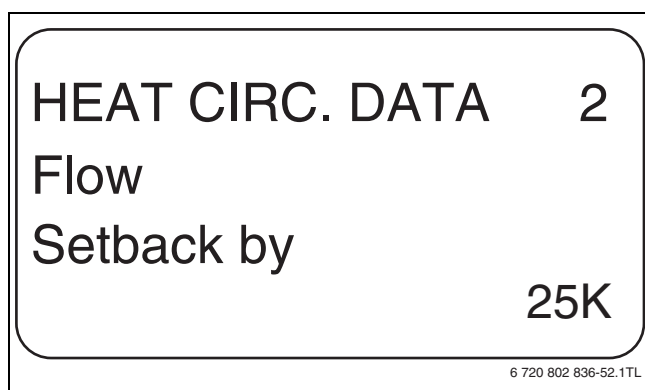


Fig. 42 Setting flow setback

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Flow setback	0 K – 40 K	30 K

Table 84 Setting range Flow setback

11.14 Setting the room temperature offset

This setting is only recommended if no remote control has been installed inside the living space.

If the average actual temperature measured with a thermometer deviates from the selected temperature, this function enables a matching of both values.

This adjustment moves the heating curve in parallel.

Example:

Displayed set room temperature	22 °C
Actual room temperature	24 °C

Table 85 Example: room temperature offset

The set value lies 2 °C below the actual value.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Room temperature Offset** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

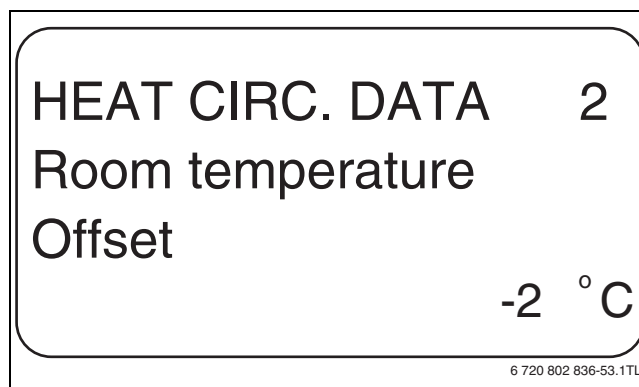


Fig. 43 Setting the room temperature offset

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Room temperature Offset	-5 °C – 5 °C	0 °C

Table 86 Setting range Room temperature offset

11.15 Automatic adaptation setting

i This function can only be selected if **Radiator/Convactor/Underfloor** has been set as the heating system.

i **Autom adaptation** is not activated at the factory.

Where a remote control is installed in the room, the heating curve is automatically adjusted to the building by constantly monitoring the room and flow temperatures.

Conditions are:

- A representative room with reference temperature.
- Fully opened thermostatic valves in the room.
- No constantly fluctuating external heat influence.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Autom adaptation** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

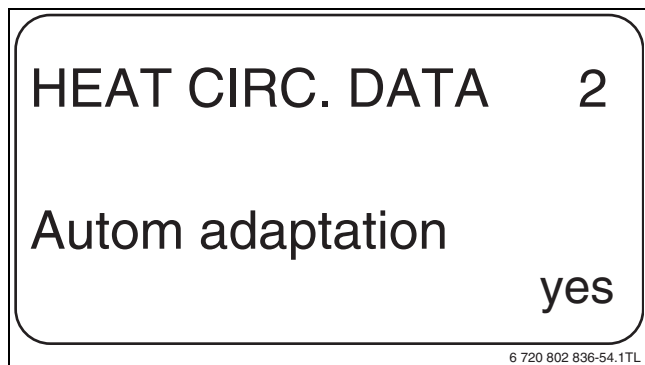


Fig. 44 Activating Automatic adaptation

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Autom adaptation	yes no	no

Table 87 Setting range Automatic adaptation

11.16 Setting switching optimisation



A remote control with a room temperature sensor must be installed for the **Optimisation** function.



The function **Optimisation for** is not activated at the factory.

The following variations are possible:

Optimisation	Explanation
Start	If Start is selected, heat-up commences before the actual switching time. The control calculates the start-up time, so that the set room temperature is achieved at the set switching point.
Stop	If Stop is selected, the system begins the setback, where possible, prior to the actual setback time to save energy. If a room cools down unexpectedly or suddenly, the stop optimisation is terminated and heating continues normally up to the programmed setback time.
switch-on/off	If switch-on/off is selected, both optimisation versions are used.
none	If none is selected, no switching optimisation is performed.

Table 88 Switching optimisation



As the start optimisation is limited to 240 minutes, start optimisation is not suitable for systems with a long heat-up time.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Optimisation for** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

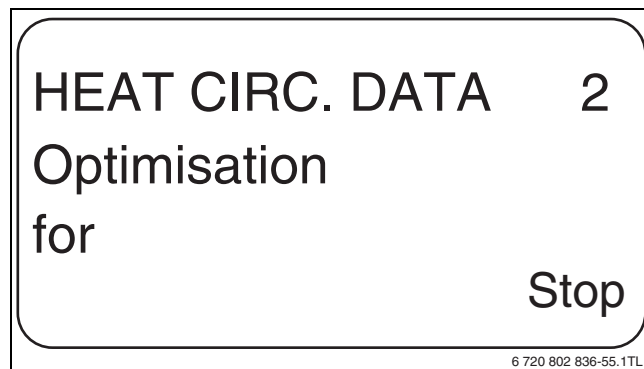


Fig. 45 Setting switching optimisation

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Optimisation	none Start Stop switch-on/off	none

Table 89 Setting range Optimisation

11.17 Set switch off optimisation time

If switching optimisation is set to **Stop** or **switch-on/off**, you can enter when the setback operation should begin. The setting must only be changed if so required.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Stop optim. time** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

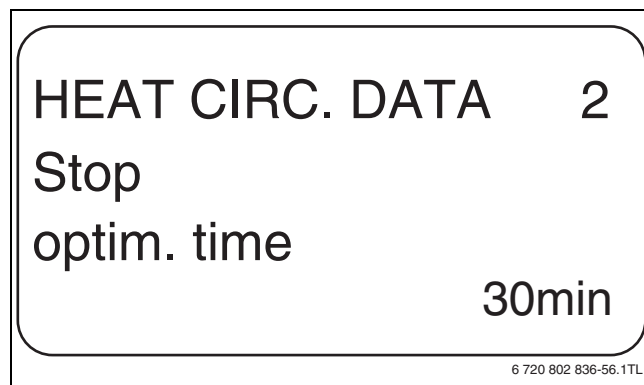


Fig. 46 Set switch off optimisation time

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Stop optim. time	10 min – 60 min	60 min

Table 90 Setting range Stop optimisation time

11.18 Setting frost protection temperature

Only change the frost protection temperature in special circumstances.

The circulation pump is automatically switched on as soon as a set outside temperature threshold is reached.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Frost prot from** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

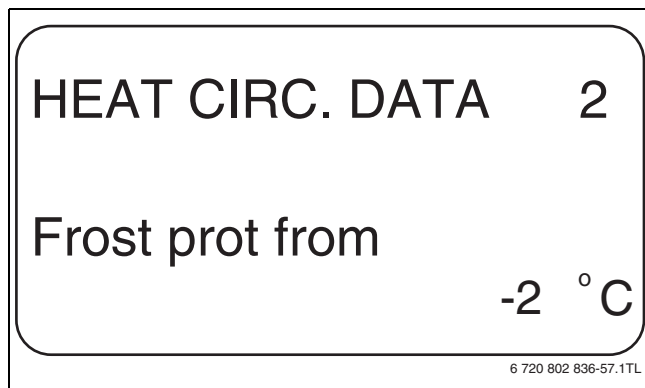


Fig. 47 Setting frost protection temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Frost prot.	-20 °C – 1 °C	1 °C

Table 91 Setting range Frost protection

11.19 Setting DHW priority

If you activate the function **DHW priority**, the circulation pumps of all heating circuits are switched off whilst DHW is being heated.

In mixed heating circuits, the mixing valve is moved towards "Mixing valve closes" (colder).

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **DHW priority** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

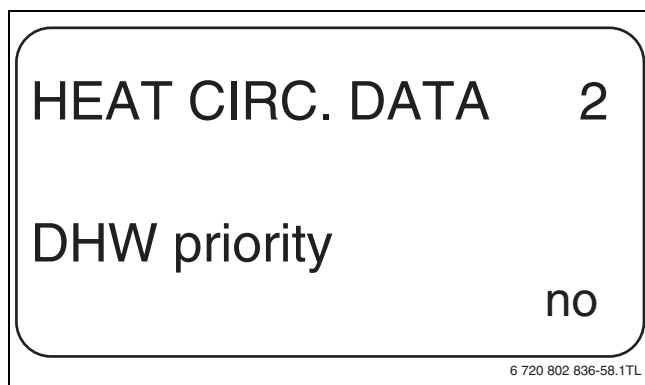


Fig. 48 Setting DHW priority

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
DHW priority	yes no	yes

Table 92 Setting range DHW priority

11.20 Setting the heating circuit actuator

The **Actuator** function enables you to enter whether a heating circuit actuator (mixing valve) is installed or not.

The control unit drives the actuator if it is installed in the heating circuit (mixing valve).

The heating circuit is regulated via the boiler flow temperature if no heating circuit actuator is installed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Actuator** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

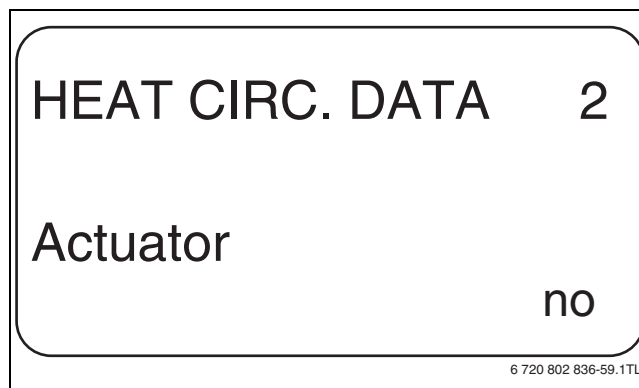


Fig. 49 Setting the heating circuit actuator

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Actuator	yes no	yes

Table 93 Setting range Actuator

11.21 Set the actuator run-time

This parameter determines the runtime of the existing actuators. Most actuators have a runtime of 120 s.



If a constant oscillation of the mixing valve is noticeable, slow down the control characteristics by reducing the actuator runtime. Then the constant cycling of the mixing valve should stop.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Actuator runtime** appears.

- Hold down button **Display** and turn the rotary selector until the required value is shown.

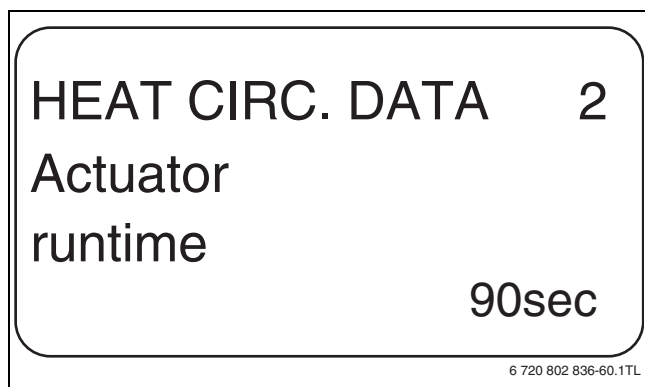


Fig. 50 Set the actuator run-time

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Actuator runtime	10 sec – 600 sec	120 sec

Table 94 Setting range Actuator runtime

11.22 Setting the Boiler raising

If the temperature in heating circuit is controlled with a mixing valve, a higher set value should be set for the boiler, than the normal set value for the heating circuit.

The **Boil. raising** setting corresponds to the temperature differential between the set boiler temperature and the set heating circuit temperature.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Boil. raising** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

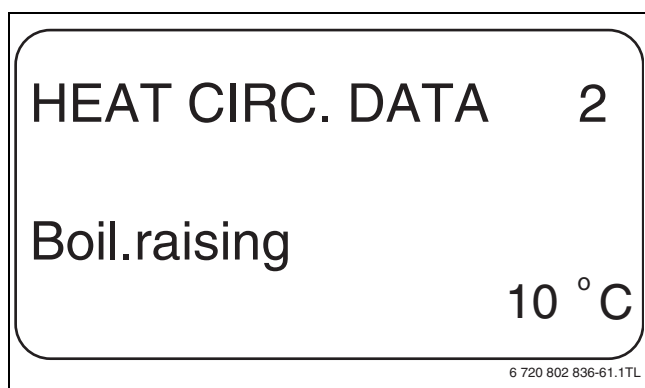


Fig. 51 Setting the Boiler raising

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Boil. raising	0 °C – 20 °C	5 °C

Table 95 Setting range Boiler raising

11.23 Setting the external changeover



The **External changeover** menu item is only displayed if **none** was selected under menu item **Remote control**. The menu item also does not appear if the **Room controller** heating system has been selected, as this requires a remote control to be installed.

If the function **External changeover** is used, an on-site switch at terminals WF123 (pink) can be used to change the operating mode of a heating circuit. This is where you configure this control unit input.

Either of the following two changeover functions can be selected:

- **1. changeover** Day/night via the terminals WF1 and WF3
 - Contact WF1 and WF3 closed = day mode
 - Contact WF1 and WF3 open = night mode
- **2. changeover** day/night/aut via terminals WF1, WF2, WF3
 - Contact WF1 and WF3 closed = day mode
 - Contact WF1 and WF2 closed = night mode
 - All contacts open = automatic mode



Activation of **2. changeover** is only possible if terminals WF1 and WF2 are not assigned via the **External fault message pump**.



Day mode will run constantly if both contacts are simultaneously closed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **External Day/night/aut** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

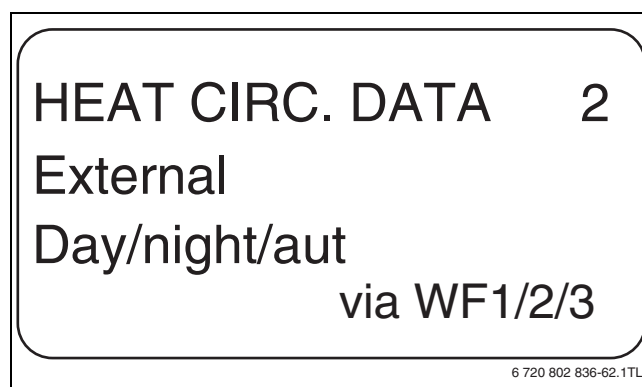


Fig. 52 Setting the external changeover

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
External Day/night/aut	none Day via WF1/3 via WF1/2/3	none

Table 96 Setting range External changeover

11.24 External fault message - pump

This function is turned off at the factory.

This menu item determines whether fault messages relating to a pump should be displayed.

You may connect an external volt free fault contact to terminals WF1 and WF2. A fault message will be displayed if the contact is open.



If an entry was made under menu item **External Day/night/aut via WF1/2/3**, this menu item cannot be called up as the input contacts are already assigned.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **External fault message pump** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

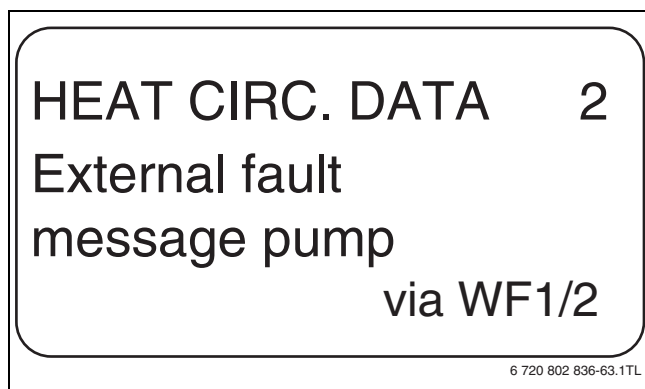


Fig. 53 External fault message - pump

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
External fault message pump	none via WF1/2	none

Table 97 Setting range External fault message - pump

11.25 Screed drying

If the heating system comprises underfloor heating, this control unit a drying program for the screed can be entered. The heating system must be set to **Underfloor**.



Check with your screed contractor for special requirements for screed drying prior to enabling this function.

After a power failure, screed drying continues from where it was interrupted.

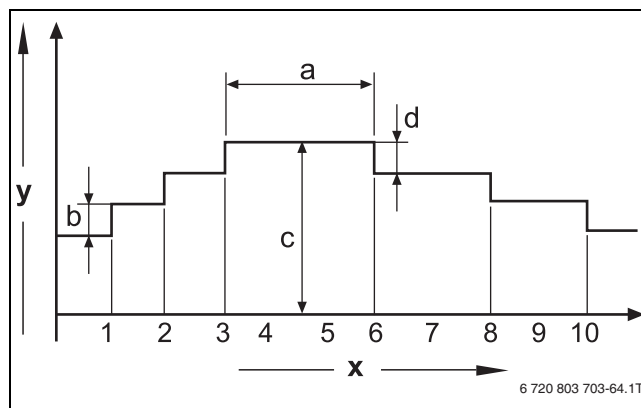


Fig. 54 Screed drying

- [x] Time (days)
- [y] Temperature
- [a] 3 days' hold time
- [b] Temp increase by
- [c] Max. temperature
- [d] Setback by

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating circ.** + no. appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Screed drying** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

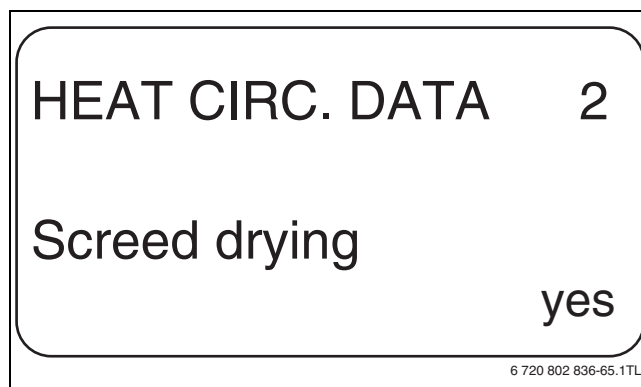


Fig. 55 Screed drying

- Release **Display** to save your input.

	Input range	Factory setting
Screed drying	no yes	no

Table 98 Setting range Screed drying



The menu options on the following pages enable the selection of temperatures and settings for the drying period. The setting reverts automatically to **no** as soon as the drying process has been completed.

11.25.1 Setting the temperature rise

This option determines the steps in which the temperature should increase to dry out the screed.

Temperature rise begins at 20 °C.

- Turn the rotary selector until submenu **Screed drying Temp increase by** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

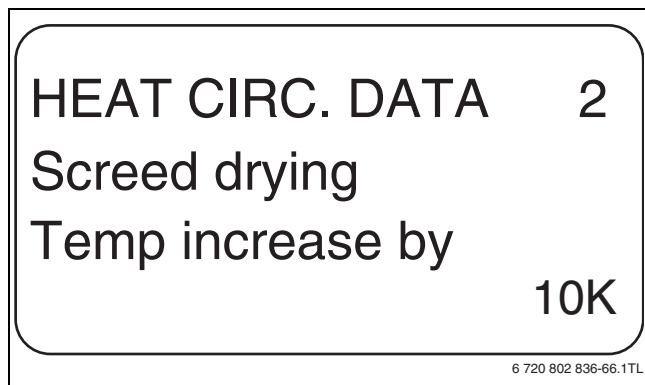


Fig. 56 Setting the temperature rise

- Release **Display** to save your input.

	Input range	Factory setting
Screed drying Temp increase by	1 K – 10 K	5 K

Table 99 Setting range Temp increase by

11.25.2 Setting the heat-up time

By setting the **Increase** parameter, you can determine in which daily cycle the temperature should increase to dry out the screed.

- Turn the rotary selector until submenu **Screed drying Increase** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.



Fig. 57 Setting the heat-up time

- Release **Display** to save your input.

	Input range	Factory setting
Increase in daily cycles	every day – every 5th day	every day

Table 100 Setting range Increase in daily cycles

11.25.3 Setting the maximum temperature

This setting determines the maximum temperature for screed drying.

- Turn the rotary selector until submenu **Screed drying Max. temperature** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

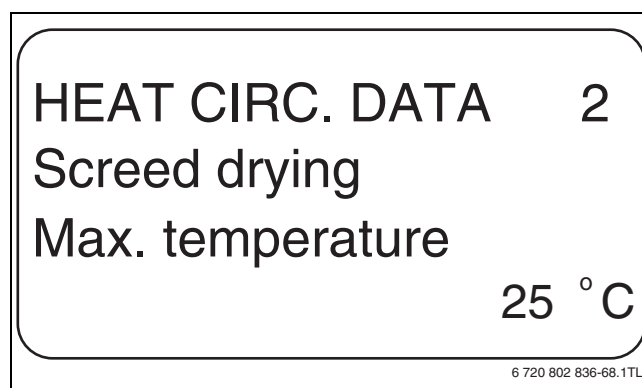


Fig. 58 Setting the maximum temperature

- Release **Display** to save your input.

	Input range	Factory setting
Max. temperature	25 °C – 60 °C	45 °C

Table 101 Setting range Maximum temperature

11.25.4 Setting the hold time

This setting determines the holding period of the maximum temperature for screed drying.

- Turn the rotary selector until submenu **Screed drying Hold max temp** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

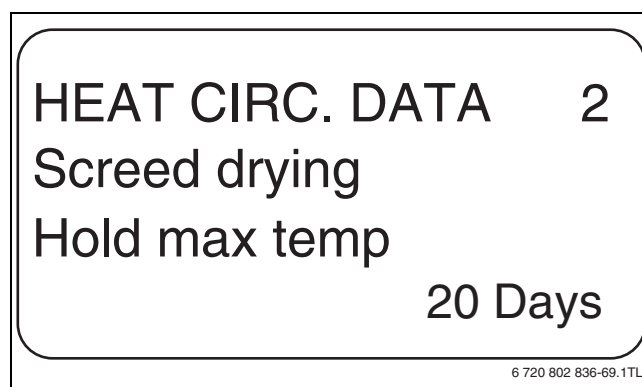


Fig. 59 Setting the hold time

- Release **Display** to save your input.

	Input range	Factory setting
Hold max temp	0 days – 20 days	4 days

Table 102 Setting range Hold max temp

11.25.5 Setting the setback temperature

This option determines the steps in which the temperature should decrease to dry out the screed.

- ▶ Turn the rotary selector until submenu **Screed drying T. setback by** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

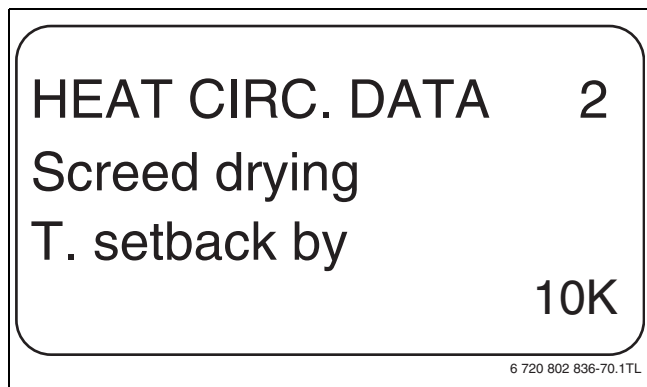


Fig. 60 Setting the setback temperature

- ▶ Release **Display** to save your input.

	Input range	Factory setting
T. setback by	1 K – 10 K	5 K

Table 103 Setting range Setback by

11.25.6 Setting the setback time

This option determines in which daily cycle the temperature should fall to dry out the screed.

- ▶ Turn the rotary selector until submenu **Screed drying Setback** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.



Fig. 61 Setting the setback time

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

i By setting **None**, screed drying will be completed at the end of the maximum hold time.

	Input range	Factory setting
Setback in daily cycles	none every day – every 5th day	every day

Table 104 Setting range Setback in daily cycles

12 DHW data

The **DHW** function is part of the basic equipment of this control unit.

12.1 Select Domestic hot water

If a DHW module is installed, the menu option allows the activation of the DHW cylinder.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **DHW** appears.
- ▶ Press **Display** to call up a submenu.
DHW is shown as the first main menu.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.
- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
DHW	yes no	yes

Table 105 Setting range Domestic hot water

12.2 Setting the temperature range

This function determines the upper limit for the set DHW temperature.



WARNING: Risk of scalding through hot water.
Setting the temperature above 60 °C creates a risk of scalding.

- ▶ Do not draw off DHW unmixed.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **DHW** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Range to** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

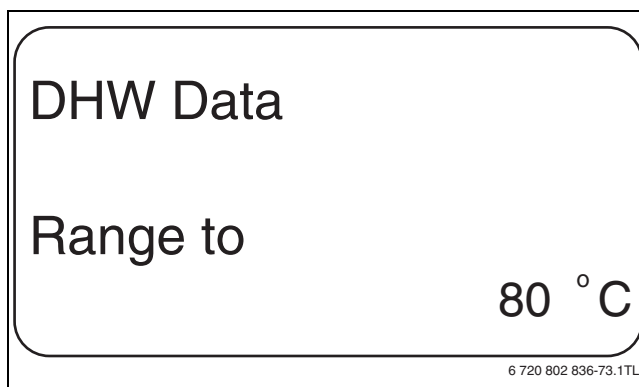


Fig. 62 Setting the temperature range

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
Range to	60 °C – 80 °C	60 °C

Table 106 Setting range Range to

12.3 Selecting switching optimisation

If the **Optimisation** function has been selected, the DHW starts to heat up before the actual start point. The control unit calculates the start time, taking into consideration the residual heat within the cylinder and the lag of heating for the heating circuits, so that the DHW temperature is reached at the set time.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Optimisation for starting** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

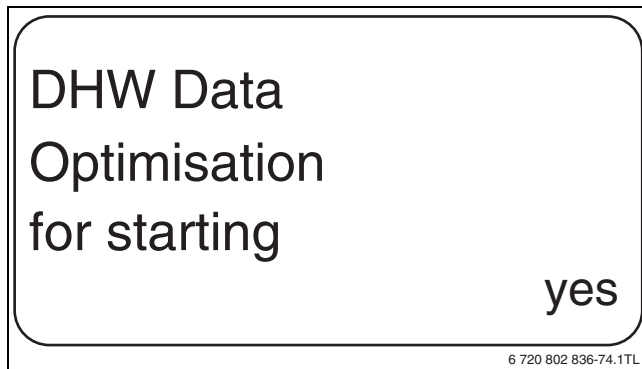


Fig. 63 Selecting switching optimisation

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Optimisation	yes no	no

Table 107 Setting range DHW optimisation

12.4 Selecting residual heat use

If the **Resid. heat use** function has been selected, the residual heat from the boiler can be used to heat the cylinder.

Residual heat utilisation	Explanation
yes	If Resid. heat use yes is selected, the control unit calculates the shutdown temperature of the burner and the runtime of the primary pump based on the residual boiler heat, until the cylinder is fully heated. The burner is switched OFF before the set domestic hot water temperature is reached. The cylinder primary pump continues to operate. The control unit calculates the runtime of the primary pump (between 3 and 30 minutes) to heat the cylinder.
no	If Resid. heat use no is selected, only little residual heat is used. The burner runs until the set DHW temperature is reached. The cylinder primary pump runs on for 3 minutes after the burner has been switched off.

Table 108 Residual heat utilisation

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Resid. heat use** appears.

- Hold down button **Display** and turn the rotary selector until the required value is shown.

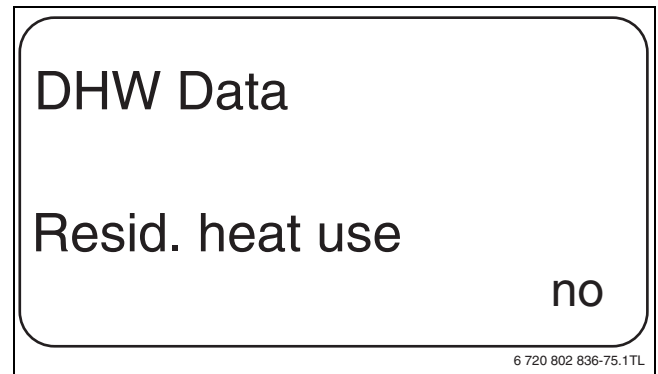


Fig. 64 Selecting residual heat use

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Resid. heat use	yes no	yes

Table 109 Setting range Residual heat utilisation

12.5 Setting hysteresis

With the **Hysteresis** function you can determine, at how many Kelvin (K) below the set DHW temperature the reheating of the cylinder begins.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Hysteresis** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

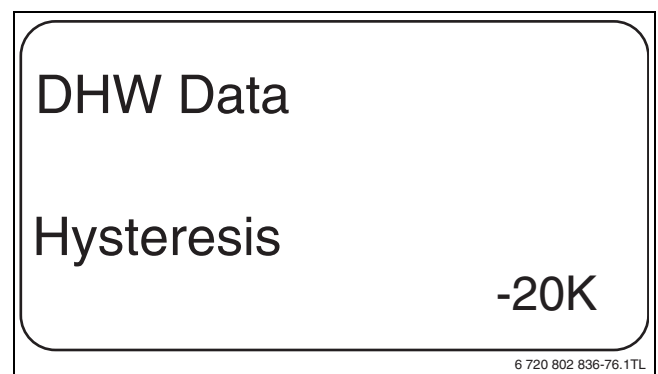


Fig. 65 Setting hysteresis

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Hysteresis	-20 K – 2 K	-5 K

Table 110 Setting range Hysteresis

12.6 Raising the boiler temperature

The **Boiler t raising** function allows you to specify the boiler water temperature while the DHW is heating up.

The boiler water temperature raising value is added to the required DHW temperature, and results in the required boiler flow temperature for DHW heating.

The factory setting of 40 K (1 K equals 1 °C) is optimised for quick DHW recovery.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Boiler t raising** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

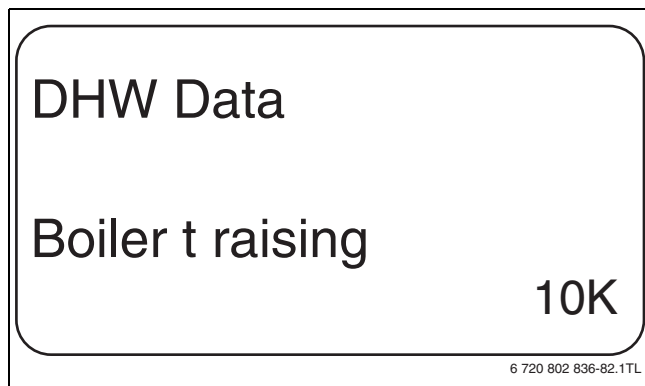


Fig. 66 Raising the boiler temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Boiler t raising	0 K – 40 K	20 K

Table 111 Setting range Boiler temperature raising

12.7 External fault indication (WF1/WF2)

An external volt free fault indicator contact from a primary pump or inert anode can be connected to terminals WF1 and WF2 of the FM441 module.

- Contacts WF1 and WF2 closed = no fault
- Contacts WF1 and WF2 open = fault condition
- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **External fault message WF1/2** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

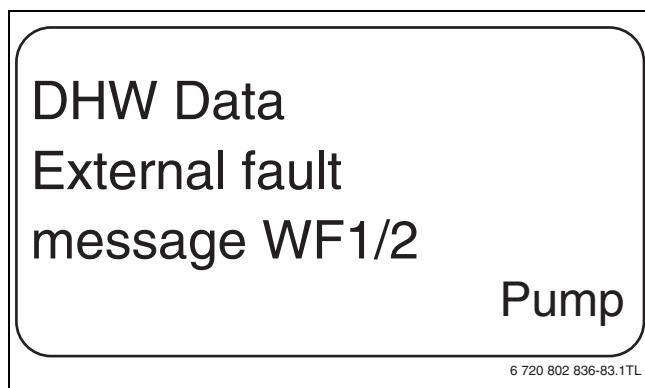


Fig. 67 External fault message

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
External fault message	none Inert anode Pump	none

Table 112 Setting range External fault message - pump

12.8 External contact (WF1/WF3)

If a volt free pushbutton is connected at terminals WF1 and WF3 in module FM441, either **Heating once** or **Therm. disinfect** can be triggered, depending on the setting.



This function is only available if the WF inputs are not required for heating circuit 0.

Heating once

If DHW heating has been switched off according to the switching times of the DHW program, Single loading can be started by pushing the pushbutton. The DHW circulation pump starts simultaneously.

Contrary to heating once via the MEC2 programming unit, the heating once process cannot be stopped.

Heating once will only be stopped when the cylinder has been fully heated.

Disinfection

If Thermal disinfection is enabled for the external contact, then the volt free pushbutton stated above can be used to start thermal disinfection. This disables any existing pasteurisation programs.

Setting the External contact

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **External contact WF1/3** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

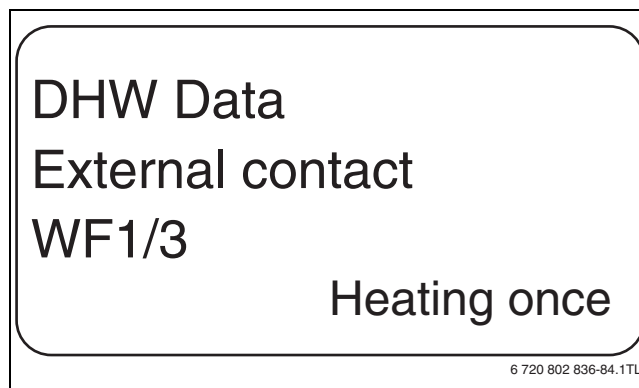


Fig. 68 Setting the External contact

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
External contact	Heating once Therm. disinfect none	none

Table 113 Setting range External contact

12.9 Thermal disinfection

If the Thermal disinfection function is selected, the DHW is brought to a temperature (70 °C) once or several times a week which is high enough to kill off bacteria within the DHW system (e.g. legionella bacteria).

Both the cylinder charging pump and the DHW circulation pump run constantly during the thermal disinfection process.

If **Therm. disinfect yes** has been selected, disinfection starts according to the factory settings or individual settings that have been made.

Operation of thermal disinfection will be shown via the LED display **Therm. disinfect enabled** on the FM441 module.

The factory settings for thermal disinfection can be changed in further menus.



The **Therm. disinfect** function will not be displayed if thermal disinfection was previously set via the **External contact WF 1/3** function.

The system tries to reach the set pasteurisation temperature for three hours. If it fails, the fault message **Therm. Disinfect failed** appears.

The thermal disinfection function can also be set via a separate control programme.

12.9.1 Setting thermal disinfection

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Therm. disinfect** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

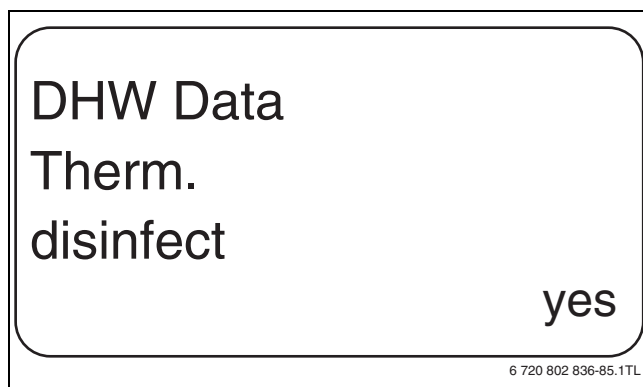


Fig. 69 Setting thermal disinfection

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Therm. disinfect	yes no	no

Table 114 Setting range Thermal disinfection

12.9.2 Setting the temperature

The **Temperature Therm. disinfect** function enables the disinfection temperature for thermal disinfection to be set (→ chapter 12.9, page 45).



WARNING: Risk of scalding through hot water.

- If the DHW circuit is not equipped with a thermostatic mixer, never open the hot water taps/valves (i.e. without mixing in cold water) during or immediately after thermal disinfection.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Temperature Therm. disinfect** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

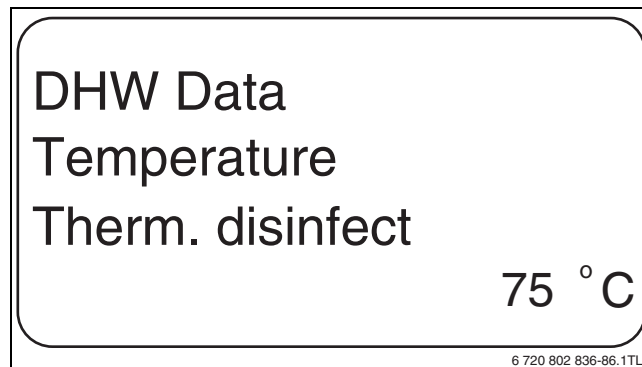


Fig. 70 Setting the pasteurisation temperature

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Temperature Therm. disinfect	65 °C – 75 °C	70 °C

Table 115 Setting range Thermal disinfection temperature

12.9.3 Setting the weekday

The **Weekday Therm. disinfect** function enables the weekday on which disinfection should be performed to be set.



The **Therm. disinfect** function will not be displayed if thermal disinfection was previously set via the **External contact WF 1/3** function.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Weekday Therm. disinfect** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

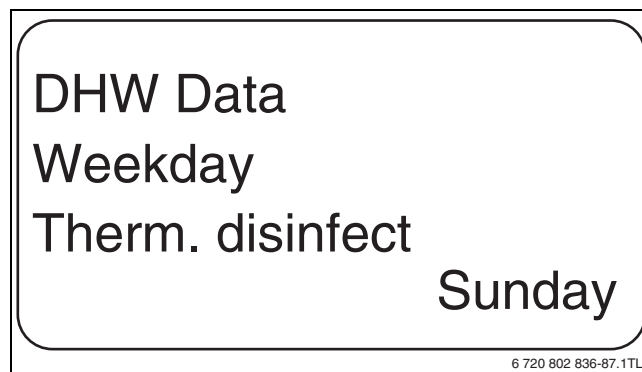


Fig. 71 Setting the weekday

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
Weekday Therm. disinfect	Monday – Sunday daily	Tuesday

Table 116 Setting range Weekday Thermal disinfection

12.9.4 Setting the time

The **time Therm. disinfect** function enables the time at which disinfection should be performed to be set.



The **time Therm. disinfect** function will not be displayed if thermal disinfection was previously set via the **External contact WF 1/3** function.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **DHW** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **time Therm. disinfect** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

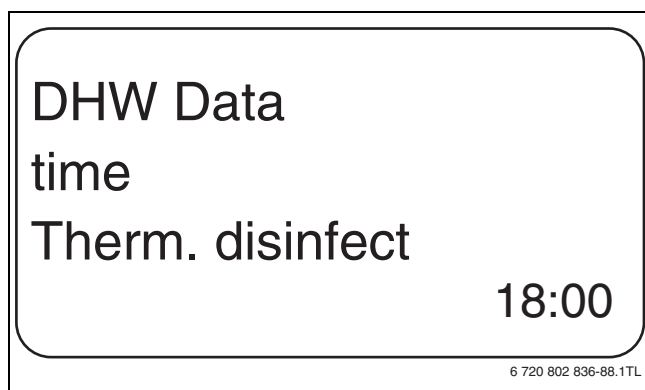


Fig. 72 Setting the time

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
time Therm. disinfect	00:00 – 23:00 hours	01:00 hours

Table 117 Setting range Time of disinfection

12.10 Setting range Daily heat-up

When daily heat-up is set, the DHW (which may include a solar cylinder, if installed) is heated to 60 °C once a day to prevent legionella bacteria from developing in the DHW system.

The time when the cylinder is heated can be adjusted.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **DHW** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **Daily heat-up** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

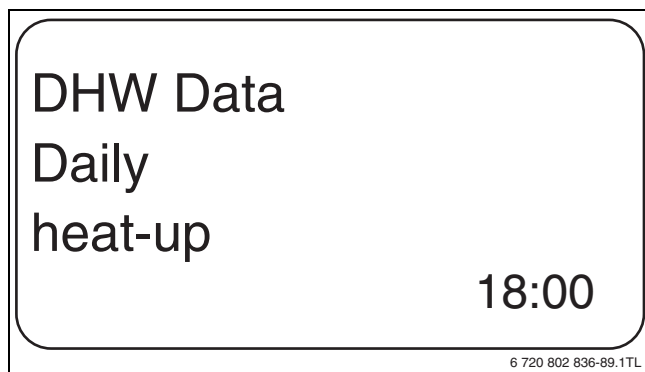


Fig. 73 Setting range Daily heat-up

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.



If the DHW was heated to 60 °C within the last 12 hours, it is not heated at the specified time.

	Input range	Factory setting
Daily heat-up	disabled 00:00 – 23:00 hours	disabled

Table 118 Setting range Daily heat-up

12.11 DHW circulation pump

12.11.1 Selecting the DHW circulation pump

The **DHW Circulat.** function enables DHW to be used immediately at the taps.

- ▶ Call up the service level.
The first main menu is **General param.**
- ▶ Turn the rotary selector until main menu **DHW** appears.
- ▶ Press **Display** to call up a submenu.
- ▶ Turn the rotary selector until submenu **DHW Circulat.** appears.
- ▶ Hold down button **Display** and turn the rotary selector until the required value is shown.

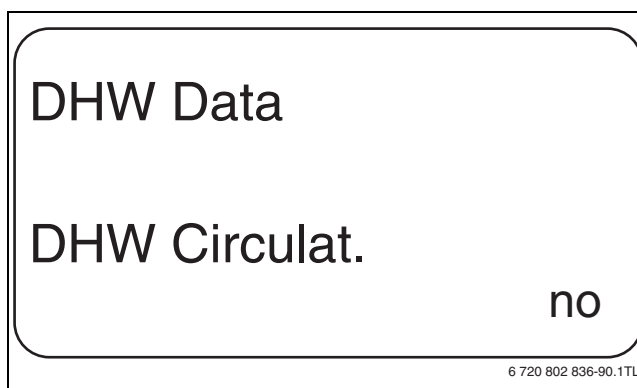


Fig. 74 Selecting the DHW circulation pump

- ▶ Release **Display** to save your input.
- ▶ Press **Back** to return to the next higher level.

	Input range	Factory setting
DHW circulat.	yes no	yes

Table 119 Setting range DHW circulation

12.11.2 Setting intervals

Operation in intervals saves operating costs for the circulation pump. The **DHW Circulat. per hour** function enables DHW to be used immediately at the taps.

The set interval applies during the period when the time program enables the DHW circulation pump. This comprises:

- The factory-set DHW circulation pump program
- Your own DHW circulation pump program
- A connection to the heating circuit switching times.

In constant mode the DHW circulation pump operates continuously when in day mode, and is switched off in night mode.

Example

An individual time program has been entered which switches the DHW circulation pump on for the period between 05:30 and 22:00 with the setting **DHW Circulat. per hour 2 times on**.

The circulation pump is enabled in cycles:

- at 05:30 h for 3 minutes
- at 06:00 h for 3 minutes
- at 06:30 h for 3 minutes
- etc., until 22:00 hours

Setting intervals

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **DHW** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **DHW Circulat. per hour** appears.
- Hold down button **Display** and turn the rotary selector until the required value is shown.

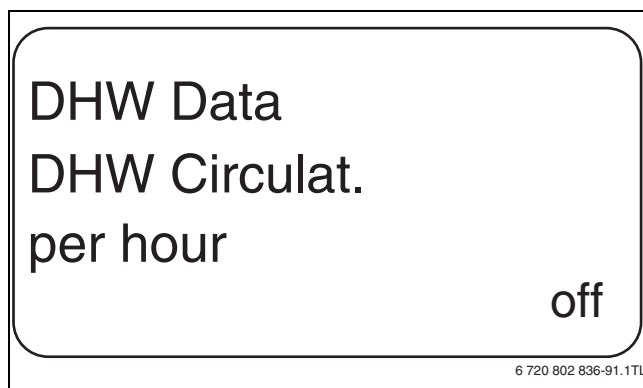


Fig. 75 Setting intervals

- Release **Display** to save your input.
- Press **Back** to return to the next higher level.

	Input range	Factory setting
DHW circulation per hour	Off 1 time on 2 times on 3 times on 4 times on 5 times on 6 times on Const. operation	2 times on

Table 120 Setting range DHW circulation per hour

13 Special parameter

This parameter enables Bosch service engineers to optimise the system beyond the standard parameters by fine-tuning the sub-parameters.

This level is reserved for Bosch service engineers. Therefore, settings are not made in plain text but in code. These are explained in a separate document.

14 Heating curve

Using the **Heating curves** menu you can display the current heating curves of the relevant heating circuit.

The flow temperatures (VL), which depend on the outside temperature (OT), are displayed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Heating curves** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector to display the heating curves of all heating circuits.

HEATING CURVE

Heating circ. 2

OT: 10 / 0 / -10

VL: 45 / 62 / 75

6 720 802 836-93.1TL

Fig. 76 Heating curve

- Press **Back** to return to the next higher level.

15 Relay test

With the **Relay test** menu, you can check whether the external components (e.g. pumps) working correctly.

The display depends on which modules are installed. Depending on the current operating conditions, there may be a time delay between demand and display.



CAUTION: System damage through disabled functions!

The supply of heat of the heating system is not guaranteed during the relay test. The control system disables all functions.

- Quit the **Relay test** function once the test has been completed to prevent damage to the system.

With the modules used most commonly in the Logamatic 4321/4322 control units, the following relays can be called up:

- Boiler
 - Burner (incl. burner servomotor)
 - Boiler actuator
 - Boiler circulation pump
- Heating circuit 1 – 8
 - Circulation pump
 - Actuator
- Domestic hot water
 - Cylinder primary pump
 - DHW circulation pump

Relay test example

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Relay test** appears.
- Press **Display** to call up a submenu.
Boiler is shown as the first submenu.
- Press **Display** to call up a further submenu.
Burner two-stage is shown at the first submenu.
- Hold down button **Display** and turn the rotary selector until the required value is shown.
- Release **Display** to save your input.
- Press **Back** twice to return to the next higher level.



At the end of the Relay test, all settings are cancelled.

16 Carrying out an LCD test

Using the **LCD test** menu, you can check whether all characters and symbols are fully displayed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **LCD test** appears.
- Press button **Display**.
The LCD is OK, when all symbols are correctly displayed.
- Press **Back** to return to the next higher level.

17 Fault log

Using the **Fault log** menu you can display the last four fault messages for the heating system. The MEC2 can only display the fault messages of the control unit with which it is connected.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Fault log** appears.
- Press button **Display**.
The fault message is displayed.
If the control unit has recorded fault messages, these will be displayed together with the time for the beginning and end of the fault.
The **No faults** message is shown if the connected control unit has not recorded any faults.

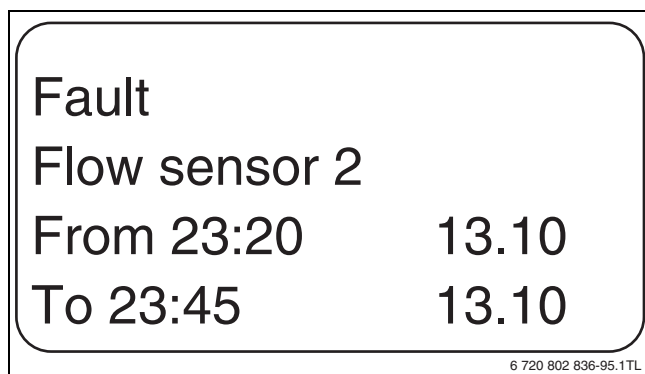


Fig. 77 Displaying the fault log

- Turn the rotary selector and scroll through recent fault messages.
- Press **Back** to return to the next higher level.

Fault displays

The following faults can be displayed on the Logamatic 4321/4322 control units if alongside the ZM434, the most commonly used function modules FM441 and FM442 have been installed.

- Outs.temp.sensor
- Flow sensor 1 – 8
- DHW temp. sensor
- DHW stays cold
- DHW warning
- Therm. disinfect
- Remote control 1 – 8
- Communication HC 1 – 8
- Boiler flow sensor
- Boiler aux. sensor
- Boiler cold
- Burner
- Safety chain
- Ext. fault ES
- Flue gas sensor
- Flue gas limit
- Ext. pump 1 – 8

- ECOCAN BUS receive
- No master
- Conflicting BUS addresses
- Address conflict 1 – 4/A
- Incorr module 1 – 4/A
- Unknown module 1 – 4/A
- Return sensor
- Inert anode
- Ext. fault input
- Control unit XY
- Unknown fault
- Strategy missing
- Manual mode XX
- Maintenance hours run/date
- Internal fault no. XX

18 Monitor data

Using the **Monitor** menu you can display the set and actual settings. The menus described in these instructions relate exclusively to the Logamatic 4321/4322 control units with the most commonly used modules - FM441 and FM442.

Some display values are separated by a slash. The number in front of the slash specifies the set value of each corresponding parameter and the figure after the slash is the actual value.

The data for the following components (if installed) is displayed:

- Boiler
- Heating circuits
- Domestic hot water
- Monitor data of other installed modules

18.1 Boiler monitor data



The monitoring masks are subject to the settings made.

Using the Monitor menu **Boiler** you can display the boiler data.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Monitor** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Boiler** appears.

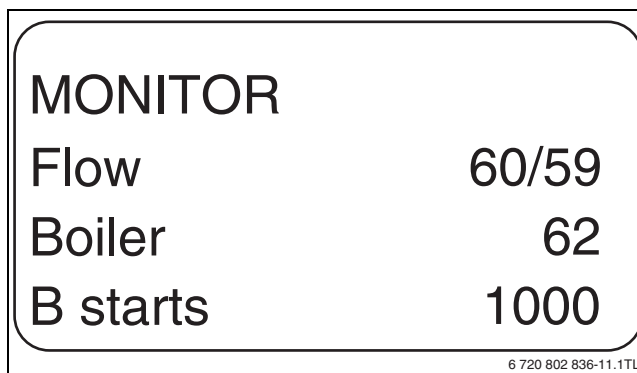


Fig. 78 Displaying monitor boiler data

- Press **Display** to call up a submenu.
The data for the monitor are shown in the display.
The **Adjusted** setting describes the outside temperature, taking the type of building into consideration which has already been entered, and with which the heating curves were calculated.

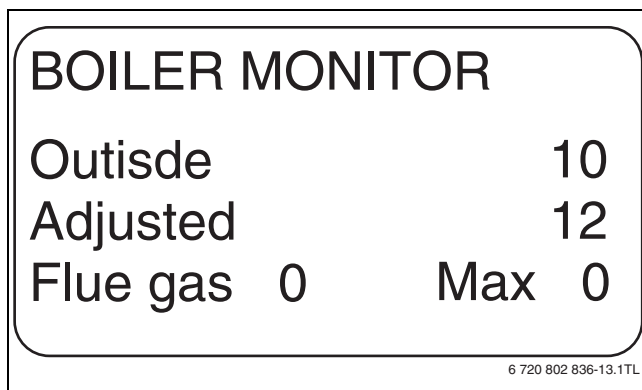


Fig. 79 Boiler monitor data

- Turn the rotary selector to scroll through the boiler monitor data.
- Press **Back** to return to the next higher level.

18.2 Heating circuit monitor data

Using the Monitor menu **Heating circ.** you can display the data for one heating circuit.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Monitor** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **Heating circ. 2** appears.
- Press **Display** to call up a submenu.
The set and actual values for the flow and room temperatures are displayed.

The last line displays one of the following operating modes:

- Constant night
 - Constant day
 - Automatic night
 - Automatic day
 - Holiday
 - Summer
 - Start optimising
 - Stop optimising
 - Screed
 - DHW Priority
 - No setback
- Turn the rotary selector to scroll through the heating circuit monitor data.
 - Press **Back** to return to the next higher level.

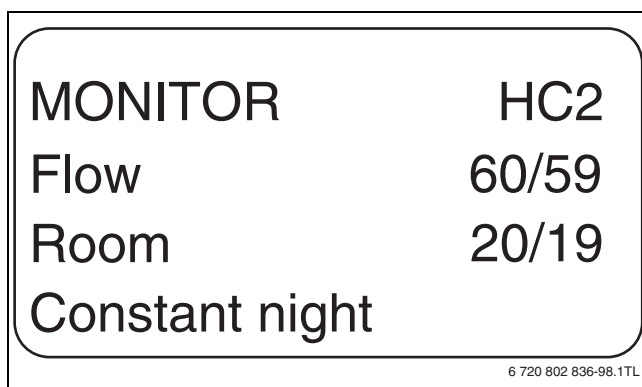


Fig. 80 Heating circuit monitor data

Design temperature adaptation

This value displays the design temperature calculated by adaptation.

Start optimisation

A calculated period, by which the heating system starts its heating operation prior to the actual switching point, so that the set room temperature is reached by the actual start time.

Stop optimisation

A calculated period to commence an early setback to save energy.

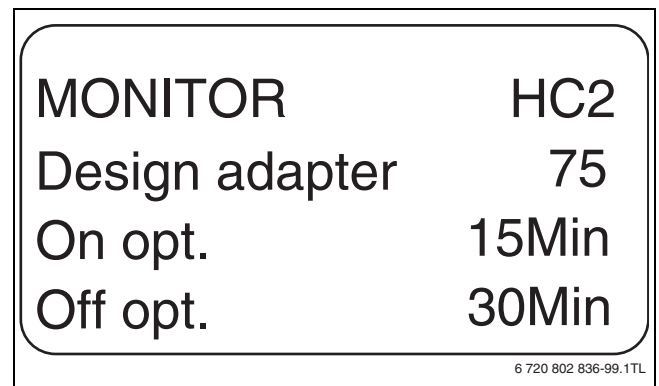


Fig. 81 Design temperature adaptation

Actuator

- 0%
no control
- 50%
Actuator is regulated in a cycle of 10 seconds for 5 seconds towards ▲ "Mixing valve opens" (hotter).
- 100%
Actuator is constantly regulated in a cycle of 10 seconds for 10 seconds towards ▼ "Mixing valve closes" (colder).

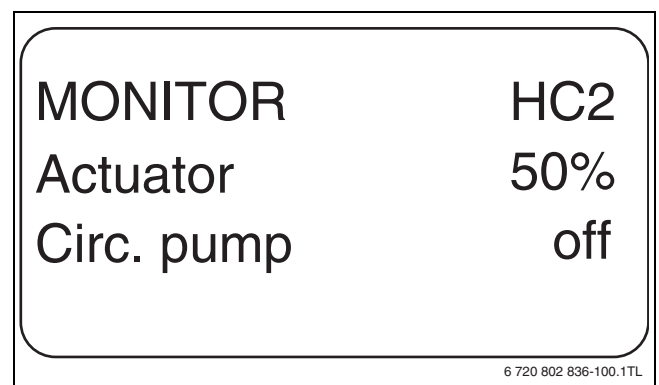


Fig. 82 Actuator

Circulation pump

Indicates the operating state of the circulation pump.

18.3 DHW monitor data

Using the Monitor menu **DHW** you can display the data for the DHW settings.

The displays depend on the settings selected under the **DHW** function (→ chapter 12, page 42ff.).

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Monitor** appears.
- Press **Display** to call up a submenu.
- Turn the rotary selector until submenu **DHW** appears.
- Press **Display** to call up a submenu.
The calculated set value and the actual value for the **DHW temperature** are displayed.
- Turn the rotary selector to scroll through the DHW monitor data.
- Press **Back** to return to the next higher level.

- Turn the rotary selector to scroll through the substation monitor data.

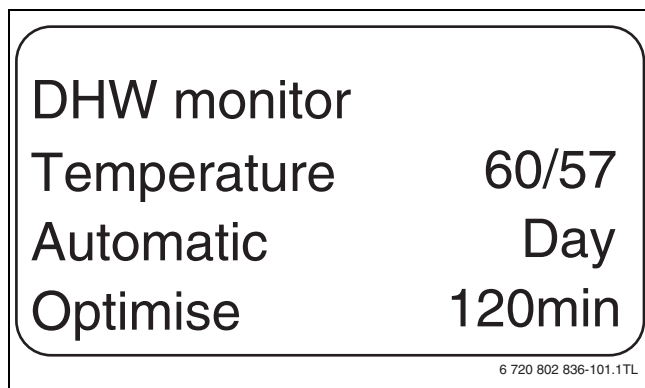


Fig. 83 DHW monitor data

- Possible operating modes:
 - Off
 - Constant operation
 - Automatic night
 - Automatic day
 - Holiday
 - Optimisation
 - Disinfection
 - Reheating
 - Daily heat-up

Optimise

Indicates the period during which the system commences DHW heating before the actual switching point, to achieve the set DHW temperature in sufficient time.

Heating

Indicates the operating condition of the cylinder primary pump.

DHW Circulat.

Indicates the operating condition of the DHW circulation pump.

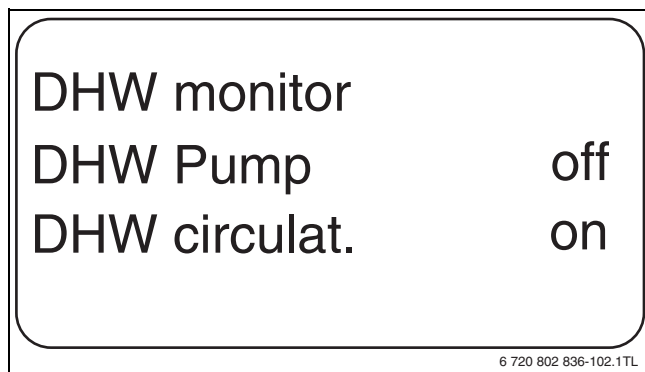


Fig. 84 DHW monitor data

19 Display version

Using the **Version** menu, the version of the MEC2 programming unit and the selected control unit can be displayed.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Version** appears.
- Press **Display** to call up a submenu.
The versions for the MEC2 programming unit and the control unit are displayed.

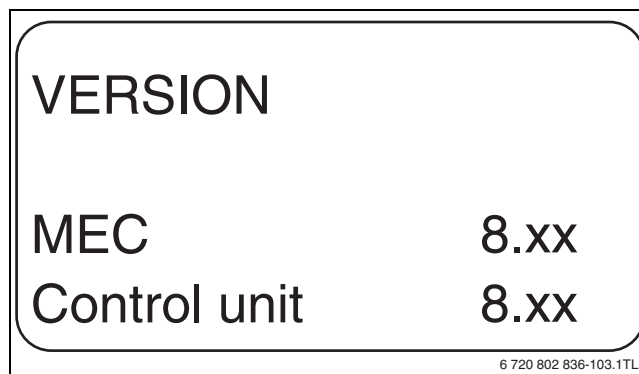


Fig. 85 Display version

- Press **Back** to return to the next higher level.

20 Selecting the control unit

Using the **Control unit** menu, a control unit can be selected if the MEC2 is operated **offline**, i.e. without a connected control unit or with a separate power supply unit.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Control unit** appears.
- Press **Display** to call up a submenu.
The display shows the selected submenu.
- Press **Back** to return to the next higher level.

21 Reset



With the **Reset** menu, all settings of the operator or service level are reset to the factory settings.



After servicing has been completed, reset the maintenance messages. This means that the maintenance message no longer appears if the flap is closed.
Resetting the maintenance message restarts the maintenance interval. With maintenance messages set according to date, the next maintenance date will be fixed one year in the future.

Resets	Explanation
Factory settings Control units	All settings of the operator or service level are reset to the factory settings. Exception: The timer programme remains in place.
Burner hours run	The hours run by the burner and the number of burner starts are returned to 0. If burner type 2 x single stage is selected, both hours run and burner starts can be reset to 0 for both burners together or for each burner individually.
Fault log	All faults stored in the fault protocol are deleted.
Maximum Flue gas temp.	This reset will only appear if a limit for the maximum flue gas temperature was set. The maximum flue gas temperature is reset to the current flue gas temperature. Fault message Flue gas limit (maximum flue gas temperature exceeded) will only be deleted if the current flue gas temperature lies below the flue gas temperature limit.
Heat yeald	This reset will only appear if a heat amount is to be captured. All heat amounts captured at that time (day, week and annual values) will be deleted.
Maint. message	This reset will only be shown if a maintenance message was triggered. This reset deletes the maintenance message or starts the next maintenance interval.

Table 121 Available resets

Example: Reset fault log

All values are automatically reset.

- Call up the service level.
The first main menu is **General param.**
- Turn the rotary selector until main menu **Reset** appears.
- Press **Display** briefly to call up a submenu.
Factory settings Control unit is shown as first submenu.



All settings may be lost if you press for too long.

- Turn the rotary selector until submenu **Fault log** appears.
- Press and hold button **Display**.
The blocks in the last line disappear one after the other. The settings are reset when no further blocks are displayed. If the button is released while a block is still being displayed, then the reset will be terminated. After implementing a reset, the display automatically reverts to the next level up.
- Press **Back** to terminate the reset procedure and return to the next higher level.

22 Environment / disposal

Environmental protection is a fundamental corporate strategy of the Bosch Group.

The quality of our products, their economy and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed.

We use the best possible technology and materials for protecting the environment taking account of economic considerations.

Packaging

We participate in the recycling programmes of the countries in which our products are sold to ensure optimum recycling.

All of our packaging materials are environmentally compatible and can be recycled.

Used appliances

Used appliances contain valuable materials that should be recycled.

The various assemblies can be easily dismantled and synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.

23 Faults and fault remediation

Fault	Effect on control characteristics	Cause	Remedy
Outs.temp. sensor	The minimum outside temperature is applied.	<ul style="list-style-type: none"> The outside temperature sensor is either incorrectly connected, e.g. not to the control unit with address 1 in a multi-boiler system, is not connected at all, or is faulty. ZM434 boiler module or control unit faulty. Communication to control unit with address 1 is interrupted. 	<ul style="list-style-type: none"> Check whether the outside temperature sensor has been connected to the correct control unit (in multi-boiler systems to the control unit with address 1). Check communication with address 1. Replace outside sensor or ZM434 boiler module.
Flow sensor 1 – 8	The mixing valve is always fully open.	<ul style="list-style-type: none"> The sensor is incorrectly connected, not connected at all, or faulty. The control unit requires the appropriate flow sensor if an actuator/mixing valve was selected in MEC2. The FM441/FM442 module or control unit is faulty. 	<ul style="list-style-type: none"> Check sensor connection. If the faulty heating circuit should be operated as an unmixed heating circuit, check in MEC2/Service level/Heating circ., whether Actuator No has been selected (→ chapter 11.20, page 38). Replace FM441/FM442 module.
DHW temp. sensor	DHW heating has stopped.	<ul style="list-style-type: none"> Sensor faulty or not connected. Module FM441 or control unit faulty. 	<ul style="list-style-type: none"> Check sensor connection. Check sensor connection on DHW cylinder. Replace the sensor or the FM441 module.
DHW warning	There is a constant attempt at charging the DHW cylinder.	<ul style="list-style-type: none"> Temperature controller/hand switch is not set to AUT. Sensor faulty or not connected. Incorrect sensor arrangement. Primary pump incorrectly connected or faulty. Module FM441 or control unit faulty. 	<ul style="list-style-type: none"> Check sensor connection and values. Check whether the manual switch is to AUT. Check primary pump function (e.g. with a relay test → chapter 15, page 47). Replace FM441 module. Check sensor connection on DHW cylinder.
DHW cold	DHW heating was interrupted. Current DHW temperature is below 40 °C.	<ul style="list-style-type: none"> Primary pump faulty. Function module FM441 faulty. More DHW is removed than newly heated. 	<ul style="list-style-type: none"> Check that temperature control or hand switch is set to AUT. Check function of sensor and cylinder primary pump. Replace FM441 module. Check sensor connection on DHW cylinder.
Therm. disinfect	Thermal disinfection was interrupted.	<ul style="list-style-type: none"> The boiler output is insufficient because e.g. other heat consumers (heating circuits) demand heat during pasteurisation. Sensor faulty or not connected. Primary pump incorrectly connected or faulty. Module FM441 or control unit faulty. 	<ul style="list-style-type: none"> Select pasteurisation at a time when no other heat demand is made. Check sensor and primary pump function and replace if necessary. (→ chapter 15, page 47, chapter 2.7, page 5). Replace FM441 module if required.
Remote control 1 – 8	Because no actual room temperature is available, the effect of the following features is disabled: Room influence, start and stop optimisation, and automatic adaptation. The control unit works with the last values set on the remote control.	<ul style="list-style-type: none"> The remote control unit is incorrectly connected or faulty. 	<ul style="list-style-type: none"> Check function/connection of remote control. Also check the addressing of the remote control. Replace remote control/function module.
Communication HC 1 – 8	Because no actual room temperature is available, the effect of the following features is disabled: Room influence, start and stop optimisation, and automatic adaptation.	<ul style="list-style-type: none"> Remote control incorrectly connected or defective. Incorrect address allocated to remote control. Control unit is faulty. 	<ul style="list-style-type: none"> Check function/connection of remote control. Also check the address of the remote control. Replace remote control/function module.

Table 122 Fault overview

Fault	Effect on control characteristics	Cause	Remedy
Boiler sensor	<ul style="list-style-type: none"> The boiler is enabled with maximum output. Emergency operation via thermostat is possible. 	<ul style="list-style-type: none"> The sensor is not or is incorrectly connected. The sensor or the control unit is faulty. 	<ul style="list-style-type: none"> Check sensor connection. Replace boiler sensor or ZM434 boiler module.
Boiler Aux. sensor	<ul style="list-style-type: none"> No return temperature control possible. Mixing valves are fully open. Ecostream control is impossible. Boiler is enabled with maximum output. 	<ul style="list-style-type: none"> The sensor is incorrectly connected, not connected at all or is defective. The ZM434 boiler module or the control unit is faulty. 	<ul style="list-style-type: none"> Check sensor connection. Replace boiler sensor or ZM434 boiler module.
Boiler cold	<ul style="list-style-type: none"> Boiler protection (frost and condensation protection) cannot be ensured. Boiler is enabled with maximum output. 	<ul style="list-style-type: none"> Temperature controller/hand switch is not set to AUT. There is no fuel supply. Sensors incorrectly arranged. The boiler sensor is faulty. 	<ul style="list-style-type: none"> Check that temperature controller or hand switch is set to AUT. Check the amount of fuel and the fuel feed. Check sensor arrangement. Replace the boiler sensor.
Burner	<ul style="list-style-type: none"> The boiler protection (frost protection) is not assured. No DHW. 	<ul style="list-style-type: none"> Burner faulty, resulting in a 230 V fault signal at terminal BR 9. The ZM434 boiler module or the control unit is faulty. 	<ul style="list-style-type: none"> Reset the burner as described in the boiler or burner documentation. Check the fault signal from the burner at terminal BR 9 (230 V signal). Fault signal: Check the burner function. No fault signal: Replace the ZM434 boiler module.
Safety chain	The boiler protection (frost protection) is not assured.	<ul style="list-style-type: none"> The high limit safety cut-out has responded. The control unit is faulty. 	<ul style="list-style-type: none"> Locate the cause for the high limit safety cut-out responding (incl. check control unit functions), then reset the high limit safety cut-out and press the reset button. Check whether an external high-limit safety cut-out (STB) is connected.
Ext. fault ES	There are no effects on the control characteristics.	<ul style="list-style-type: none"> Fault input of the ZM434 boiler module has been switched. Externally connected components are faulty or a fault is pending. 	<ul style="list-style-type: none"> Check the function of external components and repair or replace, if required.
Flue gas sensor	The flue gas limit cannot be found.	<ul style="list-style-type: none"> The sensor is not or is incorrectly connected. The sensor or the control unit is faulty. 	<ul style="list-style-type: none"> Check sensor connection.
Flue gas limit	There are no effects on the control characteristics.	<ul style="list-style-type: none"> The boiler is contaminated with soot. The flue gas sensor is faulty. 	<ul style="list-style-type: none"> Clean the boiler. Check sensor connection and function.
Ext. pump 1 – 8	There are no effects on the control characteristics.	<ul style="list-style-type: none"> Fault input WF 1/2 of the FM441/FM442 function module was opened. Externally connected heating circuit pump is faulty or a fault is pending. 	<ul style="list-style-type: none"> Check the function of the connected heating circuit pump. Replace the module concerned.
ECO-BUS receive	No effect on control characteristics.	<ul style="list-style-type: none"> The rotary encoder behind MEC2 in the CM431 controller module of the control unit has an incorrect address. Fault example: System with a control unit and rotary encoder position > 0. 	<ul style="list-style-type: none"> Check rotary coding switch position (→ chapter 5.1, page 10): <ul style="list-style-type: none"> Position 0: Only 1 BUS subscriber present. Position 1: Master control unit (other BUS subscriber is expected). Position > 0: Additional BUS subscribers.
No master	<ul style="list-style-type: none"> Boiler protection cannot be ensured. DHW priority is no longer possible. Minimum outside temperature is expected. 	<ul style="list-style-type: none"> Master control unit (address 1) is switched off or no master (address 1) is available. 	<ul style="list-style-type: none"> Check all BUS subscriber addresses. Address 1 must be allocated to the master control unit (rotary encoder behind MEC2 on CM431 of the control unit). Check Bus connection to address 1.

Table 122 Fault overview

Fault	Effect on control characteristics	Cause	Remedy
Conflicting BUS addresses	<ul style="list-style-type: none"> BUS communication no longer possible. All control functions requiring data exchange via the CAN-BUS can no longer be executed. 	<ul style="list-style-type: none"> Multiple identical addresses are present. Each address must only be allocated once in the CAN-BUS network. 	<ul style="list-style-type: none"> Check the addresses of all BUS subscribers (rotary encoder behind MEC2 in CM431 of the control unit).
Addr conflict 1 – 4/A	The functions of the module with the address conflict can no longer be carried out. However, communication of all other modules and control units via the CAN-BUS is still possible.	<ul style="list-style-type: none"> The module has been plugged into the wrong slot/control unit: Some modules can only be operated at specified CAN addresses. Install the strategy module only into the master control unit with address 1. The ZM434 boiler module must not have an address > 3. 	<ul style="list-style-type: none"> Check module arrangement.
Incorr module 1 – 4/A	Module switches all outputs off and corresponding fault LED on.	<ul style="list-style-type: none"> An incorrect module has been selected for this slot in the MEC2. Different module installed in one slot of control unit (e.g. FM442 was replaced with FM441). The MEC2, corresponding module or control unit is faulty. 	<ul style="list-style-type: none"> Check module defaults at the MEC2 service level. Check the modules installed in the control unit. Replace MEC2 or module.
Unknown module 1 – 4/A	Module switches all outputs off and corresponding fault LED on.	<ul style="list-style-type: none"> The controller software is too old to recognise the module. The module or the control unit is faulty. 	<ul style="list-style-type: none"> Check the version of the control unit in the MEC2 (→ chapter 9, page 21). Replace module.
Return sensor	No return temperature control possible.	<ul style="list-style-type: none"> The sensor is incorrectly connected, not connected at all or is faulty. The sensor or the control unit is faulty. 	<ul style="list-style-type: none"> Check sensor connection.
Inert anode	No effects on control characteristics.	<ul style="list-style-type: none"> Voltage is present at the external input WF 1/2. The module or the control unit is faulty. 	<ul style="list-style-type: none"> Replace inert anode. Replace FM441 module.
Ext. fault input	No effects on control characteristics.	<ul style="list-style-type: none"> Voltage is present at the external input WF 1/2. The module or the control unit is faulty. 	<ul style="list-style-type: none"> Check connection and function of external components (cylinder primary and DHW circulation pumps). Repair or replace, if required.
Control unit XY			<ul style="list-style-type: none"> Set the MEC2 to the control unit with the stated address. The fault will be displayed in detail.
Unknown fault	<ul style="list-style-type: none"> Subject to the type of fault. The MEC cannot recognise the fault. 	<ul style="list-style-type: none"> New control unit or controller module replaced, but older MEC version. 	<ul style="list-style-type: none"> Check version. Where necessary, use a newer version of MEC2.
Strategy missing	Boiler 1 is started. All other boilers remain off.	<ul style="list-style-type: none"> Several boiler control units are connected via the ECO-CAN BUS. The strategy module is missing or was not recognised. 	<ul style="list-style-type: none"> Install the strategy module in the control unit with address 1.
Manual mode XX	Control unit operates in manual mode.	<ul style="list-style-type: none"> It is possible that the manual switch of a function module has not been set to AUT. 	<ul style="list-style-type: none"> Set the manual switch of the corresponding function module to AUT.
Maintenance hours run/date	No effect on control characteristics.	<ul style="list-style-type: none"> The specified period before the next service has expired. 	<ul style="list-style-type: none"> Perform maintenance and then reset maintenance message.
Internal fault no. XX	Information may be lost.	<ul style="list-style-type: none"> There may be a short-term data jam. This will, however, be remedied within a few minutes. There is an EMC fault. The control unit is faulty. 	<p>If this fault remains active for longer periods or recurs frequently:</p> <ul style="list-style-type: none"> the module or control unit is faulty and must be replaced or -or- there is an EMC fault which must be removed.

Table 122 Fault overview

24 Appendix

24.1 Sensor curves



DANGER: Danger to life from electric shock!

- ▶ Before opening the appliance, isolate all poles of the mains power supply and secure against unauthorised re-connection.

Fault checking (without room temperature sensor)

- ▶ Remove sensor terminals.
- ▶ Check the resistance at the sensor lead ends using a multimeter.
- ▶ Check the temperature of the sensor with a thermometer.

Using the diagram, determine whether temperature and resistance correlate.



The sensor tolerance for all curves is $\pm 3\%/25\text{ }^{\circ}\text{C}$.

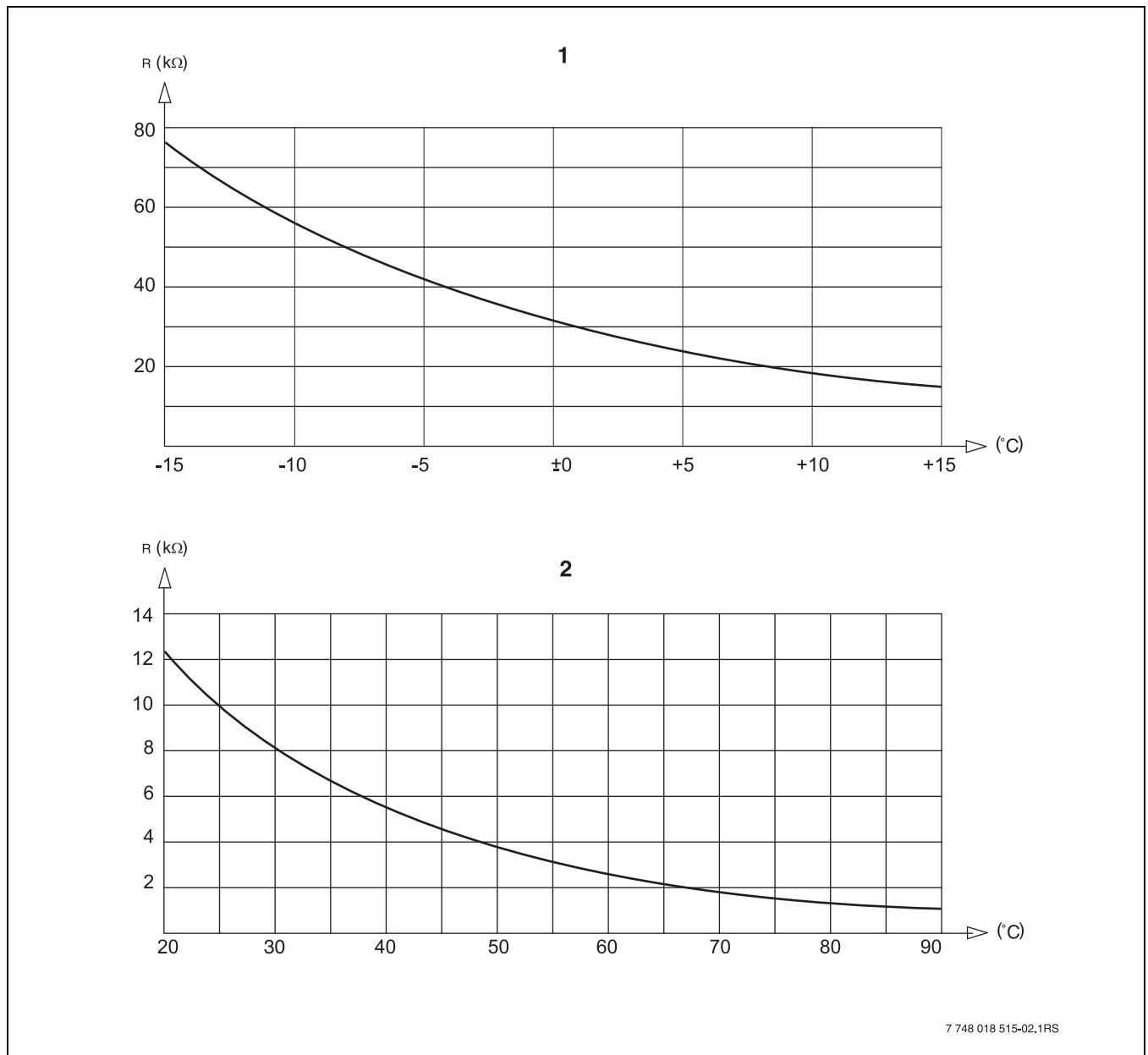
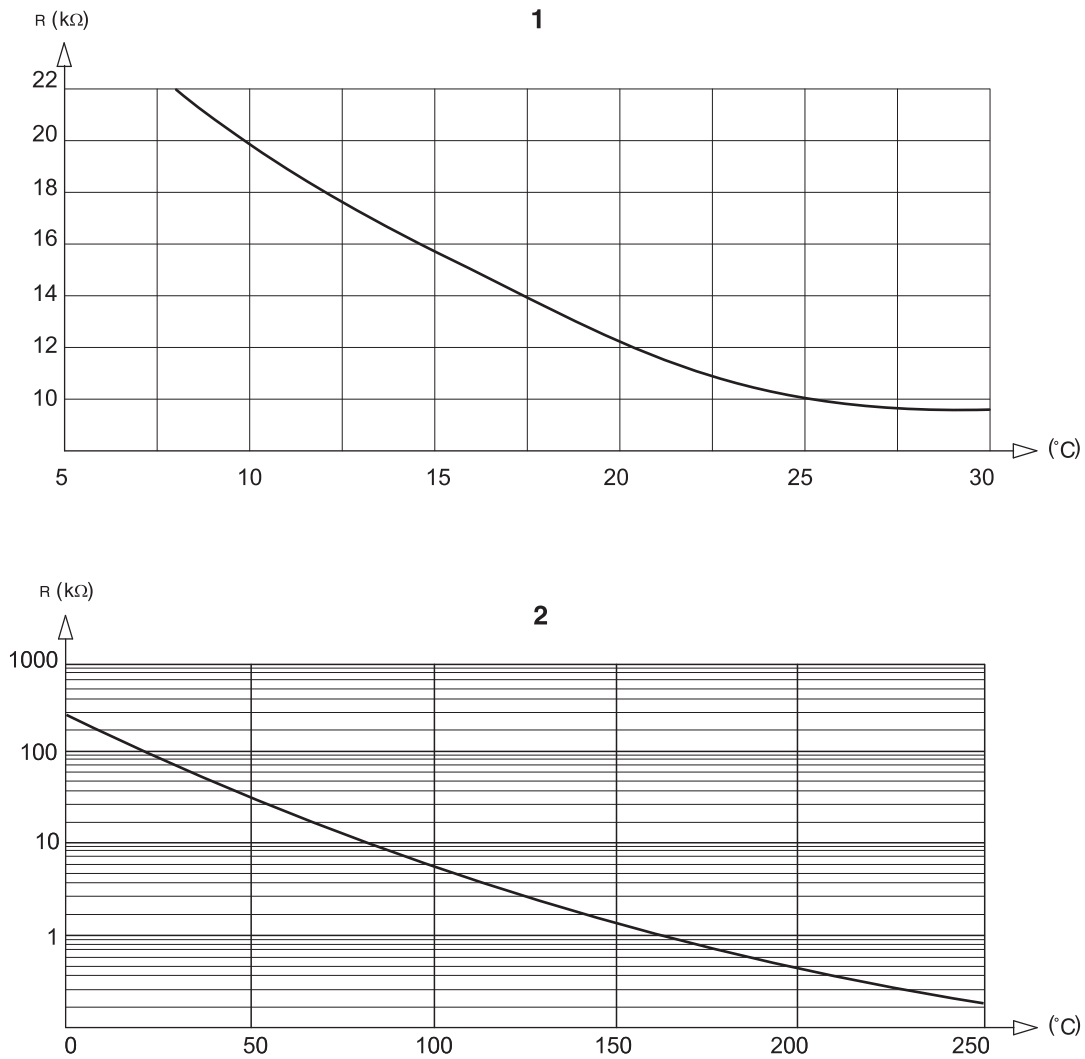


Fig. 86 Outside temperature sensor and boiler water, flow, and DHW temperature sensors

- [1] Outside temperature sensor curve
- [2] Boiler water, flow, DHW and auxiliary temperature sensor curve



7 747 012 074-05.1RS

Fig. 87 Room temperature and flue gas temperature sensors

- [1] Room temperature sensor curve
- [2] Flue gas temperature sensor (FG) curve

24.2 Setting specific boiler data

Assignment of boiler type to the corresponding Buderus boiler. The boiler type can be selected at the service level under boiler parameters (→ chapter 10.1, page 21).

Low temperature (Not available in the UK)

To be enabled for boiler series:

- Logano G125 ECO
- Logano S125 ECO
- Logano G144 ECO
- Logano G215
- Logano G234
- Logano G334
- Logano S325

LT/minimum return temperature (Not available in the UK)

To be enabled for boiler series:

- Logano SK425¹⁾
- Logano SK635¹⁾
- Logano SK735¹⁾

Condensing

To be enabled for boiler series:

- Logano plus SB315
- Logano plus SB615
- Logano plus SB735

Ecostream

To be enabled for boiler series:

- Logano GE315²⁾³⁾
- Logano GE515²⁾
- Logano GE615²⁾
- Logano SE425²⁾³⁾ (Not available in the UK)
- Logano SE635²⁾ (Not available in the UK)
- Logano SE735²⁾ (Not available in the UK)
- Logano GE434⁴⁾ (Not available in the UK)
- Logano GB434³⁾ (Not available in the UK)



The same control unit configuration applies to gas fired condensing boilers with an external condensing heat exchanger.

LT/low end temp. (Not available in the UK)

To be enabled for boiler series:

- Logano SK425¹⁾
- SK635¹⁾
- SK735¹⁾ for raised minimum boiler water temperatures.

1) Minimum boiler water temperature control via heating circuit actuators or a separate boiler circuit mixing valve.

2) Operating flow temperature control via heating circuit actuators or separate boiler circuit mixing valve.

3) Operating flow temperature control via external control unit.

4) Subject to hydraulic connection.

Keyword index

- A**
- Actuator 38, 49
 - Runtime 38
 - Actuator operating time 22–24
 - Adaptation 36, 49
 - Address settings 10
- B**
- Boiler characteristic 30
 - Boiler output 24
 - Boiler temperature increase 43
 - Boiler type
 - Condensing 23
 - Ecostream 23
 - Low temperature boilers 21
 - Low-temperature boilers with low end temp. 23
 - Burner set motor runtime 26, 28
- C**
- Circulation pump 49
 - Cleaning
 - Control unit 5
 - Commissioning
 - information 4
 - Condensing 57
 - Condensing boiler 23
 - Correct use 4
- D**
- Declaration of Conformity 4
 - Default modulation 26, 28
 - Design temperature 32, 49
 - DHW circulat. 46, 50
 - Intervals 47
 - DHW circulation pump 46
 - Intervals 46
 - DHW function 13
 - DHW monitor data
 - DHW circulat. 49
 - Heating 49
 - Optimise 49
 - DHW priority 38
 - Disinfection 44
 - Domestic hot water 42
 - Dual-fuel burner
 - Burner set motor runtime 28
 - Default modulation 28
 - Maximum gas fired boiler output 27
 - Maximum oil fired boiler output 28
 - Minimum gas fired boiler output 27
 - Minimum oil fired boiler output 28
- E**
- Ecostream 57
 - Ecostream boilers 23
 - Actuator operating time 23
 - Environment / disposal 51
 - External changeover 39
 - External fault message 44
 - External switch 44
- F**
- Fault displays 48
 - Fault log 48
 - Flow 36
 - Flow temperature 33
 - Flue gas temperature 30
 - FM442 13
 - Heating circuit function 13
 - Frost prot. 38
 - Frost protection temperature 38
 - Fuel 24
- H**
- Heat storage capacity 18
 - Heat.circuit 32
 - Heating circuit function 13
 - Heating once 44
 - Heating system 31
 - High limit safety cut-out
 - Checking/testing 15
 - Resetting 15
 - Triggering 15
 - Holiday 35
 - Hysteresis 43
- I**
- Inert anode 44
- L**
- Load limit 27
 - Low end temp. 57
 - Low end temperature 30, 32
 - Low T/min.return 22
 - Actuator operating time 22
 - Return actuator 22
 - Return temperature control 22
 - Return temperature raising facility 22
 - Type of fuel 22
 - Low temperature 57
 - Low temperature boilers 21
 - Lowering 31, 35–36
 - Low-temperature boilers with low end temp. 23
 - Actuator operating time 24
 - Fuel 24
- M**
- Malfunctions 52
 - Maximum boiler output 25, 27
 - Maximum gas fired boiler output 27
 - Maximum oil fired boiler output 28
 - Maximum room influence 34
 - MEC2 14
 - Commissioning 14
 - heating circuits 33
 - Version 50
 - Minimum boiler output 25, 27
 - Minimum gas fired boiler output 27
 - Minimum oil fired boiler output 28
 - Modulating burner 25
 - Burner set motor runtime 26
 - Default modulation 26
 - Maximum boiler output 25
 - Minimum boiler output 25
 - Modules 10

O		
Offset	36	
ON temperature	29	
Operation modes	49	
Optimisation	37, 49	
Optimise	50	
Outside stop temperature	35	
P		
Packaging	51	
Party function	33	
Password	17	
Pause function	33	
Pump function	28	
R		
Raising	39	
Recycling	51	
Reduction mode	34–35	
Relay test	47	
Remote control	33	
Reset	50	
Residual heat utilisation	43	
Return actuator	22	
Return temperature control	22	
Return temperature raising facility	22	
Room influence	34	
Room temperature	36	
Run-on time	29	
S		
Safety instructions	4	
Screed	40	
Heat-up time	41	
Holding time	41	
Maximum temperature	41	
Setback temperature	42	
Setback time	42	
Temperature rise	41	
Sequence switching	27	
Service level	17	
Shutdown temperature	30	
Single stage burner		
Maximum boiler output	25	
Start optimisation	49	
Stop optimisation	49	
Stop optimisation time	37	
Summer/wintertime changeover	33	
Switching optimisation	37, 43	
T		
Terminator	11	
Thermal disinfection	45	
Clock time	46	
Temperature	45	
Weekday	45	
Two single-stage burners		
Load limit	27	
Maximum boiler output	27	
Minimum boiler output	27	
Sequence switching	27	
Two-stage burner		
Maximum boiler output	25	
Minimum boiler output	25	
Type of building	18	
Type of burner	24	
Type of fuel	22	
U		
Used appliances	51	
Z		
ZM422	11	
Burner function	12	
Flue gas test	12	

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