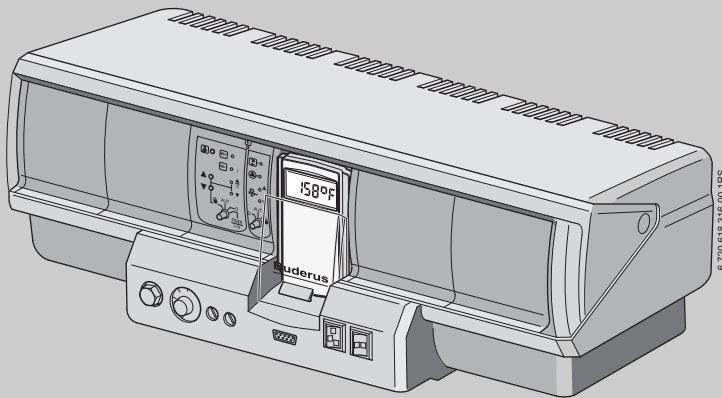
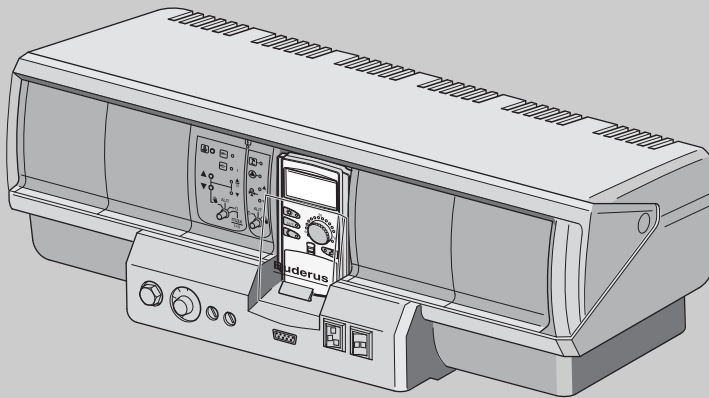


Installation and Service Instructions

Control Panel



Logamatic 4321/4322

For heating contractors

Read carefully prior to
commissioning and service
work

6 720 617 513 - 11/2008 US/CA

Buderus

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1 Safety

1.1 About this manual

This manual contains important information on the safe and appropriate commissioning and servicing of the Logamatic 4321 and 4322 control panels.

This manual is designed for heating contractors who, due to their training and experience, are knowledgeable in handling heating systems and domestic hot water installations. Only carry out service measures yourself if you have this technical expertise.

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

1.2 Intended use

The Logamatic 4321 and 4322 control panels are designed to control heating systems in apartment buildings, residential complexes and other types of buildings.

1.3 Standards, regulations and directives



USER NOTE

Observe all regulations and standards applicable to installation and operation of the system in your country.



USER NOTE

All electrical components must be approved in the USA and Canada!



This product has been tested and certified and meets applicable standards for the US and Canadian markets.

1.4 Key to symbols

Two levels of danger are identified and signified by the following terms:



WARNING!

RISK OF LIFE

Identifies possible dangers emanating from a product, which might cause serious injury or death if appropriate care is not taken.



CAUTION!

RISK OF INJURY/ SYSTEM DAMAGE

Indicates a potentially dangerous situation that could cause minor or moderately serious injuries or damage to property.



USER NOTE

Tip for optimum use of equipment and adjustment as well as useful information.

1.5 Please observe these notes

- Use the control panel only as intended and only when it is in perfect working order.
- Read the service manual carefully before starting work on the control panel.



WARNING!

RISK OF FATAL INJURY

due to electric shock!

- Make sure that all electrical work is carried out by a trained contractor.
- Before opening the control panel: isolate all poles of the power supply and secure against accidental reconnection.

**RISK OF SCALDING**

from hot water.

WARNING!

Risk of scalding from domestic hot water temperatures over 122 °F (50 °C) and during thermal disinfection.

- Install a thermostatic tempering valve to control the DHW temperature.

**RISK OF INJURY/
SYSTEM DAMAGE****CAUTION!**

due to operator error!

Operator errors can cause injury and damage to property.

- Make sure that children never operate the appliance unsupervised or play with it.
- Make sure that only personnel trained to operate the appliance correctly have access to it.

**SYSTEM DAMAGE****CAUTION!**

from frost.

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

- Protect your heating system against frost damage by draining it and the DHW piping at the lowest possible point.

**USER NOTE**

Ensure that a circuit breaker is available to disconnect all poles from the mains power supply. If there is no circuit breaker, you will need to install one.

**USER NOTE**

Make sure that the heating system is protected with an adequately-rated circuit breaker.

**USER NOTE**

Only use original Buderus spare parts. Damage as a result of the use of spare parts not supplied by Buderus are excluded from the Buderus warranty.

1.6 Important instructions for commissioning

- Before switching the control panel on, check that its manual switches and those on the function modules are set to "AUT".
- The control panel operating instructions contain a setup report for the use by the system operator. Record the settings made during initial setup and the layout of the heating zones in the setup log.

1.7 Cleaning control

- Clean the control panel with a damp cloth only.

1.8 Disposal

- Dispose of the control panel packaging in an environmentally-responsible manner.
- Electronic components do not belong in household waste. Dispose of a defunct control panel in an environmentally responsible manner through an approved organization. When disposing of the control panel, remove the lithium battery from the CM431 module inside the control panel and dispose of it separately.

2 Product description and scope of delivery

2.1 Product description

The digital Logamatic 4321 and 4322 control panels can control any floorstanding Buderus oil/gas fired boiler with single stage, two-stage or modulating burner, and offer optional control over modulating burners and boiler circuit pumps via the respective 0 – 10 V interface as well as a control of external of dual-fuel burners. These control panels can be extended with up to four function modules to provide an optimum match to an individual heating system. Multi-boiler systems can be controlled with the FM458 strategy module integrated in the Logamatic 4321 control panel.

2.2 Scope of delivery

- Digital Logamatic 4321 control panel with MEC2 remote control or digital Logamatic 4322 control panel with boiler display
- Outdoor temperature sensor (only Logamatic 4321)
- Boiler water temperature sensor FK
- FZ auxiliary temperature sensor for supply or return temperature
- Burner cable, stage 2
- Technical documents set

3 Adjusting the manual reset high limit (STB)

Removal of housing and manual reset high limit (STB)

- The manual reset high limit (STB) (→ Fig 1, [2]) must be removed from the housing to select the desired temperature.
- Undo both screws (→ Fig 1, [1]) to remove the manual reset high limit (STB).
- Remove the cover (→ Fig 1, [3]).
- Remove the protective cap (→ Fig 1, [2]).
- Loosen the retaining screws.
- Remove the STB and make the following adjustments.



USER NOTE

The manual reset high limit (STB) must be set to the maximum permitted temperature of the heating system allowed by local regulations.



USER NOTE

The factory setting is 110 °C (230 °F).

100 °C = 212 °F
 105 °C = 221 °F
 110 °C = 230 °F
 115 °C = 239 °F
 120 °C = 248 °F

Manual reset high limit setting

Fig 2 Version A

- Undo screw (→ Fig 2, [1]).
- Set the sheet metal plate with temperature scale (→ Fig 2, [2]) to marking (→ Fig 2, [3]).
- Retighten screw (→ Fig 2, [1]).

Fig 3 Version B

- Move lever (→ Fig 3, [1]) to the corresponding temperature.

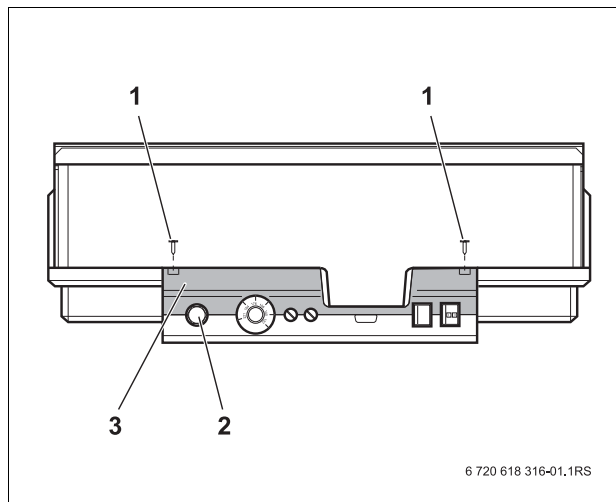


Fig. 1 Logamatic 4 control panel

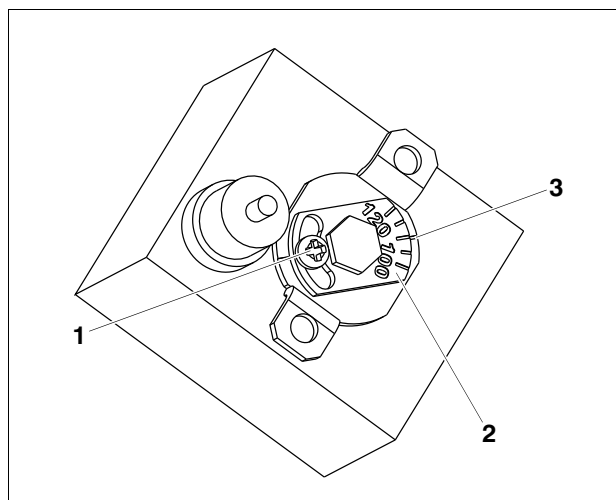


Fig. 2 Version A

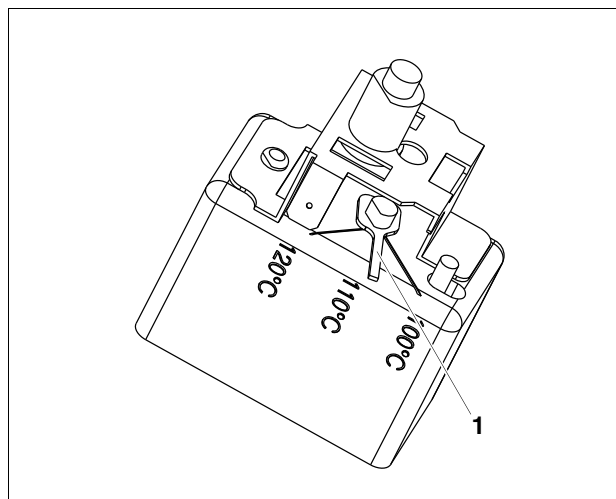


Fig. 3 Version B

4 Setting instructions for boiler aquastat (TR)



USER NOTE

Changing the boiler aquastat from 194 °F (90 °C) to 221 °F (105 °C) (only with manual reset high limit (STB) setting 248 °F (120 °C)).

The boiler aquastat can be changed from 194 °F (90 °C) to 221 °F (105 °C) in systems that require boiler water hotter than 194 °F (90 °C) (**observe the User Notes!**).

- Pull out adjustment knob.
- Break off end stop tabs (→ Fig 4, [1]).
- Insert adjustment knob again.



USER NOTE

Logamatic control panels can be operated at a maximum temperature of 210 °F (99 °C) (→ Chapter 14.3.4).



USER NOTE

With the use of a modulating or low/high/low burner, the aquastat must have an operating temperature that is 9 °F (5 °C) higher than the maximum temperature that can be set on the MEC2.

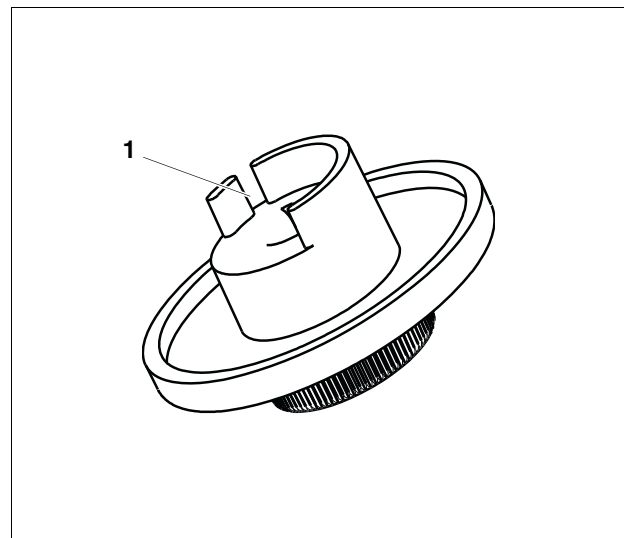


Fig. 4 Adjustment knob

5 Controls and MEC2 remote control

5.1 Control panel controls

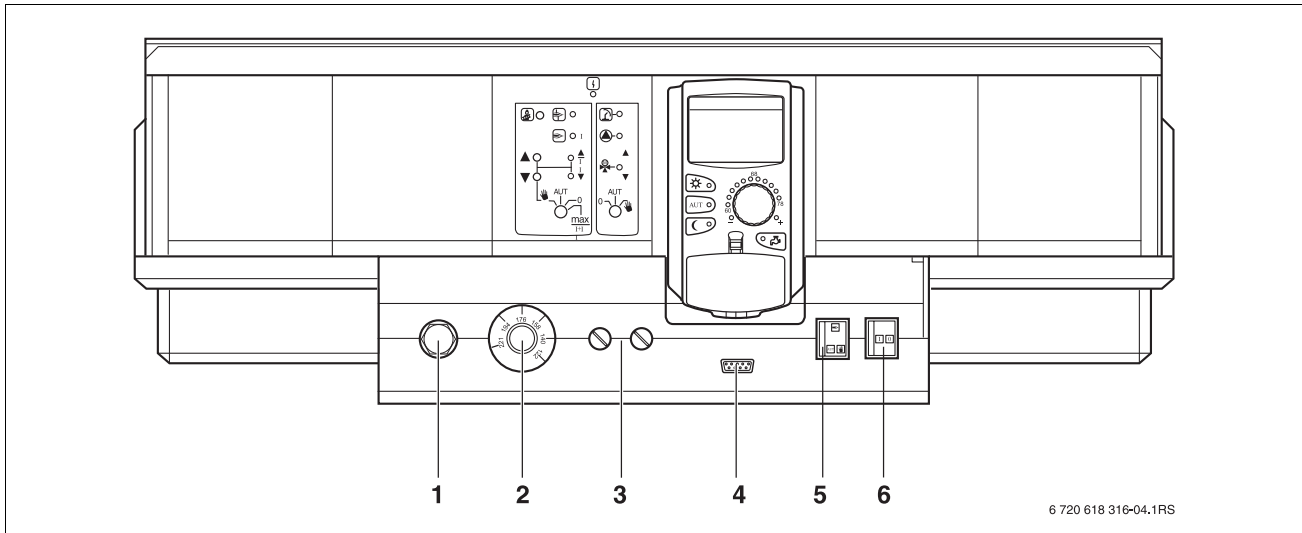


Fig. 5 Controls

- | | |
|---------------------------------|---|
| 1 Manual reset high limit (STB) | 4 Connector for external service equipment and MEC2 |
| 2 Boiler aquastat | 5 Switch for burner emergency operation |
| 3 L1, L2 fuses | 6 On/Off switch |

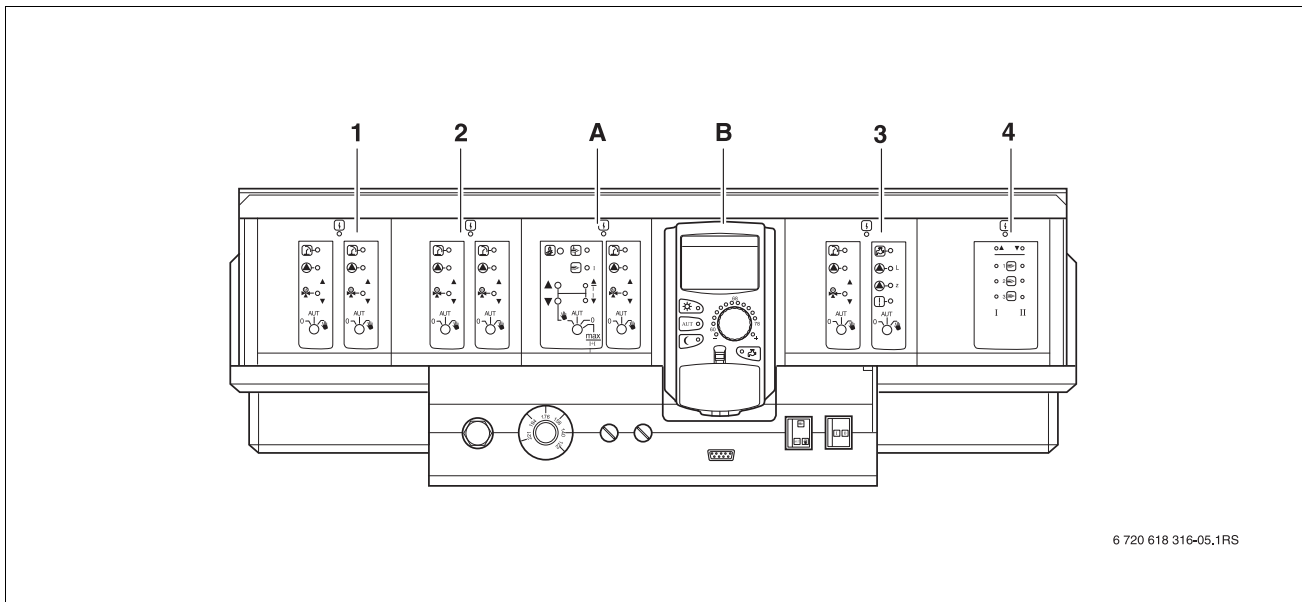


Fig. 6 Modules installed

- | |
|---|
| 1 Slot 1: e.g. FM442 – heating zone 1, heating zone 2 |
| 2 Slot 2: e.g. FM442 – heating zone 3, heating zone 4 |
| A Slot A: ZM434 (boiler circuit, burner) |
| B Slot B: CM431 module and MEC2 remote control |
| 3 Slot 3: e.g. FM441 – heating zone 5, DHW/recirculation pump |
| 4 Slot 4: e.g. FM458 (strategy, for multi-boiler systems) |

5.2 MEC2 remote control

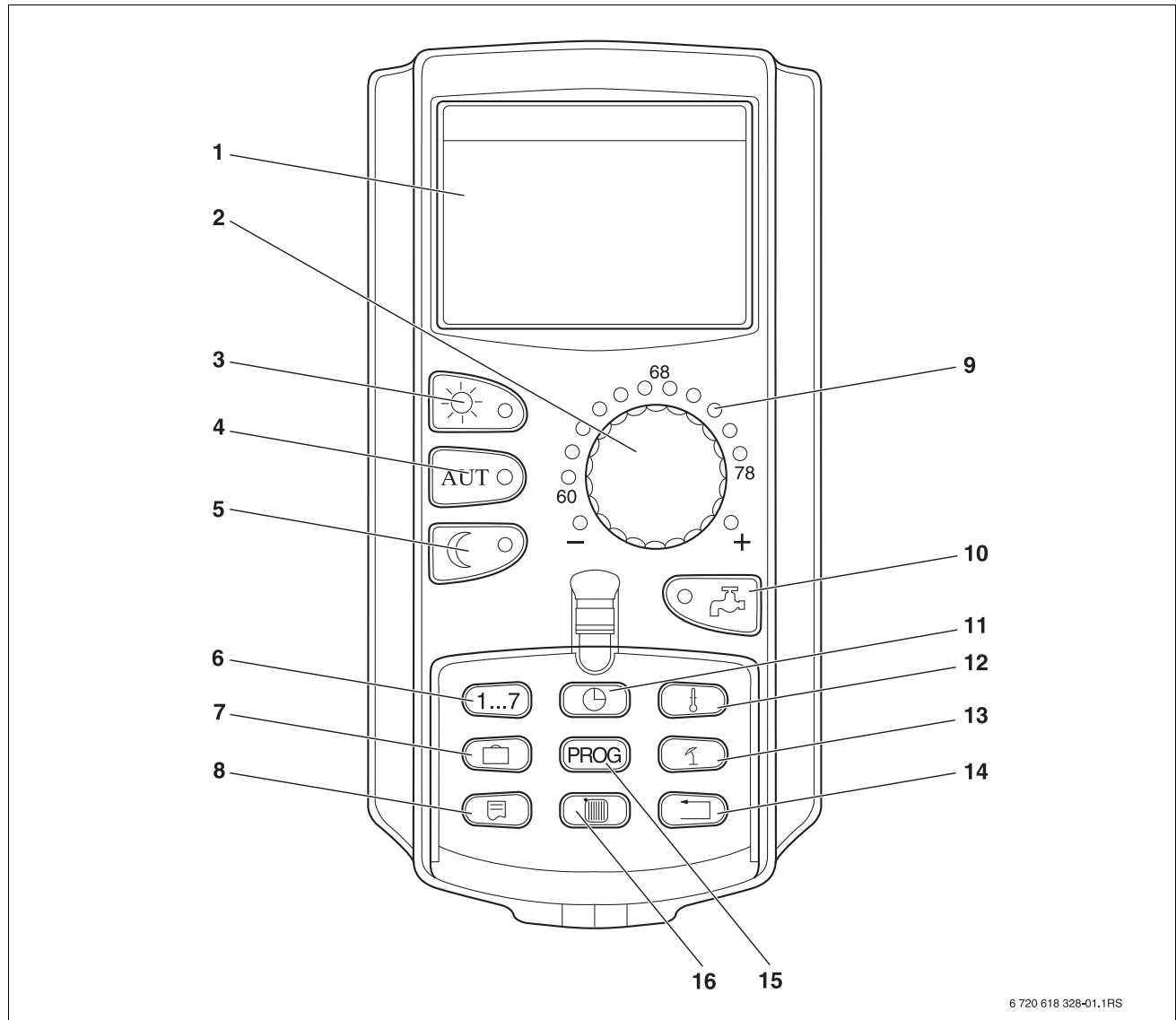


Fig. 7 MEC2 remote control

- | | |
|-----------------------------------|--|
| 1 Display | 9 Display for set nominal room temperature |
| 2 Dial | 10 Input DHW temperature/heating |
| 3 Constant heating mode | 11 Set the time |
| 4 Automatic heating mode by timer | 12 Change temperature values |
| 5 Constant setback mode | 13 Warm weather shut down (WWSD) temperature |
| 6 Set the day | 14 Back to standard display |
| 7 Set vacation days | 15 Select a timer program |
| 8 Select standard display | 16 Select heating zones/DHW zone |

6 Setting parameters and display data

Some options are only displayed with certain modules and subject to prior settings.

General data <ul style="list-style-type: none"> Minimum outdoor temperature Building type Remote control Heat consumption Level sensor Manual switch fault message Automatic service call Module selection <ul style="list-style-type: none"> Slot A Slot 1 Slot 2 Slot 3 Slot 4 Boiler data <ul style="list-style-type: none"> Boiler type Fuel Return control Actuator runtime Return priority function Thermostream control Burner type Maximum boiler output Minimum boiler output Maximum oil fired boiler output Minimum oil fired boiler output Sequential switching after ... Hours Minimum modulation output Modulation via ... Burner actuator motor runtime Communication burner control Load limit from outdoor temperature Pump function of boiler pump Boiler pump run-on time Minimum burner runtime Pump logic temperature Minimum switch-on temperature Maximum shutdown temperature Flue gas temperature limit Reset maximum flue gas temperature Boiler curve Base point temperature Design temperature Setback by 	Heating zone 1 <ul style="list-style-type: none"> Heating system Name of the heating zone Base point temperature Design temperature Minimum supply temperature Maximum supply temperature Remote control Maximum room flow Type of setback Outdoor setback at Vacation setback type No setback below ... Supply setback Room temperature offset Automatic adaptation Switch optimization Shutdown optimization Frost protection at DHW priority Actuator Actuator runtime Boiler temperature increase External day/night/aut External pump fault message Drying slab Drying slab temperature rise Drying slab warm-up time Maximum drying slab temperature Maximum drying slab time Drying slab reduction temperature Drying slab reduction time Heating zone 2, 3, 4 etc. see heating zone DHW <ul style="list-style-type: none"> DHW yes/no DHW range to Switch optimization Leftover heat utilization Differential Boiler temperature increase External fault message WF1/WF2 External contact WF1/WF2 Thermal disinfection Thermal disinfection temperature Disinfection day of week Time of disinfection Daily heating Circulation (switch-on frequency per hour) 	Special parameters Characteristic heating curve <ul style="list-style-type: none"> Heating characteristic of boiler circuit Heating characteristic of heating zone 1 Heating characteristic of heating zone 2 Heating characteristic of heating zone 3 Heating characteristic of heating zone 4 Heating characteristic of heating zone 5 Heating characteristic of heating zone 6 Heating characteristic of heating zone 7 Heating characteristic of heating zone 8 Relay test <ul style="list-style-type: none"> Boiler Heating zone 1 Heating zone 2 Heating zone 3 Heating zone 4 Heating zone 5 Heating zone 6 Heating zone 7 Heating zone 8 DHW Strategy Testing LCD Error Monitor <ul style="list-style-type: none"> Boiler Heating zone 1 Heating zone 2 Heating zone 3 Heating zone 4 Heating zone 5 Heating zone 6 Heating zone 7 Heating zone 8 DHW Version Control Panel Reset <ul style="list-style-type: none"> Control setting Burner operating hours Fault log Maximum emission temperature Heat consumption Service call
---	---	---

Fig. 8 Setting parameters and display data

7 Modules and their functions

All modules that are installed or can be installed on the Logamatic 4321 and 4322 control panels are listed below.

		Logamatic	
		4321	4322
Modules	MEC2 remote control	O	X
	CM431 controller module	O	O
	ZM434 central module Burner + boiler circuit functions	O	O
	FM441 function module* 1 heating zone + 1 DHW zone	X	X
	FM442 function module 2 heating zones	X	X
	FM443 function module Solar circuit	X	X
	FM445 function module* LAP/LSP (charging system)	X	X
	FM448 function module** Centralized alarm message	X	X
	458 function module** Strategy module	X	X

Tab. 1 Modules and their functions

* Only one DHW module per control panel.

** Only one of these two modules may be fitted in each control panel.

O = Basic equipment

X = Optional equipment

7.1 CM431 controller module

Setting the control panel address

Address settings (→ Fig 9, [1]) for the Logamatic 4321/4322 control panels are made on the CM431 module (behind the MEC2 remote control).

- Remove the MEC2 remote control.
- You can now set the control panel address with a screwdriver (→ Fig 9).

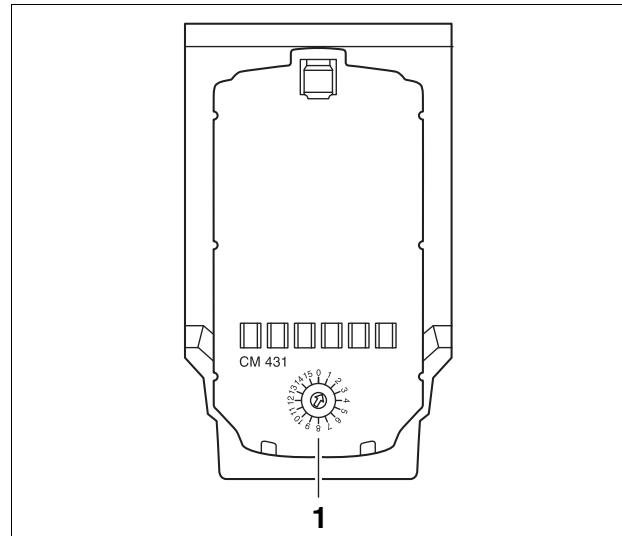



Fig. 9 Setting addresses

Address	Description
0	Stand-alone control panel: If a control panel operates as a stand-alone unit, i.e. no other devices are connected on the ECOCAN-BUS, set the address to 0 (factory setting).
	Each connected device must be given a different address if several panels are networked. A fault message is displayed by the MEC2 remote control if the same address is allocated more than once.
1	Master (lead control panel): Address 1 has special significance since, in connection with several control panels, the control panel with this address acts as the master device. The master controls the boiler. Always connect the outdoor temperature sensor to the master. The master monitors the ECOCAN-BUS that links the control panels, and a telecontrol modem or other devices if installed. The master recognizes if an address has been allocated more than once. A fault message is displayed by the MEC2. All networked control panels transfer their set values to the master, which uses them to formulate the overall set value. There may be only one master on any network.
2 – max. 15	Slave (subordinate control panel): All devices with these addresses are described as slaves. No slave may ever have address 1. Each address must only be allocated once.

Tab. 2 Control panel addresses

7.3 ZM434 burner and boiler circuit module

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



If the manual switches are not in automatic position, the MEC2 shows a message to this effect and the  fault display lights.

The control functions continue to operate in manual mode.

Burner function

"Emission test" button  **for emission test**

Press "Emission test" for a few seconds. The heating control runs for 30 minutes at full output.

During the emission test the  for fault and  for summer mode flash alternately. To cancel the emission test press "Emission test" again.

Manual switch for burner



USER NOTE

In normal mode, the manual switch should be set to "AUT".

The positions **0**, **Manual** and **max I + II** are special settings that should only be changed by heating contractors when there have been faults, e.g. if a control panel has failed or during service and maintenance work.

The burner can be controlled directly with the manual switch.

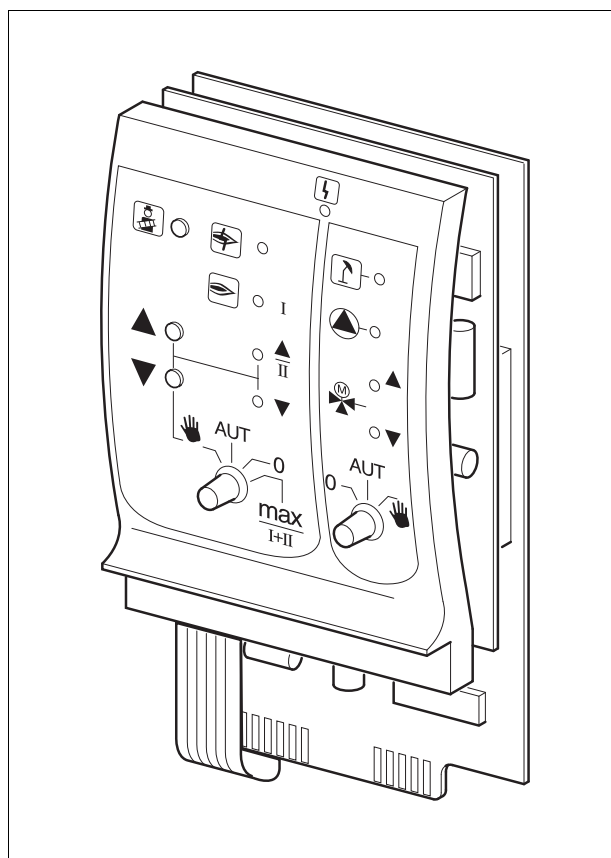











Fig. 11 ZM434



Display  General fault
e.g. building faults, sensor faults,
external faults, wiring faults,
internal module faults,
manual operation
The fault messages are shown
as plain text in the
MEC2 remote control.

LEDs for burner functions

Display  Burner fault
Display  Burner operational
Display  Modulation output is increased/
2 Stage operational
Display  Modulation output is reduced

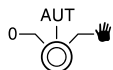
LEDs for boiler circuit functions

Display  Boiler circuit in summer mode
Display  Boiler pump operating
Display  Mixing valve opens towards boiler
Display  Mixing valve opens towards heating zone

- : In the case of single-stage and two-stage burners only the first stage is released for basic load. The second stage is without power. For modulating burners, the burner output can be variably increased using ▲ and reduced using ▼.
- AUT: The burner is operating in automatic mode.
- 0: The burner is switched OFF. Exception if the burner emergency switch is set to .
- max I+II: The burner is operated continuously at maximum output.

Boiler circuit function


Manual switch for boiler circuit



USER NOTE

In normal mode, the manual switch should be set to "AUT".

The positions **0** and **Manual** are special settings that should only be operated by heating contractors in case of faults.

- : If a boiler pump is installed, it is switched on. The boiler circuit actuator can be operated manually.
- AUT: The boiler circuit is operating in automatic mode.
- 0: If a boiler pump is installed, it is switched off. The boiler circuit actuator can be operated manually.


LEDs indicate the current function status.

7.4 FM441 function module (accessory)

The FM441 module controls one heating zone and one DHW heating consumer.

The manual switches on the module only have service and maintenance functions and only affect 120 V outputs.

Only install this module in the control panel once.

If the manual switches are not set to automatic, a corresponding message appears on the MEC2 remote control and the fault indicator  lights up.

The control functions remain operational in manual mode.

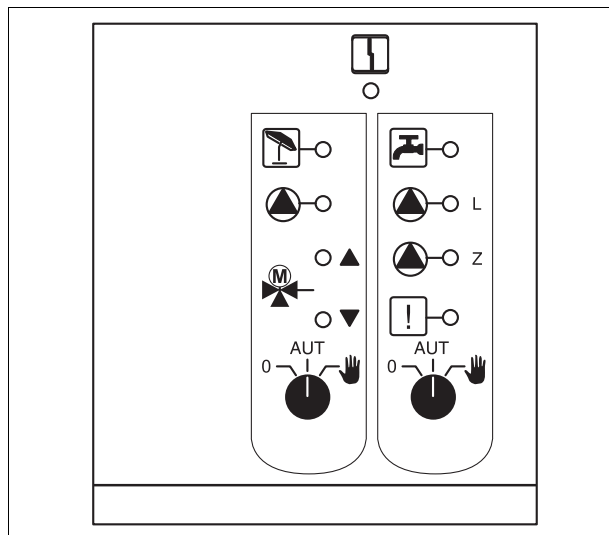


Fig. 12 FM441

Display



General fault,
e.g. on-site faults, sensor faults,
external faults, wiring faults, internal
module faults, manual mode.
Fault messages appear as plain text
on the MEC2 remote control.

LEDs for the following functions:

Display



"Mixing valve opening" (hotter)

Display



"Mixing valve closing" (colder)

Display



Heating zone in summer mode

Display



DHW in night mode
below the set temperature.

Display



Heating pump in operation

Display



Tank primary pump in operation

Display



Recirculation pump in operation

Display



Thermal disinfection active

Heating zone function

Heating zone manual switch:
(→ Fig 13, [1])



USER NOTE

In normal mode, the manual switch should be set to "AUT".

The positions **0** and **👤** (manual mode) are special settings reserved for heating contractors only.

👤 : The heating pump is switched on.
The mixing valve is switched to zero volt and can be manually operated.

AUT: The heating zone is operating in automatic mode.

0: The heating pump is switched off.
The mixing valve is switched to zero volt.
The control functions continue to operate.

Current functions are indicated by LEDs.

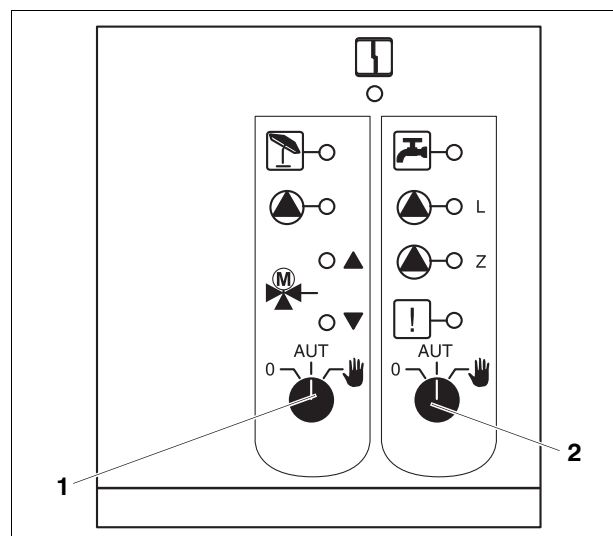


Fig. 13 FM441

1 Manual heating zone switch

2 DHW manual switch

DHW function

Manual switch for DHW heating:
(→ Fig 13, [2])



USER NOTE

In normal mode, the manual switch should be set to "AUT".

The positions **0** and **👤** (manual mode) are special settings reserved for heating contractors only.

👤 : The tank primary pump is switched on.
The DHW recirculation pump is switched off.

AUT: The DHW circuit is operating in automatic mode.


0: The tank primary pump and DHW recirculation pump are switched off. The control functions continue to operate.

Current functions are indicated by LEDs.

7.5 FM442 function module (accessory)

The FM442 module controls two independent heating zones with mixer. Several of these modules can be used in one control panel.

The manual switches on the module only have service and maintenance functions and only affect 120 V outputs.

If the manual switches are not set to automatic, a corresponding message appears on the MEC2 remote control, and the fault indicator  lights up.

The control functions remain operational in manual mode.

Heating zone function


Manual switch – heating zone

e.g. for heating zone 1 and 2



USER NOTE

In normal mode, the manual switch should be set to "AUT".

The **0** and  (manual operation) positions are special settings that should only be made by heating contractors.



The heating pump is switched on.
The mixing valve is switched to zero volt and can be manually operated.

AUT: The heating zone is operating in automatic mode.

0: The heating pump is switched off.
The mixing valve is switched to zero volt and can be manually operated. The control functions continue to operate.

Current functions are indicated by LEDs.

Function modules FM443, FM445, FM448, FM456/457 and FM458

For more information see the documentation for the module in question.

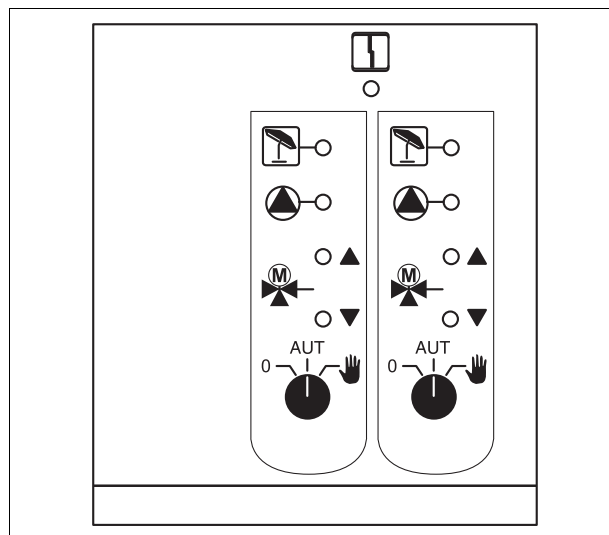


Fig. 14 FM442

Display



General fault,
e.g. on-site faults, sensor faults,
external faults, wiring faults, internal
module faults, manual mode.
Fault messages appear as plain text
on the MEC2 remote control.

LEDs for the following functions:

Display



"Mixing valve opening" (hotter)

Display



"Mixing valve closing" (colder)

Display



Heating zone in summer mode

Display



Heating pump in operation

8 Commissioning the MEC2 remote control

You can use the MEC2 remote control for all Logamatic 4000 control panels.

The MEC2 remote control can

- be installed directly in the control panel or
- be used as a remote control unit in a wall retainer or
- be connected to an adapter with a separate power source.

The MEC2 starts initialization after a power supply has been connected.

The display shows "MEC is initializing".

The control panel address is then displayed briefly.

MEC is
initializing

connection with
control module
address XX
established

If the MEC2 is installed in the control panel or wall retainer, it automatically detects the control panel to which it is connected (automatic detection). It is not necessary to select the control panel.

Different displays are shown depending on the application.

actual data

reading from
control panel

Ex works MEC2 installed in a control panel

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

The display shows "actual data reading from control panel".

MEC2 installed in another control panel

If the MEC2 contains a software version that is not able to recognize this type of control panel, the display shows "unknown controller".

- Remove the MEC2 from the control panel and replace it with an MEC2 with the correct software version.

unknown
controller

MEC2 with set parameters installed in control panel

After the MEC2 has been installed in the control panel, the two adjacent displays will initially be shown again.

MEC is
initializing

connection with
control module
address XX
established

other
controller model
night button
receive



a) Alternative controller model

Initially, only data from the control panel can be downloaded if the type of control panel varies from that entered in the MEC2 remote control. The display will then show the adjacent message.

Press "Night mode".

The display will then show the adjacent message.

data
reading from
control panel

b) Alternative controller of the same model

If the MEC2 is connected to a different control panel of the same type, the display will show the adjacent message for approx. 3 seconds.

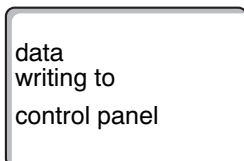
Caution
other
controller

automatic button
send
night button
receive

If the MEC2 remote control is separated from the control panel and data is modified, the display shows "automatic button send, night button receive", when the unit is reinstalled into a control panel of the same type. The control panel scans whether the new data should be accepted or whether the old data from the control panel should be used again.



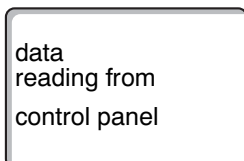
Press "AUT" = "data writing to control panel".



The display will then show the adjacent message.



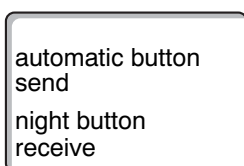
Press "Night mode" = "data reading from control panel".



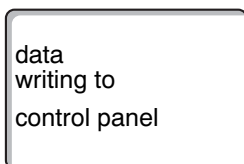
The display will then show the adjacent message.

c) Identical control panel

If the MEC2 remote control is separated from the control panel and data is also modified, the display shows "automatic button send, night button receive", when the unit is reinstalled into the same control panel. The control panel scans whether the new data should be accepted or whether the old data from the control panel should be used again.



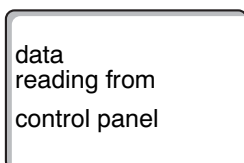
Press "AUT" = "data writing to control panel".



The display will then show the adjacent message.



Press "Night mode" = "data reading from control panel".



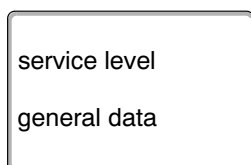
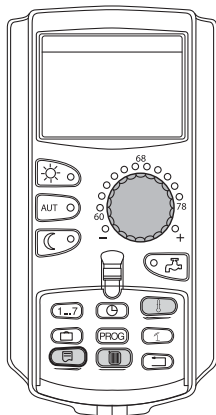
The display will then show the adjacent message.

9 Calling up the service level

Access to the service level is password protected. The service level is intended for contractors only.

Unauthorized access to the service level invalidates your warranty!

The controls marked in gray are used for this function.



Press "Display" + "Heating zone" + "Temp" simultaneously and then release.

The service level is now enabled.

Control system "Press and turn"

The service level is divided into several main menu levels. If the last line is left blank (without value entry), there are additional submenus connected with the main menu selected.

Calling up main menus

You can scroll through the main menu level by turning the dial. The main menus are structured as a loop and start again after the last main menu.



- general data
- module selection
- ...
- ...
- general data

Calling up submenus

Select the main menu (see above) whose submenu you want to call up.

Press "Display".



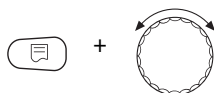
You can access all submenus of the main menu selected by turning the dial.



Example main menu: general data

- min outdoor temp
- building type
- ...
- min outdoor temp

Press and hold down "Display". You can modify the adjustable parameters of the submenu selected by turning the dial. For example, you might select functions or temperatures.



Release "Display" to save your input.

Press "Back" to return to the next level up.



10 Calling up and modifying settings

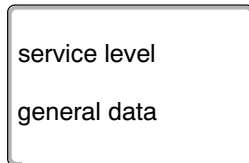


USER NOTE

The menus displayed on the MEC2 remote control depend on which modules are installed and their settings. These service instructions only describe the menus of the standard Logamatic 4321/4322 control panels incl. the ZM434 central module (standard equipment), and those of the most commonly used FM441 and FM442 function modules (accessories). All other menus are explained in the separate technical documentation of each respective module.



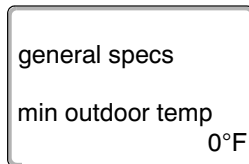
Call up the service level.



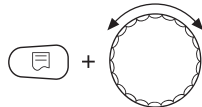
"general data" appears as the first main menu.



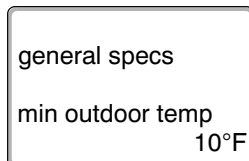
Press "Display" to call up a submenu (here: "min outdoor temp").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "10°F" (-12°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up. Press "Back" several times to return to the standard display.

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

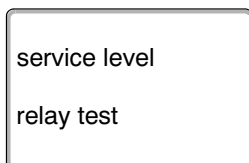
11 Checking the manual reset high limit (STB)



Call up the service level.



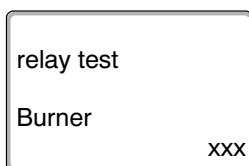
Turn the dial until parameter "Relay test" appears.



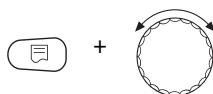
The display shows the selected submenu.



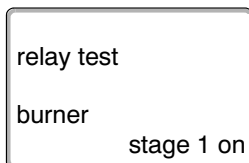
Press "Display" twice to call up a submenu (here: "burner").



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "stage 1 on").



The display shows the selected function.



Release "Display" to save your input.

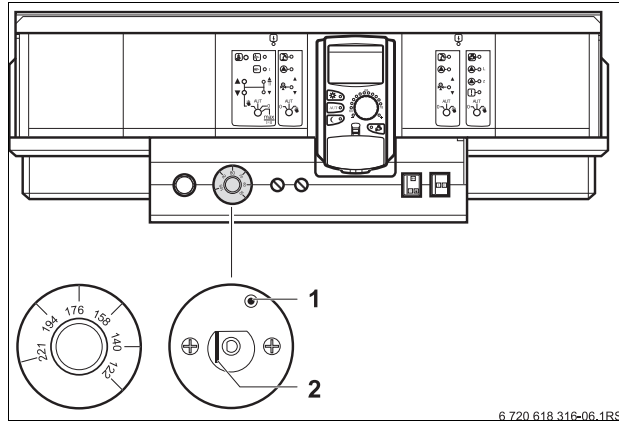
The burner ignites.

- Pull off the thermostat (TR).
- Push lever or button (→ Fig. 15, page 28) (subject to controller type) back with a screwdriver, and hold until the manual reset high limit (STB) has responded.

Canceling or ending test

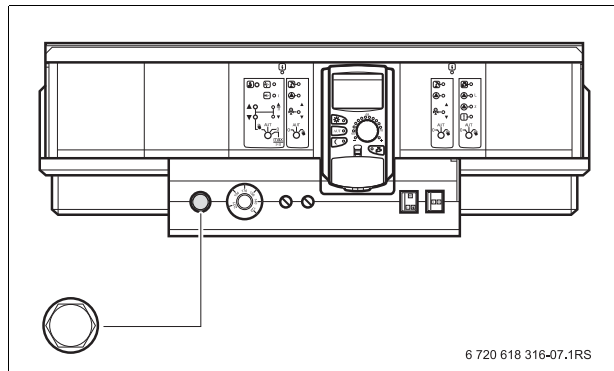


Press "Back" to interrupt or terminate the test.

Trigger the manual reset high limit (STB)*Fig. 15 Trigger manual reset high limit (STB)*

- 1 Button
- 2 Lever

- Push the selector back onto the thermostat and turn it to "194 (90)".

Unlocking the manual reset high limit (STB)*Fig. 16 Unlocking the manual reset high limit (STB)*

- Push off the cap nut to reset the manual reset high limit (STB) and push the reset button beneath.

12 General data



USER NOTE

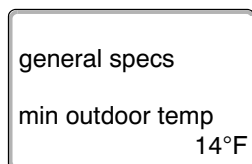
In main menu "general data" you can adjust values for the submenus listed relating to the heating system and the characteristics of the house in question. The following pages explain how to adjust values relating to the submenus.



Call up the service level. "general data" appears as the first main menu.



Press "Display" to call up a submenu (here: "min outdoor temp").



The display shows the selected submenu.



You can scroll through the following submenus by turning the dial:

- min outdoor temp
- building type
- remote control
- fault manual switch
- automatic service call

12.1 Minimum outdoor temperature

The minimum outdoor temperature is a statistically-calculated average value of the coldest outdoor temperatures over the past few years. It influences the gradient of the heating curve (colder: shallower heating curve; warmer: steeper heating curve).

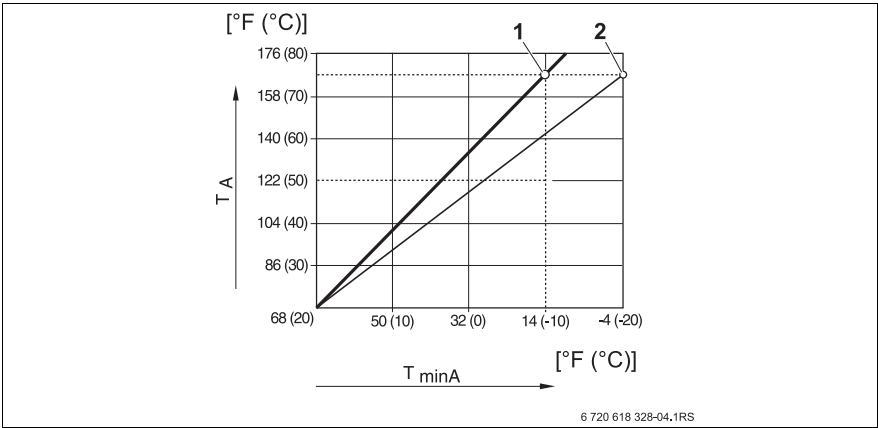


Fig. 17 Heating curve adjustment: Adjustment of gradient via design temperature and minimum outdoor temperature

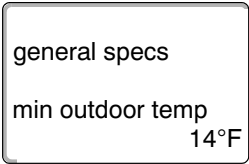
- T_{minA}** Minimum outdoor temperature
- T_A** Design temperature (minimum outdoor temperature)
- Adjustment: Design temperature 167 °F (75 °C), minimum outdoor temperature 14 °F (-10 °C) (base curve)
 - Adjustment: Design temperature 167 °F (75 °C), minimum outdoor temperature -4 °F (-20 °C)



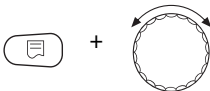
Call up the service level. "general data" appears as the first main menu.



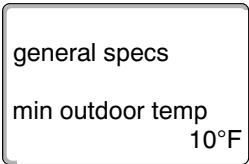
Press "Display" to call up a submenu (here: "min outdoor temp").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "10°F" (-12°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
min outdoor temp	-22 °F – 32 °F (-30 °C – 0 °C)	14 °F (-10 °C)

12.2 Building type

Input the heat storage capacity of the building type. 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 classes:

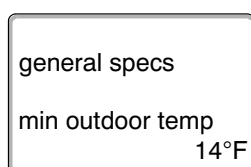
- light = low heat storage capacity, e.g. prefabricated building, wood-frame construction,
- medium = average heat storage capacity, e.g. hollow concrete block construction,
- massive = high heat storage capacity, e.g. brick building.



Call up the service level. "general data" appears as the first main menu.



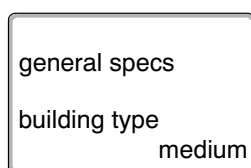
Press "Display" to call up a submenu (here: "min outdoor temp").



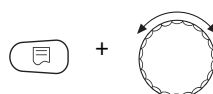
The display shows the selected submenu.



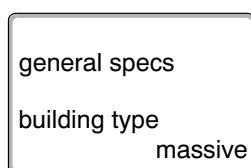
Turn the dial until submenu "building type" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "massive").



The display shows the set value.

Release "Display" to save your input.

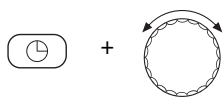


Press "Back" to return to the next level up.

	Input range	Factory setting
building type	light medium massive	medium

12.3 Summer/winter time changeover

- For changing from summer to winter time and vice-versa, open the flap of the MEC2 for the keypad of the second control level.



Hold down "Time" and select the desired time with the dial.

In spring, set the time one hour ahead (dial clockwise); in fall, set the time one hour back (dial counterclockwise).

12.4 Remote control

The remote control offers the option of external data input or modification via service tools (optional).

yes = remote control available,

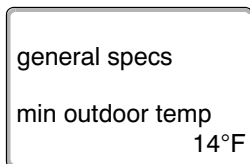
no = remote control is not available, but system data can be downloaded and monitored.



Call up the service level. "general data" appears as the first main menu.



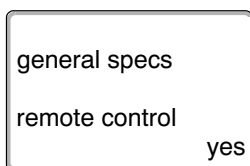
Press "Display" to call up a submenu (here: "min outdoor temp").



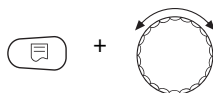
The display shows the selected submenu.



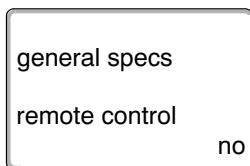
Turn the dial until submenu "remote control" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "no").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



USER NOTE

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

	Input range	Factory setting
remote control	yes no	yes

12.5 Heat consumption

You can calculate the heat amount (heat consumption).



USER NOTE

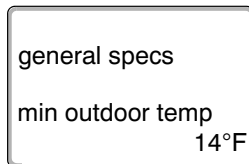
This setting is only available for single stage burners.



Call up the service level. "general data" appears as the first main menu.



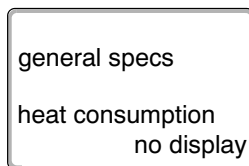
Press "Display" to call up a submenu (here: "min outdoor temp").



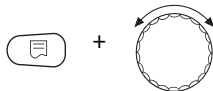
The display shows the selected submenu.



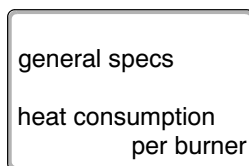
Turn the dial until the submenu "heat consumption" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "per burner").



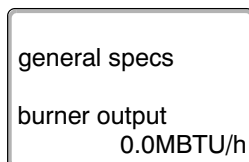
The display shows the set value.



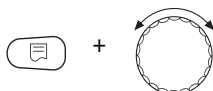
Release the "Display" button.



Turn the dial one increment clockwise, until the submenu "burner output" appears.



The display shows the selected submenu.



Press and hold "Display". The value "0.0MBTU/h" (0.0kW) blinks. Turn the dial clockwise to the desired burner output. The maximum setting is 341.2 MBTU/h (100 kW).



Release the "Display" button.



Press "Back" to return to the next level up.




USER NOTE

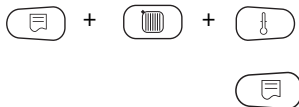
Do not use the "heat consumption" setting for billing purposes. The display is for comparison only. The accuracy of the display depends heavily on the exact adjustment of the burner output. Changes to the date and time falsify the correct display of the heat amount and may result in loss of data.

	Input range	Factory setting
heat consumption	no display per burner	no display

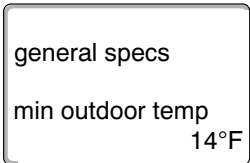
12.6 Manual switch fault message

A fault message can be displayed on the MEC2 remote control if a manual switch on a function module is set to .

Call up the service level. "general data" appears as the first main menu.



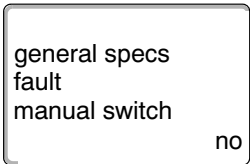
Press "Display" to call up a submenu (here: "min outdoor temp").



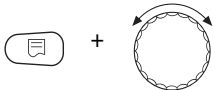
The display shows the selected submenu.



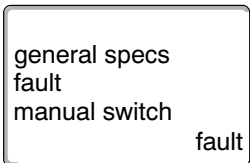
Turn the dial until submenu "fault manual switch" appears.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "fault").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



USER NOTE

With "no" only a warning message is shown with the cover closed.

"fault" messages also result in an entry in the fault log. This allows automatic forwarding over the Logamatic remote control system.

In the case of "collective fault" message, the output of a collective fault message also appears via a zero volt contact e.g. via the FM448 function module.

	Input range	Factory setting
fault manual switch	no fault collective fault	no

12.7 Automatic service message

You can generate an automatic service call at the operator level on the MEC2 remote control display.

You can set the following:

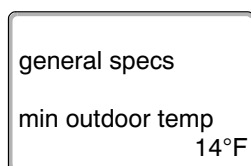
- Service message after date. Enter the date of the next service.
- Maintenance according to hours run.



Call up the service level. "general data" appears as the first main menu.



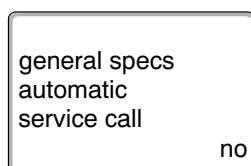
Press "Display" to call up a submenu (here: "min outdoor temp").



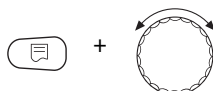
The display shows the selected submenu.



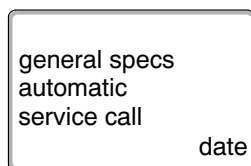
Turn the dial until the "automatic service call" submenu appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "date").

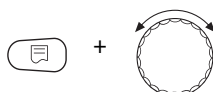


The display shows the set value.

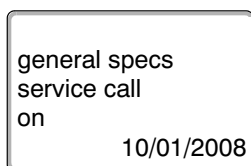
Release "Display" to save your input.



Turn the dial one click clockwise.



Hold down "Display" and turn the dial until the desired value appears (here: "10/01/2008").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

**USER NOTE**

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

The status of the service message can be checked in the "act system data" menu.

The service message can be reset in the "reset" menu.

	Input range	Factory setting
automatic service call	no run time date	no

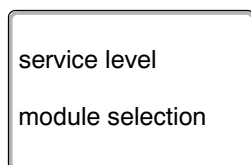
13 Module selection

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

Example: Slot 1: FM442
Slot 2, 3 and 4: N/A

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

Call up the service level. "general data" appears as the first main menu.

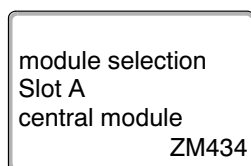


Turn the dial until main menu "module selection" appears.

The display shows the selected main menu.



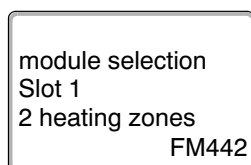
Press "Display" to call up a submenu (here: "Slot A central module").



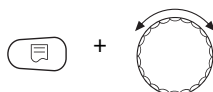
The display shows the selected submenu.



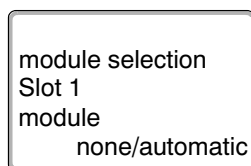
Turn the dial until submenu "Slot 1" appears.



The display shows the set value.



Hold down "Display" and turn the dial until the desired value appears (here: "module none/automatic"). We recommend this setting. The modules are automatically recognized and installed.



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
Slot A boiler module	none/automatic ZM432, ZM434	ZM434
Slot 1 – 4 function modules auxiliary modules	none/automatic FM441, FM442, FM443, FM445, FM447, FM448, FM458	none/automatic

14 Boiler data

14.1 Selecting the boiler type

Specific setting options are shown depending on the selected boiler type (regarding the individual boiler types → Chapter 27).

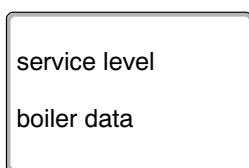
14.1.1 Low temperature boiler

The low temperature boiler is operated by a factory-set pump logic that depends on the selected "burner type".

Call up the service level. "general data" appears as the first main menu.



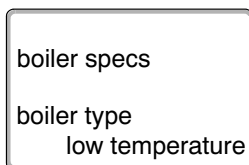
Turn the dial until main menu "boiler data" appears.



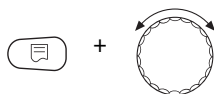
The display shows the selected main menu.



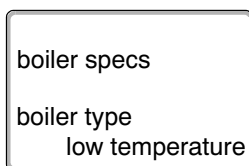
Press "Display" to call up a submenu (here: "boiler type").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "low temperature").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

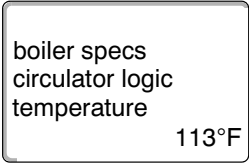
	Input range	Factory setting
boiler type	low temperature LT/MIN return Thermostream condensing LT/base temp	low temperature

Pump logic temperature

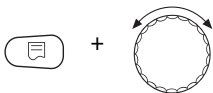
The heating zone circulation pumps and, if installed, the boiler circuit pump, are switched on to maintain the boiler operating conditions subject to the pump logic temperature. The preset pump logic temperature only needs to be changed in special cases and is only adjustable in case of boiler type =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

The factory-set pump logic temperature is 9 °F (5 °C) below the minimum shutdown temperature of the boiler.

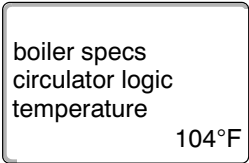
Turn the dial until submenu "circulator logic temperature" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "104°F" (40°C)).



The display shows the set value.

Release "Display" to save your input.



USER NOTE

Cast iron boilers with secondary heat exchanger must be operated as low temperature boilers in order to prevent condensation in the cast iron boiler. The pump logic temperature must be at least 104 °F (40 °C).

	Input range	Factory setting
circulator logic temperature	59 °F – 140 °F (15 °C – 60 °C)	single stage: 104 °F (40 °C) two stage: 113 °F (45 °C) modulating: 122 °F (50 °C)

14.1.2 Low temperature boiler with minimum return temperature

The control calculates the minimum return temperature from the fuel type and the burner type.

At "return control via," set whether the return temperature control is controlled via a separate boiler actuator or a heating zone actuator.

The burner control operates with an automatic switch-on delay so the building actuators can control the flow to protect the boiler.

To support the boiler temperature control the circulation pumps are automatically switched off for a short time if large consumers are opening up. Large consumers are recognized on the basis of the mixer control characteristics.

A separate return sensor (FZ) must be connected to control the separate boiler circuit actuator or when using higher-level heating zone actuators. Otherwise an error message will be shown.

The set point of the minimum boiler supply temperature for two-stage burners is 18 °F (10 °C) higher and for modulating burners it is 36 °F (20 °C) higher than the return temperature characteristic curve.

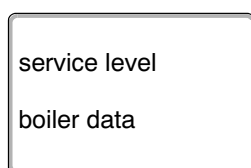
If the increase function is enabled, the return set point value is increased to 122 °F (50 °C) and the feed set point value to 167 °F (75 °C) if the return temperature falls 14 °F (8 °C) below the set point value.



Call up the service level. "general data" appears as the first main menu.



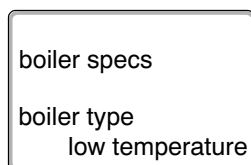
Turn the dial until main menu "boiler data" appears.



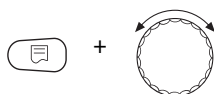
The display shows the selected main menu.



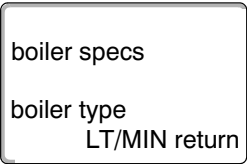
Press "Display" to call up a submenu (here: "boiler type").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "LT/MIN return").



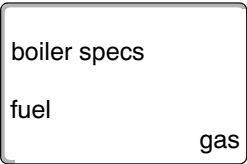
The display shows the set value.
Release "Display" to save your input.

Return temperature control

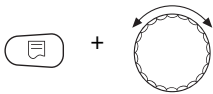
Additional setting screens that enable optimum adjustment of the boiler type are shown with the "LT/MIN return" boiler type. When the fuel type is entered the control takes the different dew-point temperatures of the emissions in different fuels into account. A factory-set set point for the return temperature is used based on the fuel type.

Fuel type

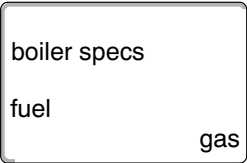
Turn the dial until submenu "fuel" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "gas").



The display shows the set value.
Release "Display" to save your input.



USER NOTE

For multi-boiler systems with low temperature boilers with minimum return temperature and different fuel types, generally select "gas" as the fuel type on control panel 1. The function "lead lag/rotat" is not affected by this adjustment.

	Input range	Factory setting
fuel	gas oil	gas

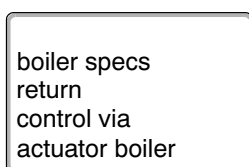
Return actuator

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

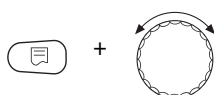
- ▲ = Mixer opens in the direction of the boiler, i.e. boiler is blocked from the consumer circuit.
Cause may be that the boiler return is too cold.
- ▼ = Mixer opens in the direction of the heating zone if the boiler return is too hot.



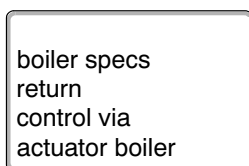
Turn the dial until the submenu "return control via" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "actuator boiler").



The display shows the set value.

Release "Display" to save your input.



USER NOTE

For the setting "actuator boiler", all heating zones must be equipped with a mixer (no unmixed heating zones) and must be controlled by the Logamatic 4000 control system.

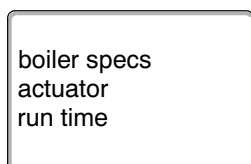
Identical boiler types are a requirement for the "actuator boiler" setting in multi-boiler systems. This setting must be chosen for every control panel if "actuator boiler" has been selected.

	Input range	Factory setting
return control via	actuator boiler actuator heat	actuator boiler

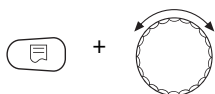
Actuator runtime

The actuator runtime is preset and does not normally need to be changed.

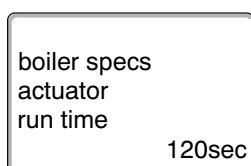
Turn the dial until submenu "actuator run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "120sec").



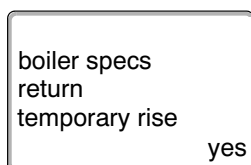
The display shows the set value.

Release "Display" to save your input.

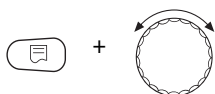
Return increase function

The return increase function can be enabled to optimize the start-up phase in single-boiler systems. When the start-up phase is detected the setpoints for feed and return temperatures are briefly increased. The function is enabled in the preset.

Turn the dial until the submenu "return temporary rise" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "yes").

boiler specs
return
temporary rise

yes

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
actuator run time	10 sec – 600 sec	120 sec
return temporary rise	yes no	yes

14.1.3 Thermostream boilers (G215, G315, G515, G615)

The boiler operating conditions for the Thermostream boilers are factory-set and are automatically taken into account. Parameter "Thermostream 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 Thermostream control by a separate three-way actuator in the boiler circuit. The control detects via the supplementary sensor whether the heat demands of the consumers are covered or whether one burner stage must remain switched on. The boiler operating temperature is safeguarded via the FK boiler sensor together with the boiler circuit actuator.

The auxiliary sensor is not required for multi-boiler systems with Thermostream boilers. Its role is taken by the common FVS supply sensor (strategy).

The factory setting provides a boiler operating temperature of 122 °F (50 °C). The minimum set boiler supply temperature for "Burner on" is 7 °F (4 °C) higher (129 °F (54 °C)).

At setting "Butterfly valve", the heating pumps are started when the boiler operating temperature is reached, and are stopped 4 °F (2 °C) below that value.

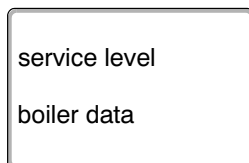
According to factory-set defaults and with the setting "Heat.zone.act", the heating zone circulation pump starts 9 °F (5 °C) below the boiler operating temperature and stops 13 °F (7 °C) below.



Call up the service level. "general data" appears as the first main menu.



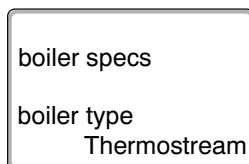
Turn the dial until main menu "boiler data" appears.



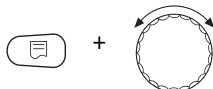
The display shows the selected main menu.



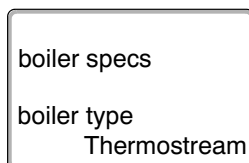
Press "Display" to call up a submenu (here: "boiler type").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "Thermostream").



The display shows the set value.

Release "Display" to save your input.

Thermostream control via

This setting determines via which actuator the preset operating supply temperature should be controlled. Make this setting in accordance with the existing or intended hydraulic conditions. It affects the actuation of the relevant actuator and the preset set points.

Select from the following options:

- "actuator boiler" if the Thermostream control is to be 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 actuator on the heat consumer side and connect it to the control panel terminals provided.

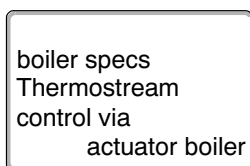
- "Butterfly valve" if the Thermostream control is to be via a separate external butterfly valve (two-way actuator).

Use butterfly valves with a maximum runtime of 20 s. If ring damper flaps with a greater runtime are used or installed, the "boiler actuator" setting should be selected.

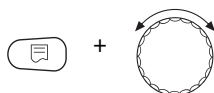
- "actuator heat" if the Thermostream is to be controlled by superimposed actuation of the heating zone actuators (three way actuators). The heating zones must be equipped with actuators that are controlled by heating zone modules of the Logamatic 4000 series (never use third-party control panels). The control function is designed for a runtime of 120 s.
- "external control" if the Thermostream is controlled by an external control panel, i.e. Logamatic 4321/4322 does not need to meet operating conditions, such as dual-block boiler with integral control panel for controlling annular butterfly dampers in the boiler blocks.



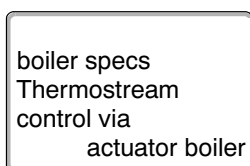
Turn the dial until the submenu "Thermostream control via" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "actuator boiler").



The display shows the set value.

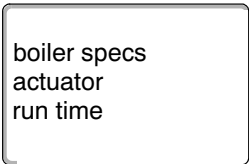
Release "Display" to save your input.

Actuator runtime

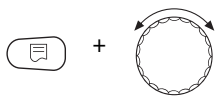
The actuator runtime is preset and does not normally need to be changed. Note that incorrect inputs may cause oscillation of the operating feed temperature control.



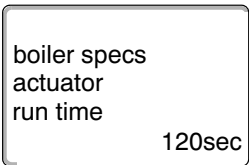
Turn the dial until submenu "actuator run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "120sec").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
Thermostream* control via	actuator boiler actuator heat Butterfly valve external control	actuator boiler
actuator run time	10 sec – 600 sec	120 sec

*) Thermostream boilers: G215, G315, G515, G615

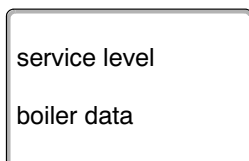
14.1.4 Condensing boiler

Select the "condensing" boiler type if such a boiler has been installed. It is not necessary to maintain operating conditions in this case.

Call up the service level. "general data" appears as the first main menu.



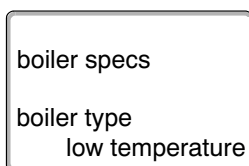
Turn the dial until main menu "boiler data" appears.



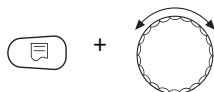
The display shows the selected main menu.



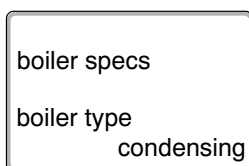
Press "Display" to call up a submenu (here: "boiler type").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "condensing").



The display shows the set value.

Release "Display" to save your input.



USER NOTE

Cast iron boilers with secondary heat exchanger must be operated as low temperature boilers in order to prevent condensation in the cast iron boiler.

14.1.5 Low temperature boiler with base line temperature

The boiler operating conditions for this type of boiler are factory-set and are automatically taken into account. The parameter "LT/base temp control via" enables a check as to how the boiler operating temperature should be controlled.

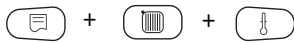
The FZ supplementary sensor must be installed in a single-boiler system with LT/base line temperature control by a separate three-way actuator in the boiler circuit. The control detects whether the heat demands of the consumers are covered or whether one burner stage must remain switched on with the supplementary sensor. The boiler operating temperature is safeguarded via the FK boiler sensor together with the boiler circuit actuator.

The auxiliary sensor is not required in multi-boiler systems with LT/base line temperature boilers. Its role is taken by the common FVS supply sensor (strategy).

The factory setting provides a boiler operating temperature of 158 °F (70 °C) (gas) or 149 °F (65 °C) (oil). The minimum set value for the boiler supply temperature is 7 °F (4 °C) higher.

At setting "Boiler butterfly valve", the heating pumps are started when the boiler operating temperature is reached, and are stopped 4 °F (2 °C) below that value.

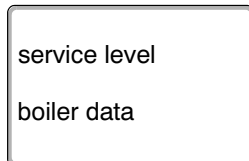
According to factory-set defaults and with the setting "Heat.zone.act", the heating zone circulation pump starts 9 °F (5 °C) below the boiler operating temperature and stops 13 °F (7 °C) below.



Call up the service level. "general data" appears as the first main menu.



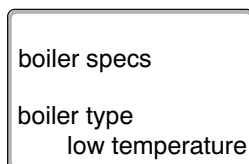
Turn the dial until main menu "boiler data" appears.



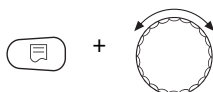
The display shows the selected main menu.



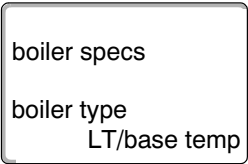
Press "Display" to call up a submenu (here: "boiler type").



The display shows the selected submenu.



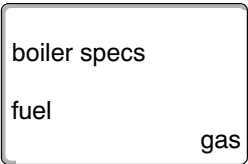
Hold down "Display" and turn the dial until the desired value appears (here: "LT/base temp").



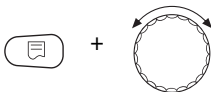
The display shows the set value.
Release "Display" to save your input.

Fuel

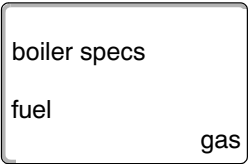
The fuel type must be set in this menu item. The setting influences the setpoints of the actuator and burner controls. Factory settings default "gas"; lower set values for the low end temperature apply when changing the setting to oil.
Turn the dial until submenu "fuel" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "gas").



The display shows the set value.
Release "Display" to save your input.

	Input range	Factory setting
fuel	gas oil	gas

LT/base line temperature control via

This setting determines via which actuator the preset operating supply temperature should be controlled. Make this setting in accordance with the existing or intended hydraulic conditions. It affects the actuation of the relevant actuator and the preset setpoints.

Select from the following options:

- "actuator boiler" if the LT/base line temperature control via is to be 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 actuator on the heat consumer side and connect it to the control panel terminals provided.

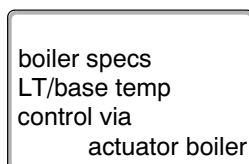
- "Butterfly valve" if the LT/base line temperature control is to be via a separate external motor ring damper flap (two-way actuator).

Use butterfly valves with a maximum runtime of 20 s. If ring damper flaps with a greater runtime are used or installed, the "actuator boiler" setting should be selected.

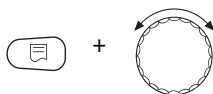
- "actuator heat" if the LT/base line temperature control is to be controlled by superimposed actuation of the heating zone actuators (three-way actuators). The heating zones must be equipped with actuators that are controlled by heating zone modules of the Logamatic 4000 series (never use third-party control panels). The control function is designed for a runtime of 120 s.



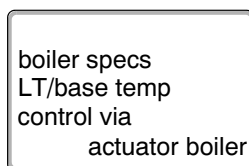
Turn the dial until the submenu "LT/base temp control via" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "actuator boiler").



The display shows the set value.

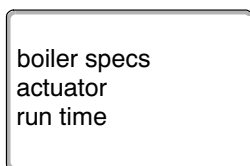
Release "Display" to save your input.

Actuator runtime

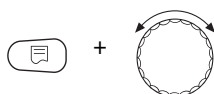
The actuator runtime is preset and does not normally need to be changed. Note that incorrect inputs may cause oscillation of the operating feed temperature control.



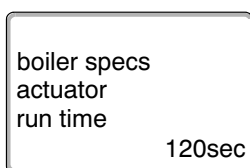
Turn the dial until submenu "actuator run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "120sec").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
LT/base temp control via	actuator boiler actuator heat Butterfly valve	actuator boiler
actuator run time	10 sec – 600 sec	120 sec

14.2 Setting the burner type

Additional setting screens are shown depending on the selected burner type.

The following burner types are available:

"single stage"

"two stage"

"modulating"

"2 single stages" is designed for the following cases:

- For a boiler sequence comprising two single stage boilers that are operated with only one Logamatic 4321 on boiler 1 and a constant temperature controller on boiler 2.
- For certain dual block boilers, each equipped with two single stage burners, which operate independently of each other.

14.2.1 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 type plate of Unit burners.

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

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



USER NOTE

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

You can determine the maximum boiler output of a modulating gas fired boiler using the consumption as guide:

- Start the burner via the manual switch and hold down ▲ 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 (35.3 ft³/h (m³/h)) and multiply the average calorific value of gas in operation (check with your local supply utility).

You can determine the minimum boiler output of a modulating gas fired boiler using the consumption as 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 (35.3 ft³/h (m³/h)) and multiply the average calorific value of gas in operation (check with your local supply utility).

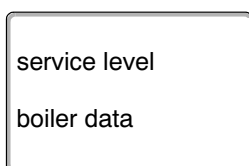
14.2.2 Single stage burner



Call up the service level. "general data" appears as the first main menu.



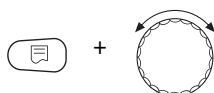
Turn the dial until main menu "boiler data" appears.



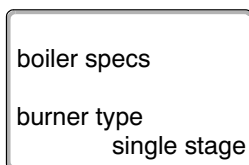
The display shows the selected main menu.



Turn the dial until submenu "burner type" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "single stage").



The display shows the set value.

Release "Display" to save your input.

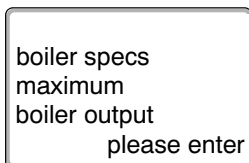
	Input range	Factory setting
burner type	single stage two stage modulating 2 single stages dual fuel burner	single stage

Maximum boiler output

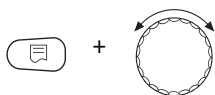
Selecting the output that the burner delivers in operation.



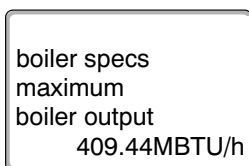
Turn the dial until the submenu "maximum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "409.44MBTU/h" (120kW)).



The display shows the set value.

Release "Display" to save your input.

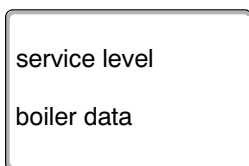
	Input range	Factory setting
maximum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

14.2.3 Two-stage burner

Call up the service level. "general data" appears as the first main menu.



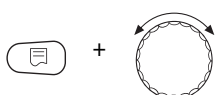
Turn the dial until main menu "boiler data" appears.



The display shows the selected main menu.



Turn the dial until submenu "burner type" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "two stage").

boiler specs
burner type
two stage

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
burner type	single stage two stage modulating 2 single stages dual fuel burner	single stage

Maximum boiler output

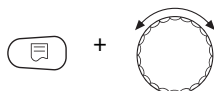
Select that output that the burner delivers when it operates with both stages (maximum output).



Turn the dial until the submenu "maximum boiler output" appears.

boiler specs
maximum
boiler output
please enter

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "547.2MBTU/h" (160kW)).

boiler specs
maximum
boiler output
547.2MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
maximum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Minimum boiler output

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

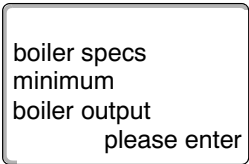


USER NOTE

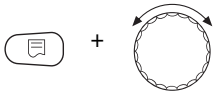
This option will only be available if maximum boiler output was previously selected.



Turn the dial until the submenu "minimum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "409.44MBTU/h" (120kW)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
minimum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

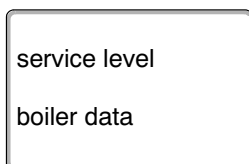
14.2.4 Modulating burner



Call up the service level. "general data" appears as the first main menu.



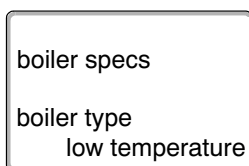
Turn the dial until main menu "boiler data" appears.



The display shows the selected main menu.



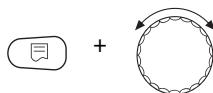
Turn the dial until the submenu "boiler type" appears.



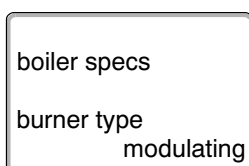
The display shows the selected submenu.



Turn the dial until submenu "burner type" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "modulating").



The display shows the set value.

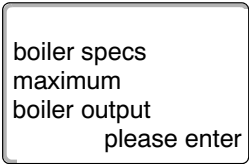
Release "Display" to save your input.

	Input range	Factory setting
burner type	single stage two stage modulating 2 single stages dual fuel burner	single stage

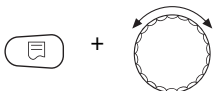
Maximum boiler output

Select that output that the burner delivers when it operates with maximum output (full load – burner cannot modulate any higher).

Turn the dial until the submenu "maximum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "818.88MBTU/h" (240kW)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
maximum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Minimum boiler output

Select that output that the burner delivers when it operates with minimum output (base load – burner cannot modulate any lower).

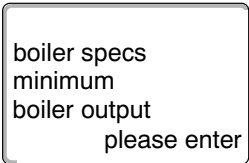


USER NOTE

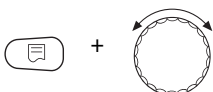
This option will only be available if maximum boiler output was previously selected.



Turn the dial until the submenu "minimum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "245.66MBTU/h" (72kW)).

boiler specs
minimum
boiler output
245.66MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
minimum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Default modulation

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

You can select the following:

- "3 point burner"
The burner modulation is adjusted via terminal BR11.
- "0-10V signal 0V = 0%"
The burner modulation is defaulted 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 18).

The following linear curve is calculated from these values:

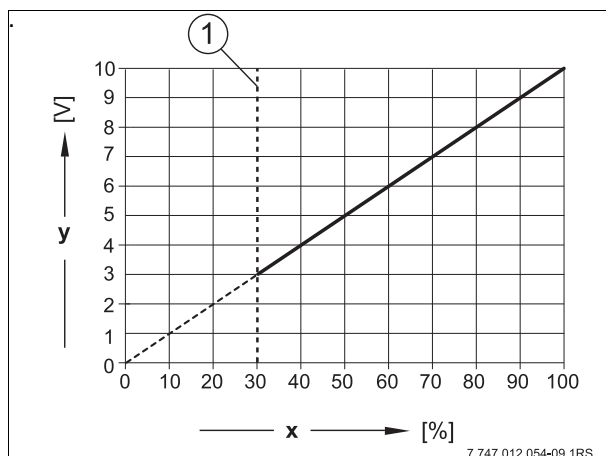


Fig. 18 Terminal U_{BR}

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

- "0-10V signal 0V = min power"
The burner modulation is defaulted via terminal U_{BR} . The entry curve of the combustion controller is linear and starts at 0 V at minimum output (→ Fig 19).

The following linear curve is calculated from these values:

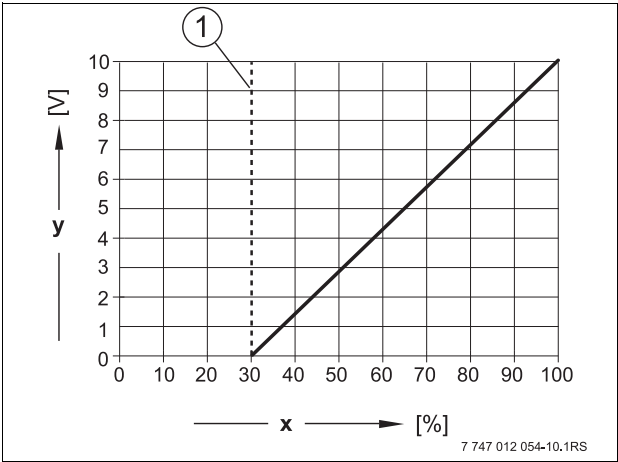
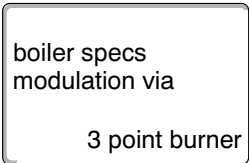


Fig. 19 Terminal U_{BR}

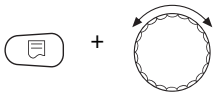
- 1 Minimum output
- x Output modulation
- y Output voltage



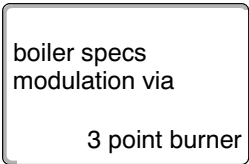
Turn the dial until the submenu "modulation via" appears.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "3 point burner").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
modulation via	3 point burner 0-10V signal 0V = 0% 0-10V signal 0V = min power	3 point burner

Burner actuator motor runtime

The control panel needs to be notified how long the actuator takes from position minimum output to maximum output.

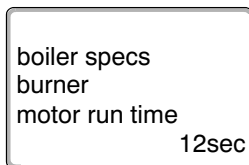


USER NOTE

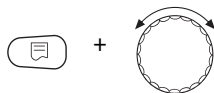
This option will only be shown if the burner modulation is adjusted via terminal BR11.



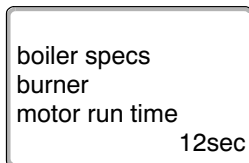
Turn the dial until submenu "burner motor run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "12sec").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
burner motor run time	5 sec – 60 sec	12 sec

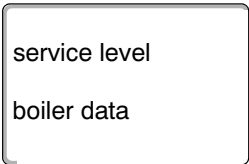
14.2.5 Two single stage burners



Call up the service level. "general data" appears as the first main menu.



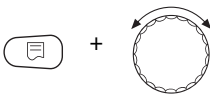
Turn the dial until main menu "boiler data" appears.



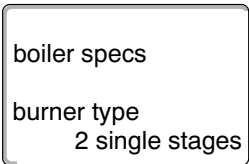
The display shows the selected main menu.



Turn the dial until submenu "burner type" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "2 single stages").



The display shows the set value.

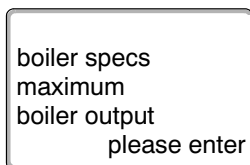
Release "Display" to save your input.

	Input range	Factory setting
burner type	single stage two stage modulating 2 single stages dual fuel burner	single stage

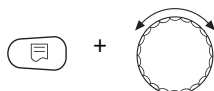
Maximum boiler output

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

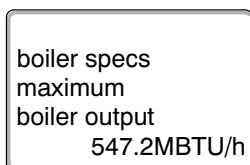
Turn the dial until the submenu "maximum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "547.2MBTU/h" (160kW)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
maximum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Minimum boiler output

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

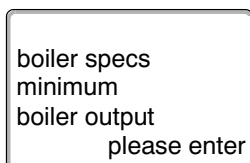


USER NOTE

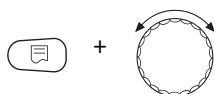
This option will only be available if maximum boiler output was previously selected.



Turn the dial until the submenu "minimum boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "409.44MBTU/h" (120kW)).

boiler specs
minimum
boiler output
409.44MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
minimum boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Rotation after ...hours

You can select the number of hours after which the sequence with the two 2 single stages boiler blocks is reversed.

Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "boiler data" appears.

service level
boiler data

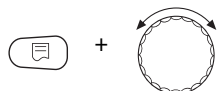
The display shows the selected main menu.



Turn the dial until submenu "rotation after" appears.

boiler specs
rotation after
00 hours

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "20 hours").

boiler specs
rotation after
20 hours

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
rotation after ... hours	00, 10, 20, ... 1000 hours	00 hours

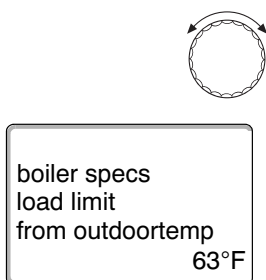
Load limit

You can enter an outdoor temperature under parameter "load limit", from which stage 2 will be automatically blocked, if you have selected the "2 single stages" burner type.

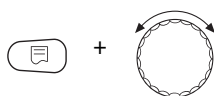
Example:

From a specified outdoor temperature DHW heating in summer mode is restricted to one boiler stage or one boiler block.

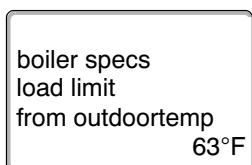
Turn the dial until submenu "load limit from outdoortemp" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "63°F" (17°C)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
load limit from outdoortemp	-24 °F – 86 °F (-31 °C – 30 °C) none	63 °F (17 °C)

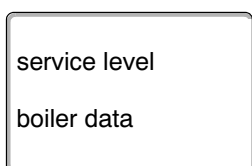
14.2.6 Dual-fuel burner

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

Call up the service level. "general data" appears as the first main menu.



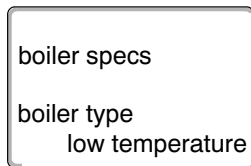
Turn the dial until main menu "boiler data" appears.



The display shows the selected main menu.



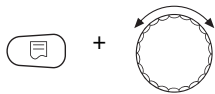
Turn the dial until the submenu "boiler type" appears.



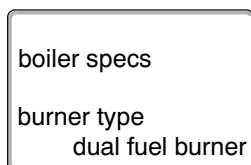
The display shows the selected submenu.



Turn the dial until submenu "burner type" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "dual fuel burner").



The display shows the set value.

Release "Display" to save your input.

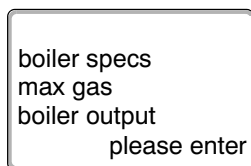
	Input range	Factory setting
burner type	single stage two stage modulating 2 single stages dual fuel burner	single stage

Maximum gas fired boiler output

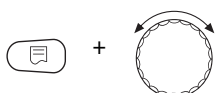
Select the output that the **gas** burner delivers when it operates with maximum output (full load – burner cannot modulate any higher).



Turn the dial until the submenu "max gas boiler output" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "818.88MBTU/h" (240kW)).

boiler specs
max gas
boiler output
818.88MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
max gas boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Minimum gas fired boiler output

Select the output that the **gas** burner delivers when it operates with minimum output (base load – burner cannot modulate any lower).



USER NOTE

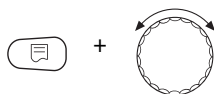
This option will only be available if maximum gas fired boiler output was previously selected.



Turn the dial until the submenu "min gas boiler output" appears.

boiler specs
min gas
boiler output
please enter

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "245.66MBTU/h" (72kW)).

boiler specs
min gas
boiler output
245.66MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
min gas boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Maximum oil fired boiler output

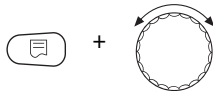
Select the output that the **oil** burner delivers when it operates with both stages (maximum output).

Turn the dial until the submenu "max oil boiler output" appears.



boiler specs
max oil
boiler output
please enter

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "818.88MBTU/h" (240kW)).

boiler specs
max oil
boiler output
818.88MBTU/h

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
max oil boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Minimum oil fired boiler output

Select the output that the **oil** burner delivers when it operates with stage 1 (minimum output).

**USER NOTE**

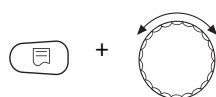
This option will only be available if maximum oil fired boiler output was previously selected.



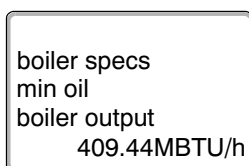
Turn the dial until the submenu "min oil boiler output" appears.

boiler specs
min oil
boiler output
please enter

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "409.44MBTU/h" (120kW)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
min oil boiler output	please enter 3.41 MBTU/h – 34116.59 MBTU/h (1 kW – 9999 kW)	please enter

Default modulation

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

You can select the following:

- "3 point burner"
The burner modulation is adjusted via terminal BR11.
- "0-10V signal 0V = 0%"
The burner modulation is defaulted 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 20).

The following linear curve is calculated from these values:

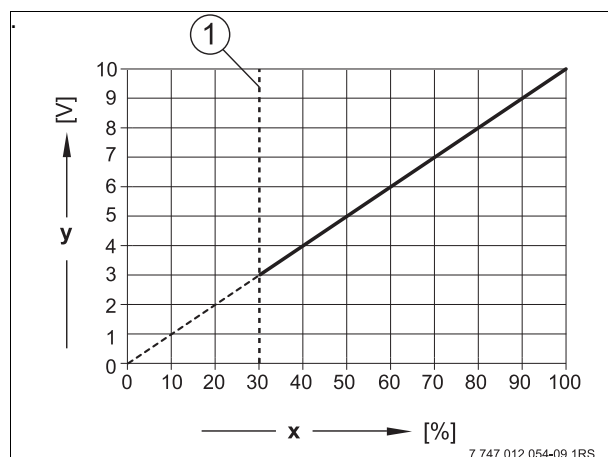


Fig. 20 Terminal U_{BR}

- 1** Minimum output
- x** Output modulation
- y** Output voltage

- "0-10V signal 0V = min power"
The burner modulation is defaulted via terminal U_{BR} . The entry curve of the combustion controller is linear and starts at 0 V at minimum output (→ Fig 21).

The following linear curve is calculated from these values:

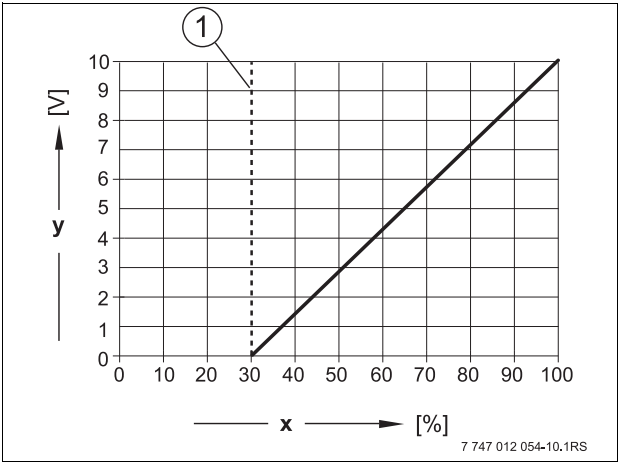
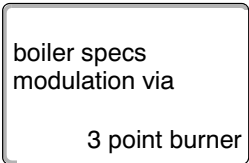


Fig. 21 Terminal U_{BR}

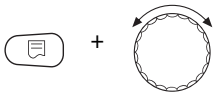
- 1 Minimum output
- x Output modulation
- y Output voltage



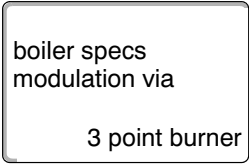
Turn the dial until the submenu "modulation via" appears.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "3 point burner").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
modulation via	3 point burner 0-10V signal 0V = 0% 0-10V signal 0V = min power	3 point burner

Burner actuator motor runtime

The control panel needs to be notified how long the actuator takes from position minimum output to maximum output.

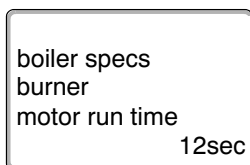


USER NOTE

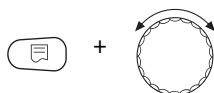
This option will only be shown if the burner modulation is adjusted via terminal BR11.



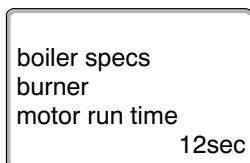
Turn the dial until submenu "burner motor run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "12sec").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
burner motor run time	5 sec – 60 sec	12 sec

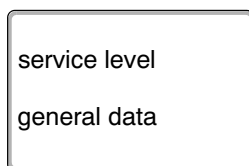
14.3 General settings for boiler characteristic data

The following settings are independent of boiler type and burner type.

- Setting the pump function
Subject to the hydraulic system or the operating conditions of certain boilers, the boiler pumps will be utilized as feed, bypass or test point pumps.
- Boiler pump post purge time
Enter a time for which the pump should continue to run after the burner has shut down, to maximize the use of the heat stored in the boiler.
- Minimum burner runtime
The minimum burner runtime tells the system the minimum length of time the burner operates after it has been switched on, irrespective of the current set point. This prevents frequent switching on and off of the burner in specific system situations.
- Minimum start temperature
The burner will be switched on again no later than when the boiler supply temperature falls to the minimum start temperature when there is a heat demand.
- Maximum shutdown temperature
The burner will be switched off no later than when the boiler supply temperature reaches the maximum shutdown temperature.
- Maximum flue gas temperature limit
A flue gas temperature sensor must be installed to capture the flue gas temperature. A maintenance message is issued if the "Maximum flue gas temperature" is exceeded. The boiler should then be serviced.



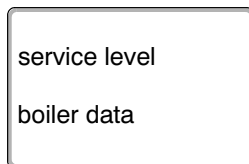
Call up the service level. "general data" appears as the first main menu.



The display shows the selected main menu.



Turn the dial until main menu "boiler data" appears.



The display shows the selected submenu.



Press "Display" to call up a submenu (here: "boiler data").

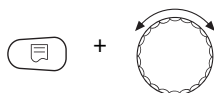
14.3.1 Pump function

The following pump functions are available:

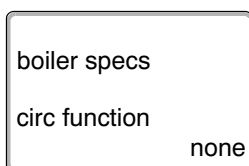
- Boiler circuit pump
The control logic and the boiler circuit pump characteristics depend on the selected boiler type, i.e. the possible boiler operating conditions affect the boiler circuit pump control. In exceptional cases the post purge time of the boiler pump can be altered.
- Test point pump
This 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 pump is actuated independently of the specified boiler type. If this setting is selected, the boiler or measuring point pump is not subject to any boiler operating conditions. The operating conditions specified in worksheet K6 must be ensured at all times.
- None



Turn the dial until submenu "circ function" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "none").



The display shows the set value.

Release "Display" to save your input.

Control of the boiler circuit pump via 0 – 10 V

There is the option of connecting the boiler circuit pump (modulating) via a 0 – 10 V output (terminal U_{PU}). This function can be used 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 perfect operation. For this, also observe the following:

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

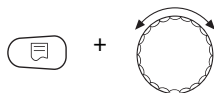
		Output (kW)										
		171 (50)	256 (75)	341 (100)	512 (150)	682 (200)	1024 (300)	1706 (500)	2559 (750)	3412 (1000)	5118 (1500)	6824 (2000)
Required temperature difference for boilers [°F (°C)]	9 (5)	16.3 (8.6)	24.5 (12.9)	32.6 (17.2)	48.9 (25.8)	65.2 (34.4)	97.8 (51.6)	163.0 (86.0)	244.5 (129.0)	326.0 (172.0)	489.0 (258.0)	652.0 (343.9)
	18 (10)	8.2 (4.3)	12.2 (6.4)	16.3 (8.6)	24.5 (12.9)	32.6 (17.2)	48.9 (25.8)	81.5 (43.0)	122.2 (64.5)	163.0 (86.0)	244.5 (129.0)	326.0 (172.0)
	27 (15)	5.5 (2.9)	8.2 (4.3)	10.9 (5.7)	16.3 (8.6)	21.7 (11.5)	32.6 (17.2)	54.3 (28.7)	81.5 (43.0)	108.7 (57.3)	163.0 (86.0)	217.3 (114.6)
	36 (20)	4.1 (2.1)	6.1 (3.2)	8.1 (4.3)	12.2 (6.4)	16.3 (8.6)	24.5 (12.9)	40.7 (21.5)	61.1 (32.2)	81.5 (43.0)	122.2 (64.5)	163.0 (86.0)

Tab. 3 Recommended flow rates for sizing the boiler circuit pump PK [35.3 ft³/h (m³/h)]

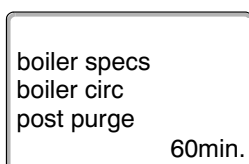
Setting boiler pump post purge time

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

Turn the dial until submenu "boiler circ post purge" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "60min.").



The display shows the set value.

Release "Display" to save your input.



USER NOTE

This parameter cannot be adjusted via this menu in multi-boiler systems (FM458 installed).

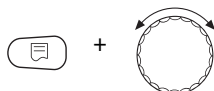
The parameter can then be adjusted in the main menu "Strategy".

	Input range	Factory setting
Pump function of boiler pump	boiler circ sensor circ none	boiler circ
boiler circ post purge	0 min. – 60 min. constant oper.	60 min.

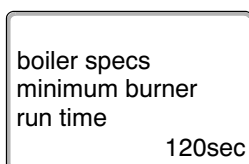
14.3.2 Setting the minimum burner runtime (minimum burner runtime after burner start)

Change the factory setting only in exceptional cases.

Turn the dial until submenu "minimum burner run time" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "120sec").



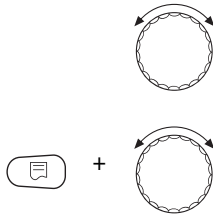
The display shows the set value.

Release "Display" to save your input.

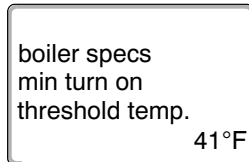
14.3.3 Setting minimum start temperature (boiler temperature limit from which the burner is started, not later)

The minimum switch-on temperature must only be changed if absolutely necessary.

Turn the dial until submenu "min turn on threshold temp." appears.



Hold down "Display" and turn the dial until the desired value appears (here: "41°F" (5°C)).



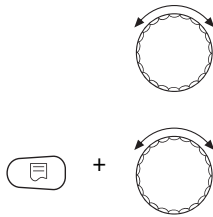
The display shows the set value.

Release "Display" to save your input.

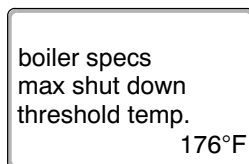
14.3.4 Setting maximum shut-down temperature

The maximum shut-down temperature must only be changed if absolutely necessary.

Turn the dial until submenu "max shut down threshold temp." appears.



Hold down "Display" and turn the dial until the desired value appears (here: "176°F" (80°C)).



The display shows the set value.

Release "Display" to save your input.



USER NOTE

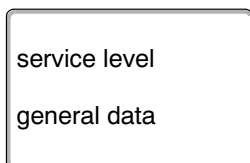
At setting > 167 °F (75 °C) adjust the thermostat to 194 °F (90 °C).

	Input range	Factory setting
minimum burner run time	0 sec – 300 sec	120 sec
min turn on threshold temp.	41 °F – 149 °F (5 °C – 65 °C)	41 °F (5 °C)
max shut down threshold temp.	158 °F – 210 °F (70 °C – 99 °C)	185 °F (85 °C)

14.3.5 Enter maximum flue gas temperature limit

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

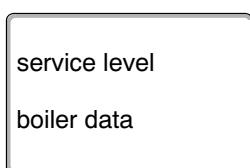
Call up the service level. "general data" appears as the first main menu.



The display shows the selected main menu.



Turn the dial until main menu "boiler data" appears.



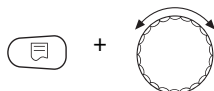
The display shows the selected main menu.



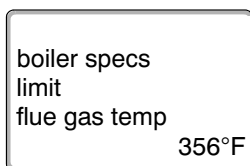
Press "Display" to call up a submenu.



Turn the dial until submenu "limit flue gas temp" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "356°F" (180°C)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
Limit for maximum emission temperature	none 122 °F – 482 °F (50 °C – 250 °C)	none

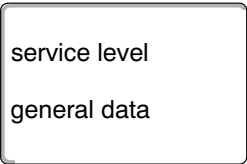
14.3.6 Entering the boiler curve

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

The characteristic curve is set by connecting the base and design temperature with a straight line. A reduction can be preset for the boiler characteristic curve.

The summer-winter time change and the operating mode switching can be applied for the boiler characteristic curve.

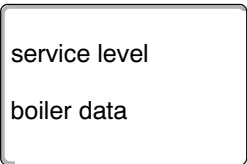
Call up the service level. "general data" appears as the first main menu.



The display shows the selected main menu.



Turn the dial until main menu "boiler data" appears.



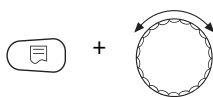
The display shows the selected main menu.



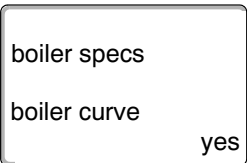
Press "Display" to call up a submenu.



Turn the dial until the submenu "boiler curve" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "yes").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
boiler curve	yes no	no

Setting the base point temperature

The base point sets the set point at an outdoor temperature of 68 °F (20 °C). The base point temperature is only displayed if "boiler curve yes" has been input.

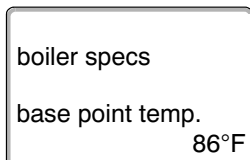
Turn the dial until the submenu "base point temp." appears.



+



Hold down "Display" and turn the dial until the desired value appears (here: "86°F" (30°C)).



The display shows the set value.

Release "Display" to save your input.

Setting design temperature

The design temperature sets the set point at a minimum outdoor temperature of, e.g. 14 °F (-10 °C).

The minimum outdoor temperature relates to the "min outdoor temp" under "general data" in accordance with the climate chart or the details from your local sales office.

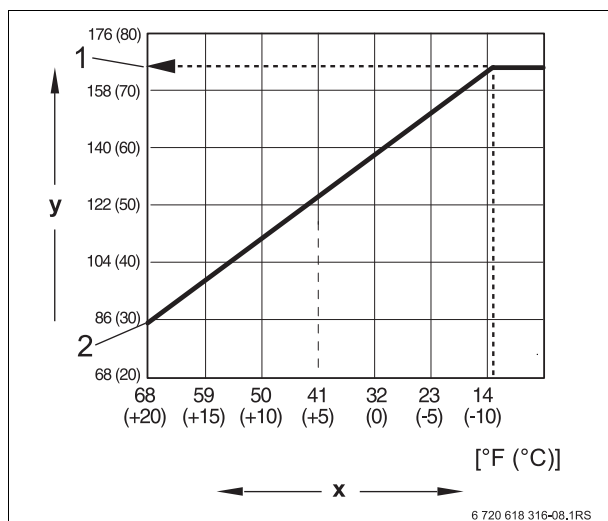
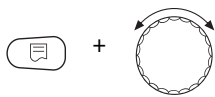


Fig. 22 Setting the design temperature (factory setting)

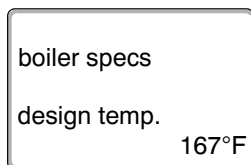
- x Outdoor temperature
- y Supply water temperature
- 1 Design temperature
- 2 Base point temperature



Turn the dial until the submenu "design temp." appears.



Hold down "Display" and turn the dial until the desired value appears (here: "167°F" (75°C)).



The display shows the set value.

Release "Display" to save your input.

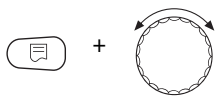
	Input range	Factory setting
base point temp.	68 °F – 194 °F (20 °C – 90 °C)	86 °F (30 °C)
design temp.	86 °F – 194 °F (30 °C – 90 °C)	167 °F (75 °C)

Setting the setback

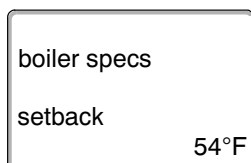
Input the temperature difference in °F (Fahrenheit) by which the boiler characteristic curve should be reduced in night mode from the day mode temperature.



Turn the dial until the submenu "setback" appears.



Hold down "Display" and turn the dial until the desired value appears (here: "54°F" (30°C)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
base point temp.	0 °F – 162 °F (0 °C – 90 °C)	54 °F (30 °C)

15 Heating zone data

The following heating systems can be selected:

- "none"
The heating zone function is not needed. All following submenu items for "heatingzone data" are not available.
- "radiator" or "baseboard"
The heating curve is automatically calculated for radiators or convectors, depending on their requirements.
- "floor"
A flatter heating curve is automatically calculated for lower design temperatures.
- "low level"
The supply temperature is in a linear relationship with the outdoor temperature. The resulting heating curve connects as a straight line the base point with a second point that depends on the design temperature.
- "constant"
Use this system for controlling a swimming pool heating system or to supply fan coils, if the heat consumer must always receive the same, set supply temperature, independent of the outdoor temperature. If you have selected this system, you cannot install a remote control.
- "room thermostat"
The set supply temperature is only dependent on the actual room temperature. A remote control must be installed in the room. The heating system is switched off if the room becomes too warm.



USER NOTE

It is recommended to use the "floor" heating system only in conjunction with mixed heating zones.

15.1 Heating system selection

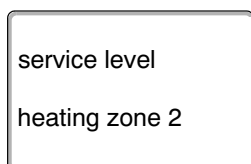
Example:

You want to set "floor" for submenu "heating system" in main menu "heating zone 2".

Call up the service level. "general data" appears as the first main menu.



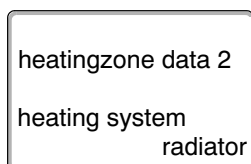
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



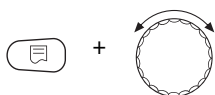
The display shows the selected main menu.



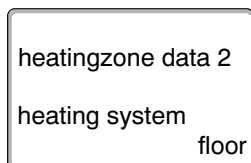
Press "Display" to call up a submenu (here: "heating system").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "floor").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
heating system	none radiator baseboard floor low level constant room thermostat	radiator

15.2 Renaming heating zone



Instead of the description "heating zone + no.", you can select a different designation from the default list.

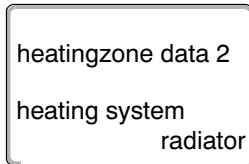
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



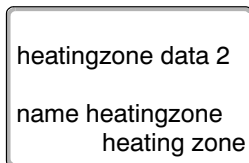
Press "Display" to call up a submenu (here: "heating system").



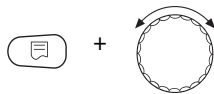
The display shows the selected submenu.



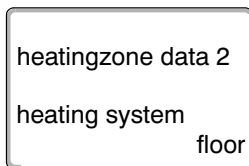
Turn the dial until submenu "name heatingzone" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "floor").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

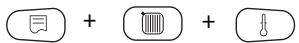
	Input range	Factory setting
name heatingzone	heating zone apartment floor bathroom pool office basement building	heating zone

15.3 Adjusting base temperature

This function will only be displayed for "low level" heating systems.

By setting the "heating system low level" you have determined a straight heating curve using the base point and design temperatures.

With the base point temperature, you determine the start of the heating curve. The base point temperature is applicable for an outdoor temperature of 68 °F (20 °C).



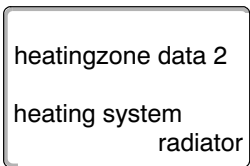
Call up the service level. "general data" appears as the first main menu.



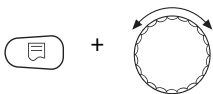
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



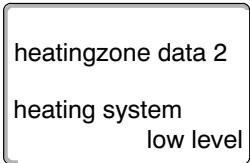
Press "Display" to call up a submenu (here: "heating system").



The display shows the selected submenu.



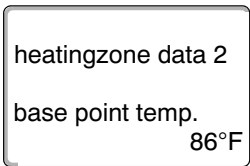
Hold down "Display" and turn the dial until the desired value appears (here: "low level").



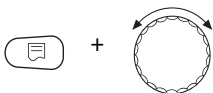
The display shows the set value.
Release "Display" to save your input.



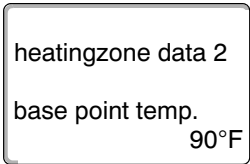
Turn the dial until submenu "base point temp." appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "90°F" (32°C)).



The display shows the set value.
Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
base point temp.	68 °F – 176 °F (20 °C – 80 °C)	86 °F (30 °C)

15.4 Setting design temperature

The design temperature is the supply temperature at the adjusted minimum outdoor temperature (→ Chapter 12).

This parameter cannot be adjusted with heating system "room thermostat".



USER NOTE

Changing the design temperature allows the heating system to operate with a flatter or steeper heating curve.

For the "low level" heating systems set the design temperature at least 18 °F (10 °C) higher than the base point temperature.



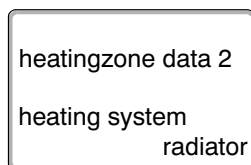
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



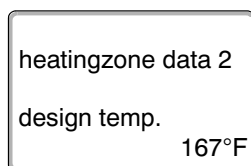
Press "Display" to call up a submenu (here: "heating system").



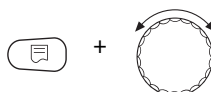
The display shows the selected submenu.



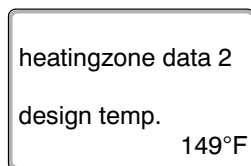
Turn the dial until submenu "design temp." appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "149°F" (65°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
design temp.	86 °F – 194 °F (30 °C – 90 °C)	167 °F (75 °C) for radiator/baseboard/low level/constant 113 °F (45 °C) for radiant floor heating systems

15.5 Minimum supply temperature

The minimum supply temperature limits the heating curve to a minimum set point.

This function will not be displayed with "constant" heating systems.

The value only needs to be changed if required.

Call up the service level. "general data" appears as the first main menu.



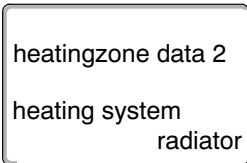
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



Press "Display" to call up a submenu (here: "heating system").



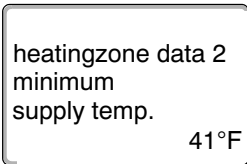
The display shows the selected submenu.



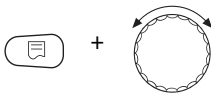
Turn the dial until submenu "minimum supply temp." appears.



The display shows the selected submenu.

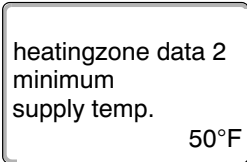


Hold down "Display" and turn the dial until the desired value appears (here: "50°F" (10°C)). This value sets the temperature below which the supply temperature must not drop.



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



	Input range	Factory setting
minimum supply temp.	41 °F – 158 °F (5 °C – 70 °C)	41 °F (5 °C)

15.6 Maximum supply temperature

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

This function will not be displayed with "constant" heating systems.

The value only needs to be changed if required.



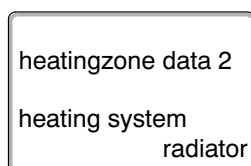
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



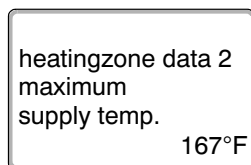
Press "Display" to call up a submenu (here: "heating system").



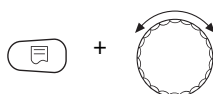
The display shows the selected submenu.



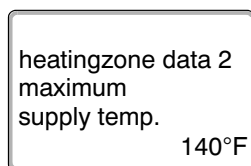
Turn the dial until submenu "maximum supply temp." appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "140°F" (60°C)). This value sets the temperature above which the supply temperature must not rise.



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
Maximum supply temperature for floor	86 °F – 140 °F (30 °C – 60 °C)	122 °F (50 °C)
Maximum supply temperature for radiators, convector heaters, base point	86 °F – 194 °F (30 °C – 90 °C)	167 °F (75 °C)

15.7 Selecting remote control

Under this menu item you can specify whether a remote control for the heating zone is installed. You can select:

- No remote control
- Remote control with display (MEC2) "MEC heatingzones"
If "remote control w/ display" is selected for several heating zones, these are grouped as "MEC heatingzones".
- Remote control without display (BFU or BFU/F)



USER NOTE

No remote control unit may be installed for "constant" heating zone systems or when "external changeover" has been enabled.

A remote control must be installed for the following functions that monitor the room temperature:

- Night reduction with room hold
 - Max room effect
 - Automatic adaptation
 - Start optimization
 - "room thermostat" heating system
-

Explanation of "MEC heatingzones"

The MEC2 can be installed in a reference room; it then functions as a room sensor with display. With the MEC2 you can control several heating zones simultaneously. These are grouped together under the term "MEC heatingzones".

The following functions can be run for the "MEC heatingzones":

- Operating mode switching
- Set point adjustments
- Set summer/winter time change
- Vacation function
- Party function
- Pause function

The heating zones grouped together under "MEC heatingzones" can, for specific settings, also be selected as "primary zone".

The timer program "PROG" function is only available for each individual heating zone.



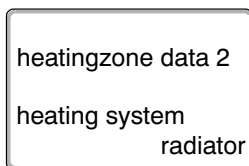
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



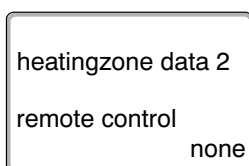
Press "Display" to call up a submenu (here: "heating system").



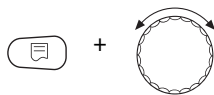
The display shows the selected submenu.



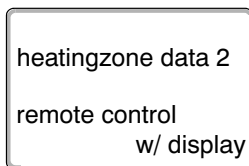
Turn the dial until submenu "remote control" appears.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "w/ display"). Turn the dial to "w/ display" if the selected heating zone has been assigned to the MEC2.



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
remote control	none w/o display w/ display	none

15.8 Maximum room effect

This function will only appear if a remote control has been selected, but will not be shown for "room thermostat" heating systems.

The maximum room effect limits the influence of room temperature (room temperature add-on) to the set supply temperature. This value determines the maximum possible room temperature setback in those rooms that are supplied via the currently selected heating zone and where there are no remote control units installed.



USER NOTE

Never expose the MEC2 remote control or the BFU, BFU/F remote control units to external heat sources, such as lamps, TV sets, or other heat generators.



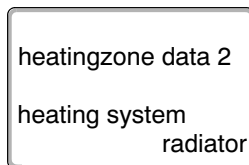
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



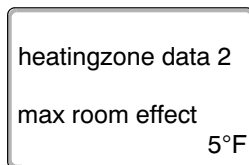
Press "Display" to call up a submenu (here: "heating system").



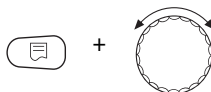
The display shows the selected submenu.



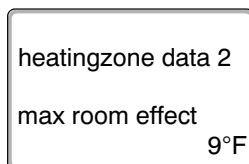
Turn the dial until submenu "max room effect" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "9°F" (5°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
max room effect	0 °F – 18 °F (0 °C – 10 °C)	5 °F (3 °C)

15.9 Selecting setback type

The following functions for reduced mode or night mode can be selected:

- "outdoor setback" determines the outdoor temperature limit.
The heating zone is switched off when this value is exceeded.
Below this limit, the heating system heats to the set night temperature.
- With "room setback" the room temperature for setback is selected.
The heating zone is switched off when this value is exceeded.
Below this limit, the heating system heats to the set night temperature.
This function requires that a remote control is located in the relevant room and that the heating zone is assigned to it.
- "shut down" switches off the entire heating zone in setback mode.
- In setback mode, the system heats to the set night temperature if "setback" is selected. The heating pumps operate constantly.



USER NOTE

If "constant" has been selected in the heating system menu item, only "setback", "outdoor setback" or "shut down" can be selected.

- Setting the heating system to "room thermostat" and setback type to "setback" achieves the same effect for temperature setback as "room setback".



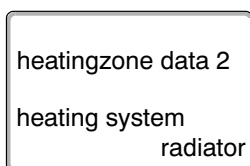
Call up the service level. "general data" appears as the first main menu.



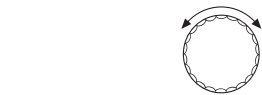
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



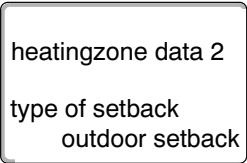
Press "Display" to call up a submenu (here: "heating system").



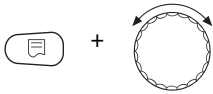
The display shows the selected submenu.



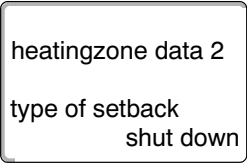
Turn the dial until submenu "type of setback" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "shut down").



The display shows the set value.
Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
type of setback	outdoor setback shut down setback room setback	outdoor setback

15.10 Setting outdoor setback temperature

Enter the outdoor temperature at which the heating operation should change over from "shut down" to "setback" if you have selected "outdoor setback" as setback type.



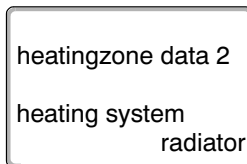
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



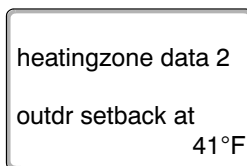
Press "Display" to call up a submenu (here: "heating system").



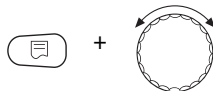
The display shows the selected submenu.



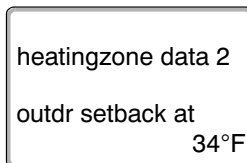
Turn the dial until submenu "outdr setback at" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "34°F" (1°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
outdr setback at	-4 °F – 50 °F (-20 °C – 10 °C)	41 °F (5 °C)

15.11 Vacation setback type

A separate reduction type can be set for the time of the vacation.
For explanations of possible settings, see chapter Chapter 15.9.



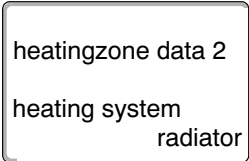
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



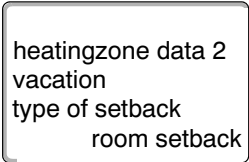
Press "Display" to call up a submenu (here: "heating system").



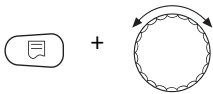
The display shows the selected submenu.



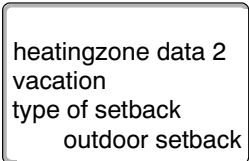
Turn the dial until submenu "vacation type of setback" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "outdoor setback").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
vacation type of setback	room setback outdoor setback* shut down setback	room setback

* At setting "vacation outdoor setback" the dial takes you into the menu where you set the outdoor setback temperature (between -4 °F (-20 °C) and 50 °F (10 °C)).

15.12 Stopping setback at low outdoor temperatures

This feature allows interruption of setback when the actual temperature falls below a selected adjusted outdoor temperature, to prevent the living space cooling down excessively.



USER NOTE

Setback will not be interrupted in manual mode and vacation mode.



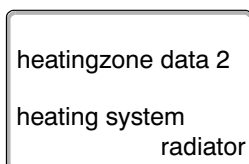
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



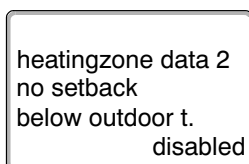
Press "Display" to call up a submenu (here: "heating system").



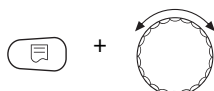
The display shows the selected submenu.



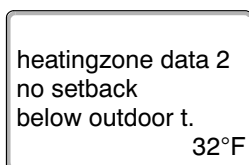
Turn the dial until submenu "no setback below outdoor t." appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "32°F" (0°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
no setback below outdoor t.	disabled -22 °F – 50 °F (-30 °C – 10 °C)	disabled

15.13 Setting supply setback

No set room temperature can be set with the "constant" heating system, so this submenu enables you to enter a setback value for the setback types "setback" and "outdoor setback".



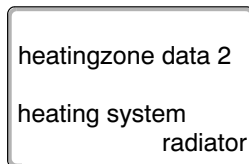
Call up the service level. "general data" appears as the first main menu.



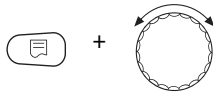
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



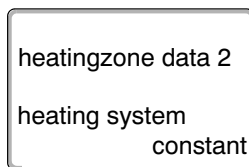
Press "Display" to call up a submenu (here: "heating system").



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "constant").

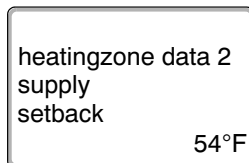


The display shows the set value.

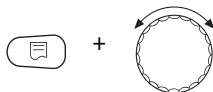
Release "Display" to save your input.



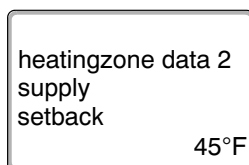
Turn the dial until "supply setback" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "45°F" (25°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
supply setback	0 °F – 72 °F (0 °C – 40 °C)	54 °F (30 °C)

15.14 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. The calibration moves the heating characteristic curve at the same time.

Example:

Displayed set room temperature 72 °F (22 °C)

Actual room temperature 75 °F (24 °C)

The set value lies 3 °F (2 °C) below the actual value.



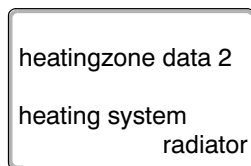
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



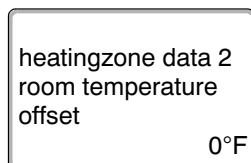
Press "Display" to call up a submenu (here: "heating system").



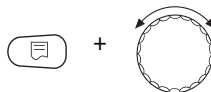
The display shows the selected submenu.



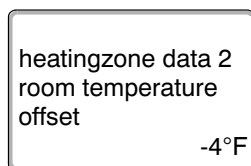
Turn the dial until submenu "room temperature offset" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "-4°F" (-2°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
offset	-9 °F – 9 °F (-5 °C – 5 °C)	0 °F (0 °C)

15.15Automatic adaptation

This function will only appear if a remote control has been selected, but will not be shown for "room thermostat" heating systems.

The "auto 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 supply temperatures.

Prerequisites are:

- a representative room with reference temperature,
- completely open thermostat valves in the room,
- no continuously changing outside heat influence.

Call up the service level. "general data" appears as the first main menu.



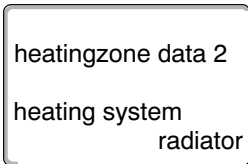
Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



Press "Display" to call up a submenu (here: "heating system").



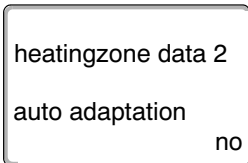
The display shows the selected submenu.



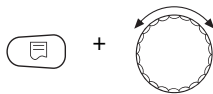
Turn the dial until submenu "auto adaptation" appears



The display shows the selected submenu.

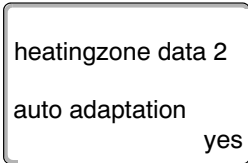


Hold down "Display" and turn the dial until the desired value appears (here: "yes").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



	Input range	Factory setting
auto adaptation	no yes	no

15.16 Setting switch optimization

The function "optimization for" is not enabled at the factory.

Install a remote control with room temperature sensor to enable the "optimization for" function.

The following variations are possible:

- Heating starts before the actual switching time if "start-up" has been selected. The control panel calculates the start time so that the set room temperature is achieved at the set start point.
- At "shut down" the system begins setback, where possible prior to the actual setback time to save energy. If a room cools down unexpectedly or suddenly, the stop optimization is terminated and heating continues normally up to the programmed setback time.
- Both optimization versions are used when "startup/shutdown" has been enabled.
- Switch optimization is disabled if "none" is selected.



USER NOTE

As the start optimization is limited to 240 minutes, start optimization is frequently inappropriate for systems with a long heat-up time.



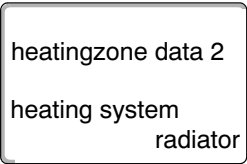
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



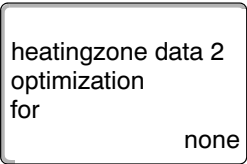
Press "Display" to call up a submenu (here: "heating system").



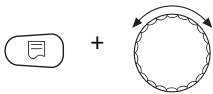
The display shows the selected submenu.



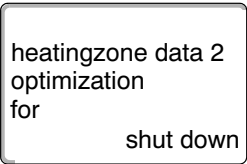
Turn the dial until submenu "optimization for" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "shut down").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
optimization	none start-up shut down startup/shutdown	none

15.17 Setting switch-off optimization time

If you have selected **"shut down"** or **"startup/shutdown"**, you may enter as of when the advanced setback operation should begin **under Chapter 15.16**. Change the setting only if necessary.



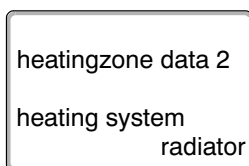
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



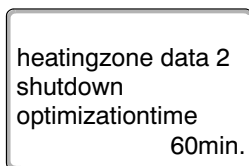
Press "Display" to call up a submenu (here: "heating system").



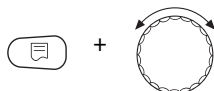
The display shows the selected submenu.



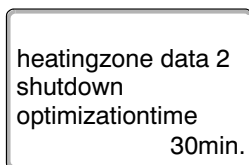
Turn the dial until submenu "shutdown optimizationtime" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "30min.>").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
shutdown optimizationtime	10 min. – 60 min.	60 min.

15.18Setting frost protection temperature

The frost protection temperature only needs to be changed in special cases.

The circulation pump is automatically switched on as soon as the preset outdoor temperature threshold is reached.



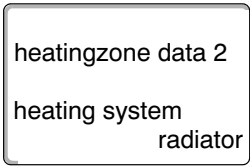
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



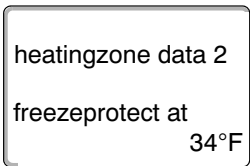
Press "Display" to call up a submenu (here: "heating system").



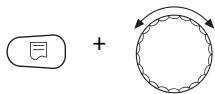
The display shows the selected submenu.



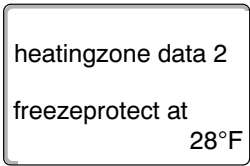
Turn the dial until submenu "freezeprotect at" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "28°F" (-2°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
freezeprotect	-4 °F – 34 °F (-20 °C – 1 °C)	34 °F (1 °C)

15.19 Setting DHW priority

If you enable the "DHW priority" function, the circulation pumps of all heating zones are switched off while DHW is being heated.

In mixed heating zones, the mixer is moved towards "Mixer closes" (colder).



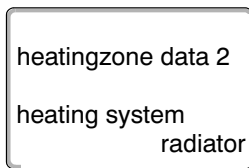
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



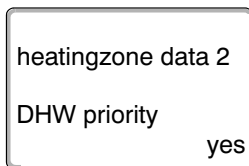
Press "Display" to call up a submenu (here: "heating system").



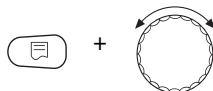
The display shows the selected submenu.



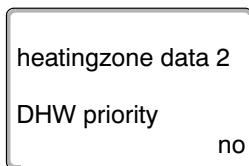
Turn the dial until submenu "DHW priority" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "no").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
DHW priority	yes no	yes

15.20Input heating zone actuator

You may determine via the "actuator" function, whether or not the system is equipped with a heating zone actuator (mixer).

The control panel drives the actuator if it is installed in the heating zone (mixer).

The heating zone is controlled via the boiler supply temperature if no heating zone actuator is installed.



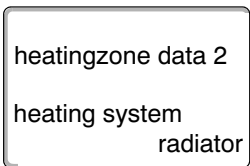
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



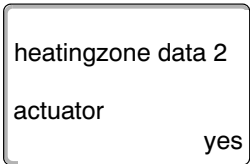
Press "Display" to call up a submenu (here: "heating system").



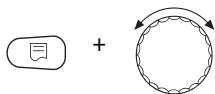
The display shows the selected submenu.



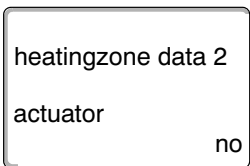
Turn the dial until submenu "actuator" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "no").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
actuator	yes no	yes

15.21 Entering actuator run time

Here you can enter the actuator run time of existing actuators. Generally, actuators have a run time of 120 s.



USER NOTE

If you notice a constant oscillation of the mixer, you can slow down the control characteristics by reducing the actuator runtime. Then the constant cycling of the mixer will cease.



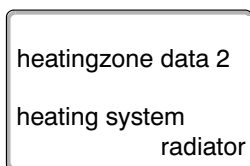
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



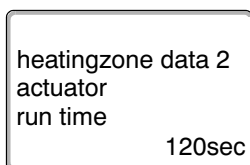
Press "Display" to call up a submenu (here: "heating system").



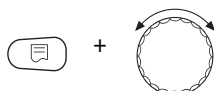
The display shows the selected submenu.



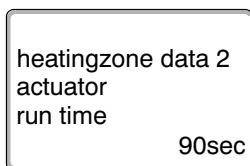
Turn the dial until submenu "actuator run time" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "90sec").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
actuator run time	10 sec – 600 sec	120 sec

15.22 Boiler temperature increase

If a heating zone is controlled with an actuator, a higher set value should be set for the boiler than the normal set value for the heating zone.

The value "boiler temp rise" corresponds to the temperature differential between the set boiler temperature and the set heating zone temperature.



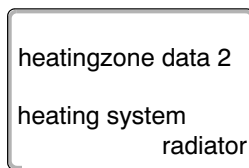
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



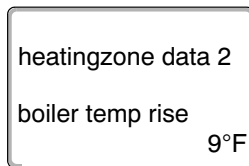
Press "Display" to call up a submenu (here: "heating system").



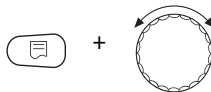
The display shows the selected submenu.



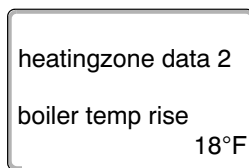
Turn the dial until submenu "boiler temp rise" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "18°F" (10°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
boiler temp rise	0 °F – 36 °F (0 °C – 20 °C)	9 °F (5 °C)

15.23 External changeover

Using the "external changeover" function, you can use an on-site switch at terminals WF1/2/3 (pink) to change the operating mode of a heating zone. This is where you configure this control panel input.

The "external changeover" menu item is only shown if "none" was selected under "remote control".

The menu item is also not shown if the "room thermostat" heating system is selected, because this requires a remote control.

The function is disabled at the factory.

Two switchover functions can be selected:

Changeover 1 Day/night via terminals WF1 and WF3

Contacts WF1 and WF3 closed	= Day mode
Contacts WF1 and WF3 open	= Night mode

Changeover 2 Day/night/aut via terminals WF1, WF2 and WF3

Activation is only possible if terminals WF1 and WF2 are not assigned by the "external pump fault message".

Contacts WF1 and WF3 closed	= Day mode
Contacts WF1 and WF2 closed	= Night mode
All contacts open	= Automatic mode



USER NOTE

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



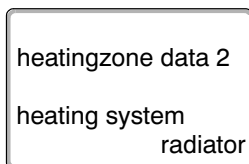
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



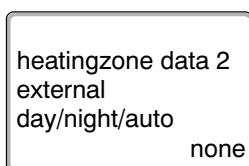
Press "Display" to call up a submenu (here: "heating system").



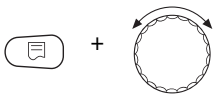
The display shows the selected submenu.



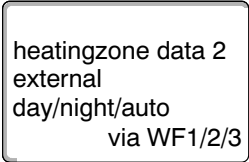
Turn the dial until submenu "external day/night/auto" is displayed.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "via WF1/2/3").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
external day/night/auto	none via WF1/3 via WF1/2/3	none

15.24 External pump fault message

The function is disabled at the factory. You can select whether fault messages for a pump are displayed in this menu item.

You can connect an external zero volt fault relay to terminals WF1 and WF2. If the contact is open a fault message is displayed.

You can select between:

1. "none"
2. "Pump fault message via WF1/2"

If an input was made under the menu item "external day/night/auto via WF1/2/3", this menu item cannot be opened because the input contacts are already assigned.

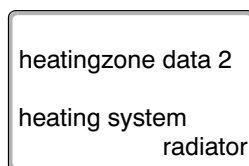
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



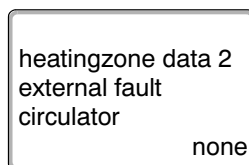
Press "Display" to call up a submenu (here: "heating system").



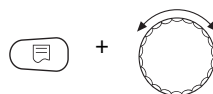
The display shows the selected submenu.



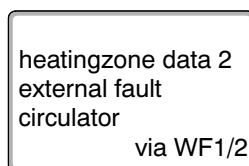
Turn the dial until submenu "external fault circulator" is displayed.



The display shows the selected submenu.



Hold down "Display" and select the desired value with the dial (here: "via WF1/2").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
external fault circulator	none via WF1/2	none

15.25 Slab drying

With this control you can enter a drying program for the slab if the heating system includes radiant floor heating. "floor" must be set as the heating system.

**USER NOTE**

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

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

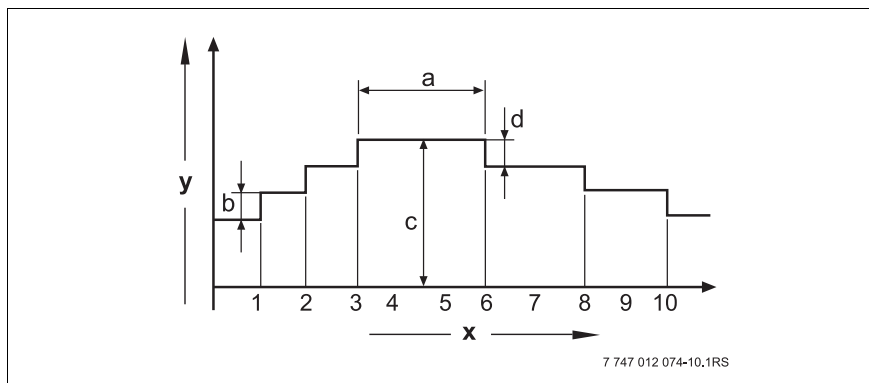


Fig. 23 Drying slab

x Time (days)

y Temperature

a 3 days' hold time

b Increase by

c Max. temperature

d Setback by



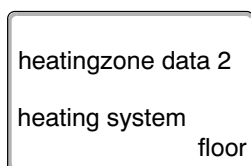
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "heating zone + no." appears (here: "heating zone 2").



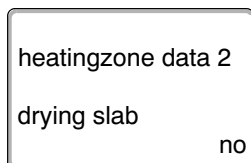
Press "Display" to call up a submenu (here: "heating system").



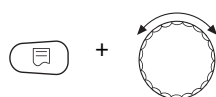
The display shows the selected submenu.



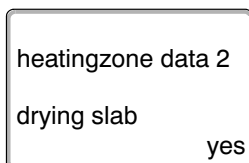
Turn the dial until submenu "drying slab" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "yes").



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
drying slab	no yes	no



USER NOTE

Parameters on the following pages enable you to select the temperatures and settings for the drying period.

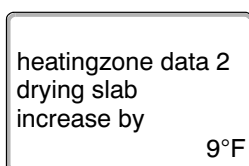
The setting reverts automatically to "no" as soon as the drying process has been completed.

Setting the temperature rise

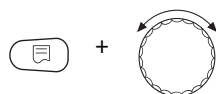
Here you can select the steps in which the temperature should increase to dry out the slab.

The temperature rise begins at 68 °F (20 °C).

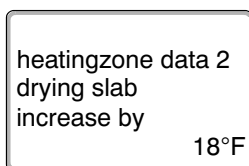
Turn the dial until submenu "drying slab increase by" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "18°F" (10°C)).



The display shows the set value.

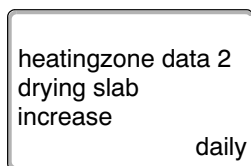
Release "Display" to save your input.

	Input range	Factory setting
increase by	2 °F – 18 °F (1 °C – 10 °C)	9 °F (5 °C)

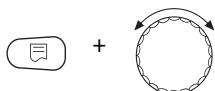
Heat-up time

By setting the "increase" parameter, you determine in which daily cycle the temperature should rise to dry out the slab.

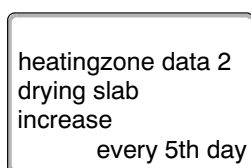
Turn the dial until submenu "drying slab increase" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "every 5th day").



The display shows the set value.

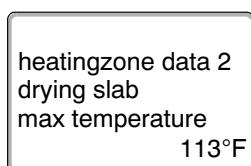
Release "Display" to save your input.

	Input range	Factory setting
Increase in daily cycles	daily, every 2nd day, every 3rd day, every 4th day, every 5th day	daily

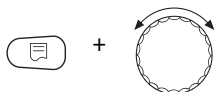
Setting the maximum temperature

Here you can enter the maximum temperature for slab drying.

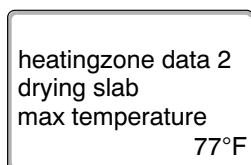
Turn the dial until submenu "drying slab max temperature" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "77°F" (25°C)).



The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
max temperature	77 °F – 140 °F (25 °C – 60 °C)	113 °F (45 °C)

Set the holding time

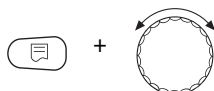
Here you can select a period of time for which the maximum temperature should be held to dry out the slab.

Turn the dial until submenu "drying slab hold max temp" appears.



heatingzone data 2
drying slab
hold max temp
4 days

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "20 days").

heatingzone data 2
drying slab
hold max temp
20 days

The display shows the set value.

Release "Display" to save your input.

	Input range	Factory setting
Hold maximum temperature	0 days – 20 days	4 days

Setting setback temperature

Here you can select the steps in which the temperature for drying out the drying slab should be set back.

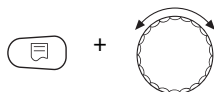
The setback ends at 68 °F (20 °C).

Turn the dial until submenu "drying slab setback" appears.



heatingzone data 2
drying slab
setback
9°F

The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "18°F" (10°C)).

heatingzone data 2
drying slab
setback
18°F

The display shows the set value.

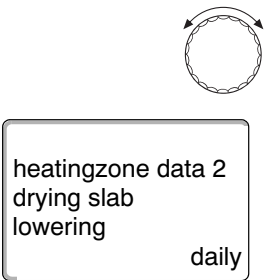
Release "Display" to save your input.

	Input range	Factory setting
Setback by	2 °F – 18 °F (1 °C – 10 °C)	9 °F (5 °C)

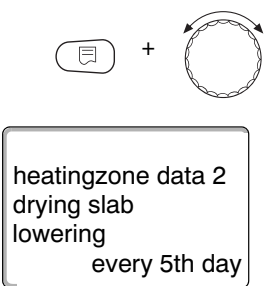
Set setback time

By setting the "lowering" parameter, you determine in which daily cycle the temperature for drying the slab should be set back.

Turn the dial until submenu "drying slab lowering" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "every 5th day").

The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



USER NOTE

Selecting "none" terminates slab drying at the end of the maximum hold time.

	Input range	Factory setting
Setback in daily cycles	none daily, every 2nd day, every 3rd day, every 4th day, every 5th day	daily

16 DHW data

The DHW function of FM441 function module is described in the following. If DHW is heated via a different function module (e.g. FM445), see the relevant service instructions for a description.

16.1 Selecting the DHW storage tank

Here, you can log the DHW storage tank in and out if a DHW module is installed.

Call up the service level. "general data" appears as the first main menu.

Turn the dial until main menu "DHW" appears.

The display shows main menu "DHW".

Press "Display" to call up a submenu (here: "DHW").

The display shows submenu "DHW".

Hold down "Display" and turn the dial until the desired value appears (here: "no").

The display shows the set value.


Release "Display" to save your input.

Press "Back" to return to the next level up.

	Input range	Factory setting
DHW	yes no	yes

16.2 Set temperature range

With this function you can set the upper limit for the desired DHW temperature.






WARNING!


RISK OF SCALDING

from hot water.
There is a risk of scalding if the desired DHW temperature is set higher than 122 °F (50 °C).


- Do not draw off DHW unmixed.

 +  + 

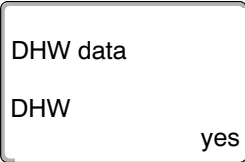
Call up the service level. "general data" appears as the first main menu.




Turn the dial until main menu "DHW" appears.



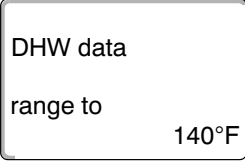
Press "Display" to call up a submenu (here: "DHW").





The display shows the selected submenu.



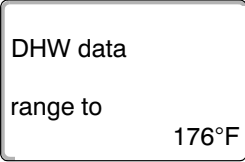
Turn the dial until submenu "range to" appears.




The display shows the selected submenu.

 + 

Hold down "Display" and turn the dial until the desired value appears (here: "176°F" (80°C)).



The display shows the set value.
Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
range to	140 °F – 176 °F (60 °C – 80 °C)	140 °F (60 °C)

16.3 Selecting switching optimization

If you select the "optimization" function, DHW heating will begin prior to the actual start point. The control panel calculates the start time, taking into consideration the residual DHW storage tank heat and the start of heating for the heating zones, so that the DHW temperature is reached at the time you have selected (time switch).



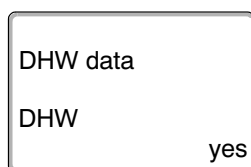
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



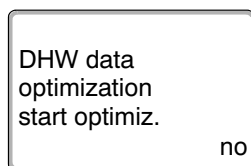
Press "Display" to call up a submenu (here: "DHW").



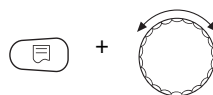
The display shows the selected submenu.



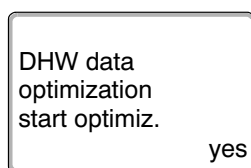
Turn the dial until submenu "optimization start optimiz." appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "yes").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
optimization	yes no	no

16.4 Selecting residual heat use

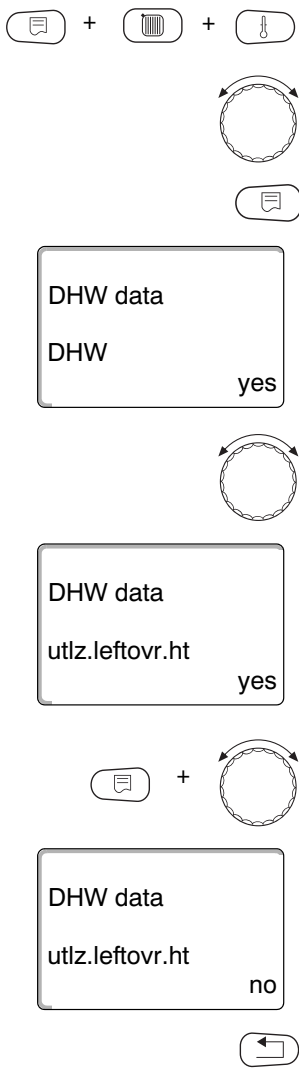
If you select the "utlz.leftovr.ht" function, you can also utilize the residual boiler heat for heating the storage tank.

"Residual heat usage yes"

If you select "utlz.leftovr.ht yes", the control panel calculates the shutdown temperature of the burner and the primary pump runtime until the storage tank is fully heated up using the residual boiler heat. The burner is switched off before the set DHW temperature is reached. The tank heating pump continues to operate. The control panel calculates the runtime of the primary pump (between 3 and 30 minutes) to heat the storage tank.

"Residual heat usage no"

If you select "utlz.leftovr.ht no", you will only use a small amount of residual heat. The burner runs until the desired DHW temperature has been reached. The storage tank primary pump runs on for 3 minutes after the burner has been switched off.



Call up the service level. "general data" appears as the first main menu.

Turn the dial until main menu "DHW" appears.

Press "Display" to call up a submenu (here: "DHW").

The display shows the selected submenu.

Turn the dial until submenu "utlz.leftovr.ht" appears.

The display shows the selected submenu.

Hold down "Display" and turn the dial until the desired value appears (here: "no").

The display shows the set value.

Release "Display" to save your input.

Press "Back" to return to the next level up.

	Input range	Factory setting
utlz.leftovr.ht	yes no	yes

16.5 Setting differential

With "differential" you can determine, at how many Fahrenheit (°F) below the set DHW temperature the reloading of the storage tank begins.



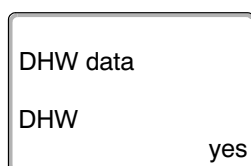
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



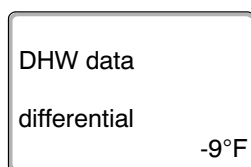
Press "Display" to call up a submenu (here: "DHW").



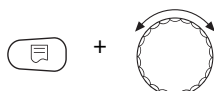
The display shows the selected submenu.



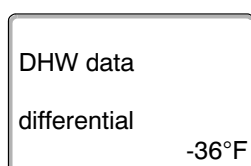
Turn the dial until submenu "differential" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "-36°F" (-20°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
differential	-36 °F to -4 °F (-20 °C to -2 °C)	-9 °F (-5 °C)

16.6 Raising the boiler temperature

With the "raise boilr temp" function, you can determine the boiler water temperature during DHW heating.

The boiler temperature rise is added to the desired DHW temperature and results in the desired supply temperature for DHW heating.

The factory setting of 72 °F (40 °C) is optimized for rapid DHW heating.



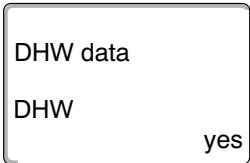
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



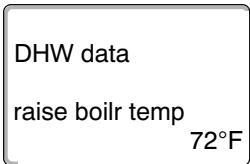
Press "Display" to call up a submenu (here: "DHW").



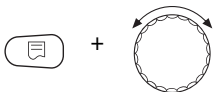
The display shows the selected submenu.



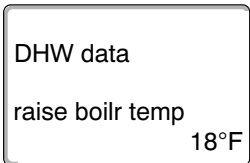
Turn the dial until submenu "raise boilr temp" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "18°F" (10°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
raise boilr temp	18 °F – 72 °F (10 °C – 40 °C)	72 °F (40 °C)

16.7 External fault message (WF1/2)

An external zero volt fault message contact of a DHW primary pump or an inert anode can be connected to terminals WF1 and WF2 of FM441 module.

- WF1 and WF2 contacts closed = no fault
- WF1 and WF2 contacts open = fault



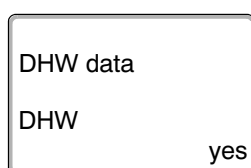
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



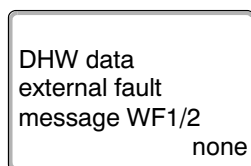
Press "Display" to call up a submenu (here: "DHW").



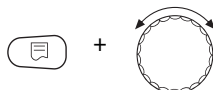
The display shows the selected submenu.



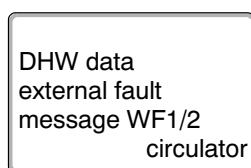
Turn the dial until submenu "external fault message WF1/2" is displayed.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "circulator").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
external fault message	none inert anode circulator	none

16.8 External contact (WF1/3)

"loading once" or "disinfection" can be initiated (subject to setting) if a zero volt button is connected to terminals WF1 and WF3 in module FM441.

"Loading once"

If DHW heating has been switched off according to the switching times of the DHW program, you may start "loading once" with the button. The DHW recirculation pump starts simultaneously.

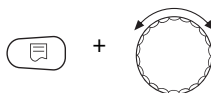
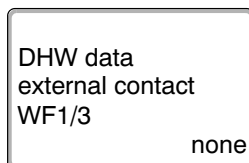
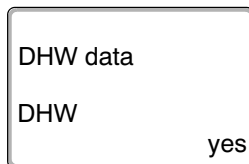
Unlike heating once via the MEC2 remote control, the "loading once" process cannot be cancelled.

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

"Disinfection"

You can start thermal disinfection with the above-mentioned zero volt button if you have assigned the external contact to "disinfection". Any existing thermal disinfection program will then become ineffective.

Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.

Press "Display" to call up a submenu (here: "DHW").

The display shows the selected submenu.

Turn the dial until submenu "external contact WF1/3" is displayed.

The display shows the selected submenu.

Hold down "Display" and turn the dial until the desired value appears (here: "loading once").

DHW data
external contact
WF1/3
loading once

The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
external contact	loading once disinfection none	none

16.9 Selecting and setting thermal disinfection

If you select the "thermal disinfection" function, the DHW is brought to a temperature of 158 °F (70 °C) once or several times a week. This is high enough to kill off germs (e.g. legionella bacteria).

The tank primary pump and DHW circulation pump run constantly during the thermal disinfection process.

If you have selected "thermal disinfection yes", thermal disinfection starts according to factory settings or your own preferences.

Thermal disinfection is indicated by LED  on the FM441 module.

You can adjust the factory settings for thermal disinfection via additional menus.



USER NOTE

The "thermal disinfection" function is not shown if thermal disinfection was previously selected with the "external contact WF1/3" function.

The system tries to reach the set thermal disinfection temperature for three hours. If this fails, for example because too much DHW was used during this time, the error message "thermal disinfection failed" appears.

You may also set up thermal disinfection via your own switching program.



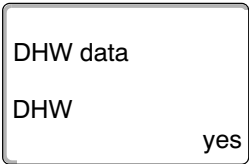
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



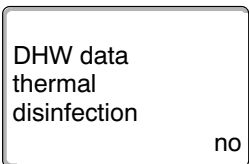
Press "Display" to call up a submenu (here: "DHW").



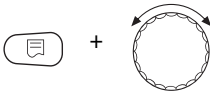
The display shows the selected submenu.



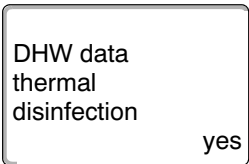
Turn the dial until "thermal disinfection" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "yes").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
thermal disinfection	no yes	no

16.10 Setting disinfection temperature

You can select the thermal disinfection temperature via the "temperature disinfection" function (→ Chapter 16.9).



WARNING!

RISK OF SCALDING

from hot water.

- If thermal disinfection is activated, ensure that a thermostatic tempering valve is installed as protection against scalding.



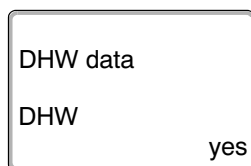
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



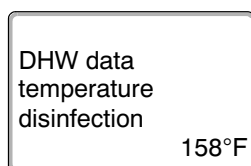
Press "Display" to call up a submenu (here: "DHW").



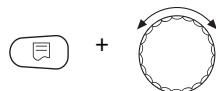
The display shows the selected submenu.



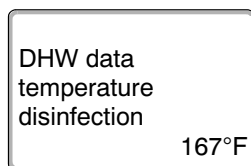
Turn the dial until submenu "temperature disinfection" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "167°F" (75°C)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
temperature disinfection	149 °F – 167 °F (65 °C – 75 °C)	158 °F (70 °C)

16.11 Setting day of week for disinfection

The day of the week for disinfection can be set with the "day of week disinfection" function.



USER NOTE

The "day of week disinfection" function is not displayed if thermal disinfection was previously set using the "external contact WF1/3" function.



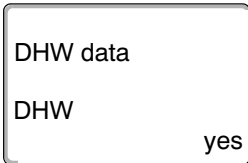
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



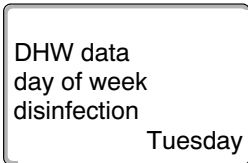
Press "Display" to call up a submenu (here: "DHW").



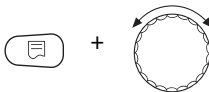
The display shows the selected submenu.



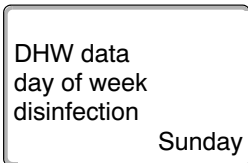
Turn the dial until submenu "day of week disinfection" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "Sunday").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
day of week disinfection	Monday – Sunday daily	Tuesday

16.12 Setting time of day for disinfection

You can set the time of day when thermal disinfection should be implemented via the "time disinfection" function.



USER NOTE

The "time disinfection" function is not displayed if thermal disinfection was previously set using the "external contact WF1/3" function.



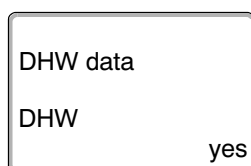
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



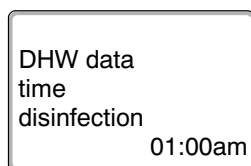
Press "Display" to call up a submenu (here: "DHW").



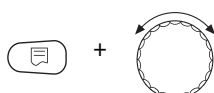
The display shows the selected submenu.



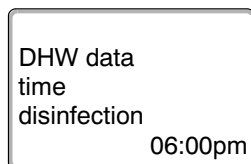
Turn the dial until submenu "time disinfection" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "06:00pm" (18:00)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
time disinfection	12:00 am – 11:00 pm (00:00 – 23:00)	1:00 pm (01:00)

16.13Daily heating

When daily heat-up is set, the DHW (which may include a solar storage tank, if installed) is heated to 140 °F (60 °C) once a day to prevent legionella bacteria from multiplying in the DHW.

The time when the storage tank is heated can be adjusted.



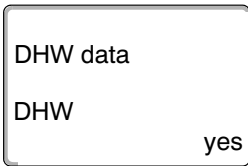
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



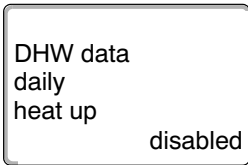
Press "Display" to call up a submenu (here: "DHW").



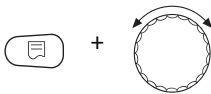
The display shows the selected submenu.



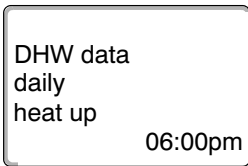
Turn the dial until submenu "daily heat up" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "06:00pm" (18:00)).



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.



USER NOTE

If the DHW was heated to 140 °F (60 °C) within the last 12 hours, it is not heated at the specified time.

	Input range	Factory setting
daily heat up	disabled 12:00 am – 11:00 pm (00:00 – 23:00)	disabled

16.14 Selecting the recirculation pump

With the "recirculation" function you can indicate that a DHW circulation pump is installed, which ensures that DHW is immediately available at the draw-off points.



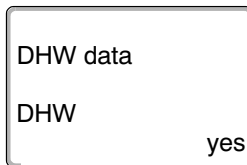
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



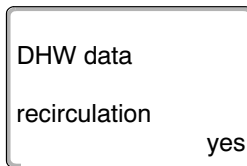
Press "Display" to call up a submenu (here: "DHW").



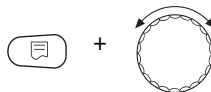
The display shows the selected submenu.



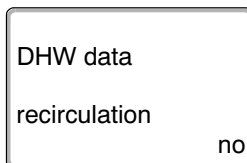
Turn the dial until submenu "recirculation" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "no").



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
recirculation	yes no	yes

16.15 Setting the recirculation pump intervals

Interval operation reduces the operating costs of the recirculation pump.

In the function "recirculation per hour" you can select how often per hour the DHW circulation pump runs for 3 minutes.

The set interval applies during the period when the time program enables the recirculation pump. This may be:

- the factory-set recirculation pump program,
- your own recirculation pump program,
- a connection to the heating zone switching times.

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

Example:

Your own time program was created to start the recirculation pump between 5:30 am – 10:00 pm (05:30 – 22:00 h) with setting "recirculation per hour 2 cycles".

The circulation pump is run

- at 5:30 am (05:30 h) for 3 minutes,
- at 6:00 am (06:00 h) for 3 minutes,
- at 6:30 am (06:30 h) for 3 minutes,
- etc. until 10:00 pm (22:00 h)



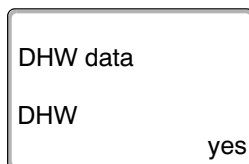
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "DHW" appears.



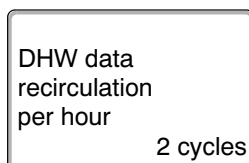
Press "Display" to call up a submenu (here: "DHW").



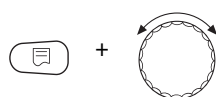
The display shows the selected submenu.



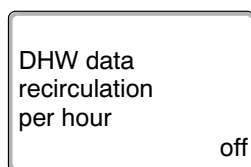
Turn the dial until submenu "recirculation per hour" appears.



The display shows the selected submenu.



Hold down "Display" and turn the dial until the desired value appears (here: "off"). The recirculation pump will now only operate during heating once.



The display shows the set value.

Release "Display" to save your input.



Press "Back" to return to the next level up.

	Input range	Factory setting
recirculation per hour	off 1 cycles 2 cycles 3 cycles 4 cycles 5 cycles 6 cycles constant oper.	2 cycles

17 Characteristic heating curve

Using the "heating curves" menu, you can display the current heating curves of the relevant heating zones.

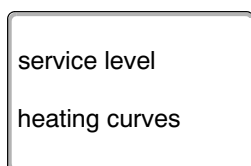
The supply temperatures (ST), which depend on the outdoor temperature (OT), are displayed.



Call up the service level. "general data" appears as the first main menu.



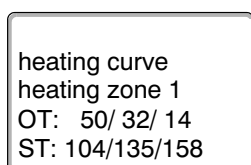
Turn the dial until main menu "heating curves" appears.



The display shows the selected main menu.



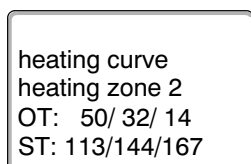
Press "Display" to call up a submenu (here: "heating zone 1").



The display shows the selected submenu.



Turn the dial until submenu "heating zone 2" appears.



The display shows the selected submenu.



Press "Back" to return to the next level up.

18 Running relay test

With the "relay test" menu, you can check whether you have correctly connected the external components (e.g. pumps).

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



CAUTION!

SYSTEM DAMAGE

through disabled functions.

The heat supply of the heating system is not assured during the relay test. All functions are disconnected from the control.

- Exit this function after the relay test to prevent system damage.

You can call up the following relays with the most frequently used modules in the Logamatic 4321/4322 control panels:

Boiler

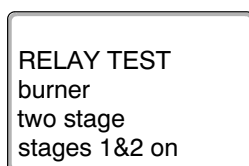
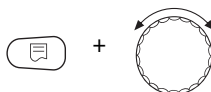
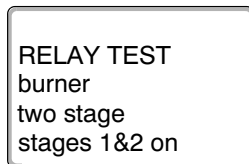
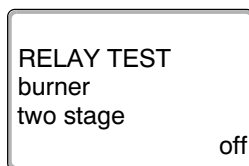
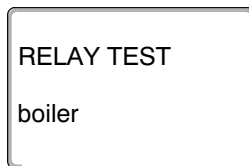
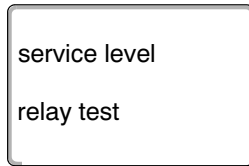
- Burner (incl. burner actuator)
- Actuator
- Boiler circulator

Heating zone 1 – 8

- Circulator
- Actuator

DHW

- Tank primary pump
- Recirculation pump



Relay test example

Call up the service level. "general data" appears as the first main menu.

Turn the dial until main menu "relay test" appears.

The display shows the selected main menu.

Press "Display" to call up a submenu (here: "boiler").

The display shows the selected submenu.

Press "Display" to call up a further submenu (here: "burner two stage").

The display shows the selected submenu.

Turn the dial until the submenu "burner two stage" appears.

The display shows the selected submenu.

Hold down "Display" and turn the dial until the desired value appears (here: "on").

The display shows the set value.

Release "Display" to save your input.

Press "Back" twice to return to the higher levels.



USER NOTE

At the end of the "relay test", all adjustments are cancelled.

19 Carrying out an LCD test

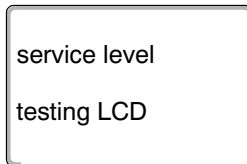
Using the "testing LCD" menu, you can check whether all symbols are fully displayed.



Call up the service level. "general data" appears as the first main menu.



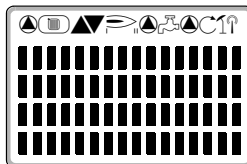
Turn the dial until main menu "testing LCD" appears.



The display shows the selected main menu.



Press "Display".



The LCD is OK if all signs and symbols are correctly displayed.



Press "Back" to return to the next level up.

20 Fault log

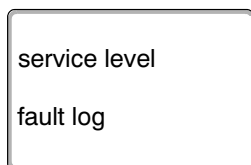
Using the "fault log" menu, you can display the last four fault messages of your heating system. The MEC2 can only display the fault messages of the control panel to which it is connected.



Call up the service level. "general data" appears as the first main menu.



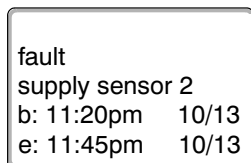
Turn the dial until main menu "fault log" appears.



The display shows the selected main menu.



Press "Display".



The fault message is displayed.

Fault messages recorded by the control panel will be displayed together with the beginning and end times of the fault.

The display will show "no fault" if the connected control panel has not recorded any faults.



Turn dial and scroll through the recent fault messages.



Press "Back" to return to the next level up.

Fault displays

The Logamatic 4321/4322 can display the following faults, if in addition to the ZM434, the most frequently-used function modules FM441 and the FM442 are installed.

- | | |
|--------------------------|--------------------------|
| – outdoor sensor | – no master |
| – supply sensor 1 – 8 | – BUS: addr.conf. |
| – DHW sensor | – Addr.conflict 1 – 4/A |
| – DHW warning | – wrong module 1 – 4/A |
| – DHW cold | – unknown module 1 – 4/A |
| – thermal disinfection | – return sensor |
| – remote control 1 – 8 | – inert anode |
| – communication HZ 1 – 8 | – external fault |
| – boiler supply sensor | – controller XY |
| – boiler aux. sensor | – unknown fault |
| – boiler cold | – no such strategy |
| – burner | – manual XX |
| – safety sequence | – service run time/date |
| – ext.fault boiler | – internal fault no. XX |
| – flue gas sensor | |
| – flue gas limit | |
| – ext. circulator 1 – 8 | |
| – ECO-BUS receive | |

With the use of other modules, additional fault messages are possible. For information about these, see the corresponding instructions.

21 Fault

Fault	Effect on control characteristics	Possible causes of fault	Remedy
outdoor sensor	– Minimum outdoor temperature is assumed.	<ul style="list-style-type: none"> – The outdoor sensor is either incorrectly connected, e.g. not to the control panel with address 1 in a multi-boiler system, is not connected at all, or is defective. – ZM434 boiler module or control defective. – Communication to control panel with address 1 is interrupted. 	<ul style="list-style-type: none"> – Check whether the outdoor temperature sensor has been connected to the correct control panel (to control panel with address 1). – Check communication with address 1. – Replace outdoor sensor or ZM434 boiler module.
supply sensor 1 – 8	– The mixer is fully open.	<ul style="list-style-type: none"> – Sensor incorrectly connected, not connected at all, or defective. If an actuator/mixer has been selected in the MEC2, the control panel demands the associated supply sensor. – FM441/FM442 module or control panel defective. 	<ul style="list-style-type: none"> – Check the sensor connection. – If the heating zone with a fault should be operated as an unmixed heating zone, check on the MEC2/service level/heating zone whether actuator: "no" was selected. – Replace FM441/442 module.
DHW sensor	– Heating of DHW is stopped.	<ul style="list-style-type: none"> – Sensor incorrectly connected, not connected at all, or defective. – FM441 module or control defective. 	<ul style="list-style-type: none"> – Check the sensor connection. – Replace sensor or FM441 module. – Check sensor connection on DHW storage tank.
DHW warning	– The system tries constantly to load the DHW storage tank.	<ul style="list-style-type: none"> – Temperature controller/manual switch is not set to "AUT". – Sensor not correctly connected or defective. – Incorrect sensor arrangement. – Primary pump incorrectly connected or defective. – FM441 module or control defective. 	<ul style="list-style-type: none"> – Check that temperature control or manual switch is set to "AUT". – Check function of sensor and tank primary pump. – Replace FM441 module. – Check sensor connection on DHW storage tank.
DHW cold	– In spite of a further attempt to heat up DHW, the DHW temperature falls below 104 °F (40 °C).	<ul style="list-style-type: none"> – Loading pump defective. – FM441 function module defective. – More DHW is used than is heated. 	<ul style="list-style-type: none"> – Check that temperature control or manual switch is set to "AUT". – Check function of sensor and tank primary pump. – Replace FM441 module. – Check sensor connection on DHW storage tank.
thermal disinfection	– Thermal disinfection is interrupted.	<ul style="list-style-type: none"> – Heat output of boiler is not sufficient, because other heat consumers (heating zones) take heat during thermal disinfection. – Sensor not correctly connected or defective. – Primary pump incorrectly connected or defective. – FM441 module or control defective. 	<ul style="list-style-type: none"> – Select thermal disinfection for a time at which no other heat is required. – Check the sensor and primary pump function, and replace if necessary. – Replace FM441 module.
remote control 1 – 8	<ul style="list-style-type: none"> – Because no actual room temperature is available, the effect of the following features is reduced: room effect, start and stop optimization and automatic adaptation. – The control operates with the last values set at the remote control. 	<ul style="list-style-type: none"> – Remote control incorrectly connected or defective. 	<ul style="list-style-type: none"> – Check function/connection of remote control. Check the addressing of the remote control. – Replace remote control/function module.

Tab. 4 Fault table

Fault	Effect on control characteristics	Possible causes of fault	Remedy
communication HZ 1 – 8	<ul style="list-style-type: none"> Because no actual room temperature is available, the effect of the following features is reduced: room effect, start and stop optimization and automatic adaptation. 	<ul style="list-style-type: none"> Remote control has an incorrectly allocated address. Remote control is incorrectly wired. Remote control is defective. Control is defective. 	<ul style="list-style-type: none"> Check function/connection of remote control. Check the addressing of the remote control. Replace remote control/function module.
boiler sensor	<ul style="list-style-type: none"> The boiler is enabled at maximum output. Emergency operation via the temperature control is possible. 	<ul style="list-style-type: none"> The sensor is not connected or is incorrectly connected. The sensor or the control is defective. 	<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"> Feed temperature control no longer possible. Mixers are fully open. Thermostream control is no longer possible. 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 is defective. 	<ul style="list-style-type: none"> Check sensor connection Replace additional boiler sensor or ZM434 boiler module.
boiler cold	<ul style="list-style-type: none"> Boiler protection (freezing and condensate protection) is not guaranteed. Boiler is enabled with maximum output. 	<ul style="list-style-type: none"> Temperature control/hand switch is not set to "AUT". Fuel has run out. Sensor layout is incorrect. Boiler sensor is defective. 	<ul style="list-style-type: none"> Check that temperature control or hand switch is set to "AUT". Check fuel level and feed. Check sensor arrangement. Replace boiler sensor.
burner	<ul style="list-style-type: none"> Boiler protection (freezing protection) is not guaranteed. No DHW. 	<ul style="list-style-type: none"> Burner defective, resulting in a 120 V fault signal at terminal BR 9. The ZM434 boiler module or the control is defective. 	<ul style="list-style-type: none"> Service burner as described in the boiler or burner documentation. Check the fault signal from the burner at terminal BR 9 (120 V signal). Fault signal: Check the burner function. No fault signal: Replace the ZM434 boiler module.
safety sequence	<ul style="list-style-type: none"> Boiler protection (freezing protection) is not guaranteed. 	<ul style="list-style-type: none"> The STB is tripped. The control is defective. 	<ul style="list-style-type: none"> Locate the cause for the manual reset high limit (STB) responding (incl. check control panel functions), then reset the manual reset high limit (STB) and press the reset button. Check whether an external STB is connected.
ext.fault boiler	<ul style="list-style-type: none"> There are no effects on the control characteristics. 	<ul style="list-style-type: none"> Fault input of the ZM434 boiler module has been wired. Externally connected components are defective or a fault is pending. 	<ul style="list-style-type: none"> Check the function of the external components and repair or replace them.
flue gas sensor	<ul style="list-style-type: none"> The emission limit value cannot be found. 	<ul style="list-style-type: none"> The sensor is not connected or is incorrectly connected. The sensor or the control is defective. 	<ul style="list-style-type: none"> Check sensor connection
flue gas limit	<ul style="list-style-type: none"> There are no effects on the control characteristics. 	<ul style="list-style-type: none"> The boiler is sooted up. Emission sensor is defective. 	<ul style="list-style-type: none"> Boiler must be cleaned. Check sensor connection and operation.
ext. circulator 1 – 8	<ul style="list-style-type: none"> There are no effects on the control characteristics. 	<ul style="list-style-type: none"> Fault input WF1/2 of the FM441/FM442 function module was opened. Externally connected heating zone pump is defective or a fault is pending. 	<ul style="list-style-type: none"> Check the function of connected heating pump. Replace the affected module.

Tab. 4 Fault table

Fault	Effect on control characteristics	Possible causes of fault	Remedy
ECO-BUS receive	<ul style="list-style-type: none"> – No effect on the control characteristics. 	<ul style="list-style-type: none"> – Rotary code switch behind MEC2 in the CM431 controller module of the control is incorrectly addressed. – Fault example: System with a control panel and dial position > 0. 	<ul style="list-style-type: none"> – Check the position of the dial: – Position 0: Only 1 BUS subscriber present. – Position 1: Master control panel (other BUS subscriber is expected). – Position > 0: other BUS subscribers present.
no master	<ul style="list-style-type: none"> – Boiler protection is not guaranteed. – DHW priority is no longer possible. – It is calculated with a minimum outdoor temperature. 	<ul style="list-style-type: none"> – Master control panel (address 1) is switched off or no master (address 1) is available. 	<ul style="list-style-type: none"> – Check the addresses of all bus devices. Address 1 must be allocated to the master control panel (dial behind the MEC2 in the CM431 of the control panel). – Check the BUS connection to address 1.
BUS: addr.confl.	<ul style="list-style-type: none"> – Bus communication no longer possible. – All control functions requiring data exchange via the ECOCAN-BUS can no longer be implemented. 	<ul style="list-style-type: none"> – Multiple identical addresses are present. – Each address must only be allocated once in the ECOCAN-BUS network. 	<ul style="list-style-type: none"> – Check the addresses of all BUS subscribers (dial behind MEC2 in CM431 of the control panel).
Addr.conflict 1 – 4/A	<ul style="list-style-type: none"> – Functions of the module where the address conflict occurs cannot be executed. However, communication of all other modules and control panels via the ECOCAN-BUS is still possible. 	<ul style="list-style-type: none"> – The module has been plugged into the wrong slot/control panel: Some modules can only be operated at specified CAN addresses. – Install the strategy module only into the master control panel with address 1. – The ZM434 boiler module must not have an address > 3. 	<ul style="list-style-type: none"> – Check module arrangement.
wrong module 1 – 4/A	<ul style="list-style-type: none"> – All outputs are switched off from the module and the corresponding error LED is switched on. 	<ul style="list-style-type: none"> – Incorrect module default in MEC2. – Incorrect module installed in control. – The MEC2, the corresponding module or the control is defective. 	<ul style="list-style-type: none"> – Check module defaults at the MEC2 service level. – Check the modules installed in the control. – Replace the MEC2/module.
unknown module 1 – 4/A	<ul style="list-style-type: none"> – All outputs are switched off from the module and the corresponding error LED is switched on. 	<ul style="list-style-type: none"> – The control software is too old to be able to use the module. – The module or control is defective. 	<ul style="list-style-type: none"> – Check the control panel version in the MEC2. – Replace the module.
return sensor	<ul style="list-style-type: none"> – Feed temperature control no longer possible. 	<ul style="list-style-type: none"> – The sensor is not connected or is incorrectly connected or is defective. – The sensor or the control is defective. 	<ul style="list-style-type: none"> – Check sensor connection.
inert anode	<ul style="list-style-type: none"> – No effects. 	<ul style="list-style-type: none"> – A voltage is applied at the external input WF1/2. – Module or control panel is defective. 	<ul style="list-style-type: none"> – Replace the inert anode. – Replace the FM441 module in the control.
external fault	<ul style="list-style-type: none"> – No effects. 	<ul style="list-style-type: none"> – A voltage is applied at the external input WF1/2. – Module or control panel is defective. 	<ul style="list-style-type: none"> – Check the function of external components (DHW storage tank primary or DHW circulation pump) and their repair/replacement.
controller XY			<ul style="list-style-type: none"> – Set the MEC2 to the control with the stated address. The exact type of fault is displayed.

Tab. 4 Fault table

Fault	Effect on control characteristics	Possible causes of fault	Remedy
unknown fault	<ul style="list-style-type: none"> – Uncertain, depends on the error type. – Error is not recognized by the MEC. 	<ul style="list-style-type: none"> – New control panel or controller module replaced, but older MEC version. 	<ul style="list-style-type: none"> – Check version. – If necessary use MEC2 with new version.
no such strategy	<ul style="list-style-type: none"> – Boiler 1 is started. All other boilers remain switched off. 	<ul style="list-style-type: none"> – Multiple boiler controls have been connected via the ECOCAN-BUS. – The strategy module is not present or is not detected. 	<ul style="list-style-type: none"> – Place the strategy module in the control with address 1.
manual XX	<ul style="list-style-type: none"> – Control is run in manual mode. 	<ul style="list-style-type: none"> – Someone may have forgotten to set the manual switch of a function module to "AUT". 	<ul style="list-style-type: none"> – Set the manual switch of the module to "AUT".
service run time/date	<ul style="list-style-type: none"> – No influence on control characteristics. 	<ul style="list-style-type: none"> – The period set until the next service has expired. 	<ul style="list-style-type: none"> – Carry out service and then reset the service message.
internal fault no. XX	<ul style="list-style-type: none"> – Messages may be lost. 	<ul style="list-style-type: none"> – An internal data blockage may occur for a short time, and is cleared after a few minutes. – An EMC fault is pending: – The control is defective. 	<p>If the error is pending for a longer time or occurs repeatedly for a short time:</p> <ul style="list-style-type: none"> – the module or the control is defective and must be replaced or – there is an EMC fault that must be removed.

Tab. 4 Fault table

22 Actual data

Using the "act system data" menu you can display the set and actual values. The menus described in these instructions relate exclusively to the Logamatic 4321/4322 control panel and the most commonly used FM441 and FM442 modules.

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.

You can display data for the following components (if installed):

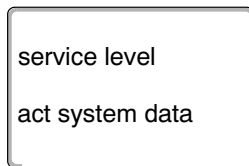
- Boiler
- Heating zones
- DHW
- Monitor data of other installed modules

22.1 Boiler monitor data

The monitoring screens are subject to the settings made.

Using the monitor menu "boiler" you can display the boiler data.

Call up the service level. "general data" appears as the first main menu.



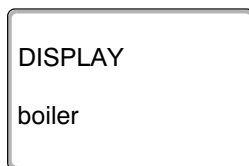
Turn the dial until main menu "act system data" appears.

The display shows the selected main menu.

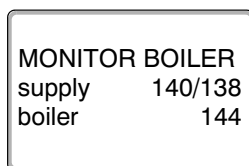


Press "Display".

The display first shows submenu "boiler".



Turn the dial until the desired submenu appears (here: "Supply 60/59").



The display shows the selected submenu.



Press "Display".

MONITOR BOILER	
outdoor	50
avg temp	54
flue 0	max 0

Boiler data is shown on the display

The "avg temp" value describes the outdoor temperature, taking the specified type of building into consideration, with which the heating curve is calculated.



Turn the dial to scroll through additional boiler monitor data.

MONITOR BOILER	
burner	off
output	0%

Burner control data is shown on the display.

Burner status: on/off
currently demanded output (in %)

MONITOR BOILER	
boiler circ	off
act.pos.	0%

Example: Maintenance message according to hours run (or according to date)

The service call appears on the display.

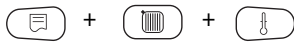
MONITOR BOILER	
service call	
after	6000 h
expired	2100 h



Press "Back" to return to the next level up.

22.2 Heating zone monitor data

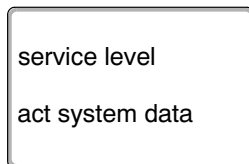
Using the monitor menu "heating zone" you can display the data for one heating zone.



Call up the service level. "general data" appears as the first main menu.



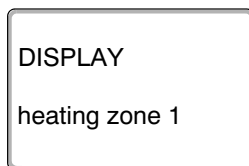
Turn the dial until main menu "act system data" appears.



The display shows the selected main menu.



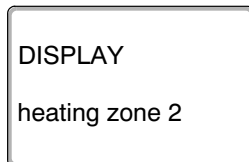
Press "Display" to call up a submenu (here: "heating zone 1").



The display shows the selected submenu.



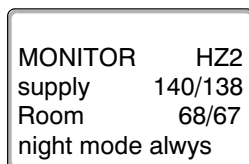
Turn the dial until submenu "heating zone 2" appears.



The display shows the selected submenu.



Press "Display".



The set and actual values for the **supply and room temperatures** are displayed.

The last line displays one of the following **operating modes**:

- night mode always
- day mode always
- auto mode always
- automatic day
- vacation
- summer
- startopt
- stopopt.
- slab
- DHW priority
- no setback



Turn the dial to scroll through the heating zone monitor data.

MONITOR	HZ2
design	167
startopt	15min
stopopt.	30min

Design temperature adaptation

This value displays the design temperature calculated by adaptation.

Start optimization

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

Stop optimization

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

Turn the dial to scroll through the heating zone monitor data.



MONITOR	HZ2
act.pos.	50%
circulator	off

Actuator

Indicates the calculated controlling pulse in percent.

Example:

- 0 % = no control command
- 50 % = actuator is commanded in a cycle of 10 seconds for 5 seconds in the direction "Mixer opens" (hotter).
- -100 % = actuator is controlled every 10 seconds for 10 seconds towards "Mixer closes" (colder) (constant).

Circulator

Indicates the operating condition of the circulation pump.



Press "Back" to return to the next level up.

22.3 DHW monitor data

The "DHW" monitor menu can be used to display data for DHW settings.

The displays depend on the settings that have been selected in the "DHW" function.



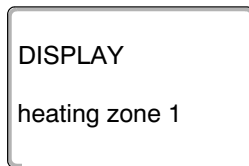
Call up the service level. "general data" appears as the first main menu.



Turn the dial until main menu "act system data" appears.



Press "Display" to call up a submenu (here: "heating zone 1").



The display shows the selected submenu.



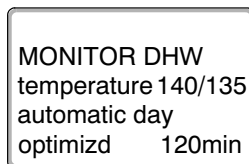
Turn the dial until submenu "DHW" appears.



The display shows the selected submenu.



Press "Display".



The calculated set value and the actual value for the **DHW temperature** are displayed.

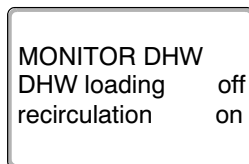
Possible operating modes:

- off
- constant oper.
- auto mode always
- automatic day
- vacation
- optimization
- disinfection
- reloading
- daily heat up

optimizd

Indicates the period during which the system starts DHW heating before the actual set point, to achieve the set DHW temperature in good time.

Rotate selector to scroll through the DHW monitor data.



DHW loading

Indicates the operating status of the storage tank primary pump.

recirculation

Indicates the operating condition of the DHW circulation pump.



Press "Back" to return to the next level up.



Turn the dial to scroll through the substation monitor data.

23 Display version

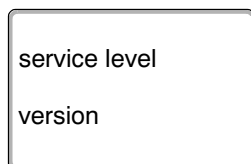
Using the "version" menu you can display the MEC2 remote control version as well as that of the selected control panel.



Call up the service level. "general data" appears as the first main menu.



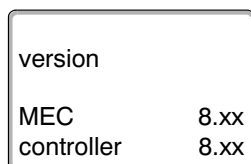
Turn the dial until main menu "version" appears.



The display shows the selected main menu.



Press "Display" to call up a submenu.



The versions for the MEC2 remote control and the control panel are displayed.



Press "Back" to return to the next level up.

24 Selecting the control panel

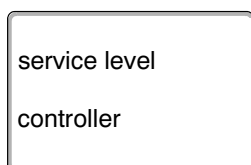
With the "controller" menu you can select a control panel, if the **MEC2** is operated **offline**, i.e. without connected control panel or with a separate power supply unit.



Call up the service level. "general data" appears as the first main menu.



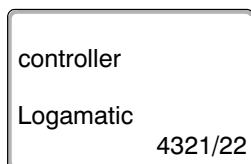
Turn the dial until main menu "controller" appears.



The display shows the selected main menu.



Press "Display" to call up a submenu (here: "Logamatic 4321/22").



The display shows the selected submenu.

25 Reset to the factory settings

With the "reset" menu you can return all settings of the operator or service level to the factory settings.

Available resets:

- Control panel settings
All settings of the operator or service level are reset to the factory settings. Exception: The timer program is retained.
- Burner hours run
The hours run by the burner and the number of burner starts are returned to 0.
If the burner type was selected to be "2 single stages", 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 log are deleted.
- Maximum flue gas temperature
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.
The 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 amount
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.
- Service call
This reset will only be shown if a service call was triggered.
This reset deletes the service call or starts the next maintenance interval.

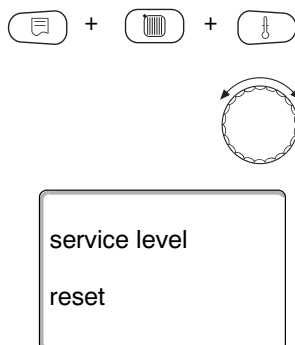
After maintenance is completed, the service call must be reset. This restarts the maintenance interval. Note that in the case of service calls by date the next service date is reset to one year ahead.

Example: Reset fault log

Call up the service level. "general data" appears as the first main menu.

Turn the dial until main menu "reset" appears.

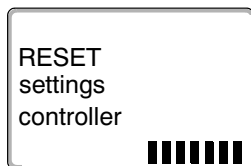
The display shows the selected main menu.





Briefly press "Display" to call up a submenu (here: "settings controller"). All settings may be lost if you press for too long.

The display shows the selected submenu.



Turn the dial until "fault log" appears.

The display shows the selected submenu.



Press and hold "Display".

The blocks in the last line disappear one after another. The fault log will only be reset when no block is being displayed anymore. If the button is released while a block is still visible, the reset is canceled. After implementing a reset, the display automatically reverts to the next level up.



When terminating a reset, press "Back" to return to the next level up.

26 Sensor characteristics

- Isolate the heating system from the power supply before taking any readings.

Using the diagram you can check whether temperature and resistance correlate.

Fault test (without room temperature sensor)

- Remove the sensor terminals.
- Check the resistance at the sensor lead ends using an ohmmeter.
- Check the sensor temperature with a thermometer.



USER NOTE

For all curves, the sensor tolerance is up to 3 %/77 °F (25 °C).

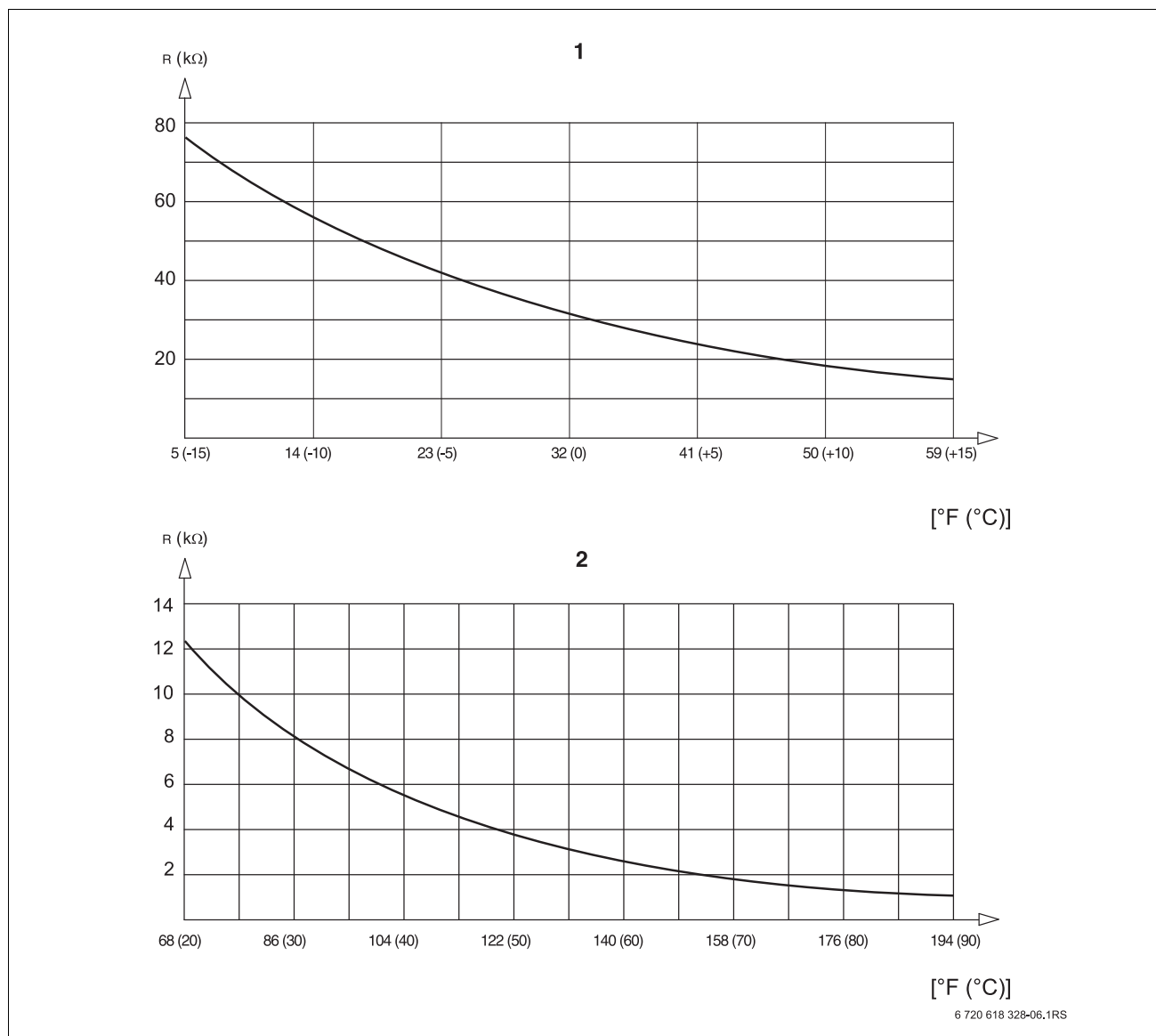
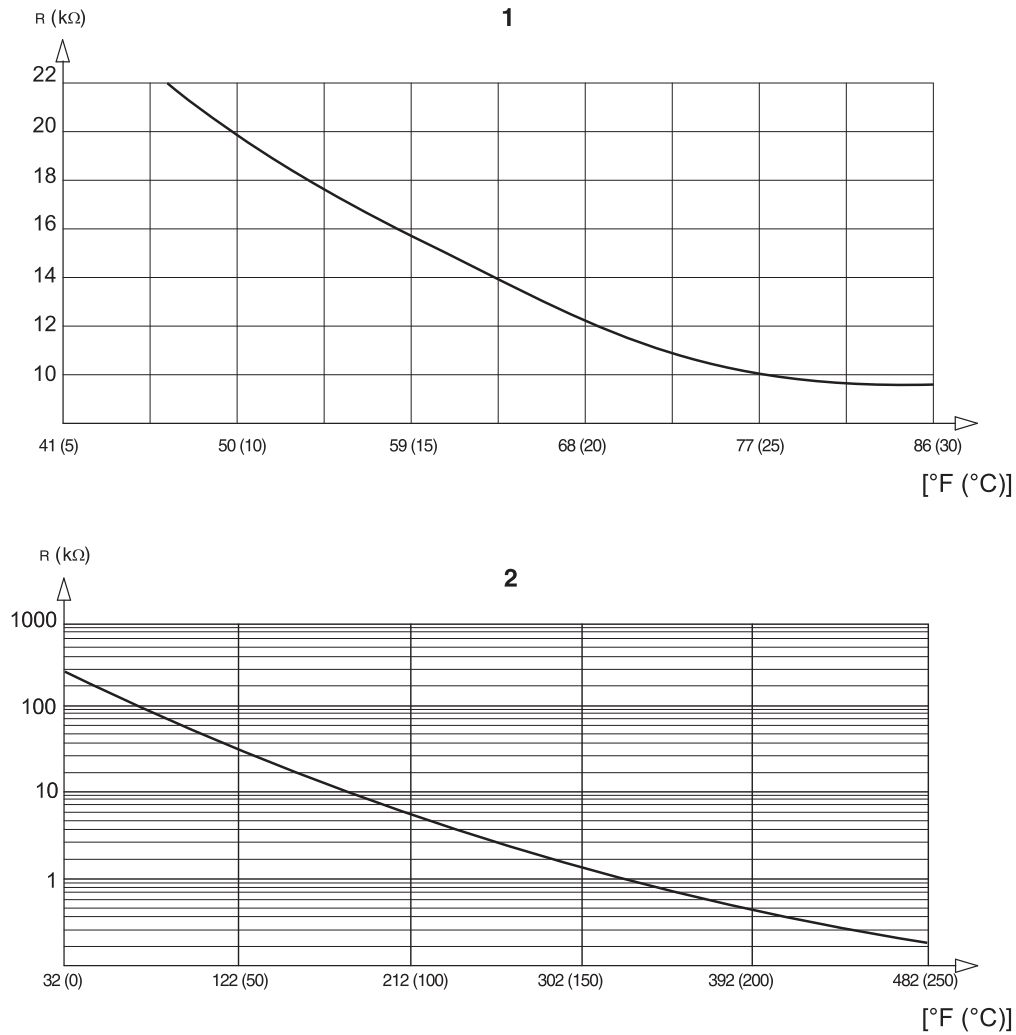


Fig. 24 Outdoor temperature sensor and boiler water, feed, DHW temperature sensor

- 1 Outdoor temperature sensor curve
- 2 Boiler water, supply, DHW and auxiliary temperature sensor curve



6 720 618 328-07.1RS

Fig. 25 Room temperature and emission temperature sensor

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

27 Setting specific boiler characteristic data

Allocation of boiler type to the corresponding Buderus boiler. You can adjust the boiler type on the service level under boiler parameters (→ Chapter 14).

- **Low temperature:**

for activation with boiler series:

Logano G125, GB125, G215, S125 Thermo

Logano G234, G334

- **Calorific value:**

for activation with boiler series:

Logano plus SB315, SB615, SB735

- **Thermostream:**

for activation with boiler series:

Logano GE315 ^{1) 2)}, GE515 ¹⁾, GE615 ¹⁾



USER NOTE

The same control configuration is applicable for the gas boilers with external heat exchangers.

Logano plus G315 ^{1) 2)}, G515 ¹⁾, G615 ¹⁾

¹⁾ Operating supply temperature control via heating zone actuators or separate boiler circuit actuator.

²⁾ Subject to hydraulic connection.

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