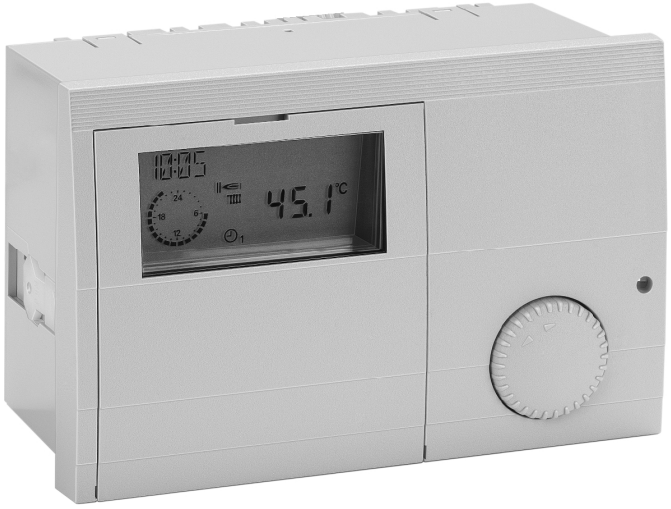
E8.5064 V1

System Manager

Installation Manual



Please observe the safety instructions and read through this manual carefully before commissioning the equipment.

Safety information

Power connection regulations

Please note the connection conditions specified by your local electrical power supply company and the VDE regulations.
Your heating control system may only be installed and serviced by appropriately authorised specialists.

⚠ For fixed devices, a facility for mains disconnection in accordance with EN 60335 must be installed in compliance with the installation specifications (e.g. switch).

⚠ The mains lines insulation must be protected against damage caused by overheating (e.g. insulation hose).

⚠ The minimum distance to installation objects in the vicinity must be chosen so that the permitted ambient temperature is not exceed during operation (see table - Technical Data).

⚠ If the system is not installed properly, persons using it are at put at risk of fatal or serious injury (electric shock).
Ensure the controller is de-energized prior to performing any work on the controller!

Safety

Please read and keep in a safe place

Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator.

Warranty conditions

If the system is not installed, commissioned, serviced and repaired properly, it will render the manufacturer's warranty null and void.

Conversion

All technical changes are prohibited.

Transport

On receipt of the product, check that the delivery is complete. Report any transport damage immediately.

Storage

Store the product in a dry place. Ambient temperature: see Technical data.

Important text passages

! Important information is highlighted by an exclamation mark.

⚠ This attention symbol indicates dangerous situations.

Note

! The operating manual describes the maximum version of the controller, meaning that not all statements are relevant for your device.

General Notes

! With regard to installation, operation, and maintenance, the following instructions must be observed. This device must only be installed by a specialist technician. Improperly performed repairs can subject users to considerable risks.

! To comply with applicable regulations, the instructions for assembly and operation must be readily available at all times and must be handed over to the responsible engineer when working on the device for his attention.

Description

Declaration of conformity

CE

We the manufacturer declare the product E8.5064 is in conformity with the fundamental requirements of the following directives and standards.

Directives:

– 2004/108/EC, 2006/95/EC

Standards:

– EN 60730-1, EN 60730-2-9

The manufacture is subject to the quality management system in accordance with DIN EN ISO 9001.

Function

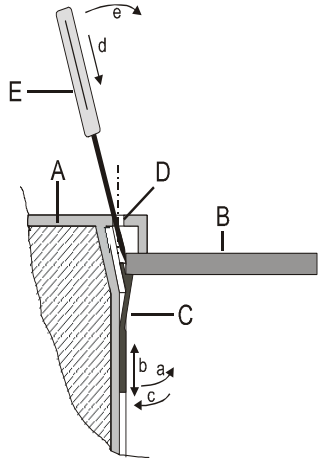
The device contains a number of functions and must be set in accordance with use. The following functions are mapped in the System Manager:

- Cascade modulating HS
- Cascade switching HS
- Control of 2 HS or 2-stage HS via relay
- Water heating, 2 mixed heating circuits, as well as 2 extra functions
- Demand-related circulation pump control
- Automatic toggle between summer and winter time
- Activation of a timer is possible

Inhaltsverzeichnis

Installation

Assembly/Dismantling



Sketch showing basic mode of operation:

A Controller, side view, cutaway view
B Control panel plate
C Mounting clamp
D Unlocking holes (see Chapter Changing set values)
E Sharp-pointed tool

Installing the controller:

1. Set the mounting clamp to the wall thickness of the control panel (at the left and right-hand side of the unit):

a. Pull the mounting clamp at the low away from the controller wall (toothing).

b. In this condition, slide the mounting clamp down or up until the distance from the edge of the unit corresponds to the thickness of the control panel wall.
Detent position 1 ≅ 0.5 - 1.0 mm wall thickness
Detent position 5 ≅ 5.0 mm wall thickness

c. Press the mounting clamp against the controller wall at the low.

2. Press the controller into the control panel recess and check that it is firmly secure. If the controller wobbles: Remove the controller and move the mounting clamps up.

Removing the controller:

⚠ Disconnect the unit from the power supply before removing it.

d) Insert a sharp-pointed tool at an angle with respect to the exterior wall into one of the unlocking holes (the tool must be slid between mounting clamp and control panel wall).

e) Lever the tool with respect to the unit exterior wall. This causes the mounting clamp to release the control panel wall.

Raise the unit slightly at the corresponding side and repeat the procedure on the other side of the unit.

The unit can now be removed.

Electrical Connection

Connecting instructions

⚠ The controller is designed for an operating voltage of 230 V AC at 50 Hz. The burner contact is potential-free and must always be connected in series with the mechanical boiler thermostat (if present).

⚠ Important: Bus lines and sensor lines must be laid separately, away from mains cables!

! After connecting or modifying the connections of sensors and remote controls the controller must be briefly switched off (mains switch/fuse). The function of the controller is reconfigured in accordance with the connected sensors the next time the controller is switched on.

Note for installation in connection with digital room device

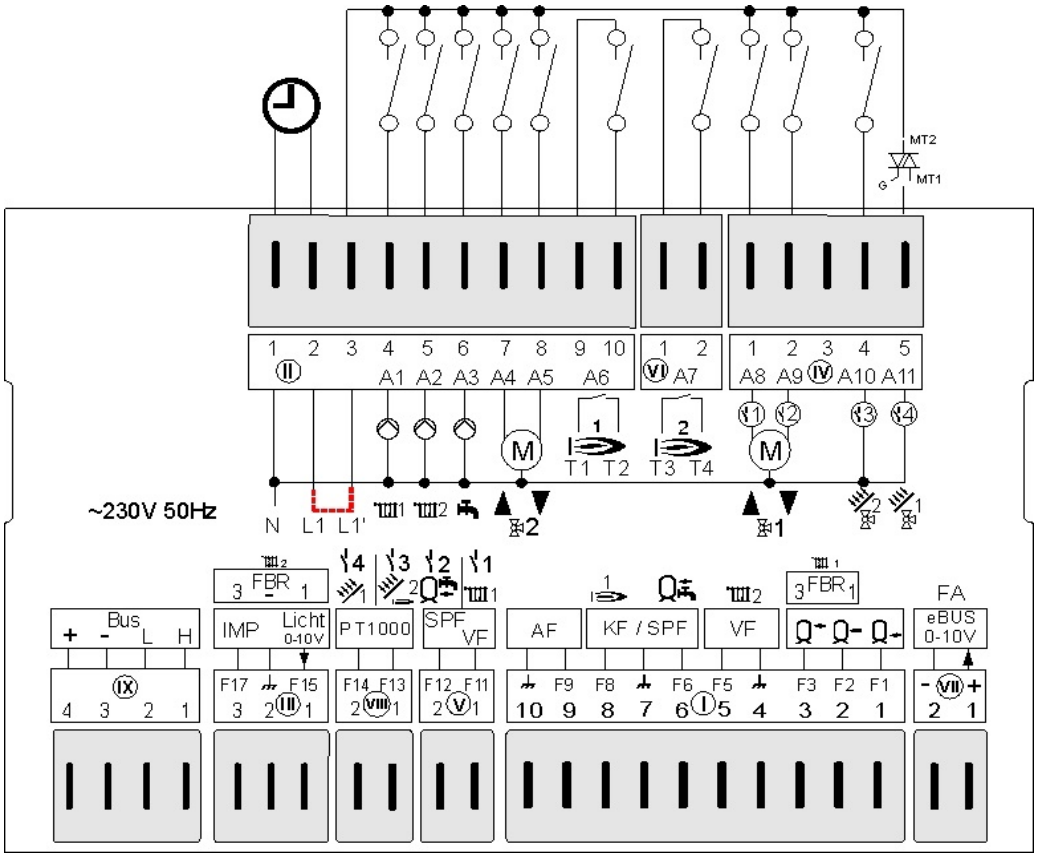
When installing a digital room device, the heating circuit-specific set values are adjusted at the room device. These values are automatically superceeded inside the controller.

! If during operation the digital room device is separated from the BUS for a longer time period (>5 min), the heating controller will continue to work with its own set values.

In order to avoid damages in case of errors - for deviations from relevant set values (such as maximum flow temperature for floor heaters) - we suggest the following procedure:

1. Installing the new heating controller
2. Set all values for heating controller
3. Install one digital room device
4. Set all values for digital room device

Connection diagram ~ 230 V; Relay switching capacity 2 (2) A, ~ 250 V



Terminal assignment

Sensors

VII (1+2): eBUS (FA) or 0 - 10 V output
I (1,2,3+⏚): F1/F2/F3 = buffer storage tank low/middle/top
I (2+3+⏚): FBR2 (FBR1) for heating circuit 1
I (2+⏚): F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): F8 = Boiler sensor/header sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1/ Multifunction relay sensor ≀ 1
V (2+⏚): F12 = Hot-water tank low/ Multifunction relay sensor ≀ 2
VIII (1+⏚): F13 = PT1000 => HS2/collector 2/ Multifunction relay sensor ≀ 3
VIII (2+⏚): F14 = PT1000 => Collector 1/ Multifunction relay sensor ≀ 4
III (1-3): FBR2 (FBR1) for heating circuit 2
III (1+2): F15 = 0-10V input/light sensor/ Room sensor for heating circuit 2
III (2+3): F17 = Pulse counter for output measurement
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = Burner stage 1/HS 1
VI (1+2): A7 = Burner stage 2/HS 2/Solid fuel
IV (1): A8 = Mixer motor heating circuit 1 on/ Multifunction relay ≀ 1
IV (2): A9 = Mixer motor heating circuit 1 to/ Multifunction relay ≀ 2
IV (3): A10 = Collector pump 2/Switching valve to solar tank 2/Multifunction relay ≀ 3
IV (4): A11 = Collector pump 1 (ON / OFF) multifunction relay ≀ 4

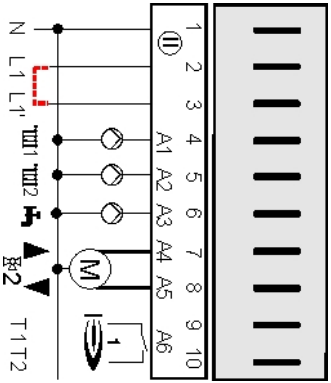
⚠ **Important:** Bus lines and sensor lines must be laid separately, away from mains cables!

Power terminal assignments

Plug 2 [II]

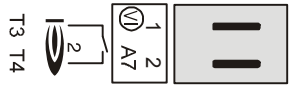
Options

Provided no separate regulations for protecting the relay apply, a bridge to supply the relay must be connected between terminals II 2 and II 3.



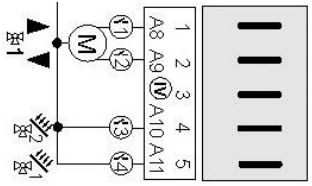
N: Neutral conductor, mains
L1: Power supply, unit
L1´: Power supply to relay
1: heating circuit pump HC 1
2: heating circuit pump HC 2
: Storage tank charging pump
: Mixer open, heating circuit 2
: Mixer closed, heating circuit 2
: Burner stage 1
: Burner stage 1

Plug 6 [VI]



: Burner stage 2/HS2
: Burner stage 2/HS2

Plug 4 [IV]

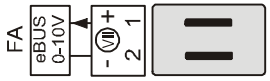


: Mixer heating circuit 1 open / Multifunction relay 1
: Mixer heating circuit 1 close / Multifunction relay 2

Collector pump 2/Switching valve / Multifunction relay 3
Collector pump 1(ON / OFF) / Multifunction relay 4

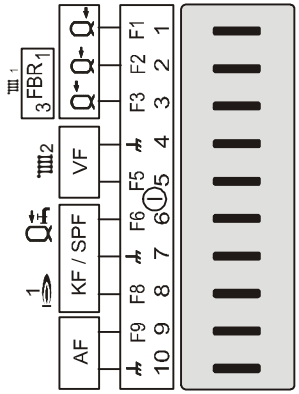
Sensor terminal assignments

Connector 7 [VII]



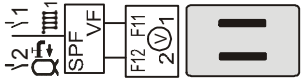
Pin 1: eBUS (FA) or 0 - 10 V output
Pin 2: (Ground BUS/0 - 10 V)

Connector 1 [I]



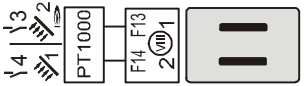
Pin 1: Buffer storage tank low sensor
Pin 2: Buf. stor. tank middle sensor/FBR heat. circ. 1 (room sensor)
Pin 3: Buf. stor. tank top, sensor/FBR heating circuit 1 (set value)
Pin 4: Flow sensor, heating circuit 2 (ground)
Pin 5: Flow sensor, heating circuit 2
Pin 6: Waste water sensor
Pin 7: Waste water and boiler sensor (ground)
Pin 8: Boiler sensor
Pin 9: Outdoor sensor
Pin 10: Outdoor sensor (ground)

Connector 5 [V]



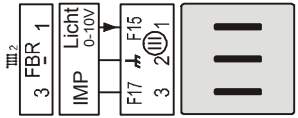
Pin 1: Flow sensor heating circuit 1/sensor multifunction 1
Pin 2: Service water low sensor/sensor multifunction 2

Connector 8 [VIII] => **PT 1000 sensor**



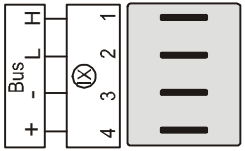
Pin 1: Sensor HS2/Solar 2/Multifunction relay 3
Pin 2: Sensor Solar 1/Sensor multifunction relay 4

Connector 3 [III]



Pin 1: FBR heating circuit 2 (room sensor)/0 - 10 V IN/Light
Pin 2: FBR heating circuit 2 (ground)
Pin 3: FBR heating circuit 2 (set value)/Pulse counter for output measurement

Connector 9 [IX]



CAN Bus Pin 1 = H (Data)
CAN Bus Pin 2 = L (Data)
CAN Bus Pin 3 = - (ground, Gnd)
CAN Bus Pin 4 = + (12 V supply)

Remote controls

Operation-control module Merlin BM, BM 8, Lago FB

(Only for controller models with CAN-Bus connection)

Electrical connection: Connector IX; 1 - 4
The controller permits connection of an operation-control module BM for each heating circuit via a bus line. The operation-control module allows various operation-control functions and monitoring functions for the system values to be relocated to the main controlled zone – i.e. the living room. This achieves maximum comfort and convenience. Please refer to the technical description of the BM for a precise description of the overall scope of functions.

- Display of the system parameters
- Entry of the heating circuit parameters
- Room temperature control
- Automatic adaptation of the heat slope (not Lago FB)

Remote control FBR2

Electrical connection: HC1: Connector I; 2, Ground and 3
or HC2: Connector III; 1 - 3

- Rotating switch for modifying room temperature setting

Adjusting range: (± 5 K)

- Room control via the integrated room sensor
- Rotating switch for selecting operating mode

⏻ Standby/OFF (frost protection only)
$\mathbb{O}_1$ Automatic mode (according to timer program 1 in controller)
$\mathbb{O}_2$ Automatic mode (according to timer program 2 in controller)
☽ 24-hour night operation (reduction temperature)
☼ 24-hour daytime operation (comfort temperature)
Summer mode (heating OFF, hot water only)

Depending on the version, your FBR supports a portion of the following operating modes.

! The operating mode at the controller must be set to $\mathbb{O}$.

The controller can also be operated with an FBR1.

Installation location:

- In reference/main living room of the heating circuit (on an inside wall of the room).
- Not in the vicinity of radiators or other heat dissipating units.
- Any, if the room sensor influence is switched off.

Installation:

- Remove cap from underside of pedestal.
- Secure the base at the installation location.
- Connect the electrical connection cables.
- Press the cap back on.

Sensor resistances FBR

Temperature	FBR1 terminals 1-2 switch in position ◷	FBR2 terminals 1-2 Room sensor
+10 °C	680 Ω	9950 Ω
+15 °C	700 Ω	7855 Ω
+20 °C	720 Ω	6245 Ω
+25 °C	740 Ω	5000 Ω
+30 °C	760 Ω	4028 Ω

DCF receiver

Electrical connection: Connector VII; Terminal 1, 2
The controller can evaluate a eBUS DCF receiver on the eBUS FA-Terminals.

If the DCF receiver is connected, the controller time is updated as soon as the DCF transmits a valid time on the BUS.

If the time has not been corrected after max. 10 min, select a different place of installation for the DCF (e.g. another wall - not in proximity to TV devices, monitors or dimmers).

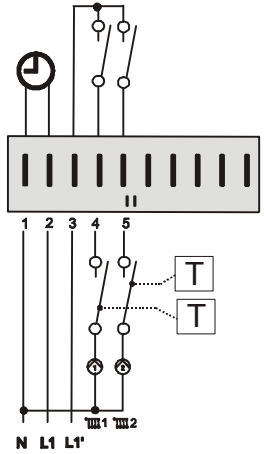
PC

All system-specific parameters can be set and interrogated using the C*omfort*S*oft* parameterisation software. The parameters can be saved, displayed graphically and evaluated on the PC at predefined intervals. T connect to a PC you need the optical adapter or CoCo PC active, which also supports the sending of error messages by SMS and the remote interrogation of controller data.

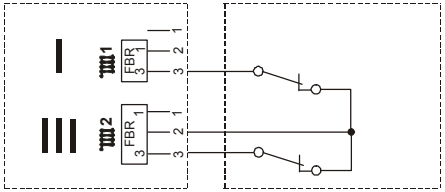
Maximum delimiter

If a maximum delimiter is required it must be connected between the heating circuit pump and the pump controller switch output.

Connector I, terminals 4 and 5



Telephone switch



The heating system can be switched to Heating mode ✳ with a telephone switch. The connection terminals of the controller for the remote control FBR (see connection diagram) are used for installation. As soon as a short circuit between terminal 3 of the FBR and ground (FBR terminal 2) is detected, the assigned heating circuit is switched to heating mode. Additionally the hot water preparation is activated (only for controllers with hot water preparation). When the short-circuit is eliminated, the controller once again heats on the basis of the set heating program.

⚠ If the heating circuit is controlled remotely by an operating module, the telephone switch must be connected at the operating module.

Sensor values/characteristic curve

Temperature	5 kOhm NTC	1 kOhm PTC	PT1000
-60 °C	698961 Ω	470 Ω	
-50 °C	333908 Ω	520 Ω	
-40 °C	167835 Ω	573 Ω	
-30 °C	88340 Ω	630 Ω	
-20 °C	48487 Ω	690 Ω	922 Ω
-10 °C	27648 Ω	755 Ω	961 Ω
0 °C	16325 Ω	823 Ω	1000 Ω
10 °C	9952 Ω	895 Ω	1039 Ω
20 °C	6247 Ω	971 Ω	1078 Ω
25 °C	5000 Ω	1010 Ω	1097 Ω
30 °C	4028 Ω	1050 Ω	1118 Ω
40 °C	2662 Ω	1134 Ω	1155 Ω
50 °C	1801 Ω	1221 Ω	1194 Ω
60 °C	1244 Ω	1312 Ω	1232 Ω
70 °C	876 Ω	1406 Ω	1270 Ω
80 °C	628 Ω	1505 Ω	1309 Ω
90 °C	458 Ω	1607 Ω	1347 Ω
100 °C	339 Ω	1713 Ω	1385 Ω
110 °C	255 Ω	1823 Ω	1422 Ω
120 °C	194 Ω	1936 Ω	1460 Ω

5 kOhm NTC: AF, KF, SPF, VF

1 kOhm PTC: AFS, KFS, SPFS, VFAS

The controller can be operated with 5 kOhm NTC (standard) or 1 kOhm PTC sensors. The sensor type is selected in the start-up level during start-up.

The start-up level is displayed when the operating cover is opened after the supply voltage has been switched on (once only). It can be reactivated again by briefly switching the supply voltage off.

The sensor switchover affects all sensors.

Exceptions:

- Attaching an analogue remote control is detected automatically. This means that the previous and new versions can be connected to the controller [connector I; 2, ground, 3 and connector III; 1 - 3].

Sensors

Outside sensor AF (AFS)

Order no. AF, 5 kΩ: 99 679 030
Order no. AFS, 1 kΩ: 99 679 001

Scope of supply
Outside sensor, screw and dowel

Installation location:

- Wherever possible, on a northerly or north-easterly wall behind a heated room
- Approx. 2.5 m above ground
- Not above windows or ventilation shafts

Installation:

- Pull cover off sensor.
- Fasten sensor with enclosed screw
- Connect electrically

Immersion sensor KF (KFS) /SPF (SPFS)

Order no. KF/SPF, 5 kΩ, 3 m, ø 6.0x50: 99 676 769
Order no. KFS/SPFS, 1 kΩ, 3 m, ø 6.0x50: 99 676 682

Installation location:

- In the immersed pipe of the hot-water cylinder tank (generally on the front face of the tank)

Installation:

- Slide the sensor as far as possible into the immersed pipe.

! The immersed sleeve must be dry.

- Connect electrically

Strap-on sensor VF (VFAS)

Order no. VF, 5 kΩ, 3 m, ø 6.0x50: 99 679 073
Order no. VFAS, 1 kΩ, 3 m, ø 6.0x50: 99 679 051

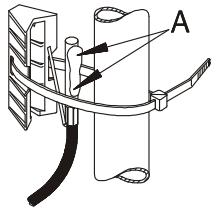
Scope of supply
Flow sensor, thermal compound, retaining strap, pressure cap

Installation location:

- In the case of boiler control instead of the boiler sensor KF as close as possible behind the boiler on the heating flow pipe
- In the case of mixer operation approx. 0.5 m behind the circulation pump

Installation:

- Thoroughly clean the flow pipe.
- Apply heat conductive paste (A)!!
- Secure sensor with stretch band.
- Connect electrically



! **Only sensor of one type may be used**

System bus

The heating system

1 - 8 Boiler (modulating or switching)
1 - 15 Mixed weather-dependent heating circuits
0 - 15 Room controller (digital or analogue)
1 Solar system (2 collectors, 2 storage tanks)
1 Solid fuel boiler

Bus ID

For mixer motor controllers and control units

The bus ID (00 - 15; expert level parameter) is used to number the heating circuits in the system. Each operating module and each mixer motor module is given the number of the assigned heating circuit as its bus ID.

- Heating circuit numbers (00 - 15) may not be assigned twice.
- Heating circuit numbers 00 and 01 may not be used simultaneously.
- The heating circuits are sequentially numbered starting with "01".
- Please only use heating circuit number 00 for replacement controllers if "00" was used in the replaced controller.

Pre-settings

Heating circuit 1 ➔ 01
Heating circuit 2 ➔ 02

! After setting all the bus ID's the system must be reenergised (once only).

Input of the basic setting

! Please ensure that you set the desired operating mode **after** installation is complete.

! Please enter the settings in the order specified (=> priorities).

Operation in normal mode

(operating flap closed)

Operating elements

Change the set operating mode

Operating mode selection

Turn the knob to select the operating mode required. The operating mode selected is indicated by a symbol at the bottom of the display. It takes effect when the setting is not changed for 5 s.

The following operating modes are available for selection:

Standby/OFF
(Heating OFF and hot water preparation OFF, only frost protection mode) Exception: see F15 Function page 31

AUTOMATIC 1 (Automatic mode 1)
(Heating according to timer program 1; HW according to HW program)

AUTOMATIC 2 (Automatic mode 2)
(Heating according to timer program 2; HW according to HW program)

HEATING (Day mode)
(24 h heating with comfort temperature 1; HW according to HW program)

REDUCING (Night mode)
(24 h heating with reduced temperature; HW according to program)

SUMMER (Summer mode)
(Heating OFF, HW according to HW program)

Service (automatic reset after 15 min)
Boiler regulates to boiler target temperature = maximum boiler temperature. When the boiler temperature has reached 65 °C, the consumers are regulated to their maximum flow temperature to dissipate heat (cooling function).

! The cooling function must be explicitly enabled in the consumer circuits by means of a set value.

Effect of the operating mode

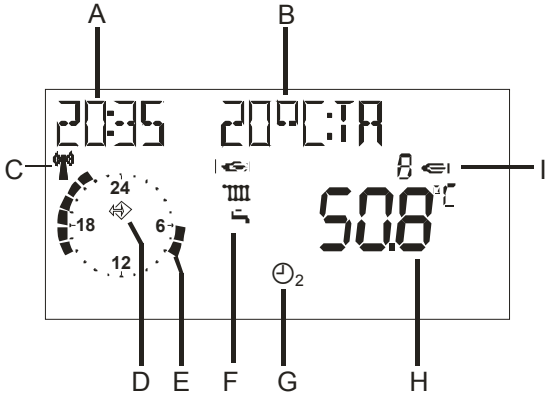
The operating mode set here affects the boiler regulation and the integrated heating circuits of the controller.

Each heating circuit can be assigned a separate operating mode from the one set by means of the "operating mode" parameter in the user level of the corresponding heating circuit.

When the "⏻ = Standby/OFF", and "= Summer mode" operating modes are set, they have a reducing effect on system controllers with respect to all heating circuits and consumer circuits in the entire system.

! For mixer controllers the reduction of operating mode is only effective for internal heating circuits.

Display in normal operation



! Due to the tolerances of sensors, deviations of +/- 2 K (2 °C) are normal between various temperature displays. Temperatures which change rapidly can have higher deviations for short periods due to the different time-related behaviour of various sensors.

! The display of the current heating program applies to the device's first heating circuit.
In case of having two heating circuits the display can be set to the 2nd circuit

Explanations

A Current time

B Freely selectable display
(refer to "DISPLAY SEL" parameter)

C DCF reception OK
(only if receiver is connected) via eBUS)

D Bus icon (if this icon does not appear, check data line to connected CAN controllers => check eBUS via DISPLAY level)

E Display of the active heating program for the first heating circuit
(here: 6:00 to 08:00 hrs and 16:00 to 22:00 hrs)

F Status display: ⇨ internal burner 1 relay ON; heating mode; hot water preparation

G Mode selector switch, the display applies to all heating circuits for which a separate operating mode has been selected via the "MODE" set value
(here: $\mathbb{O}_2$ => Heating according to timer program 2).

H Display of current temperature of HS 1 or header temperature in the case cascades

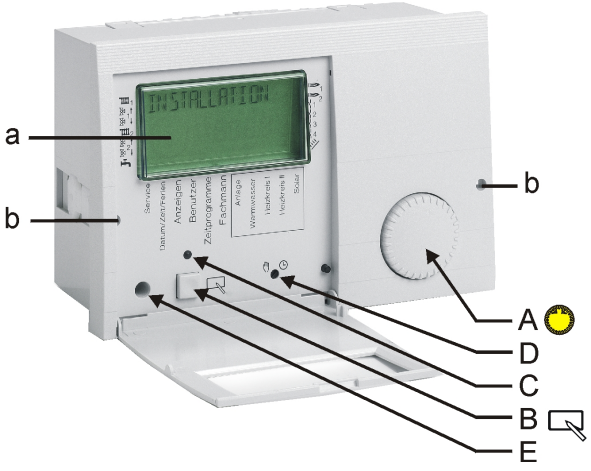
I Display of numbers of active heat generators
(only applies to cascades)

! With HS1 BUS = 5 is indicated firmly here 0

Changing set values

The operating flap must be opened first in order to change or request set values.

=> Controller switches to Operation mode



a Display indicating the current level

b Holes to unlock the controller fixation.
Insert a thin screwdriver deep into the holes and then lift up the controller.

Operating elements

A => Shaft encoder
Search for value/level or adjust value

B => Programming key

- Select a value level
- Select a value level to change
- Save a new value

C => Change display
LED ON => The value in the display can be changed by actuating the shaft encoder (A).

D => Manual-Automatic switch.
In Manual mode, all the pumps and first burner stage are switched on. The mixers are not changed/accessed. (“DISPLAY EMERGENCY OPERATION”).

Limitation (switch-of with 5 K hysteresis):

- Burner => MAX T-MODULE (expert)
- Heating circuit pumps => MAX T-FLOW (expert)
- Cylinder charging pump => DHW-TEMP I (user)

⚠ Caution, overheating, e.g. with floor or wall heating! => Set mixer by hand!

E => PC connection via optical adapter

Operating level

	General	SERVICE
		DATE/TIME/HOLIDAY
Open operating flap	⟳ Turn anticlockwise ↗	
	⟳ Turn clockwise ↘	
	Display	INSTALLATION
		HOT WATER
		HEAT CIRCUIT I
		HEAT CIRCUIT II
		SOLAR/MF
	User	INSTALLATION
		HOT WATER
		HEAT CIRCUIT I
		HEAT CIRCUIT II
		SOLAR/MF
	Time programs	CIRCL TIME
		HOTW-PROG
		HTG-PROG I 1
		etc...
	Expert	INSTALLATION
		HOT WATER
		HEAT CIRCUIT I
		HEAT CIRCUIT II
		SOLAR/MF
	Expert FA	SETUP

Operation is divided into different areas:

General - Display - User - Time programs - Expert - Expert FA.

Opening the hinged control panel cover automatically takes you to the display and indicator area.

- The current area "DISPLAY" appears in the display for a short time (1 clock circuit).
- After the clock circuit the display switches to the current operating level "SETUP".
- This is displayed for a short time (1 clock circuit) when you switch to a new area.

⟳ Select the level in which the value to be adjusted or displayed can be found using the rotary knob.

Press Prog button! => Open/select level

⟳ Search for value using rotary knob

Press Prog button! => Select value
LED lights up => adjustment can now be made

⟳ Modify value using rotary knob

Press Prog button! => Store value - LED goes off

When the operating flap is first opened after voltage is applied, the level SETUP is displayed once only. Once the values grouped here have been set the controller is operable.

Areas

General

Value selection summary
Service => for service engineers
Date/Time/Holiday => for users

Display

System value display (e.g. sensor values and setpoints). No adjustments can be made. Operating errors are therefore excluded in this area.

User

Summary of settings that can be made by the operator.

Time programs

Summary of time programs for heating circuits, the hot water circuit and extra functions where applicable

Expert

Summary of values for which expert knowledge is required to make settings (installation technician).

⚠ Values in the expert level are protected by a code no. (damage/malfunction possible).

Expert FA (only for FA via BUS)

Summary of values transmitted by the automatic firing device.

Levels

The settings in the different areas are sorted into operating levels

- INSTALLATION
- Hot water
- Heating circuit I
- Heating circuit II
- Solar/MF

Installation

All display values and settings that relate to the heat generator or the entire system and cannot be assigned to a consumer circuit.

Hot water

All display values and settings that affect central hot water preparation and circulation.

Heating circuit I/II

All indicator and set values that relate to the corresponding consumer circuit (also, for example, as decentral hot-water circuit).

Solar/MF

All indicator and set values that relate to solar energy recovery and settings for the multifunction relay.

Installation level

Installation level	
All the values in this level must be entered in sequence without interruption Open level, adjust value, save value and activate next value	
GERMAN	Set language
TIME	Set current time: 1. Minute => => 2. Hour
YEAR	Set current date
MONTH	Set current date
DAY	Set current date
See following pages for continuation	

Commissioning procedure

1. Please read this guide carefully before commissioning
2. Fit controller, make electrical connections and switch on boiler and supply voltage
3. Wait until standard display appears on controller
4. Open hinged operating cover

When the hinged operating flap is opened for the first time after switching on, the "SETUP" is shown on the display.

5. Start SETUP
6. Set 1. value
7. Save value and next value ...
8. Close hinged operating flap (end of SETUP)
9. Move program switch to required operating mode, e.g. automatic 1 (see page 19)

Installation level			
Designation	**Value range**	**Default**	**IV**
INSTALLATION	----, 01 - 06	----	
BUS-ID HS	----, 01 - 08	----	
HS 1 TYPE	00 - 06	01	
HS1 BUS	00 - 05	00	
HS 2 TYPE	00 - 05	00	
STORAGE HS2	00 - 03	00	
BUFFER	00, 01, 02	00	
HC FUNCTION 1	00, 01, 03	00	
HC FUNCTION 2	00 - 04	00	
CAP/STAGE	00 - 9950 kW	00 kW	
See following pages for continuation			

Installation (selecting basic controller functions)

This set value can be used to pre/set the other values of the start-up level. The following basic functions may be pre-selected (also see system description page 32).

If the selection of set value INSTALLATION always displays "----" = no pre-selection => values retain their previously defined status (values on delivery: E8.0634 2-stage burner; Hot water preparation two mixed heating circuits).

01 = E8.4034 => Cascade controller for modulating HS
02 = E8.4834 => Cascade controller for switching HS
03 = E8.3611 => 0 - 10 V Controller
04 = E8.0634 => Standard controller with 2-stage HS
05 = 2HS controller => 2 HS cascade switched via relay
06 = E8.6644 => (no function in V1)

BUS-ID HS (- - - -)

(not an option in all models)

The controller will be used as cascade with setting "01 - 08". The heating circuits are then not available anymore.

HS 1 TYPE (primary heat generator type)

00 = No primary heat generator
01 = Single stage HS switching
02 = Single stage modulating
03 = 2-stage HS switching (second stage via A7)
04 = Two individual HS switching (second HS via A7)
05 = Multi-stage switching (cascade via BUS)
06 = Multi-stage modulating (cascade via BUS)

HS1 BUS (connection for HS)

00 = Relay => Standard (switching HS)
01 = CAN-BUS => Standard (cascade switching)
02 = eBUS => HS without temperature controller
=> Preset modulation depth
=> Standard (cascade modulating)
03 = eBUS => HS with temperature controller
=> Preset desired temperature
[not suitable for cascade]
04 = 0 - 10 V Preset Boiler set temperature
only for HS 1 TYPE = 01, 02 or 03
Burner relays are controlled in parallel
Cooler KF [F8] must be connected
05 = 0 - 10 V Preset Modulation degree
only for HS 1 TYPE = 02

HS 2 TYPE (secondary heat generator type HS => A7)

(For HS1 with 2-stage burner – not active)
00 = No secondary heat generator
01 = Solid fuel boiler => function see “STORAGE HS2”
02 = (no function in V1)
03 = (no function in V1)
04 = Collector pump
05 = Pump for HS1 (e.g. additional HS for cascades)

STORAGE HS2 (heat accumulator for HS2)

(Only where HS 2 TYPE = Solid fuel)

Warm-up relief applies superordinated:
ON: T-HS2 > MIN T-HS2
OFF: T-HS2 < [MIN T-HS2 - 5 K]
T-HS2 = Solid fuel burner temperature

00 = Heating vis-à-vis collector (no storage tank) => F8
ON: T-HS2 > [F8 + HYST BURNER2 + 5 K]
OFF: T-HS2 < [F8 + HYST BURNER2]

01 = Heating vis-à-vis buffer storage tank => F1, F3
ON: T-HS2 > [F3 + HYST BURNER2 + 5 K]
OFF: T-HS2 < [F1 + HYST BURNER2]

02 = Heating vis-à-vis HW tank => F6
ON: T-HS2 > [F6 + HYST BURNER2 + 5 K]
OFF: T-HS2 < [F6 + HYST BURNER2]

03 = Heating vis-à-vis STORAGE III (pool) => F15
ON: T-HS2 > [F15 + HYST BURNER2 + 5 K]
OFF: T-HS2 < [F15 + HYST BURNER2]

Switching pattern

Switching the pump on is done if the temperature of the solid fuel boiler exceeds the temperature of the Reference sensor by the hysteresis (HYST BURNER2 + 5 K). Switching off occurs when the temperature drops 5K below the switch-on temperature.

Start-up relief

Switching off occurs when the temperature of the solid fuel boiler drops below the set limit temperature
(MIN T-HS2) by 5 K. The pump is enabled again when the temperature of the solid fuel boiler exceeds the set limit temperature (MIN T-HS2).

Blocking HS1

ON: T-HS2 > HS set temperature + 5 K and pump HS2 = ON

OFF: T-HS2 <= HS set temperature or pump WE2 = OFF

No HS1 blocking for

HS 1 TYPE = "Multi-stage switching“
HS 1 TYPE = "Multi-stage modulating“

STORAGE HS2 = "Heating against HW storage (F6)“
STORAGE HS2 = "Heating against STORAGE III (F15)“

! If activated, the cooling function will also affect the solid-fuel boiler function.

BUFFER (heater buffer storage type)

! After activation (>0) it is not possible to connect a FBR for heating circuit 1.

00 = no buffer storage for heating operation
01 = Buffer storage for heating operation (F1 - F3)
(Sensor switching- in V1 no other function)

02 = Combination storage tank for heating and HW operation

(Sensor switching- in V1 no other function)

HC FUNCTION (heating circuit function selection)

If this parameter is modified the controller is restarted. "RESET" briefly appears in the display.

00 => Standard heating circuit

01 => Control to fixed flow temperatures

During the heating periods (see heating program) the heating circuit is operated with a fixed preset flow temperature
[T-FLOW DAY], and during reduced mode operation with a fixed preset flow temperature [T-FLOW REDUC] accordingly.

02 => Swimming pool control (only for heating circuit II)

This function can be used to heat a swimming pool. The mixer controls the flow temperature for the swimming pool heat exchanger. The swimming pool water temperature sensor is connected to the room sensor connection for the heating circuit (see FBR).
[Plug III; 1 + 2]
The flow temperature control operates like normal room control [ROOM INFL].
The set value for the water temperature can be entered in the user area of the associated heating circuit level

[T-POOL 1/2/3]. The heating program operates.
No heating takes place during the reduction period (frost protection only).
The water temperature and the current set value are displayed in the display level [T-POOL/T-POOL DES].

03 => Hot water circuit
This function can be used to operate additional hot water circuits. The heating circuit flow sensor is located in the hot water storage tank.
The hot water temperature set value can be entered in the user area of the associated heating circuit level [DHW-TEMP 1/2/3]. The heating program for the heating circuit acts as an enable program for the storage tank. The storage tank set value is set to 10 °C during the reduction period.
The boiler controller hot water priority function can be used (partial priority acts like priority).

04 => Return flow temperature increase via mixer motor
(only for heating circuit II)
The heating circuit flow sensor is used as a boiler return flow sensor. The mixer motor controls to the heating circuit set value for 24 hours [MIN T-FLOW].

Installation tip: Mixer motor OPEN => boiler flow is fed into the return (=> return flow temperature increase)
Mixer motor CLOSED => heating circuit return is passed through. When the mixer motor is open it must be ensured that there is circulation through the boiler (boiler pump).

CAP/STAGE (boiler output for each stage)

Display of the HS number and the stage => Selection with Prog button => Input/Adjustment of HS output
- - - - = Stage/Boiler not available
0 = Stage/Boiler not active

In the case of boilers of the same power, a boiler release is sufficient; e.g.:

HS1 01 => 01
HS1 02 => 01
HS2 01 => 01 etc.
(depending on the number of boilers)

Automatic assignment:

After restarting or after a new configuration, the controller searches the bus systems for a heat generator. Within this time period (approx. 2 min) no manual output entries are allowed [Display „SCAN“]. In the case that a heat generator answers with output information, this output is automatically entered into the list. In the case that a heat generator answers without output information, 15 kW is entered into the list. This value can then be adjusted manually.

If a boiler, which had been configured previously, is no longer found after a restart, or after updating the parameter NEW CONFIG, an error message is put out. Pressing CONFIG OK after entering the performance data, the boiler is deleted from the configuration and the error message is deleted.

Solar/MF			
Designation	**Value range**	**Default**	**IV**
RELAY FUNC (1-4)	00 - 26	00,00,01,02	
T-MF(1-4) SETP	30 °C - 90 °C	30 °C	
MF(1-4) HYST	2 K - 10 K	5 K	
F15 FUNCTION	00 - 03	00	
See following pages for continuation			

Auxiliary relay functions

The multifunction relays = MF relay is assigned one basic function respectively

MF-1: Mixer HC1 OPEN (FUNC RELAY 1 = 00)
MF-2: Mixer HC1 CLOSED (FUNC RELAY 2 = 00)
MF-3: Header pump (FUNC RELAY 3 = 01)
MF-4: Circulation (time) (FUNC RELAY 4 = 02)

If this basic function of a MF relay is not required (configuration of the installation in Installation level), any one of the functions described below may be selected for any unused relay.

The MF-relay 1 - 4 (A8-A11) is always assigned with a sensor 1 - 4 (F11-F14) (applies for functions starting from „20“ only). If a further sensor is required for a function, this sensor must be connected as F17 (connector III, Pin 2 + 3).
The functions that may be selected for the MF relays 1 - 4 are described using MF relay 1 as an example.

RELAY FUNC 1 (function selection relay MF1)

T-MF1 SETP (switching temperature relay MF1)

MF 1 HYST (hysteresis relay MF1)

00 = No MF function

01 = Header pump

ON: When heat is requested by a consumer
OFF: Without consumer heat request
If at least one consumer in the system requests heat the pump is switched on. The after-run function runs after the burner has been switched on.

02 = Circulation (time)

Switching the relay according to the time program for the circulation pump

03 = Booster pump

ON: When heat is requested by an internal consumer
OFF: When no heat is requested by an internal consumer. Follow-up pump action occurs.

05 = Pump HS1

The relay may be used to control boiler pump for heat generator 1.
(Relay switches with burner relay 1; run-down = 5 min)

06 = Pump HS2

When using the controller to control two heat generators the relay may be used to control the pump for HS 2.
(Relay switches with burner relay 2; run-down = 5 min)

20 = Temperature-controlled circulation pump

T-CIRCL = Return flow temperature of circulation line
ON: T-CIRCL < T-MF1 SETP
OFF: T-CIRCL > [T-MF1 SETP + MF 1 HYST]

The circulation pump is switched on when the return flow temperature drops below the temperature setting limit (T-MF1 SETP). The pump is switched off again when the return flow temperature exceeds the set limit temperature by the Hysteresis (MF 1 HYST).
The set circulation program and the "Circulation with hot water" setting have an overriding function
=> Switching on only takes place during enable periods.

21 = Pulsed circulation pump

ON: With short circuit at assigned sensor input
OFF: After 5 minutes
If a short-cut occurs at the multifunction sensor input the circulation pump is switched on for 5 minutes. Switching on takes place on the edge (once only).
The set circulation program and the "Circulation with hot water" setting have an overriding function
=> Switching on only takes place during enable periods.

22 = Solid fuel boiler integration

(e.g. in connection with 2-stage HS)
T-MF1 or 1 - 4 = Temperature of the solid fuel boiler
T-BUFFER B = Temperature of buffer storage in the infeed area [F1]
ON: T-MF1 > [T-BUFFER B (F1) +MF 1 HYST + 5 K]
OFF: T-MF1 < [T-BUFFER B (F1) + MF 1 HYST]

Start-up relief:
ON: T-MF1 > T-MF1 SETP
OFF: T-MF1 < [T-MF1 SETP - 5 K]

The pump is switched on when the temperature of the solid fuel boiler exceeds the temperature of the buffer storage in the infeed area [T-BUFFER B (F1)] by the hysteresis [MF 1 HYST+ 5 K]. Switching off occurs when the temperature drops 5 K below the switch-on temperature.

Switching off also occurs when the temperature of the solid fuel boiler drops below the set limit temperature [T-MF1 SETP] by 5 K. The pump is enabled again when the temperature of the solid fuel boiler exceeds the set limit temperature [T-MF1 SETP].

<u>Blocking HS1:</u>

ON: T-MF1 > HS set temperature + 5 K and solid-fuel boiler pump = ON
OFF: T-MF1 <= HS set temperature or solid-fuel boiler pump = OFF

23 = Solar integration (to MF4 because of PT1000 sensor)

T-SOL PANEL [T-MF4] = Temperature of the solar collector
T-DHW L [F12]= Temperature of hot water storage tank in infeed area
ON: T-SOL PANEL > [T-DHW L + MF4 HYST + 5 K]
OFF: T-SOL PANEL < [T-DHW L + MF4 HYST]

The pump is switched on when the temperature of the solar collector exceeds the temperature of the storage tank in the infeed area (T-DHW L) by the Hysteresis (MF4 HYST + 5 K). Switching off occurs when the temperature drops 5 K below the switch-on temperature.

Safety/system protection:
OFF: T-DHW B > T-MF4 SETP
ON: T-DHW B < [T-MF4 SETP - 5 K]

Switching off occurs when storage tank temperature exceeds the set limit temperature (T-MF4 SETP). The pump is enabled again when the storage tank temperature drops below the limit temperature by 5 K.

24 = Return flow temperature increase HS1

T-RETURN 1 = Return flow temperature from the installation [= T-MF1 or 1 - 4].
ON: T-RETURN 1 < T-MF1 SETP
OFF: T-RETURN 1 > [T-MF1 SETP +MF 1 HYST]

The return flow temperature increase pump is switched on if the return flow temperature drops below the temperature setting limit (T-MF1 SETP). It is switched off again when the return flow temperature exceeds the temperature setting limit by the Hysteresis (MF 1 HYST).

25 = Return flow temperature increase HS2

T-RETURN 2 = Return temperature of system
ON: T-RETURN 2 < T-MF1 SETP
OFF: T-RETURN 2 > [T-MF1 SETP +MF 1 HYST]

The return flow temperature increase pump is switched on if the return flow temperature drops below the temperature setting limit (T-MF1 SETP). It is switched off again when the return flow temperature exceeds the temperature setting limit by the Hysteresis (MF 1 HYST).

26 = Return flow temperature increase HS via buffer storage

ON: T-BUFFER B [F1] > T-MF1 +MF 1 HYST + 5 K
OFF: T-BUFFER B < T-MF1+MF 1 HYST

The valve to the return flow temperature increase via the buffer storage is opened if the temperature buffer storage low [T-BUFFER B] exceeds the return flow temperature of the installation [sensor 1 or 1 - 4] by the Hysteresis (MF 1 HYST + 5 K). It is switched off again when the temperature buffer storage low drops below the return flow temperature.

F15 FUNCTION (sensor function F15)

00 = Room sensor for heating circuit 2. If a further sensor at the pulse input [IMP] is detected at this position an FBR is evaluated.

01 = 0 - 10 V input => For Preset Collector set temperature. On evaluation see parameter V-CURVE in the expert/installation level.

02 = light sensor (for plausibility testing with solar – no function in version V1).

03 = 0 - 10 V input preset for modulation. On evaluation see parameter V-CURVE in the expert/installation level.

! The internal determination of the burner requirement is deactivated when this function is used.

! It is exclusively the target set via the 0 - 10 V output that applies. Any changes, such as those relating to external heating circuits, hot water preparation or the frost protection function are ignored. The operating mode switch also has no effect on the burner requirement, only on the internal and external determination of requirement and distribution.

Heating circuit/Sensors			
Designation	**Value range**	**Default**	**IV**
BUS ID 1	00 - 15	01	
BUS ID 2	00 - 15	02	
5K SENSORS	00 = 5 k, 01 = 1 k	5 k	

BUS ID (heating circuit number):

The heating circuits are sequentially numbered starting with "01". heating circuit numbers must not be assigned twice. Please only use "00" for replacement controllers (see page 18).

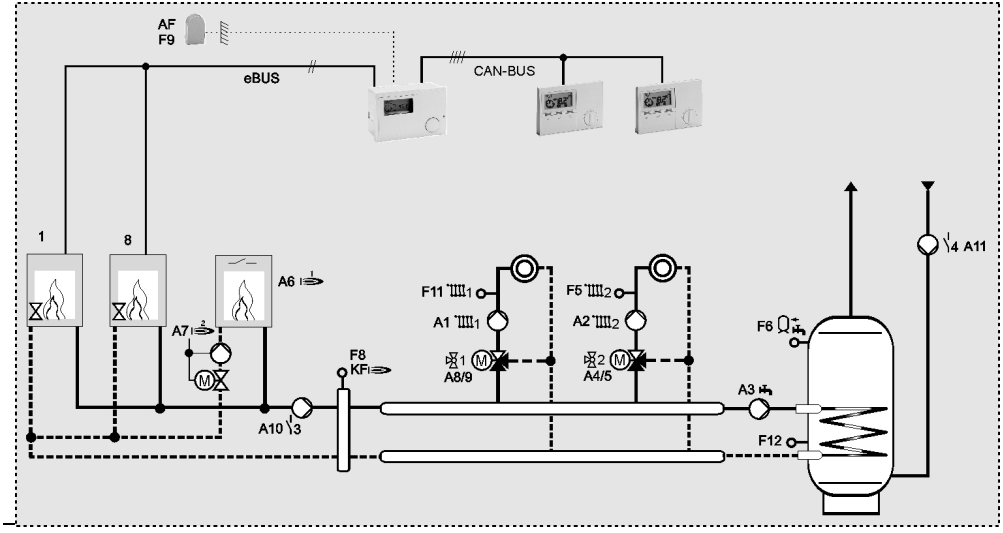
5 K SENSORS/1 K SENSORS

(code no. required for input)

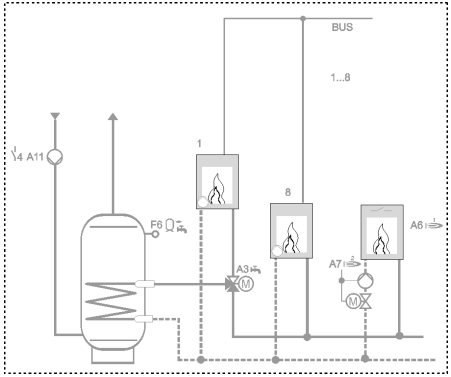
00 = 5 kOhm NTC sensor
01 = 1 kOhm PTC sensor
Here the type of connected sensor can be set (does not apply to FBR, room sensor and solar sensor PT 1000 [connector VIII]).

Schematic circuit diagrams hydraulic system

Installation 01 = E8.4034 =>
Cascade controller for modulating HS



Alternatively: Isolating circuit for hot water preparation



Terminal assignment

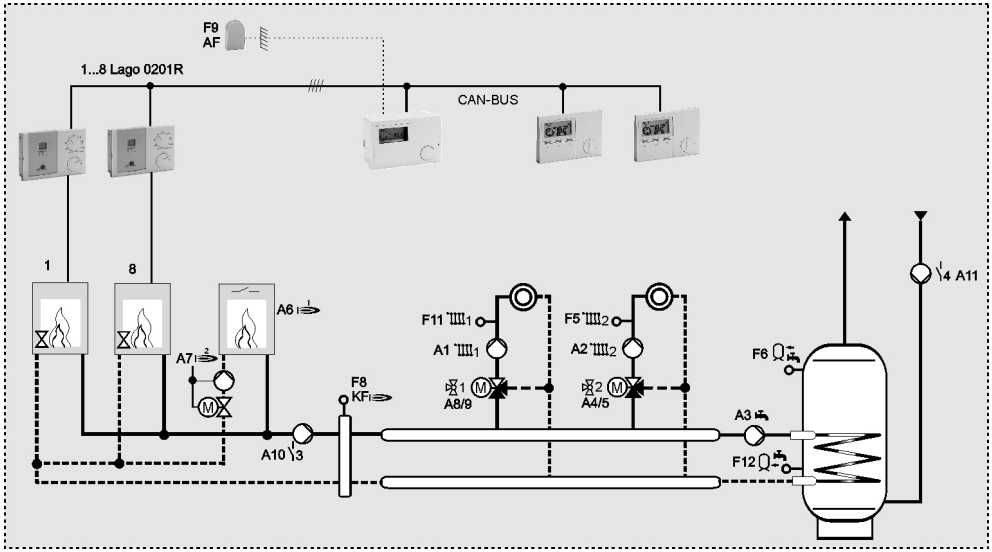
Sensors

VII (1+2): eBUS (to heat generators/FA)
I (2+3+⏚): optional FBR2 (FBR1) for heating circuit 1
I (2+⏚): optional F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): F8 = Header sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1
V (2+⏚): optional F12 = Hot-water tank lower
VIII (1+⏚): optional F13 = Multifunction relay sensor 3 (PT1000; but not for header pump)
VIII (2+⏚): optional F14 = Multifunction relay sensor 4 (PT1000; but not if circulation [time] applies)
III (1-3): optional FBR2 (FBR1) for heating circuit 2
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

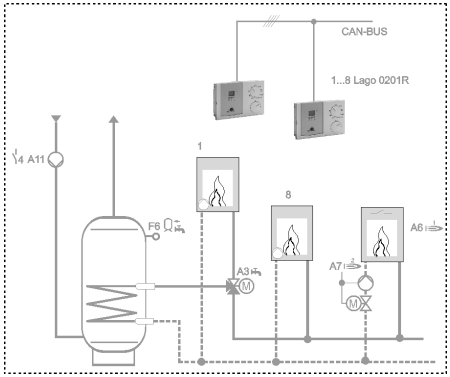
Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = Additional switching HS
VI (1+2): A7 = Pump additional switching HS
IV (1): A8 = Mixer motor heating circuit 1 on
IV (2): A9 = Mixer motor heating circuit 1 to
IV (3): A10 = Header pump/Multifunction relay 3
IV (4): A11 = Circulation pump/ Multifunction relay 4

Installation 02 = E8.4834 =>
Cascade controller for switching HS



Alternatively: Isolating circuit for hot water preparation



Terminal assignment

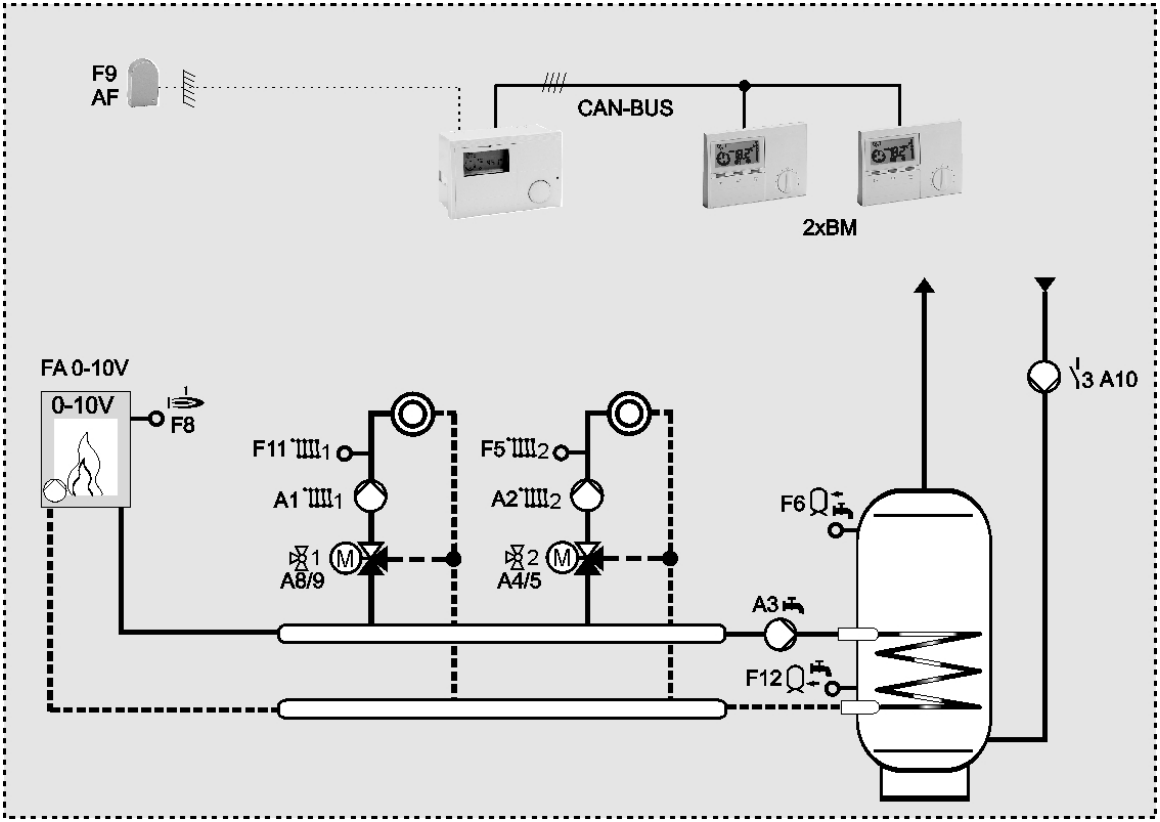
Sensors

I (2+3+⏚): optional FBR2 (FBR1) for heating circuit 1
I (2+⏚): optional F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): F8 = Header sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1
V (2+⏚): optional F12 = Hot-water tank lower
VIII (1+⏚): optional F13 = Multifunction relay sensor 3 (PT1000; but not for header pump)
VIII (2+⏚): optional F14 = Multifunction relay sensor 4 (PT1000; but not if circulation [time] applies)
III (1-3): optional FBR2 (FBR1) for heating circuit 2
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = Additional switching HS
VI (1+2): A7 = Pump additional switching HS
IV (1): A8 = Mixer motor heating circuit 1 on
IV (2): A9 = Mixer motor heating circuit 1 to
IV (3): A10 = Header pump/Multifunction relay 3
IV (4): A11 = Circulation pump/ Multifunction relay 4

Installation 03 = E8.3611 => 0 - 10 V Controller



Terminal assignment

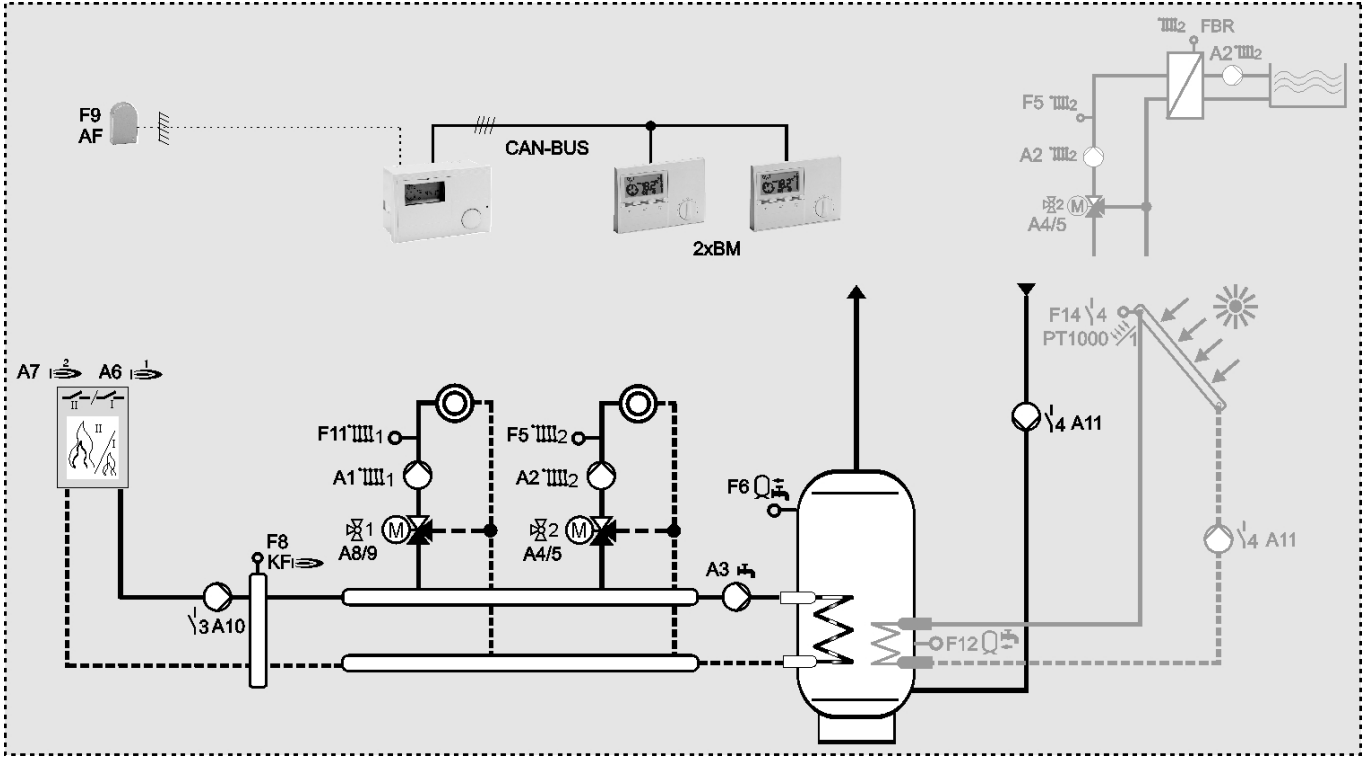
Sensors

I (2+3+⏚): optional FBR2 (FBR1) for heating circuit 1
I (2+⏚): optional F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): optional F8 = HS1 sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1
V (2+⏚): optional F12 = Hot-water tank lower
VIII (1+⏚): optional F13 = Multifunction relay sensor 3 (PT1000; but not if circulation [time] applies)
VIII (2+⏚): optional F14 = Multifunction relay sensor 4 (PT1000)
III (1-3): optional FBR2 (FBR1) for heating circuit 2
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = -
VI (1+2): A7 = -
IV (1): A8 = Mixer motor heating circuit 1 on
IV (2): A9 = Mixer motor heating circuit 1 to
IV (3): A10 = Circulation pump/ Multifunction relay 3
IV (4): A11 = optional multifunction relay 4

Installation 04 = E8.0634 =>
Standard controller with 2-stage HS



Terminal assignment

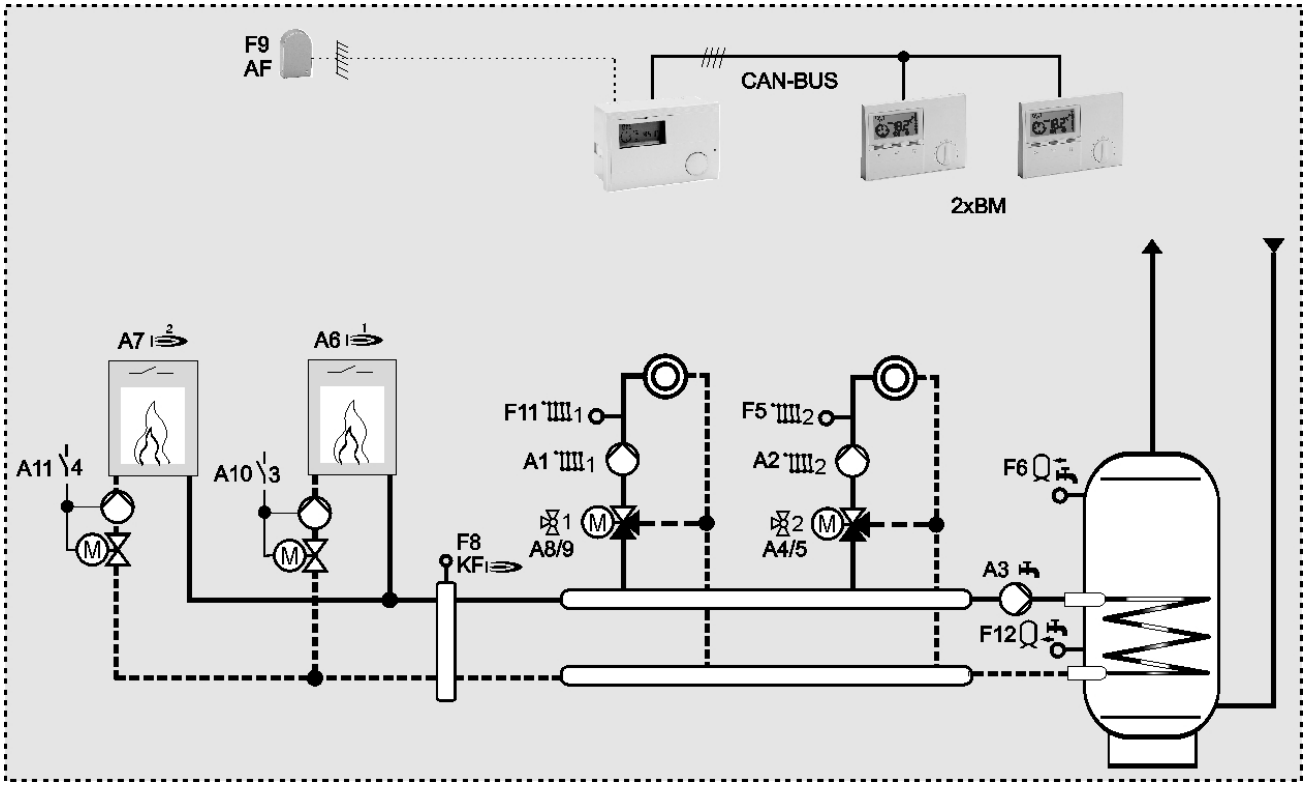
Sensors

I (2+3+⏚): optional FBR2 (FBR1) for heating circuit 1
I (2+⏚): optional F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): F8 = HS1 sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1
V (2+⏚): optional F12 = Hot-water tank lower
VIII (1+⏚): F13 = Sensor return flow temperature (PT1000)
VIII (2+⏚): optional F14 = Multifunction relay sensor 4 (PT1000; but not if circulation [time] applies)
III (1-3): optional FBR2 (FBR1) for heating circuit 2
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = Burner 1
VI (1+2): A7 = Burner 2 (no changer)
IV (1): A8 = Mixer motor heating circuit 1 on
IV (2): A9 = Mixer motor heating circuit 1 to
IV (3): A10 = Circulation pump/ Multifunction relay 3
IV (4): A11 = optional multifunction relay 4

Installation 05 = 2HS controller => 2 HS cascade switched via relay



Terminal assignment

Sensors

I (2+3+⏚): optional FBR2 (FBR1) for heating circuit 1
I (2+⏚): optional F2 = Room sensor for heating circuit 1
I (4+5): F5 = Flow sensor heating circuit 2
I (6+7): F6 = Storage tank sensor
I (7+8): F8 = HS1 sensor
I (9+10): F9 = Outdoor sensor
V (1+⏚): F11 = Flow sensor heating circuit 1
V (2+⏚): optional F12 = Hot-water tank lower
III (1-3): optional FBR2 (FBR1) for heating circuit 2
IX (1+2): Data line CAN bus
IX (3+4): Power supply CAN bus

Mains

II (1): Neutral conductor, mains
II (2): Power supply, unit
II (3): Power supply, relay
II (4): A1 = Pump heating circuit 1
II (5): A1 = Pump heating circuit 2
II (6): A3 = Cylinder charging pump
II (7): A4 = Mixer motor heating circuit 2 on
II (8): A5 = Mixer motor heating circuit 2 to
II (9+10): A6 = HS 1
VI (1+2): A7 = HS 2
IV (1): A8 = Mixer motor heating circuit 1 on
IV (2): A9 = Mixer motor heating circuit 1 to
IV (3): A10 = Pump HS 1/multifunction relay 3
IV (4): A11 = Pump HS 2/multifunction relay 4

Error Messages

Error	Error description
Communication error	
E 90	Adr. 0 and 1 on bus. Bus IDs 0 and 1 may not be used simultaneously.
E 91	Bus ID used. The set bus ID is already in use by another device. More than 1 Time Master in the system
E 200	Communication error HS1
E 201	Communication error HS2
E 202	Communication error HS3
E 203	Communication error HS4
E 204	Communication error HS5
E 205	Communication error HS6
E 206	Communication error HS7
E 207	Communication error HS8
Internal error	
E 81	EEPROM error. The invalid value has been replaced with the default value ⚠ Check parameter values!

Sensor defective (break/short circuit)	
E 69	F5: Flow sensor HC2
E 70	F11: Flow sensor HC1, sensor Multifunction1
E 71	F1: Buffer storage tank low sensor
E 72	F3: Buffer storage tank top sensor
E 75	F9: Outdoor sensor
E 76	F6: Storage tank sensor

If a fault or error occurs in the heating system, you will see a blinking warning triangle (⚠) and the related error number on the controller display. Please refer to the table below for the significance of the displayed error code.
The system must be restarted after a fault has been remedied => RESET.

Sensor defective (break/short circuit)	
E 78	F8: Boiler sensor/Collector sensor (cascade)
E 80	Room sensor HC1, F2: F2 Buffer storage tank low sensor
E 83	Room sensor HC2, F15: Pool sensor (Storage tank 3)
E 135	F12: HW Storage tank low sensor, Multifunction 2
E 136	F13 (PT1000): HS2, Collector2, Multifunction 3
E 137	F14 (PT1000): Collector 1, Multifunction 4

RESET: Brief device shut-off (mains switch). Controller restarts, reconfigures itself and continues to operate with the values that have already been set.

RESET+ ⏎: Overwrite all settings with default values (except language, time and sensor values).
The additional button (⏎) must be pressed when the controller is switched on (mains on) until "EEPROM" appears in the display.

Troubleshooting

General

If your system malfunctions you should first check that the controller and the control components are correctly wired.

Sensors:
All sensors can be checked in the "General/Service/Sensor test" level. All the sensors that are connected must appear in this level with plausible measurements.

Actuators (mixer motors, pumps):
All actuators can be checked in the "General/Service/Relay test" level. All relays can be individually switched using this level. This makes it easy to check whether these components have been correctly connected (e.g. mixer motor direction of rotation).

BUS connection:
In control devices with connection to
Mixer motor => Communication symbol appears in standard display ("" or "" depending on version)
Boiler controller => Outside temperature and boiler temperature display (see "Display/Installation")
In boiler controller with connection to
Control unit => Room temperature displayed and current room temperature setting blanked out "----"
(see "Display/heating circuit")

In mixer motor expansion controllers with connection to
Boiler controller => Outside temperature and boiler temperature display (see "Display/Installation")
Control unit => Room temperature displayed and current room temperature setting blanked out "----"
(see "Display/heating circuit")

In case of communication problems

Check connecting cables: Bus lines and sensor lines must be laid separately, away from mains cables! Poles switches?

Check bus feed: There must be at least 8 V DC between the "+" and "-" terminals of the BUS connector (connector IX, terminals 3 + 4). If you measure a lower voltage, an external power supply must be installed.

Pumps do not switch off

Check manual/automatic switch => Automatic

Pumps do not switch on

Check operating mode => Standard (test)

Check time and heating program => Heating time

Check pump switching => Type of pump switching
Standard => Outside temperature >
Room temperature setting?
Heating limits => Outside temperature >
Valid heating limit?
Room control => Room temperature >
Temperature setting + 1 K

Burner does not switch of at correct time

Check minimum boiler temperature and type of minimum delimiter => Protect from corrosion

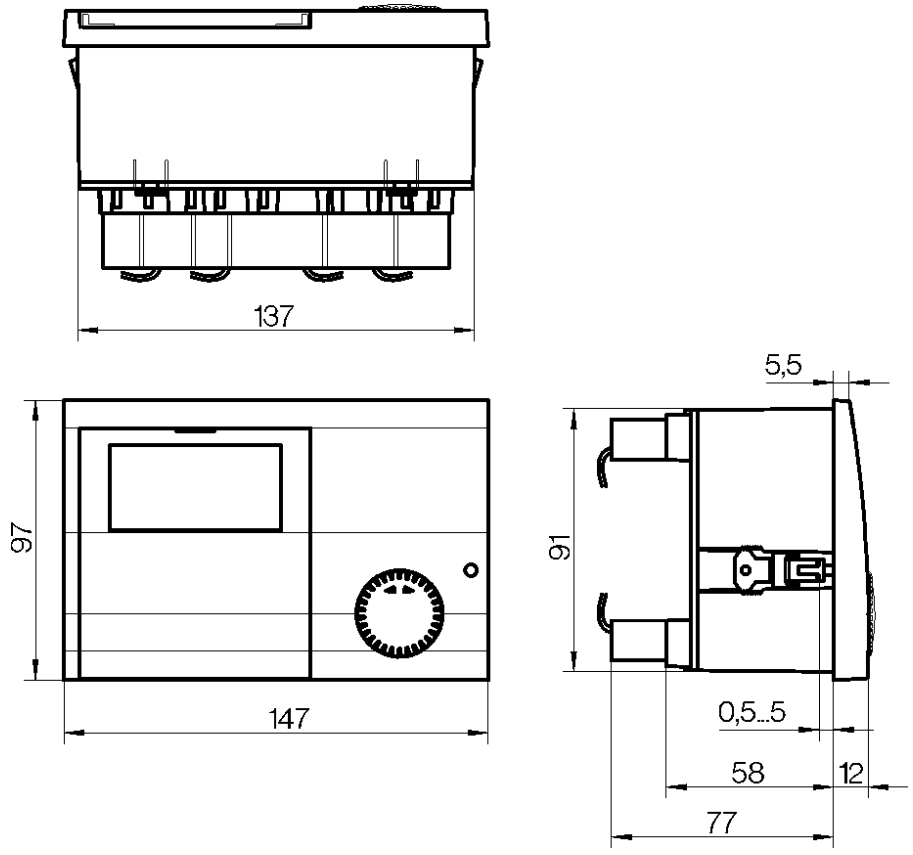
Burner will not switch on

Check boiler temperature setting => The temperature setting must be greater than the boiler temperature.

Check operating mode => Standard ◴ (test ✳)

With solar: check burner blocking

Dimensions



Technical Data

Supply voltage to EN 60038	AC 230 V ± 10 %
Power consumption	Max. 8 W
Switching capacity of the relays	AC 250 V 2 (2) A
Maximum current on terminal L1'	10 A
Enclosure to EN 60529	IP40
Safety class II to EN 60730-1	Totally insulated
Switch panel installation in acc. with DIN IEC 61554	Recess 138 x 92
Power reserve of the timer	at least 10 hours
Permitted room temperature during operation	0 to 50 °C
Permitted room temperature during storage	- 20 to 60 °C
Permissible humidity non condensing	95 % r.H.
Sensor resistances	NTC 5 kΩ (AF, KF, SPF, VF)
Tolerance of the resistor	+/- 1 % at 25 °C
Temperature tolerance	+/- 0.2 K at 25 °C
	PTC 1010 Ω (AFS, KFS, SPFS, VFAS)
Tolerance of the resistor	+/- 1 % at 25 °C
Temperature tolerance	+/- 1.3 K at 25 °C
	PT1000 sensor with 1 kΩ
Tolerance of the resistor	+/- 0,2 % at 0 °C

Glossary

Flow and return flow temperature

The flow temperature is the temperature to which the heat source heats the water that transfers the heat to the consumer (e.g. radiator). The return flow temperature is the temperature of the water that flow back from the consumer to the heat source.

Desired and actual temperature

The desired temperature (or setpoint temperature) describes the desired temperature for a room or for hot water.
The actual temperature denotes the actual temperature that prevails. The heating controller has the task to adjust the actual temperature to the desired temperature.

Setback temperature

The setback temperature is the desired temperature to which the heating system heats outside heating times (e.g. at night). It should be set so that the rooms do not cool down too much while saving energy.

Heat source

Heat source is generally the designation for the heating boiler. It may also be a buffer storage tank however.

Mixed heating circuit/Mixer circuit

In the mixed heating circuit a three-way valve is used to add cooled water from the return flow to the hot flow water. The flow temperature is thus reduced. This is important for Underfloor heating systems, for example, because they must only be operated with low flow temperatures.

Heating time

In the heating programs you can define up to three heating times per day, one for the morning, one for lunchtime, and one for the evening for example. During a heating time, the temperature is controlled to the desired room temperature. Between heating times the temperature is controlled to the setback temperature.

Header pump

A header pump is used to pump the hot water in a system with one or several heat sources. It is switched on as soon as a consumer in the system requests heat.

Legionella

Legionella are bacteria that live in water. The hot water storage tank is heated to 65 °C every 20th heating period or at least once a week as protection against these bacteria.

If you have any technical questions, please contact your local branch office/agent.
The addresses are available on the Internet or from Elster GmbH.
We reserve the right to make technical modifications in the interests of progress.

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