

Installation

Place of installation

- In a dry room, e.g. in the boiler room
- Mounting choices:
 - Control cabinet (in the front, on the inner wall, or on a DIN rail)
 - Control panel
 - In the sloping front of a control desk
- Permissible ambient temperature: 0...50 °C

Electrical installation

- The local regulations for electrical installations must be complied with
- Cable tension relief must be ensured
- The cables from the controller to the actuators and pumps carry mains voltage
- The cables to the sensors should not be run parallel to mains carrying cable

Permissible cable lengths

- For all sensors and thermostats:

Copper cable 0.6 mm dia.	max. 20 m
Copper cable 1.0 mm ²	max. 80 m
Copper cable 1.5 mm ²	max. 120 m
- For the room units:

Copper cable 0.25 mm ²	max. 25 m
Copper cable 0.5 mm ²	max. 50 m

Mounting and wiring the base

Wall mounting

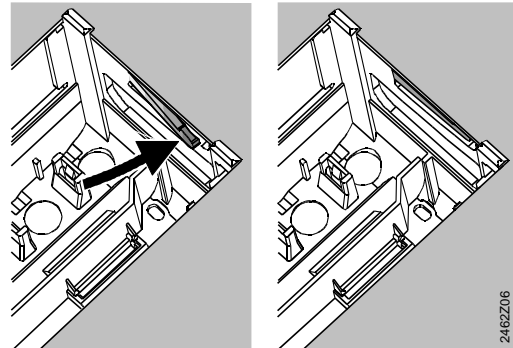
1. Separate base from the controller.
2. Hold base against the wall. Marking «TOP» must be at the top!
3. Mark fixing holes on the wall.
4. Drill holes.
5. If required, knock out holes on the base for cable entry glands.
6. Screw base to the wall.
7. Wire up base.

DIN rail mounting

1. Fit rail.
2. Separate base from the controller.
3. If required, knock out holes on the base for cable entry glands.
4. Fit base to the rail. Marking «TOP» must be at the top!
5. If required, secure base (depending on the type of rail used).
6. Wire up base.

Flush panel mounting

- Required panel cutout: 92 × 138 mm
 - Maximum thickness: 3 mm
1. Separate base from the controller.
 2. If required, knock out holes on the base for cable entry glands.
 3. Insert base in the panel cutout from behind until stop is reached. Marking «TOP» must be at the top!
 4. Push lateral tongues behind the front panel (refer to illustration below).
 5. Wire up base. Make sure the cable lengths are such that there is sufficient space to open the control panel door.

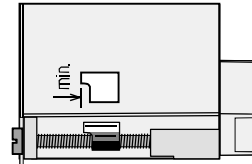



Wrong Correct
Place tongues on both sides correctly – they may not be located inside the cutout!

Commissioning

Preparatory checks

1. DO NOT switch on power yet.
2. Check wiring according to the plant connection diagram.
3. Ensure correct position and location of the levers by turning the fixing screws (refer to illustration on the lateral wall of the unit):



4. Insert controller in the base until stop is reached. Marking «TOP» must be at the top!
5. Tighten fixing screws alternately.
6. Check the motorized valve: see if
 - it is correctly installed (observe direction of flow indicated on the valve body)
 - in the case of a slipper valve, the slipper turns in the correct angular range (note position indicator)
 - the manual lever is disengaged
7. Note with underfloor and ceiling heating systems! The limit thermostat must be set to the correct value. During the functional test, the flow temperature may not exceed the maximum permissible level (usually 55 °C). If it does, proceed immediately as follows:
 - Either close the valve manually, or
 - Switch off the pump, or
 - Close the pump isolating valve
8. Switch on power. The display must show something (e.g. the time of day). If not, the reason is probably one of the following:
 - No mains voltage
 - Main fuse defective
 - Mains isolator or main switch not ON
9. Addressing to be made on the room units:
 - Room unit heating circuit 1 = address 1
 - Room unit heating circuit 2 = address 2
10. If one of the operating mode buttons flashes, a room unit overrides the controller. Select operating mode  on the room unit.

General information about operation

- Setting elements:
 - Setting knobs for room temperature readjustments, separately for heating circuit 1 and heating circuit 2
 - Display; one operating line is assigned to each setting
 - Button for selecting the heating circuits, for separate status indication (heating circuit mixing valve and heating circuit pump) and the heating circuit-dependent settings
 - Buttons for selecting and readjusting values:
 - To select the next operating line below
 - To select the next operating line above
 - To decrease the displayed value
 - To increase the displayed value

Adopting a setting value:

The setting value is adopted by selecting the next operating line (or by pressing one of the operating mode buttons)

- Enter --. / --:-- / --- (deactivating the function):
Keep or depressed until the required display appears
- Block skip function:
To select a single operating line quickly, two button combinations can be used:

Press and to select the next line block above.
Press and to select the next line block below.

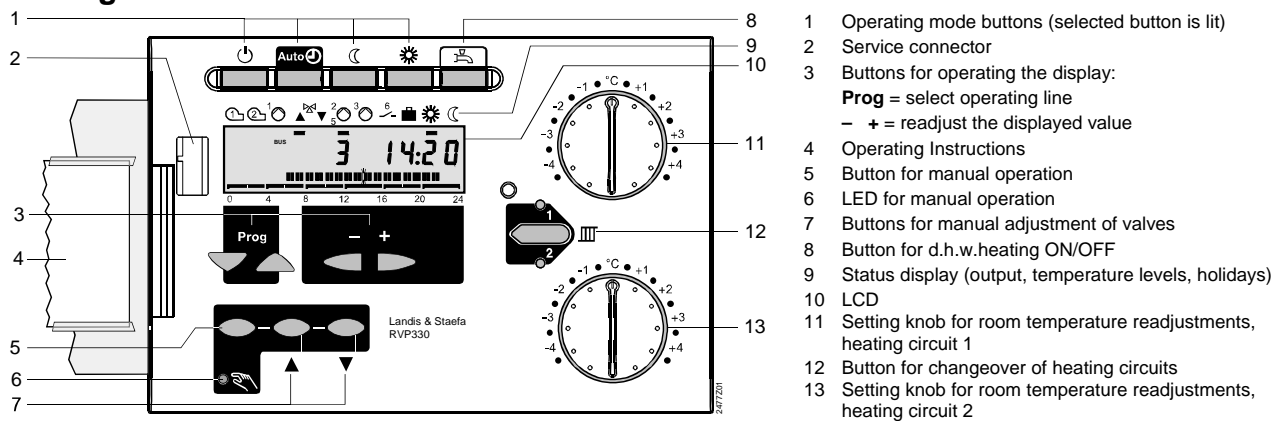
Setting procedure

- Make settings on operating lines 1...41 («End-user»), table on pages 3 and 4).
- Select plant type on operating line 51 (page 4).
- Enter all adjusted values in the parameter list below. All functions and operating lines required for the selected type of plant are activated and can be adjusted. All operating lines that are not required are locked.
- Enter the adjusted values in the table provided.
- Set the service functions (independent of the type of plant).
- Carry out the final work.

Commissioning and functional check

- Specific operating lines for the functional check:
 - 161 = outside temperature simulation
 - 162 = relay test
 - 163 = sensor test
 - 164 = setpoints or limit values
- If **Er** (for ERROR) appears on the display: prompt operating line 50 to pinpoint the error

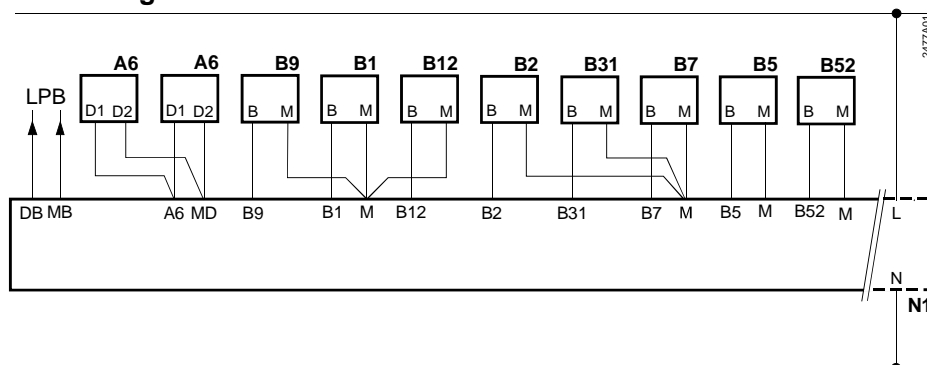
Setting elements



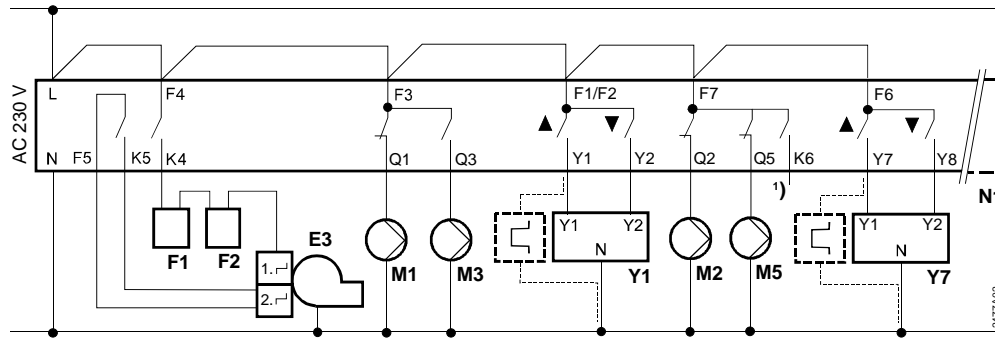
Connection diagrams

- | | | |
|--|--|--|
| A6 Room units for heating circuits 1 and 2 | B7 Return sensor | M3 Charging pump |
| B1 Flow sensor, heating circuit 1 | B9 Outside sensor | M5 Heating circuit pump, heating circuit 2 |
| B12 Flow sensor, heating circuit 2 | E3 Two-stage burner | N1 Controller RVP331 |
| B2 Boiler sensor | F1 Limit thermostat | Y1 Actuator, heating circuit 1 |
| B31 Storage tank sensor / thermostat | F2 Manual reset safety limit thermostat | Y1 Actuator, heating circuit 2 |
| B5 Room sensor, heating circuit 1 | M1 Circulating pump | 1) Multi-functional output |
| B52 Room sensor, heating circuit 2 | M2 Heating circuit pump, heating circuit 1 | |

Low voltage side



Mains voltage side



Settings

Legend for the setting tables:

Adjustable
Display only

Line	Function, display	Default	Range	Setting	Explanations, notes and tips

Settings on the «End-user» level

Press or to activate the «End-user» level.

1	Setpoint of NORMAL heating	20.0 °C	0...35	..... °C	..... °C	
2	Setpoint of REDUCED heating	14.0 °C	0...35	..... °C	..... °C	
3	Setpoint of holiday mode / frost protection	10.0 °C	0...35	..... °C	..... °C	
4	Weekday (for the heating program)	1-7	1...7	.....	.....	1 = Monday 2 = Tuesday, etc. 1-7 = entire week
5	First heating period, start of NORMAL heating	06:00	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
6	First heating period, end of NORMAL heating	22:00	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
7	Second heating period, start of NORMAL heating	--:--	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
8	Second heating period, end of NORMAL heating	--:--	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
9	Third heating period, start of NORMAL heating	--:--	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
10	Third heating period, end of NORMAL heating	--:--	00:00...24:00	.... : ....	.... : ....	Switching program for heating circuit --:-- = period inactive
12	Date of first day of the holiday period	--:--	01.01. ... 31.12.	.... ..	.... ..	Day.Month
13	Date of last day of the holiday period	--:--	01.01. ... 31.12.	.... ..	.... ..	Day.Month
14	Heating curve, flow temperature setpoint TV1 at 15 °C outside temperature	30 °C	20...70	..... °C	..... °C	
15	Heating curve, flow temperature setpoint TV2 at -5 °C outside temperature	60 °C	20...120	..... °C	..... °C	
26	Setpoint of d.h.w. temperature	55 °C	20...100	..... °C		
31	Weekday (for switching program 2)	1-7	1...7	.....		1 = Monday 2 = Tuesday, etc. 1-7 = entire week
32	Start of first «ON period»	05:00	00:00...24:00	.... : ....		Switching program 2 --:-- = period inactive
33	End of first «ON period»	22:00	00:00...24:00	.... : ....		Switching program 2 --:-- = period inactive
34	Start of second «ON period»	--:--	00:00...24:00	.... : ....		Switching program 2 --:-- = period inactive
35	End of second «ON period»	--:--	00:00...24:00	.... : ....		Switching program 2 --:-- = period inactive

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
36	Start of third «ON period»	--:--	00:00...24:00	.... : ....	Switching program 2 --:-- = period inactive
37	End of third «ON period»	--:--	00:00...24:00	.... : ....	Switching program 2 --:-- = period inactive
38	Time of day		00:00...23:59		Hour:Minute
39	Weekday		1...7		1 = Monday 2 = Tuesday, etc.
40	Date		01.01. ... 31.12.	.....	Day.Month (e.g. 02.12 meaning December 2)
41	Year		1995...2094	.....
50	Faults	Display function Example of display: 20 = error code			10 = fault outside sensor 20 = fault boiler sensor 30 = fault flow sensor, heating circuit 1 32 = fault flow sensor, heating circuit 2 40 = fault return sensor 50 = fault storage tank sensor / thermostat 60 = fault room sensor, heating circuit 1 61 = fault room unit, heating circuit 1 62 = wrong room unit connected, heating circuit 1 65 = fault room sensor, heating circuit 2 66 = fault room unit, heating circuit 2 67 = wrong room unit connected, heating circuit 2

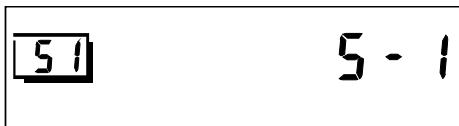
Settings on the «Heating engineer's» level

Press and simultaneously for 3 seconds, thus activating the «Heating engineer's» level for selecting the type of plant and for setting the plant-related variables.

Selecting the plant type:

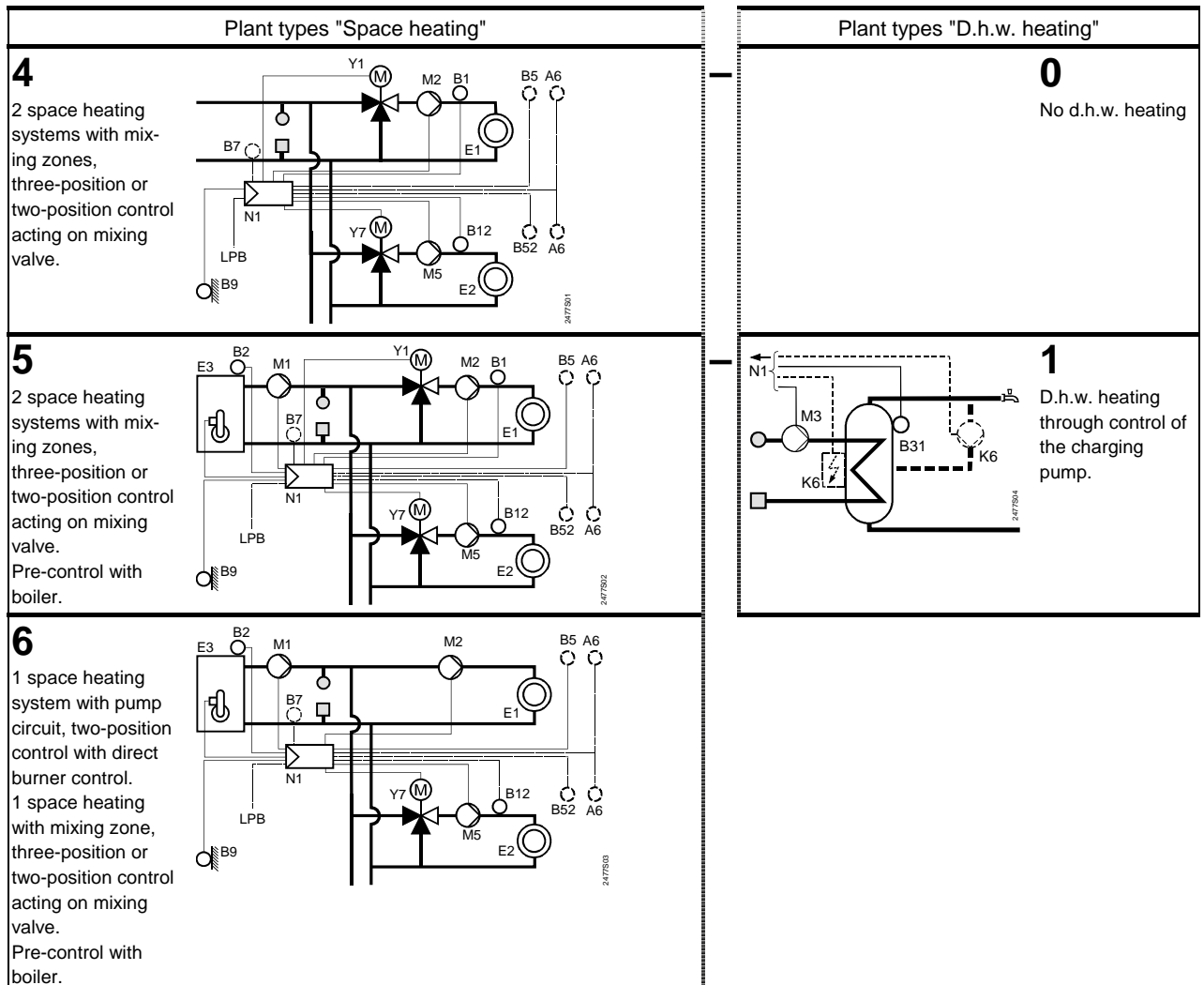
The required plant type must be selected on operating line 51. This activates all functions and shows the operating lines required for the particular type of plant.

Example of a selection:



Line	Function, display	Default	Range	Setting	Explanations, notes and tips
51	Plant type	5-1	4-0 ... 6-1	.....-.....	For type references, refer to the next section

Plant types



A6 Room unit QAW50 or QAW70
 B1 Flow sensor, heating circuit 1
 B12 Flow sensor, heating circuit 2
 B2 Boiler sensor
 B31 Storage tank sensor / thermostat
 B5 Room sensor, heating circuit 1
 B52 Room sensor, heating circuit 2

B7 Return sensor
 B9 Outside sensor
 E1 Load (room 1)
 E2 Load (room 2)
 E3 Heat source (boiler)
 K6 Electric immersion heater / circulating pump
 M1 Circulating pump

M2 Heating circuit pump, heating circuit 1
 M3 Charging pump
 M5 Heating circuit pump, heating circuit 2
 N1 Controller RVP331
 Y1 Heating circuit valve, heating circuit 1
 Y7 Heating circuit valve, heating circuit 2

Parameter list

Line	Function, display	Default	Range	Setting	Explanations, notes and tips

Block «Space heating»

61	Heating limit for NORMAL heating (ECO day)	17.0 °C	--.- or -5...+25	..... °C	..... °C	Input --.- = function inactive
62	Heating limit for REDUCED heating (ECO night)	5.0 °C	--.- or -5...+25	..... °C	..... °C	Input --.- = function inactive
63	Building time constant	20 h	0...50	..... h		Light = 10 h, medium = 25 h, heavy = 50 h
64	Quick setback	1	0 / 1	.....	.....	0 = without 1 = with
65	Room temperature source	A	0 / 1 / 2 / 3 / A	.....	.....	0 = no room sensor used 1 = room unit connected to terminal A6 2 = room sensor connected to terminal B5 or B52 3 = average of the two devices connected to terminals A6 and B5 or A6 and B52 A = automatic selection

Line	Function, display	Default	Range	Setting		Explanations, notes and tips
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66	Type of optimisation	0	0 / 1	0 = with room model 1 = with room unit / room sensor Setting 0 only permits optimum start control
67	Max. heating up time	00:00 h	00:00...42:00	..... h	..... h	Max. forward shift of switching on before occupancy starts. Setting 00:00 = no optimum start control
68	Max. early shutdown	0:00 h	0:00...6:00	..... h	..... h	Max. forward shift of switching off before occupancy ends. Setting 0:00 = no optimum stop control
69	Max. limitation of the room temperature	--.-	--.- or 0...35	..... °C	..... °C	Input --.- = limitation inactive. Function can only be provided with room unit / room sensor
70	Room temperature influence	4	0...20	.....	.....	Gain factor for influence of the room temperature. Function can only be provided with room unit / room sensor
71	Room temperature setpoint boost with boost heating	5 °C	0...20	..... °C	..... °C	

Block «Pump heating circuit»


75	Overtemperature protection pump heating circuit	1	0 / 1	not adjustable	0 = function inactive 1 = function active
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Block «Actuators heating circuit»

81	Max. limitation of the flow temperature	---	--- or 0...140 °C °C	Input --- = function inactive No safety function!
82	Min. limitation of the flow temperature	---	--- or 0...140	..... °C	..... °C	Input --- = function inactive
83*	Max. limitation of the flow temperature	---	--- or 1...600	..... °C/h	..... °C/h	Input --- = function inactive (function prevents cracking noise)
84*	Excess flow temperature mixing valve / heat exchanger	10 °C	0...50	..... °C	..... °C	Excess flow temperature for primary controller in interconnected plants
85*	Actuator running time	120 s	30...873	..... s	..... s	Settings required only for three-position actuator
86*	P-band of control (Xp)	32.0 °C	1...100	..... °C	..... °C	
87*	Integral action time of control (Tn)	120 s	10...873	..... s	..... s	
88*	Type of actuator	1	0 / 1	.....	.....	0 = two-position control 1 = three-position control
89*	Switching differential	2 °C	1...20	..... °C	..... °C	Setting required only for two-position actuator

* Operating lines 83 to 89: with plant type 6-x, only heating circuit 2 can be selected!

Block «Boiler»

91	Boiler operating mode	0	0...2	.....	.....	0 = with manual shutdown (button ) 1 = with automatic shutdown (OFF, when there is no demand for heat) 2 = without shutdown
92	Max. limitation of the boiler temperature	95 °C	25...140	..... °C	..... °C	No safety function!
93	Min. limitation of the boiler temperature	10 °C	5...140	..... °C	..... °C	
94	Switching differential of boiler	6 °C	1...20	..... °C	..... °C	
95	Min. limitation of burner running time	4 min	0...10	..... min	..... min	
96	Release limit burner stage 2	50 °C·min	0...500	..... °C·min	..... °C·min	
97	Reset limit burner stage 2	10 °C·min	0...500	..... °C·min	..... °C·min	
98	Locking time burner stage 2	20 min	0...40	..... min	..... min	
99	Operating mode pump M1	1	0 / 1	.....	.....	0 = without shutdown in the case of protective boiler startup 1 = with shutdown in the case of protective boiler startup

Block «Setpoint of return temperature limitation»

101	Setpoint of return temperature limitation, constant value	---	--- or 0...140 °C °C	Input --- = function deactivated
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Line	Function, display	Default	Range	Setting	Explanations, notes and tips
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Block «D.h.w.»

123	Release of d.h.w. heating	2	0...2	0 = 24 h per day 1 = according to the heating program; start of release is always shifted forward by one hour 2 = according to switching program 2																		
124	D.h.w. priority, flow temperature setpoint	0	0...4	<table border="1"> <thead> <tr> <th></th> <th>D.h.w. priority</th> <th>Flow temp. setpoint acc. to</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>absolute priority</td> <td>d.h.w.</td> </tr> <tr> <td>1</td> <td>shifting priority</td> <td>d.h.w.</td> </tr> <tr> <td>2</td> <td>shifting priority</td> <td>max. selection</td> </tr> <tr> <td>3</td> <td>none (parallel)</td> <td>d.h.w.</td> </tr> <tr> <td>4</td> <td>none (parallel)</td> <td>max. selection</td> </tr> </tbody> </table>		D.h.w. priority	Flow temp. setpoint acc. to	0	absolute priority	d.h.w.	1	shifting priority	d.h.w.	2	shifting priority	max. selection	3	none (parallel)	d.h.w.	4	none (parallel)	max. selection
	D.h.w. priority	Flow temp. setpoint acc. to																					
0	absolute priority	d.h.w.																					
1	shifting priority	d.h.w.																					
2	shifting priority	max. selection																					
3	none (parallel)	d.h.w.																					
4	none (parallel)	max. selection																					
126	D.h.w sensor / d.h.w. thermostat	0	0 / 1	0 = sensor 1 = thermostat																		
127	D.h.w. charging temperature boost	10 °C	0...50 °C																			
128	Switching differential of d.h.w.	8 °C	1...20 °C																			
129	Max. d.h.w. charging time	60 min	--- or 5...250 min	Input --- = function deactivated																		
130	Setpoint of legionella function	---	--- or 20...100 °C	Input --- = function deactivated																		
131	Forced charging	0	0 / 1	0 = none 1 = daily with the first release																		

Block «Multi-functional relay»

141	Function «Multi-functional relay»	0	Plant types x-0: 0...2 Plant types x-1: 0...8	0 = no function 1 = relay ENERGIZED in the event of fault 2 = relay ENERGIZED when there is demand for heat 3 = circulating pump ON 24 hours per day 4 = circulating pump ON acc. to heating program 5 = circulating pump ON acc. to switching program 2 6 = changeover electric immersion heater / heating circuit
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Block «Service functions and general settings»

161	Outside temperature simulation	---	--- or -50...+50 °C	Simulation will automatically be terminated after 30 minutes --- = no simulation	
162	Relay test	0	0...12		0 = normal operation 1 = all contacts open 2 = burner stage 1 ON (K4) 3 = burner stages 1 and 2 ON (K4 + K5) 4 = circulating pump ON (M1) 5 = charging pump ON (M3) 6 = heating circuit valve OPEN (Y1) 7 = heating circuit valve CLOSED (Y2) 8 = heating circuit pump ON (M2) 9 = multi-functional relay ENERGIZED (K6) 10 = heating circuit valve OPEN (Y7) 11 = heating circuit valve CLOSED (Y8) 12 = heating circuit pump ON (M5) To terminate the relay test: select next line, or automatically after 30 min.	
163	Sensor test Sensor: 000 = short-circuit --- = open-circuit Thermostat: 000 = contact closed --- = contact open	Display function				0 = outside sensor B9 1 = flow sensor B1, heating circuit 1 2 = room sensor B5, heating circuit 1 3 = room unit sensor A6, heating circuit 1 4 = return sensor B7 5 = storage tank sensor / thermostat B31 6 = boiler sensor B2 7 = flow sensor B12, heating circuit 2 8 = room sensor B52, heating circuit 2 9 = room unit sensor A6, heating circuit 2

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
164	Setpoints or limit values --- = no setpoint or limit value available		Display function		0 = no function 1 = flow temperature setpoint, heating circuit 1 2 = room temperature setpoint, heating circuit 1 3 = room temperature setpoint, heating circuit 1 4 = return temperature limit value 5 = d.h.w. temperature setpoint 6 = boiler temperature setpoint (switch-off point) 7 = flow temperature setpoint, heating circuit 2 8 = room temperature setpoint, heating circuit 2 9 = room temperature setpoint, heating circuit 2
167	Outside temperature for frost protection for the plant	2.0 °C	--. or 0...25	..... °C	Input --. = no frost protection for the plant
168	Flow temperature setpoint for frost protection for the plant	15 °C	0...140	..... °C	
173	Gain of locking signal	100 %	0...200	..... %	Response to locking signals
174	Pump overrun time	6 min	0...40	..... min	
175	Pump kick	0	0 / 1	.....	0 = no periodic pump kick 1 = weekly pump kick active
176	Winter- / summertime changeover	25.03	01.01 ... 31.12		Setting: earliest possible changeover date
177	Summer- / wintertime changeover	25.10	01.01 ... 31.12		Setting: earliest possible changeover date
194	Hours run counter		Display function		Number of controller operating hours
195	Controller's software version		Display function		

Final work

1. Enter the settings in these Installation Instructions.
Keep the Installation Instructions in a safe place.
2. Enter the following in the Operating Instructions:
 - Release of d.h.w. heating
 - Function of switching program 2
3. Insert the Operating Instructions in the unit cover.

Dimensions

