

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, thermostats and external contacts:

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 room units:

Copper cable 0.25 mm ²	max. 25 m
Copper cable 0.5 mm ²	max. 50 m
- For the data bus:

0.75...2.5 mm ²	refer to the specifications contained in data sheets N2030E and N2032E
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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

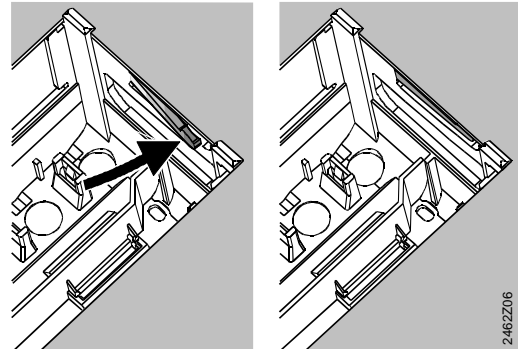
1. Fit rail.
2. Separate base from the controller.
3. If required, knock out holes on the base for cable entry glands.
4. Fit base to the rail. Marking «TOP» must be at the top!
5. If required, secure base (depending on the type of rail used).
6. Wire up base.

Flush panel mounting

- Required panel cutout: 92 x 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

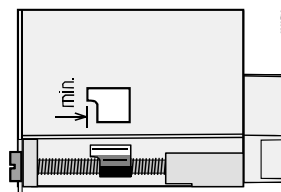
Correct


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. If one of the operating mode buttons flashes, a room unit or contact H1 overrides the controller. Select operating mode  on the room unit. Switch off contact H1.

General information about operation

- Setting elements:
 - Setting knob
 - Display; an operating line is assigned to each setting
 - 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.

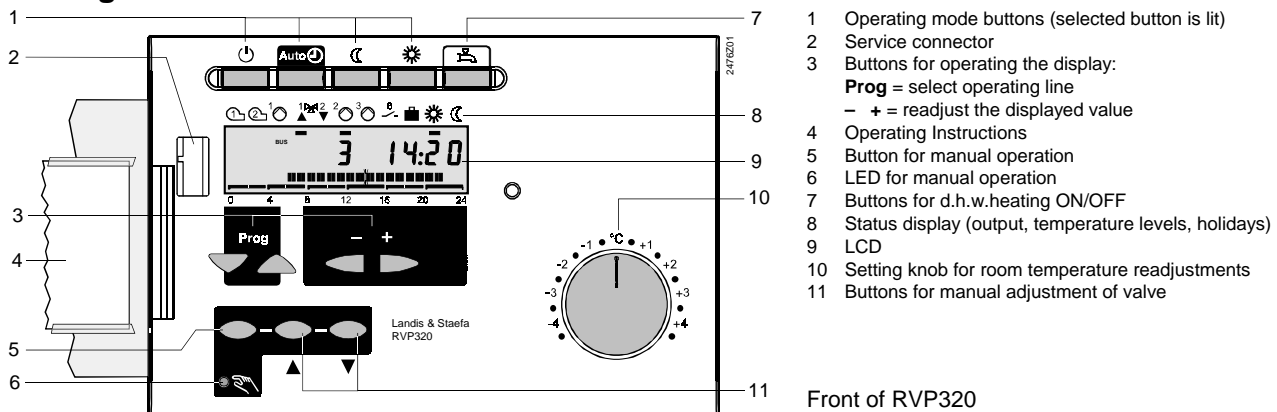
Setting procedure

1. Make settings on operating lines 1...41 («End-user»), table on pages 3 and 4).
2. Select plant type on operating line 51 (page 4).
3. 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.
4. Enter the adjusted values in the table provided.
5. Set the service functions (independent of the type of plant).
6. 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

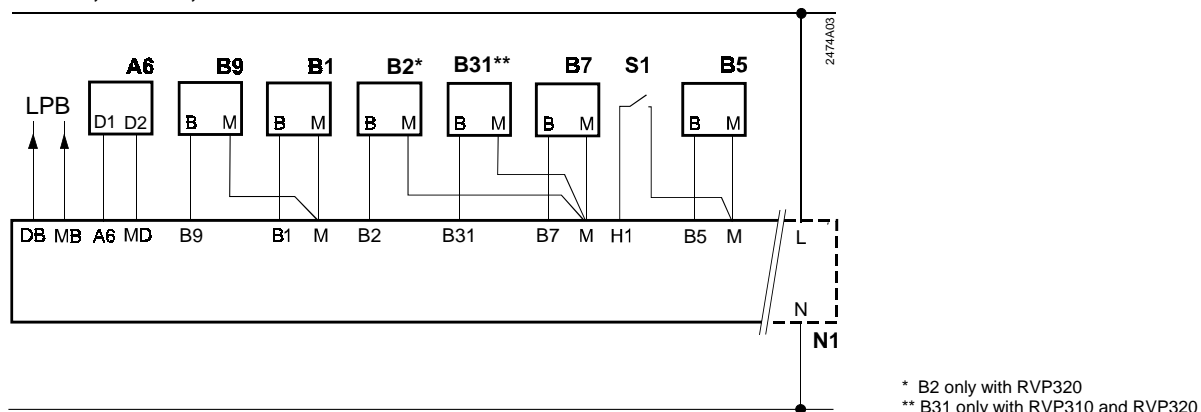


Connection diagrams

A6 Room unit (QAW50 or QAW70)	B9 Outside sensor	M2 Heating circuit pump
B1 Flow sensor	E1 Two-stage burner	M3 Charging pump
B2 Boiler sensor	F1 Limit thermostat	N1 Controller RVP3...
B31 Storage tank sensor / thermostat	F2 Safety limit thermostat	S1 Remote control „Operating mode“
B5 Room sensor	LPB Data bus	Y1 Actuator „Heating circuit“
B7 Return sensor	M1 Circulating pump	1) Multi-functional output

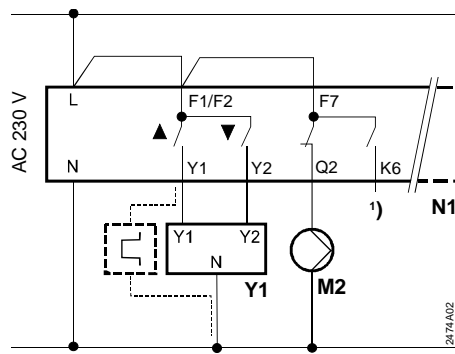
Low voltage side

RVP300, RVP310, RVP320

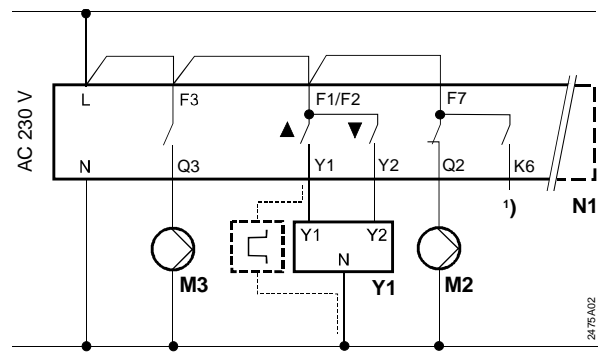


Mains voltage side

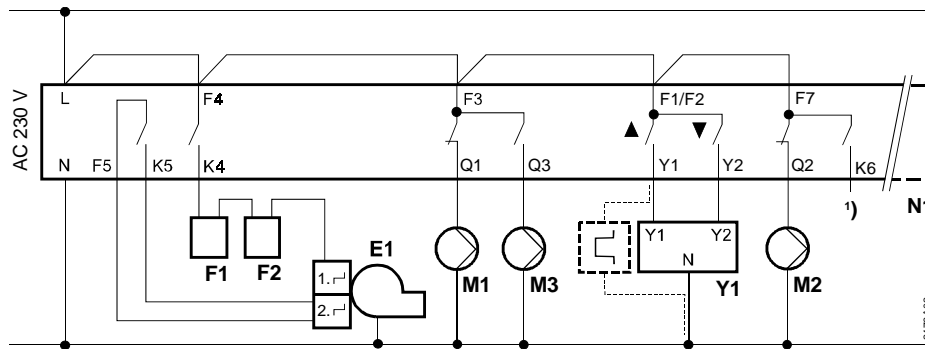
RVP300



RVP310



RVP320



Settings

Legend for the setting tables:

Adjustable
Display only

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
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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	
2	Setpoint of REDUCED heating	14.0 °C	0...35	..... °C	
3	Setpoint of holiday mode / frost protection	10.0 °C	0...35	..... °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	
15	Heating curve, flow temperature setpoint TV2 at -5 °C outside temperature	60 °C	20...120	..... °C	

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
26	Setpoint of d.h.w. temperature	55 °C	20...100	..... °C	
31	Weekday (for the 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
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. meaning December 2)
41	Year		1995...2094	.....
50	Faults	Display function Example of display:			0 = fault outside sensor 20 = fault boiler sensor 30 = fault flow sensor 40 = fault return sensor 50 = fault storage tank sensor / thermostat 60 = fault room sensor 61 = fault room unit 62 = wrong room unit connected 81 = short-circuit on data bus (LPB) 82 = same bus address used several times (LPB) 100 = two clock time masters on data bus (LPB) 140 = inadmissible bus address (LPB)

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:

RVP310:

Plant type is ready selected (1-1).

RVP300 and RVP320:

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	RVP300	1-0	1-0, 2-0-....	For type references, refer to the next section
		RVP310	1-1	1-1	-	
		RVP320	3-1	3-0, 3-1-....	

Plant types

Type of controller	Description of plant type	Plant diagram
RVP300	1-0 Space heating with mixing zone. Three-position control or two-position control, acting on mixing valve	
	2-0 Space heating with district heat. Three-position control or two-position control, acting on two-port valve	
RVP310	1-1 Space heating with mixing zone. Three-position control or two-position control, acting on mixing valve. D.h.w. heating through control of the charging pump	
RVP320	3-0 Space heating with mixing zone. Three-position control or two-position control, acting on mixing valve. Precontrol with boiler	
	3-1 Space heating with mixing zone. Three-position control or two-position control, acting on mixing valve. Precontrol with boiler. D.h.w. heating through control of the charging pump	

A6	Room unit QAW50 or QAW70	E3	Heat exchanger
B1	Flow sensor	LPB	Data bus
B2	Boiler sensor	K6	Electric immersion heater / circulating pump
B31	Storage tank sensor / thermostat	M1	Circulating pump
B5	Room sensor	M2	Heating circuit pump
B7	Return sensor	M3	Charging pump
B9	Outside sensor	N1	Controller RVP3...
E1	Heat source (boiler)	Y1	Heating circuit valve
E2	Load (room)		

Parameter list

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
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
Block «Space heating»

61	Heating limit for NORMAL heating (ECO day)	17.0 °C	--.- or -5...+25 °C	Input --.- = function inactive
62	Heating limit for REDUCED heating (ECO night)	5.0 °C	--.- or -5...+25	..... °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 3 = average of the two devices connected to terminals A6 and B5 A = automatic selection
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	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	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	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	

Block «Actuator heating circuit»

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

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	No safety function!
93	Min. limitation of the boiler temperature	10 °C	5...140	..... °C	
94	Switching differential of boiler	6 °C	1...20	..... °C	
95	Min. limitation of burner running time	4 min	0...10	..... min	
96	Release limit burner stage 2	50 °C·min	0...500	..... °C·min	
97	Reset limit burner stage 2	10 °C·min	0...500	..... °C·min	
98	Locking time burner stage 2	20 min	0...40	..... min	

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
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	Input --- = function deactivated Plant types 1-x, 3-x: min. limitation Plant typ 2-0: max. limitation
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Block «District heat»

112	Slope of max. return temperature limitation	0.7	0.0 ... 4.0	
113	Start of shifting max. return temperature limitation	10 °C	-50...+50	..... °C
114	Integral action time of max. return temperature limitation	30 min	0...60	..... min

Block «D.h.w.»

121	Assignment of d.h.w. heating	0	0...2	D.h.w. heating with 0 = own controller 1 = all controllers in the interconnected system with the same segment number 2 = all controllers in the interconnected system																		
123	Release of d.h.w. heating	2	0...2	0 = 24 h per day 1 = according to the heating program(s), depending on the setting mode on operating line 121 ; 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 temperature 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 temperature 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 temperature setpoint acc. to																					
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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(s), depending on the setting made on operating line 121 5 = circulating pump ON acc. to switching program 2 6 = changeover electric immersion heater / heating circuit acc. to own controller 7 = changeover electric immersion heater / heating circuit acc. to all controllers with the same segment number in the interconnected system 8 = changeover electric immersion heater / heating circuit acc. to all controllers in the interconnected system
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Line	Function, display	Default	Range	Setting	Explanations, notes and tips
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Block «Service functions and general settings»

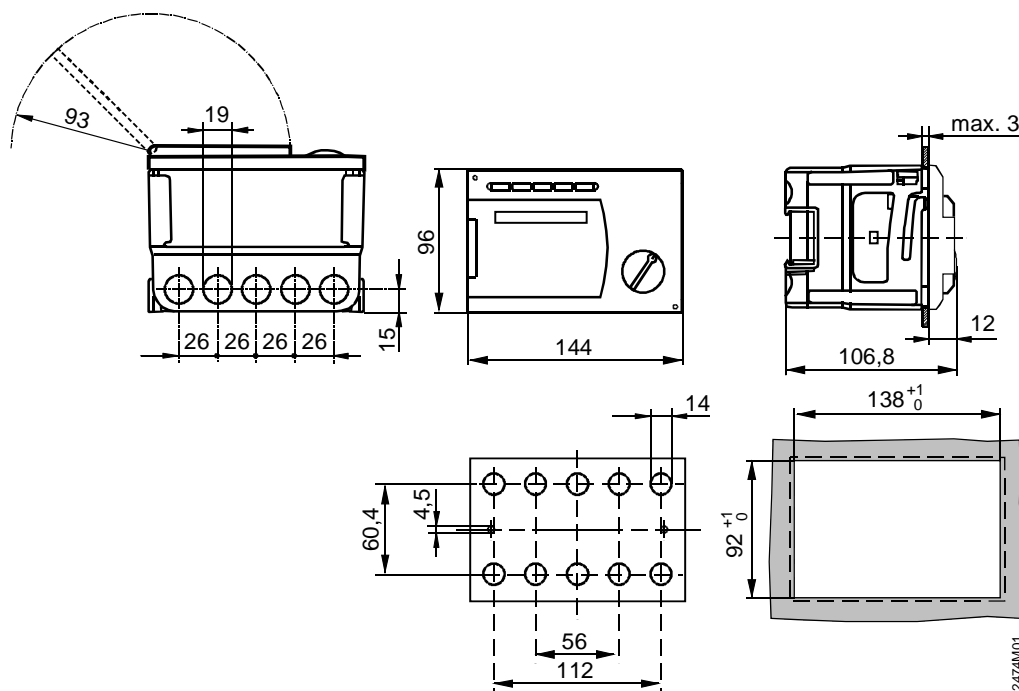
161	Outside temperature simulation	--.-	--.- or -50...+50 °C	Simulation will automatically be terminated after 30 minutes --.- = no simulation																																	
162	Relay test	0	0...9		0 = normal operation 1 = all contacts open 2 = burner stage 1 ON (K4) 3 = burner stages 1 and 2 ON (K4 and 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) To terminate the relay test: select next line, or automatically after 30 min.																																	
163	Sensor test Sensor: 0000 = short-circuit ---- = open-circuit Thermostat: 000 = contact closed ---- = contact open	Display function				0 = outside sensor B9 1 = flow sensor B1 2 = room sensor B5 3 = room unit sensor A6 4 = return sensor B7 5 = storage tank sensor / thermostat B31 6 = boiler sensor B2																																
164	Setpoints or limit values ---- = no setpoint or limit value available	Display function				0 = no function 1 = flow temperature setpoint 2 = room temperature setpoint 3 = room temperature setpoint 4 = return temperature limit value 5 = d.h.w. temperature setpoint 6 = boiler temperature setpoint (switch-off point)																																
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																																		
169	Device number	0	0...16	Data bus address (LPB) 0 = device without bus																																	
170	Segment number	0	0...14	Data bus address (LPB)																																	
172	Operating mode when connection terminals H1–M are linked	0	RVP300: 0...3 RVP310 and RVP320: 0...9	<table border="1"> <thead> <tr> <th></th> <th>Heating circuit operating mode</th> <th>D.h.w.</th> </tr> </thead> <tbody> <tr> <td>0 =</td> <td> Standby</td> <td>OFF</td> </tr> <tr> <td>1 =</td> <td> AUTO</td> <td>OFF</td> </tr> <tr> <td>2 =</td> <td> REDUCED</td> <td>OFF</td> </tr> <tr> <td>3 =</td> <td> NORMAL</td> <td>OFF</td> </tr> <tr> <td>4 =</td> <td> Standby</td> <td>ON</td> </tr> <tr> <td>5 =</td> <td> AUTO</td> <td>ON</td> </tr> <tr> <td>6 =</td> <td> REDUCED</td> <td>ON</td> </tr> <tr> <td>7 =</td> <td> NORMAL</td> <td>ON</td> </tr> <tr> <td>8 =</td> <td> AUTO</td> <td>ON, 24 h/day</td> </tr> <tr> <td>9 =</td> <td> NORMAL</td> <td>ON, 24 h/day</td> </tr> </tbody> </table>		Heating circuit operating mode	D.h.w.	0 =	Standby	OFF	1 =	AUTO	OFF	2 =	REDUCED	OFF	3 =	NORMAL	OFF	4 =	Standby	ON	5 =	AUTO	ON	6 =	REDUCED	ON	7 =	NORMAL	ON	8 =	AUTO	ON, 24 h/day	9 =	NORMAL	ON, 24 h/day
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7 =	NORMAL	ON																																				
8 =	AUTO	ON, 24 h/day																																				
9 =	NORMAL	ON, 24 h/day																																				
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																																	
178	Clock mode	0	0...3	0 = autonomous clock in the controller 1 = clock via bus (slave), without remote control 2 = clock via bus (slave), with remote control 3 = controller is the central clock (master)																																	
179	Bus power supply	A	0 / A	0 = no power supply via the controller A = power supply via the controller																																	

Line	Function, display	Default	Range	Setting	Explanations, notes and tips
180	Outside temperature source	A	A or 00.01 ... 14.16	.....	No display means: controller is autonomous (no data bus used) Input when delivered via data bus: segment or device number of source, or A for automatic identification of source
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



Dimensions in mm

