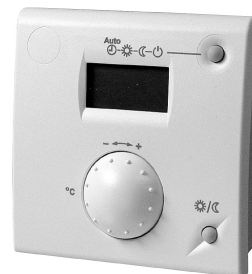
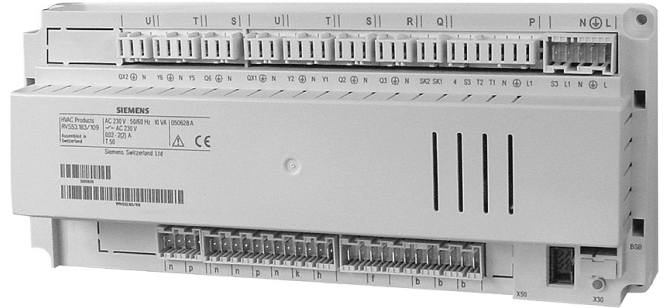
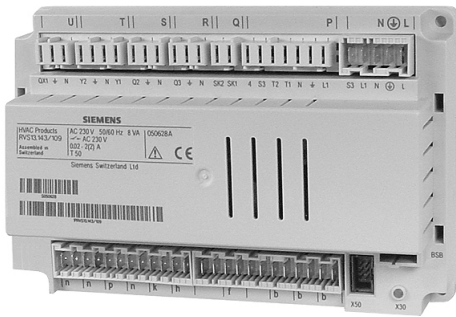


SIEMENS



Albatros² Boiler controllers User Manual

RVS13...
RVS53...
AVS75...
AVS37...
QAA75...
QAA78...
QAA55...

Edition 2.1
Controller series B
CE1U2357en
6. July 2006

Building Technologies
HVAC Products

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1 Summary

The present User Manual describes the products listed below and covers handling and configuration of the units for readers ranging from endusers to heating engineers.

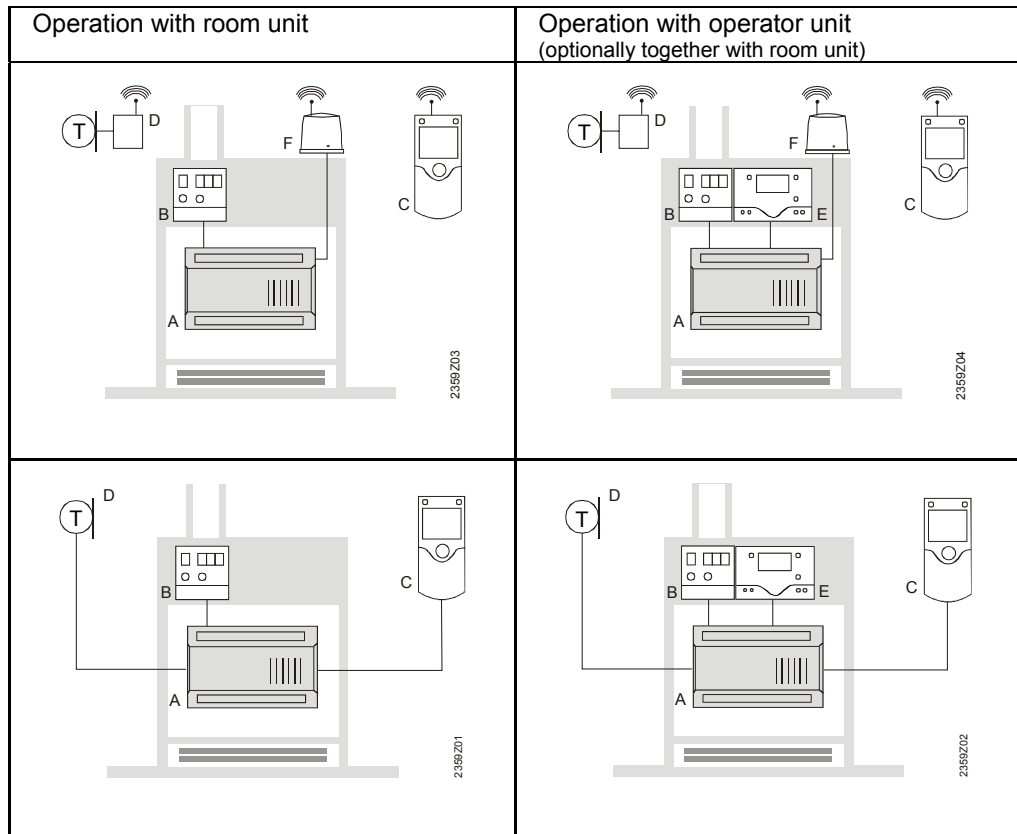
ASN	Name
RVS13.123	Basic unit boiler
RVS13.143	Basic unit boiler
RVS53.183	Basic unit boiler
AVS75.390	Extension module
AVS37.294	Operator unit
QAA75.610	Room unit, wired
QAA75.611	Room unit with backlight, wired
QAA78.610	Room unit, wireless
QAA55.110	Room unit
AVS16.290	Power section
AVS71.390	radio module
AVS14.390	radio repeater
AVS13.399	Wireless outside sensor

The following products are described in separate pieces of documentation:

QAC34	Outside temperature sensor NTC 1 k Ω
QAD36	Strap-on temperature sensor NTC 10 k Ω
QAZ36	Immersion temperature sensor NTC 10 k Ω

1.1 Type summary

wireless



- A Basic unit RVS...
- B Power section AVS16...
- C Room unit QAA55... / QAA75... / QAA78...
- D Outside sensor AVS13...
- E Operator unit AVS37...
- F Radio module AVS71...

2 Safety notes

2.1 Product liability

- The products may only be used in building services plant and applications as described in this document
- When using the products, all requirements specified in chapters "Handling" and "Technical data" must be satisfied
- Local regulations (for installation, etc.) must be complied with
- Do not open the units. If not observed, warranty by Siemens becomes void

3 Mounting and installation

3.1 Regulations

Electrical installation

- Prior to installing the controller, power must be turned off
- The connections for mains and low-voltage are separated
- The wiring must be made in compliance with the requirements of safety class II. This means that sensor and mains cables must not be run in the same duct

3.2 Basic units RVS...

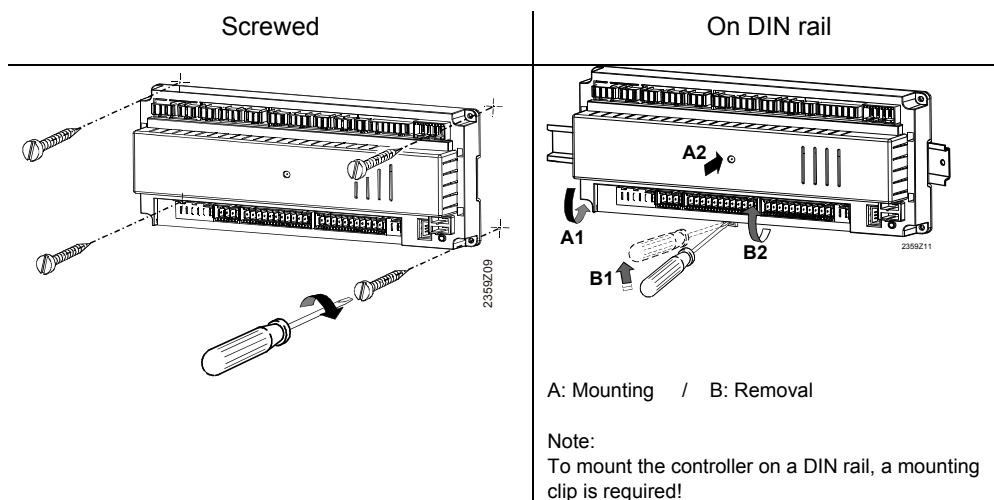
Planning

- Air circulation around the unit must be ensured, allowing the unit to emit the heat produced by it.
A clearance of at least 10 mm must be provided for the unit's cooling slots at the top and bottom of the housing.
That space should not be accessible and no objects should be placed there. If the controller is enclosed in another (insulating) casing, a clearance of up to 100 mm must be observed around the cooling slots
- The controller is designed conforming to the directives for safety class II devices mounted in compliance with these regulations
- Power to the controller may only be supplied when completely fitted. If this is not observed, there is a risk of electric shock hazard near the terminals and through the cooling slots
- The controller may not be exposed to dripping water
- Permissible ambient temperature when mounted and when ready to operate:
0...50 °C
- Power cables must be clearly segregated from low-voltage cables (sensors) observing a distance of at least 100 mm

Mounting location

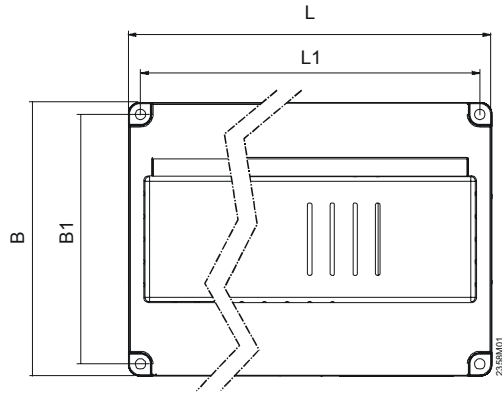
- boiler
- Control panel
- Housing for wall mounting

Mounting method



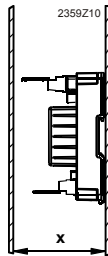
Dimensions and drilling plan

Dimensions in mm



	L	B	H	L1	B1
RVS53...	280.7	120.7	51.7	270	110
RVS13...	180.7	120.7	51.7	170	110
AVS75.390	108.7	120.7	51.7	98	110

Total height required

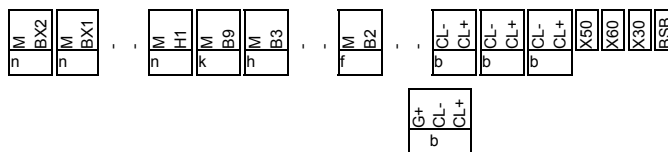
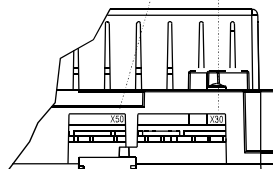
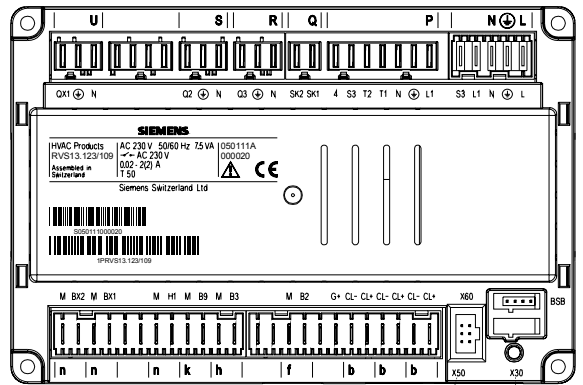
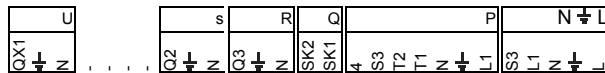


Dimension X:

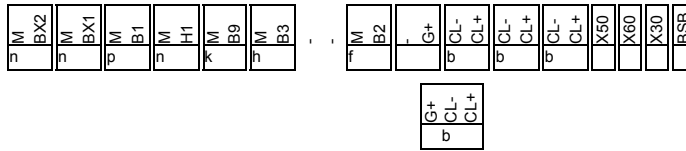
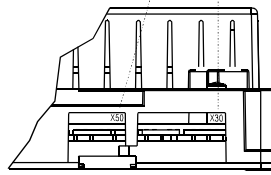
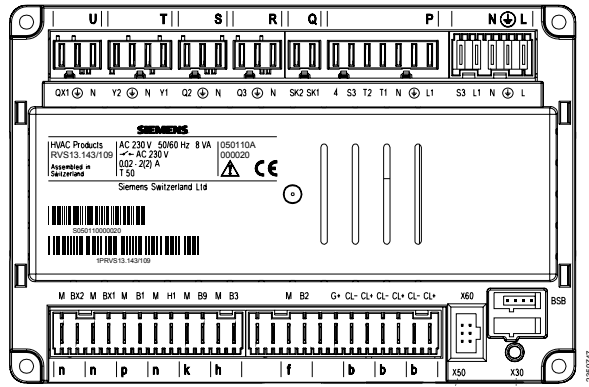
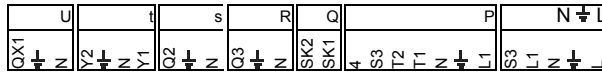
For connectors with tongues: Minimum 70 mm

For connectors without tongues: Minimum 60 mm

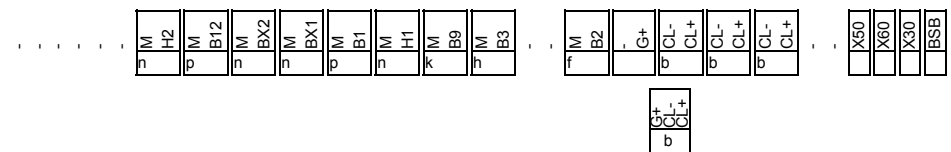
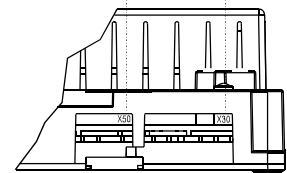
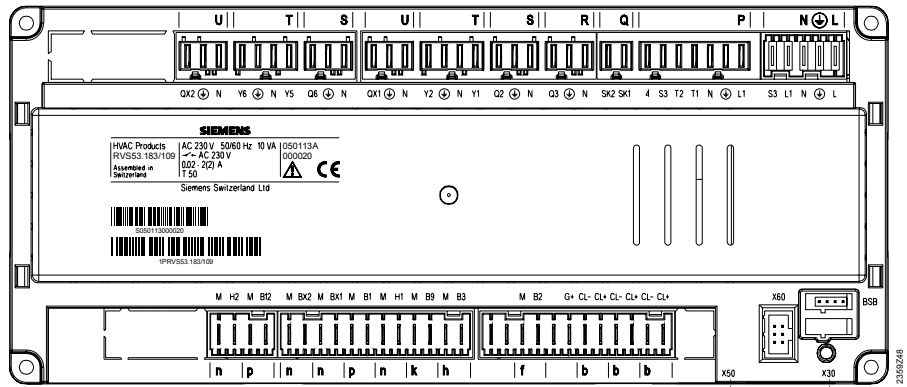
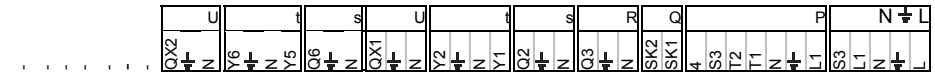
3.2.1 Connection terminals of RVS13.123



3.2.2 Connection terminals of RVS13.143



3.2.3 Connection terminals of RVS53.183



Terminal markings

Mains voltage

	<i>Use</i>	<i>Terminal</i>	<i>Type of connector</i>
L	Phase AC 230 V basic unit	N \perp L	AGP4S.05A/109
\perp	Protective earth		
N	Neutral conductor		
L1	Phase AC 230 V burner		
S3	Output burner fault		
L1	Phase burner	P	AGP8S.07A/109
\perp	Protective earth		
N	Neutral conductor		
T1	Burner 1st stage on		
T2	Phase burner 1st stage		
S3	Input burner fault		
4	Input burner 1st stage hours run		
SK1	Safety loop	Q	AGP8S.02E/109
SK2	Safety loop		
N	Neutral conductor	R	AGP8S.03A/109
\perp	Protective earth		
Q3	DHW charging pump / diverting valve		
N	Neutral conductor	S	AGP8S.03B/109
\perp	Protective earth		
Q2	1st heating circuit pump		
Y1	1st heating circuit mixing valve opening	T	AGP8S.04B/109
N	Neutral conductor		
\perp	Protective earth		
Y2	1st heating circuit mixing valve closing		
N	Neutral conductor	U	AGP8S.03C/109
\perp	Protective earth		
QX1	1st multifunctional output		
N	Neutral conductor	S	AGP8S.03B/109
\perp	Protective earth		
Q6	2nd heating circuit pump		
Y5	2nd heating circuit mixing valve opening	T	AGP8S.04B/109
N	Neutral conductor		
\perp	Protective earth		
Y6	2nd heating circuit mixing valve closing		
N	Neutral conductor	U	AGP8S.03C/109
\perp	Protective earth		
QX2	2nd multifunctional output		

Low-voltage

	<i>Use</i>	<i>Terminal</i>	<i>Type of connector</i>
BSB	Service tool OCI700	-	-
X60	Radio module AVS71.390	-	-
X50	extension module AVS75.390	-	AVS82.490/109
X30	Operator unit / boiler control panel	-	AVS82.491/109
CL+	BSB data	b	AGP4S.02A/109
CL-	BSB ground		
CL+	Room unit 2 data	b	AGP4S.02A/109
CL-	Room unit 2 ground		
CL+	Room unit 1 data	b	AGP4S.02A/109
CL-	Room unit 1 ground		

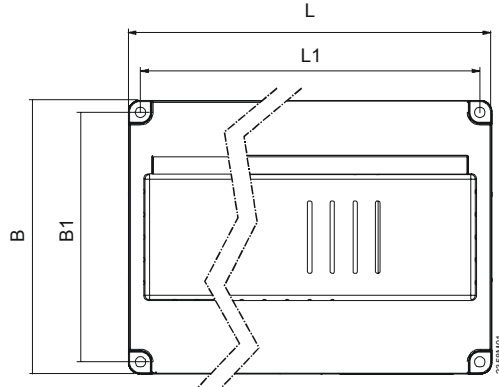
	<i>Use</i>	<i>Terminal</i>	<i>Type of connector</i>
G+	Room unit power supply 12 V		
B2 M	Boiler sensor Ground	f	AGP4S.02B/109
B3 M	DHW sensor top Ground	h	AGP4S.02C/109
B9 M	Outside sensor Ground	k	AGP4S.02D/109
H1 M	Digital / DC 0...10 V input Ground	n	AGP4S.02F/109
B1 M	Flow temperature sensor HC1 Ground	p	AGP4S.02G/109
BX1 M	Multifunctional sensor input 1 Ground	n	AGP4S.02F/109
BX2 M	Multifunctional sensor input 2 Ground	n	AGP4S.02F/109
B12 M	Flow temperature sensor HC2 Ground	p	AGP4S.02G/109
H2 M	Digital input Ground	n	AGP4S.02F/109

3.3 Extension module AVS75.390



Planning, mounting location and mounting method are in compliance with the basic modules.

Dimensions and drilling plan



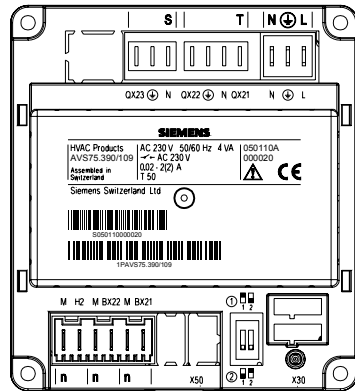
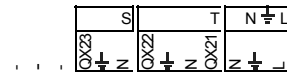
Dimensions in mm

	L	B	H	L1	B1
AVS75.390	108.7	120.9	51.7	98	110

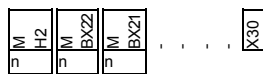
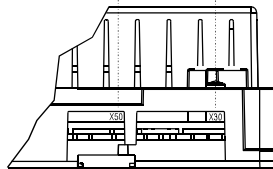
Connections

The AVS75.390 extension module must be connected to terminal X50 of the basic unit using the AVS83.490/109 connecting cable. The connectors are coded.

3.3.1 Connection terminals of AVS75.390



= Mixing heating circuit2



Terminal markings

Mains voltage

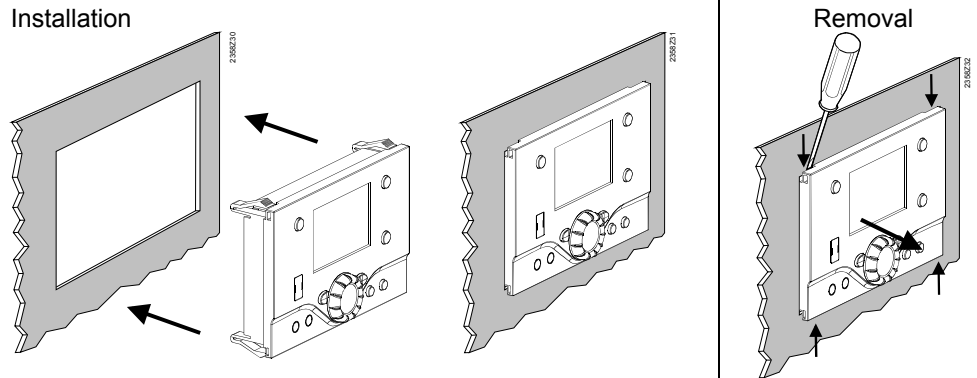
	<i>Use</i>	<i>Terminal</i>	<i>Type of connector</i>
L	Phase AC 230 V basic unit	N \perp L	AGP4S.03E/109
\perp	Protective earth		
N	Neutral conductor		
QX21	Mixing valve opening	T	AGP8S.04B/109
N	Neutral conductor		
\perp	Protective earth		
QX22	Mixing valve closing		
N	Neutral conductor	S	AGP8S.03B/109
\perp	Protective earth		
QX23	Heating circuit pump		

Low-voltage

	<i>Use</i>	<i>Terminal</i>	<i>Type of connector</i>
X30	Operator unit / boiler control panel	-	AVS82.491/109
BX21	Flow temperature sensor HC2	n	AGP4S.02F/109
M	Ground		
H2	Digital input	n	AGP4S.02F/109
M	Ground		

3.4 Operator unit AVS37.294

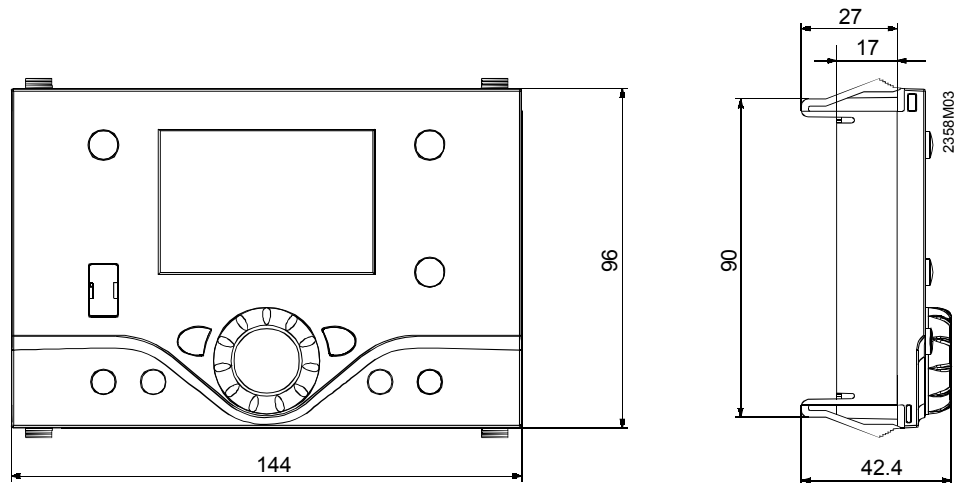
Mounting method



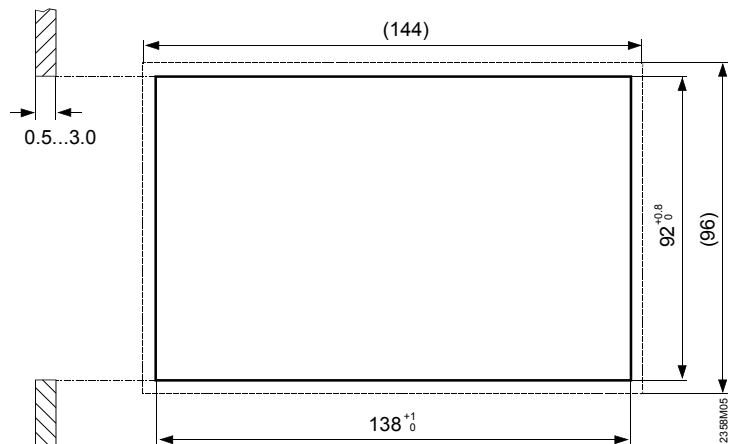
Connections

The AVS37.294 operator unit must be connected to terminal X30 of the basic unit using the AVS82.491/109 connecting cable. The connectors are coded.

Dimensions

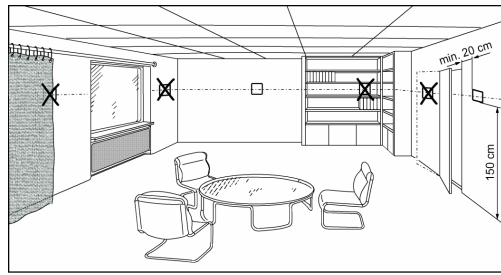


Panel cutout



3.5 Room unit QAA55.110

Planning



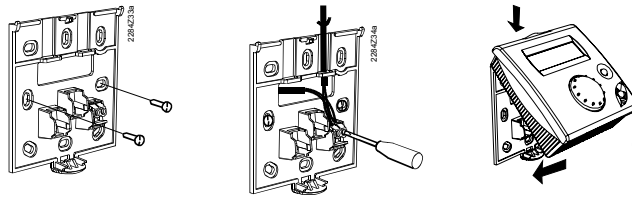
The room unit should be located in the main living room while giving consideration to the following points:

- The place of installation should be chosen such that the sensor can capture the room temperature as accurately as possible without getting adversely affected by direct solar radiation or other heat or refrigeration sources (about 1.5 meters above the floor)
- In the case of wall mounting, there must be sufficient clearance above the unit, enabling it to be fitted and removed



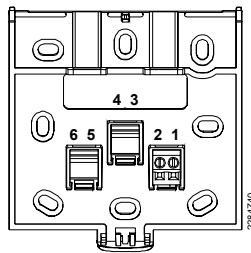
When the unit is removed from its base, power is disconnected so that the unit is out of operation.

installation



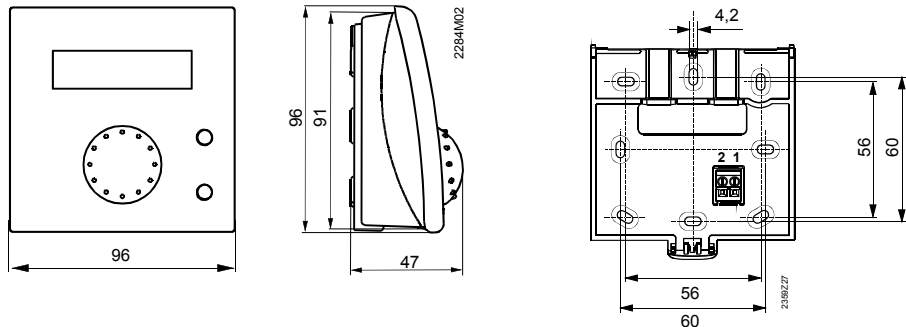
- The controller may not be exposed to dripping water

Connections



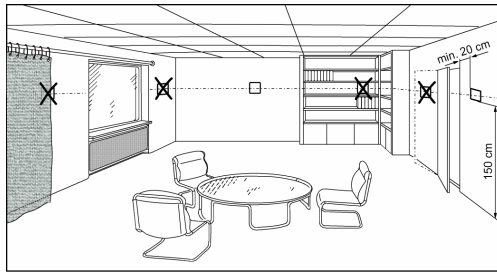
1	CL+	BSB data
2	CL-	BSB ground

Dimensions and drilling plan



3.6 Room unit QAA75.61x

Planning



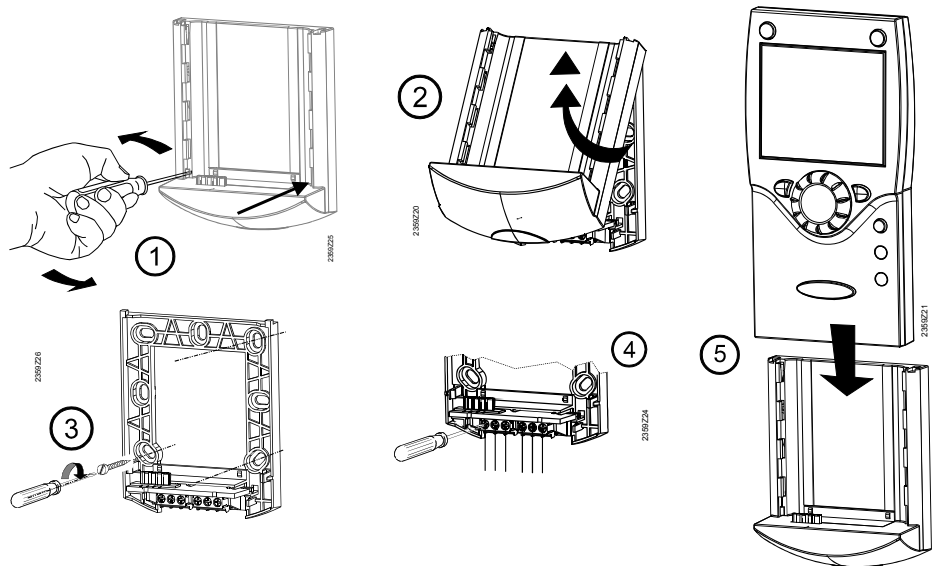
The room unit should be located in the main living room while giving consideration to the following points:

- The place of installation should be chosen such that the sensor can capture the room temperature as accurately as possible without getting adversely affected by direct solar radiation or other heat or refrigeration sources (about 1.5 meters above the floor)
- In the case of wall mounting, there must be sufficient clearance above the unit, enabling it to be fitted and removed



When the unit is removed from its base, power is disconnected so that the unit is out of operation.

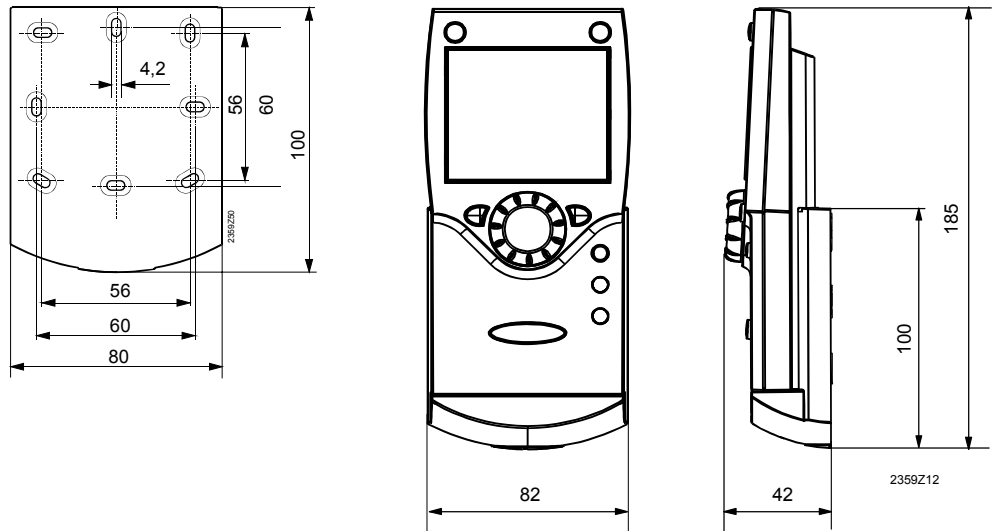
Mounting method



Connections

Terminal	Marking	QAA75.610	QAA75.611
1	CL+	BSB data	BSB data
2	CL-	BSB ground	BSB ground
3	G+	Reserved	Power supply DC 12 V

Dimensions and drilling plan



3.7 Wireless components

The wireless components should be located such that transmission will be as interference-free as possible. The following criteria must be observed:

- Not in the vicinity of electrical cables, strong magnetic fields or equipment such as PCs, TV sets, microwave ovens, etc.
- Not near larger metal structures or constructional elements with fine metal meshes such as special glass or special concrete
- The distance to the transmitter should not exceed 30 meters or 2 floors

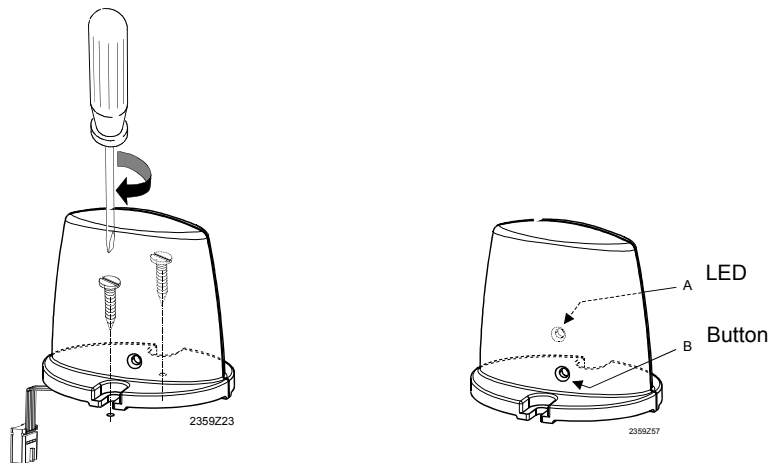
3.7.1 Radio module AVS71.390

The radio module extends the product range through the introduction of wireless communication. With this type of device, system components such as room units transmit data with no need for using cables.

Planning

Mounting method

Do not install the radio module inside metal casings (e.g. inside the boiler).

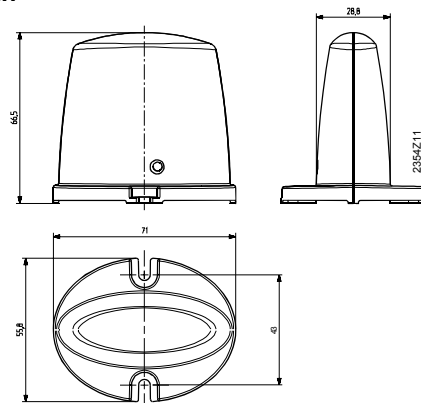


Connection



The prefabricated cable must be connected to terminal X60 of the controller. Prior to connecting the module, the basic unit must be disconnected from power!

Dimensions and drilling plan

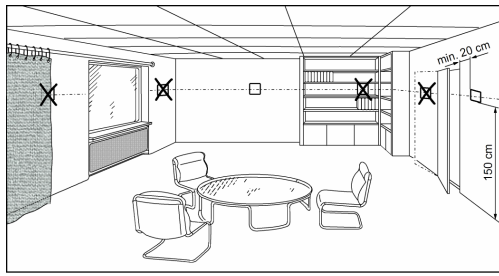


Radio link

Establishment of the radio link is described in the following sections which cover the different radio-controlled units.

3.7.2 Room unit QAA78.610

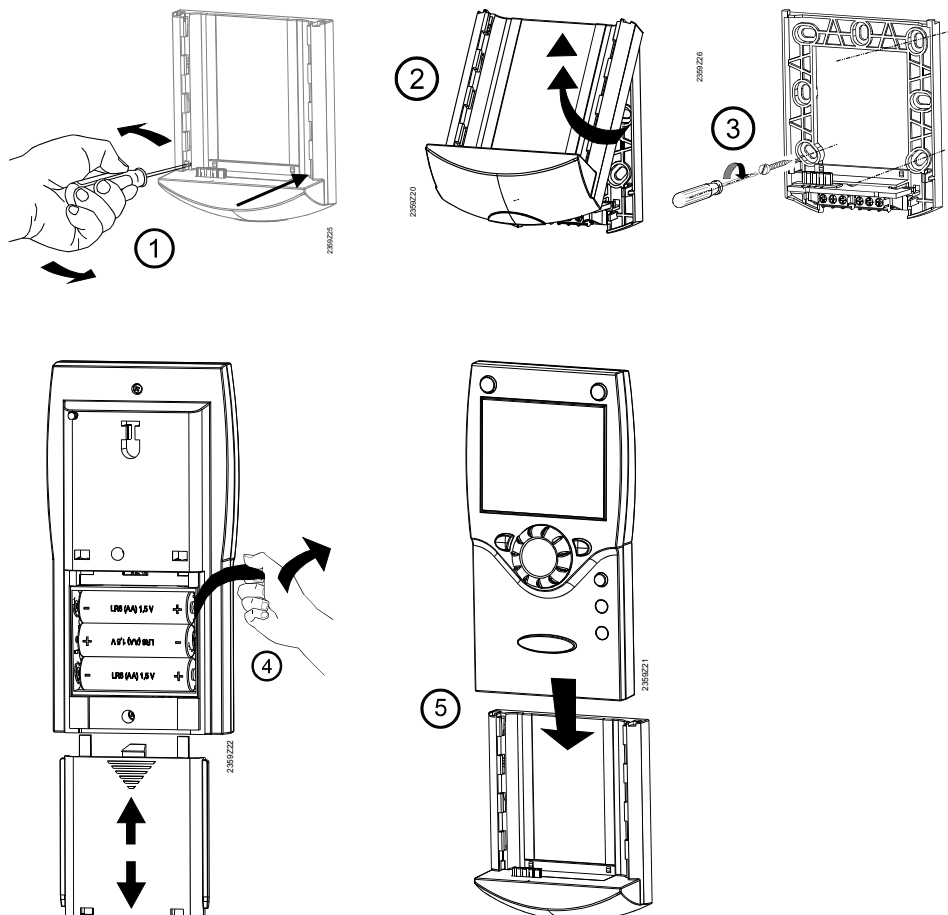
Planning



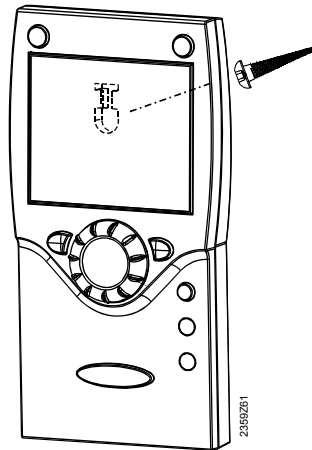
The room unit should be located in the main living room while giving consideration to the following points:

- The place of installation should be chosen such that the sensor can capture the room temperature as accurately as possible without getting adversely affected by direct solar radiation or other heat or refrigeration sources (about 1.5 meters above the floor)
- In the case of wall mounting, there must be sufficient clearance above the unit, enabling it to be fitted and removed

Mounting with base



Mounting without base



Connection / power supply

The room unit is powered by three 1.5 V Alkali batteries type AA (LR06).

Radio link



Establish the radio link in the vicinity of the radio module prior to mounting so that all system components are within easy reach.

Prerequisite for the radio link is that all components receive power, which means that the radio module must be correctly connected to the basic unit and the batteries must be correctly installed in the room unit.

Establishing the link

1. Press the button on the installed radio module for at least 8 seconds until the LED on the radio module starts **flashing at high frequency**.
2. Press the OK button on the room unit to switch to programming.
3. Press the Info button for at least 3 seconds and select operating level "Commissioning" with the setting knob. Then, press the OK button.
4. Select operating page "Wireless" and press the OK button.
5. Select operating line "Used as" (operating line 40) and make the appropriate selection. Then, press the OK button.
6. Select operating line "Binding" (line 120). Then, press the OK button.
7. Set the setting knob to "Yes" and press the OK button. Link establishment is started.
8. The display shows the progress of link establishment in %. This process can take 2 to 120 seconds.
9. The link is established when "Unit ready" appears and the LED on the radio module extinguishes.

Testing



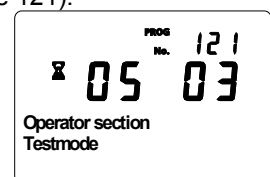
The test is made to check the quality of the radio link.

- The test can be stopped by pressing the ESC button
- While the radio link can be opened on the boiler, the test should be made at the location where the room unit will be installed

On the room unit, as described above (points 2 to 4), select operating page "Wireless" and activate the test mode on operating line "Test mode" (line 121).

Example of a display during the test:

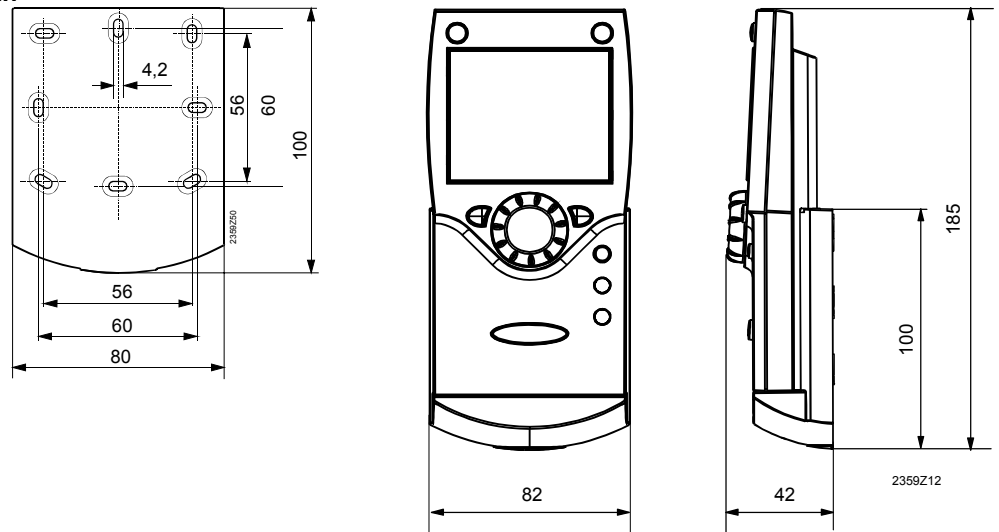
The digits on the left show telegrams that have been sent, the digits on the right telegrams that have been received. The test will be ended after 24 telegrams. The test will be considered successful when at least 50 % of the telegrams



sent have been received.

If the test was not successful, some other mounting location should be chosen or the AVS14.390 radio repeater should be used.

Dimensions and drilling plan

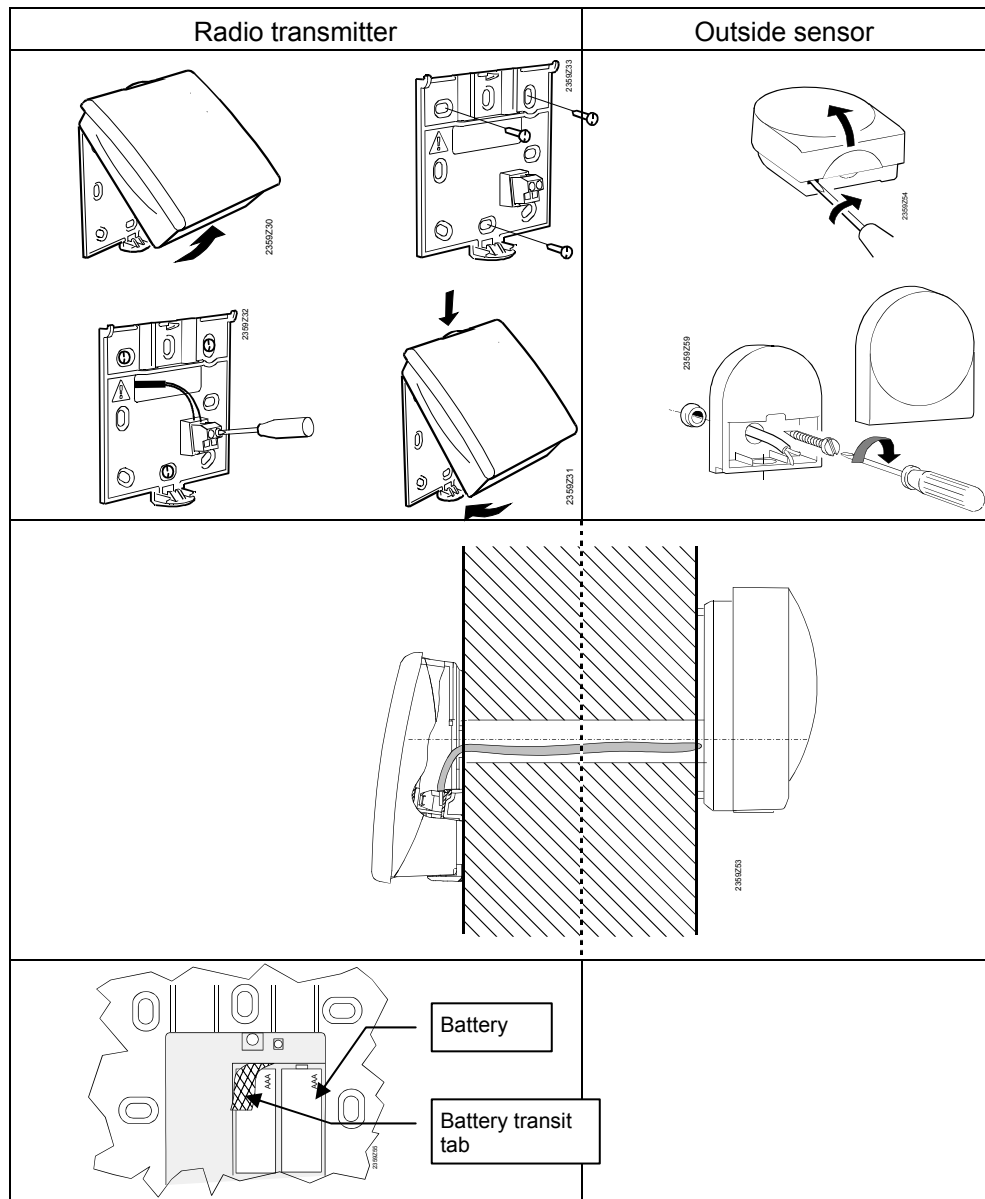


3.7.3 Wireless outside sensor AVS13.399



- The radio transmitter must be installed inside the building
- The radio transmitter's mounting location should be chosen such that batteries can be easily changed

Mounting method



Connections

The outside sensor is to be connected via a 2-core cable; the wires are interchangeable.

Power is supplied by two 1.5 V Alkali batteries type AAA (LR03).

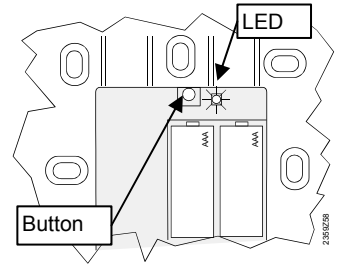
Radio link

Tip: Establish the radio link in the vicinity of the radio module prior to mounting so that all system components are within easy reach.

Prerequisite for the radio link is that all components receive power, which means that the radio module must be correctly connected to the basic unit and the batteries must be correctly installed in the room unit.

Establishing the link

1. Press the button on the radio module for at least 8 seconds until the LED on the radio module starts flashing at **high frequency**.
2. Press the button on the transmitter of the wireless outside sensor for at least 8 seconds until that LED also starts flashing at **high frequency**.
3. The link is established when the LED on the radio module extinguishes.
4. Press the button on the transmitter of the wireless outside sensor briefly again until the LED extinguishes.



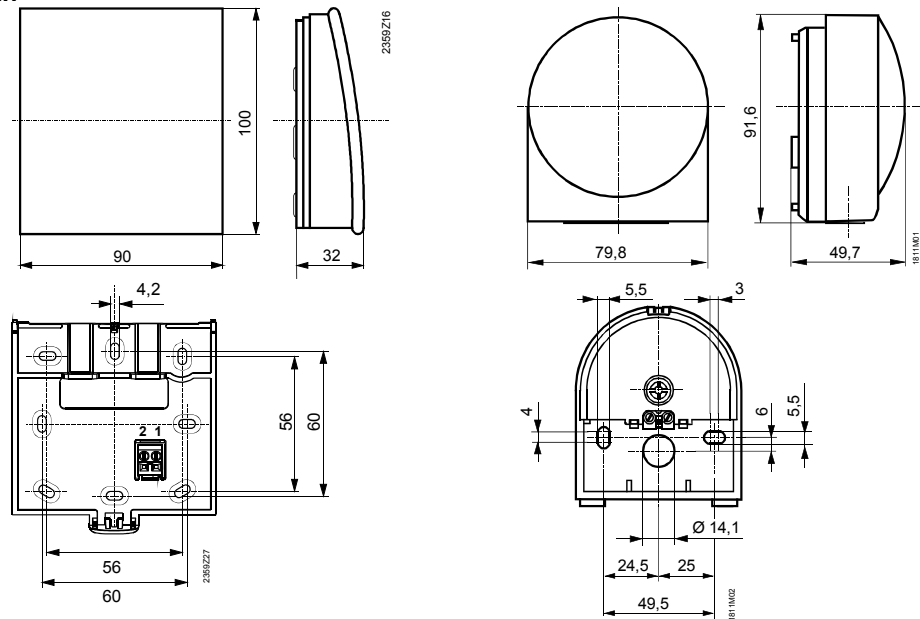
Testing



The test is made to check the quality of the radio link.

- The test can be stopped by pressing the ESC button
 - While the radio link can be opened on the boiler, the test should be made at the location where the room unit will be installed
1. Press button on the transmitter of the wireless outside sensor 3 to at most 8 seconds until the LED start flashing at **low frequency**.
 2. When radio communication works, the LED on the radio module flashes briefly at 10-second intervals.
 3. After the test, press the button on the transmitter of the wireless outside sensor again briefly until the LED extinguishes.

Dimensions and drilling plan

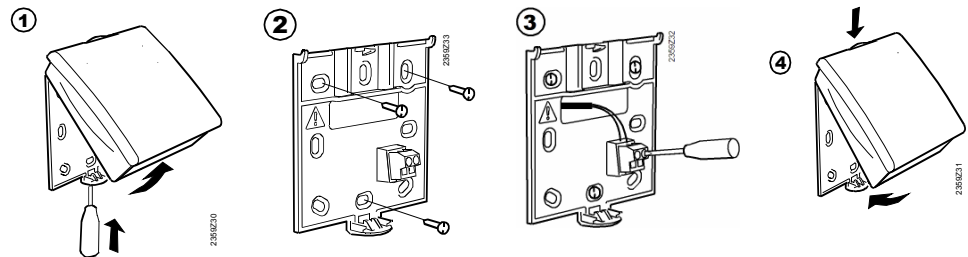


3.7.4 Radio repeater AVS14.390



- To establish the radio link, the device must be temporarily connected to power prior to mounting, enabling the radio link to be opened and tested
- The radio repeater must be fitted inside the building

Mounting method



Connections

Power is supplied via the enclosed power pack. The wires are interchangeable.

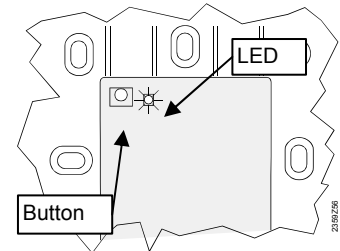
Radio link

Tip: Establish the radio link in the vicinity of the radio module prior to mounting so that all system components are within easy reach.

Prerequisite for the radio link is that all components receive power, which means that the radio module must be correctly connected to the basic unit and power must be correctly supplied to the radio repeater.

Establishing the link

1. Press the button on the radio module for at least 8 seconds until the LED on the radio module starts flashing at **high frequency**.
2. Press the button on the installed radio repeater until the LED starts flashing at **high frequency**.
3. The link is established when the LED on the radio module extinguishes.



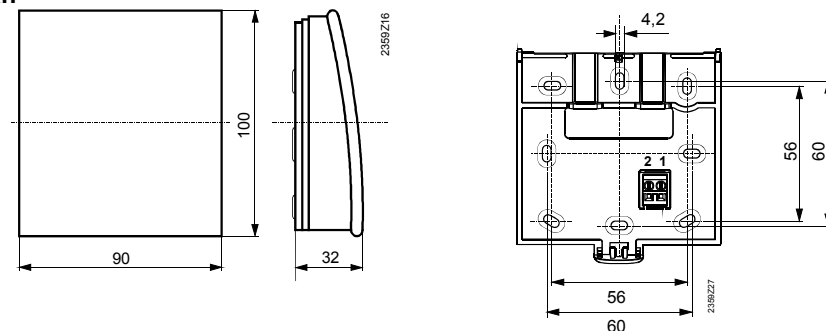
Testing



The test is made to check the quality of the radio link.

- The test can be stopped by pressing the ESC button
 - While the radio link can be opened on the boiler, the test should be made at the location where the room unit will be installed
1. Press button on the radio repeater for 3 to at most 8 seconds until the LED starts flashing at **low frequency**.
 2. When radio communication works, the LED on the radio module flashes briefly at 10-second intervals.
 3. After the test, press the button on the radio repeater again briefly until the LED extinguishes.

Dimensions and drilling plan



3.7.5 Checking the wireless components

To check whether the connections to the required system components are operational, consult operating lines 130 through 135 on operating page “Wireless“ (operating level “Commissioning“).

3.8 Power supply AVS16.290

Mounting notes

The boiler control panel is designed for installation in floor-standing or wall-hung oil or gas boilers and may only be used for that purpose. For installation, the following points must be observed:



- Power to the control panel may be supplied only after it is completely fitted in the cut-out. Extension modules or dummy covers for which cutouts are provided must also be fitted beforehand

- Dimensions of cutout 92 x 92 mm, sheet metal thickness 0.5 to 3.0 mm

- The boiler control panel must be secured with the 4 clips provided on the panel



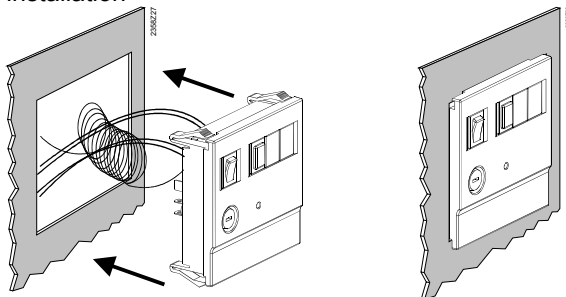
- Power to the control panel may be supplied only after it is completely fitted in the cut-out. Extensions or dummy covers for which cutouts are provided must also be fitted beforehand

- Control panel wiring to the connection terminals does not feature strain relief so that the cables must be secured inside the boiler

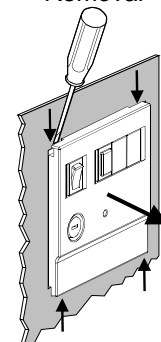
- The local regulations for electrical installation must be complied with.

Mounting method

installation



Removal



Connections

Mains

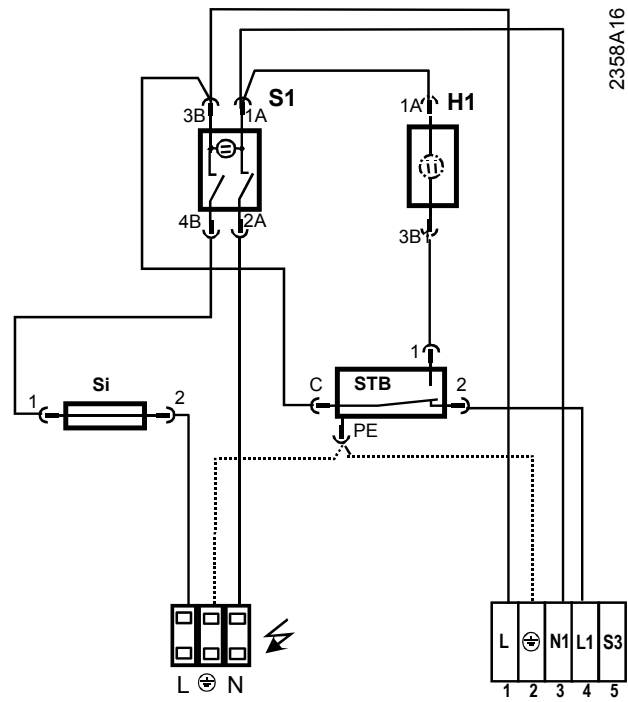
Terminal	Marking	Leiterfarben
L	Phase AC 230 V	Blue
⊕	Protective earth	Green + yellow
N	Neutral conductor	Blue

Connection to basic unit

Terminal	Marking	Leiterfarben
1	L	Phase AC 230 V basic unit
2	⊕	Protective earth
3	N	Neutral conductor
4	4	Phase AC 230 V burner
5	5	Input burner fault
		-

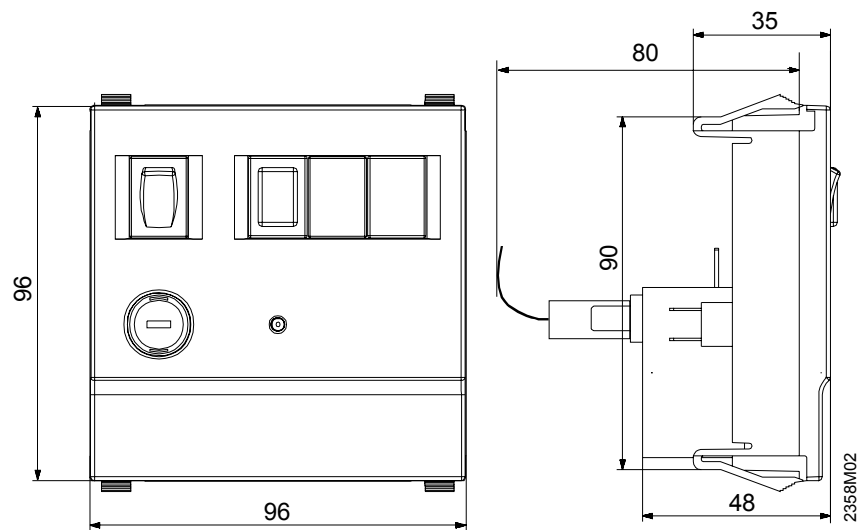
Mains supply to

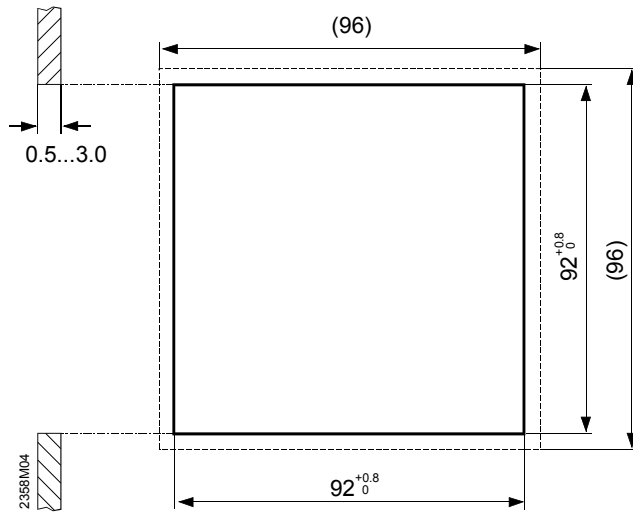
RVS... basic unit



- Si Fuse 6.3AT
- S1 Mains switch with green glow lamp
- STB Safety limit thermostat 110°C
- H1 Signal lamp (SLT tripped)

Dimensions





4 Commissioning

Prerequisites

To commission the units, the following steps must be carried out:

- Prerequisite is correct mounting and correct electrical installation and, in the case of wireless systems, correctly working radio links to all the auxiliary units
- Make all plant-specific settings. Special attention must be paid to operating page "Configuration". For that purpose, the relevant operating level is to be selected as follows:
 - Press the OK button on the room unit to switch to programming.
 - Press the Info button for at least 3 seconds and select operating level "Commissioning" with the setting knob. Then, press the OK button.
- Make the functional check as described below
- Reset the attenuated outside temperature (operating page "Diagnostics of consumers", operating line "Outside temp attenuated" (operating line 8703))

functional check

To facilitate commissioning and fault tracing, the controller allows output and input tests to be made. With these tests, the controller's inputs and outputs can be checked. To make the tests, select operating page "Input/output test" and go through all available operating lines.

Operating state

The current operating state can be checked on operating page "State".

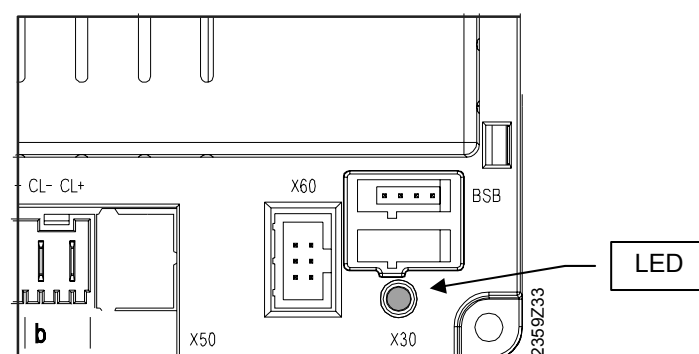
Diagnostics

For detailed diagnostics of the plant, check operating pages "Diagnostics heat source" and "Diagnostics consumer".

4.1 Basic units

Checking the LED

LED off:	No power supply
LED on:	Ready to operate
LED flashes	Local faults



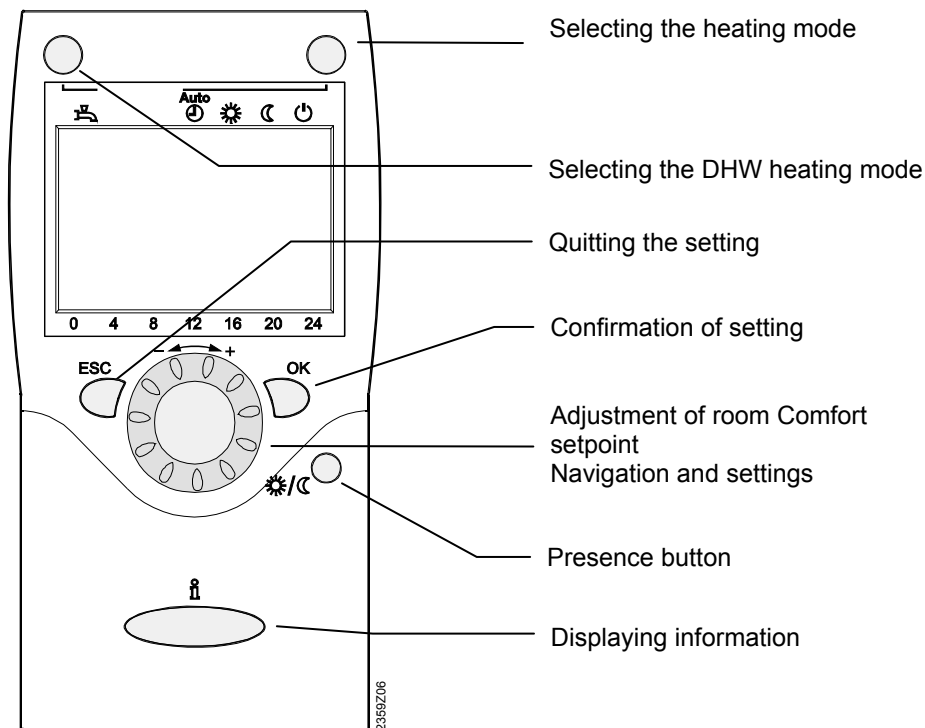
5 Handling

5.1 QAA75... / QAA78... / AVS37...

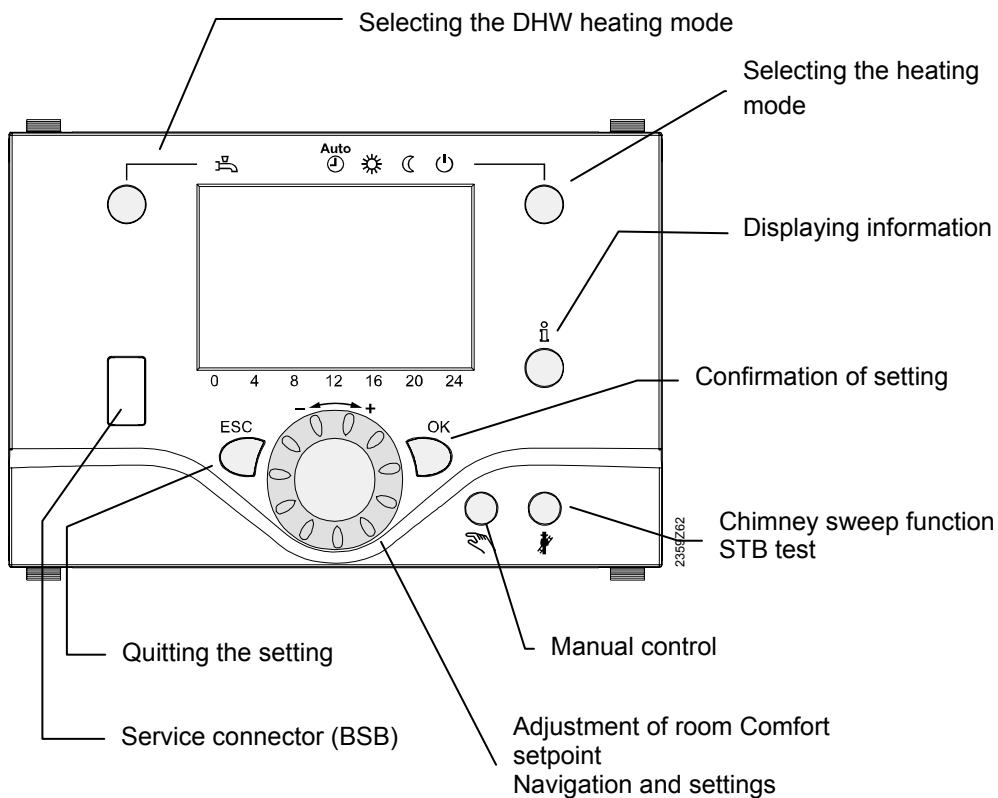
5.1.1 Operation

Operating elements











Room unit



Operator unit

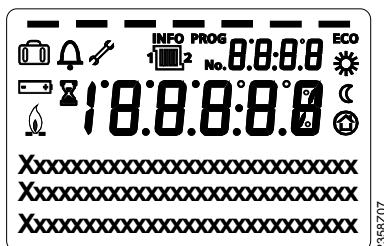


Display choices

	Heating to the Comfort setpoint	INFO	Info level activated
	Heating to the Reduced setpoint	PROG	Programming activated
	Heating to the frost protection setpoint	ECO	ECO function active Heating system temporarily off
	Process running – please wait		Holiday function active
	Change battery		Reference to heating circuit
	Burner in operation (only oil / gas burner)		Maintenance / special mode
			Error messages

display

Display showing all available segments.



Selection of space heating mode



Press the button to switch between the different operating modes. The choice made is indicated by a bar which appears below the symbols.





Automatic operation **AUTO** 



Automatic operation controls the room temperature according to the time program.

Characteristics of automatic operation:

- Heating mode according to the time program
- Temperature setpoints according to heating program "Comfort setpoint"  or "Reduced setpoint" 
- Protective functions active
- Automatic summer / winter changeover (ECO functions)

Continuous operation  or 

Continuous operation maintains the room temperature at the selected operating level.

-  Heating to the Comfort setpoint
-  Heating to the Reduced setpoint

Characteristics of continuous operation:

- Heating mode with no time program
- Protective functions active
- Summer/winter heating limit and automatic 24-hour heating limit (ECO functions)
 - During continuous operation with comfort setpoint: not active
 - During continuous operation with reduced setpoint: Active

Protective mode 

When using Protection, the heating system is off. But it remains protected against frost (frost protection temperature), provided there is no power failure.

Characteristics of Protection:

- Heating off
- Temperature according to frost protection
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and automatic 24-hour heating limit active

Selecting DHW heating

The button is used to switch DHW heating mode on and off. The choice made is indicated by a bar which appears below the symbols.

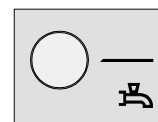
DHW heating mode 

- On

The DHW is heated according to the selected switching program.

- Off

No DHW heating, but the protective function is active.




DHW push

To do this, keep the DHW operating mode button on the operator or room unit depressed for at least 3 seconds.

The DHW push can also be started when:

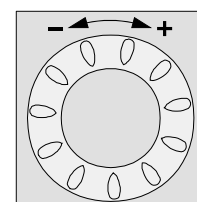
- The operating mode is "Off"
- Operating mode changeover acts via H1 or centrally (LPB)
- All heating circuits have assumed the holiday mode

Adjusting the room temperature setpoint

Turn the setting knob to increase or decrease the **Comfort setpoint** .

For the **Reduced setpoint** 

- Press the OK button
- Select operating page "Heating circuit" and
- Adjust the "Reduced" setpoint

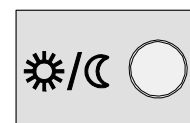




Each time you make a readjustment, wait at least 2 hours, allowing the room temperature to adapt.

Presence button

If the rooms are not used for a certain period of time, you can press the occupancy button to reduce the room temperature, thus saving heating energy.

When the rooms are occupied again, press again the occupancy button to resume heating operation.



-  Heating to the Comfort setpoint
-  Heating to the Reduced setpoint

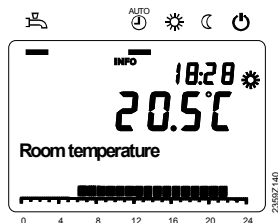


- The occupancy button is only active in automatic operation
- The current selection is active until the next switching action according to the heating program occurs

Displaying information

The Info button is used to display information.





Available information

Certain information lines are hidden, depending on the type of unit, unit configuration and operating state.

Possible displays

Depending on the type of unit, configuration and operating state, some of the info lines listed below may not appear.

Displays:

- Possible error messages from the error code list on page 6.15.1
- Possible maintenance alarms from the maintenance code list on page 6.15.2
- Possible special mode messages

Other displays:

- | | |
|----------------------------|------------------------------|
| - Room temperature | - State DHW |
| - Room temperature minimum | - State boiler |
| - Room temperature maximum | - State solar |
| - Boiler temp | - State solid fuel boiler |
| - Outside temperature | - State buffer storage tank |
| - Outside temp min | - Date and time of day |
| - Outside temp max | - Telephone customer service |
| - DHW temp 1 | |
| - State heating circuit 1 | |
| - State heating circuit 2 | |
| - State heating circuit P | |

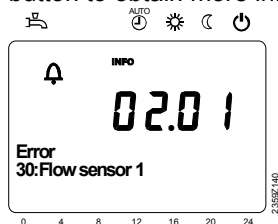
Exceptional cases

In exceptional cases, the display shows one of the following symbols:



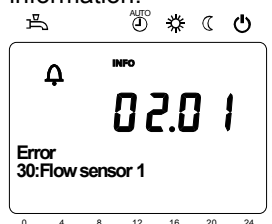
Error messages

If this symbol appears, a plant fault occurred. In that case, press the Info button to obtain more information.



Maintenance or special mode

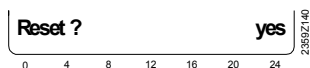
If this symbol appears, a maintenance alarm is delivered or the plant has changed to special mode. In that case, press the Info button to obtain more information.



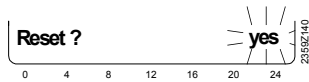
A list of possible displays is given on page 88.

Reset function

The reset function for meters and the resettable parameters appears on the bottom line of the display, provided a reset is permitted on the current operating line (enduser / commissioning / heating engineer).



After activation with the OK button, the display shows a flashing "Yes".




After confirmation with the OK button, the relevant parameter or meters will be reset.

manual control

When manual control is active, the relays are no longer energized and deenergized according to the control state, but are set to a predefined manual operating state depending on their function.

The burner relay energized in manual control can be deenergized by the electronic temperature controller (TR).

Setpoint adjustment with manual control

After manual control has been activated, a change to the basic display must be made. There, the maintenance / special mode symbol  appears. Press the Info button to switch to info display "Manual mode", where the setpoint can be adjusted.

Chimney sweep function

The chimney sweep function is activated by a short press (maximum 3 seconds) on the chimney sweep button. It produces the operating state required for making flue gas measurements.

SLT test

The SLT test (SLT = safety limit thermostat) is activated by a long press (longer than 3 seconds) on the chimney sweep button. The button must be kept depressed during the entire test. If released, the test will be aborted. The SLT test is shown on the display.



The test must be made by qualified staff since the boiler temperature will be raised above the maximum limitations.

5.1.2 Programming

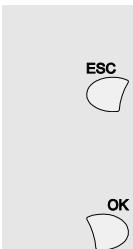
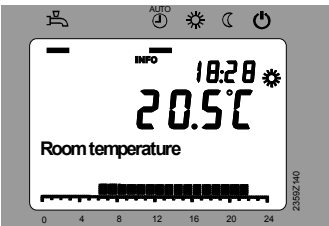
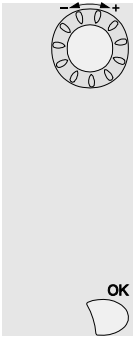
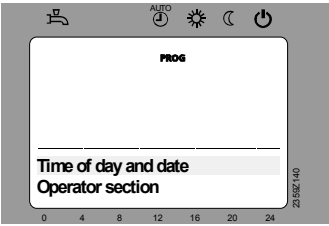
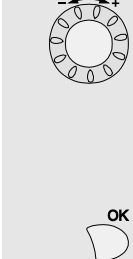
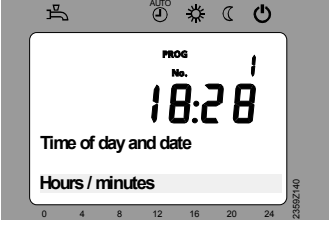
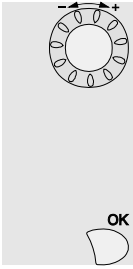

Setting principle

Settings that cannot be made directly with the help of operating elements are made through programming. For this purpose, the individual settings are structured in the form of operating pages and operating lines, thus forming practical groups of settings. The following example which shows the setting of the time of day and date shall explain this.

Example "Setting the time of day"



- When pressing the ESC button, you go back one step; adjusted values will not be adopted
- If no setting is made for 8 minutes, the unit will automatically return to the basic display
- Operating lines may be hidden, depending on the type of unit, their configuration and user level

operation	Display example	Description
<p>1</p> 		<p>You see the basic display. If the basic display is not shown, press the ESC button to return to it.</p> <p>Press the OK button.</p>
<p>2</p> 		<p>The bottom section of the display shows a number of operating pages. Turn the setting knob until operating page "Time of day and date" appears.</p> <p>To confirm, press the OK button.</p>
<p>3</p> 		<p>In the bottom section of the display, the first operating line of operating page "Time of day and date" appears. Turn the setting knob until operating line "Hours / minutes" appears.</p> <p>To confirm, press the OK button.</p>
<p>4</p> 		<p>The display shows the hours flashing. Turn the setting knob until the hours of the time of day are correct.</p> <p>To confirm, press the OK button.</p>

5

The display shows the minutes flashing.
Turn the setting knob until the minutes of the time of day are correct.

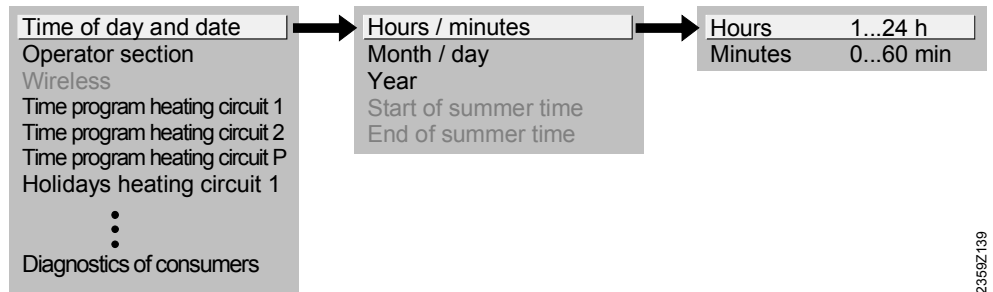
To confirm, press the OK button.

6

The settings are saved, the display stops flashing.
You can continue to make other settings, or you press the operating mode button to return to the basic display.

7 Now, you have returned to the basic display.

Example of menu structure



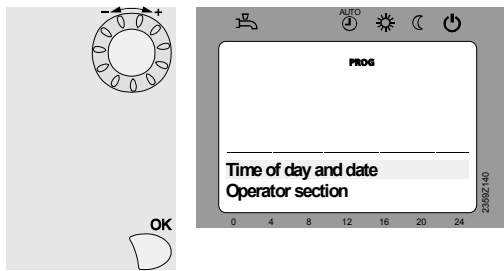
2359Z139

5.1.3 User levels

Certain user levels only allow certain user groups to make settings. To reach the required user level, proceed as follows:

operation	Display example	Description
<p>1</p>		<p>You see the basic display. If the basic display is not shown, press the ESC button to return to it.</p> <p>Press the OK button.</p>
<p>2</p>		<p>You are on user level "Enduser".</p> <p>Press the Info button for 3 seconds.</p>
		<p>You are given a choice of user levels. Turn the setting knob until the required user level is reached.</p> <p>Press the OK button.</p>

3

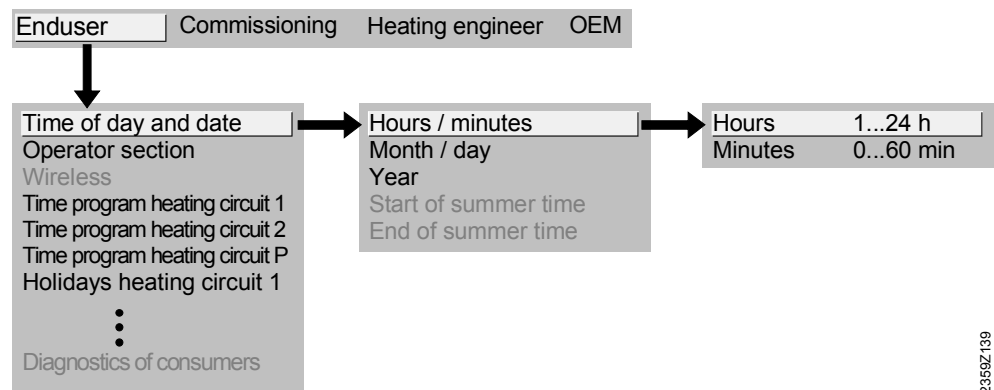


You are now on the required user level.

To reach the OEM level, enter the relevant code.

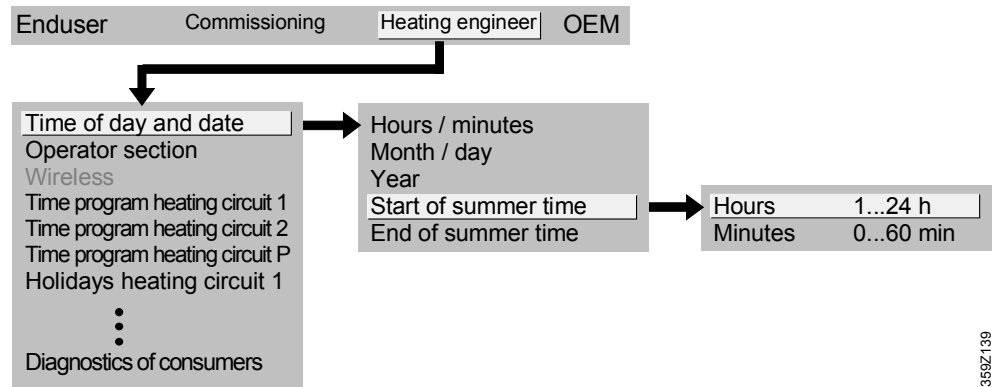
Setting structure for "Enduser"

The example given here shows that certain user levels do not allow certain settings to be made. The example shows them highlighted. On the unit, they are hidden.



2359Z139

Setting structure for "Heating engineer"



2359Z139

5.1.4 Overview of settings

The table below shows all available settings up to the heating engineer level. However, certain operating lines may be hidden, depending on the type of unit.

Legend

E = enduser I = commissioning F = heating engineer
ZN = line number

Operating line	User level	Function	Default value	Min	Max	Unit
Time of day and date						
1	E	Hours/minutes	-	00:00	23:59	hh:mm
2	E	Day/month	-	01.01	31.12	tt.MM
3	E	Year	-	2004	2099	jjjj
5	F	Start of summertime	25.03	01.01	31.12	tt.MM
6	F	End of summertime	25.10	01.01	31.12	tt.MM
Operator section						
20	E	Language German ; ...	German			-
22	F	Info Temporarily ; Permanently	Temporarily			-
26	F	Operation lock Off ; On	Off			-
27	F	Programming lock Off ; On	Off			-
40	I	Used as Room unit 1 ; Room unit 2 ; Operator unit ; Service unit	Room unit 1			-
42	I	Assignment room unit 1 Heating circuit 1 ; Heating circuits 1 and 2	Heating circuit 1			-
44	I	Operation HC2 Commonly with HC1 ; Independently	Commonly with HC1			-
46	I	Operation HCP Commonly with HC1 ; Independently	Commonly with HC1			-
48	I	Action occupancy button None ; Heating circuit 1 ; Heating circuit 2 ; Commonly	Heating circuit 1			-
54	F	Readjustment room sensor	0.0	-3	3	°C
70	F	Software version	-	0	99.9	-
wireless						
120	I	Binding No ; Yes	No			
121	I	Test mode Off ; On	Off			
130	I	Room unit 1 Missing ; Ready ; No reception ; Change batt	-			-
131	I	Room unit 2 Missing ; Ready ; No reception ; Change batt	-			-
132	I	Outside sensor Missing ; Ready ; No reception ; Change batt	-			-
133	I	Repeater Missing ; Ready ; No reception	-			-
134	I	Operator unit Missing ; Ready ; No reception ; Change batt	-			-
135	I	Service unit Missing ; Ready ; No reception ; Change batt	-			-

Operating line	User level	Function	Default value	Min	Max	Unit
138	I	Delete all devices No Yes	No			-
Time prog heating circuit 1						
500	E	Preselection Mo - Su Mo - Fr Sa - Su Mo Tu We Th Fr Sa Su	Mo - Su			-
501	E	1st phase on	6:00	00:00	24:00	hh:mm
502	E	1st phase off	22:00	00:00	24:00	hh:mm
503	E	2nd phase on	24:00	00:00	24:00	hh:mm
504	E	2nd phase off	24:00	00:00	24:00	hh:mm
505	E	3rd phase on	24:00	00:00	24:00	hh:mm
506	E	3rd phase off	24:00	00:00	24:00	hh:mm
516	E	Default values No Yes	No			-
Time prog heating circuit 2						
520	E	Preselection Mo - Su Mo - Fr Sa - Su Mo Tu We Th Fr Sa Su	Mo - Su			-
521	E	1st phase on	6:00	00:00	24:00	hh:mm
522	E	1st phase off	22:00	00:00	24:00	hh:mm
523	E	2nd phase on	24:00	00:00	24:00	hh:mm
524	E	2nd phase off	24:00	00:00	24:00	hh:mm
525	E	3rd phase on	24:00	00:00	24:00	hh:mm
526	E	3rd phase off	24:00	00:00	24:00	hh:mm
536	E	Default values No Yes	No			-
Time program 3 / HCP						
540	E	Preselection Mo - Su Mo - Fr Sa - Su Mo Tu We Th Fr Sa Su	Mo - Su			-
541	E	1st phase on	6:00	00:00	24:00	hh:mm
542	E	1st phase off	22:00	00:00	24:00	hh:mm
543	E	2nd phase on	24:00	00:00	24:00	hh:mm
544	E	2nd phase off	24:00	00:00	24:00	hh:mm
545	E	3rd phase on	24:00	00:00	24:00	hh:mm
546	E	3rd phase off	24:00	00:00	24:00	hh:mm
556	E	Default values No Yes	No			-
Time program 4 / DHW						
560	E	Preselection Mo - Su Mo - Fr Sa - Su Mo Tu We Th Fr Sa Su	Mo - Su			-
561	E	1st phase on	6:00	00:00	24:00	hh:mm
562	E	1st phase off	22:00	00:00	24:00	hh:mm
563	E	2nd phase on	24:00	00:00	24:00	hh:mm
564	E	2nd phase off	24:00	00:00	24:00	hh:mm
565	E	3rd phase on	24:00	00:00	24:00	hh:mm
566	E	3rd phase off	24:00	00:00	24:00	hh:mm
576	E	Default values No Yes	No			-
Holidays heating circuit 1						

Operating line	User level	Function	Default value	Min	Max	Unit
642	E	Start	--.---	01.01	31.12	tt.MM
643	E	End	--.---	01.01	31.12	tt.MM
648	E	Operating level Frost protection Reduced	frost protection			-
Holidays heating circuit 2						
652	E	Start	--.---	01.01	31.12	tt.MM
653	E	End	--.---	01.01	31.12	tt.MM
658	E	Operating level Frost protection Reduced	frost protection			-
Holidays heating circuit P						
662	E	Start	--.---	01.01	31.12	tt.MM
663	E	End	--.---	01.01	31.12	tt.MM
668	E	Operating level Frost protection Reduced	frost protection			-
Heating circuit 1						
710	E	Comfort cooling setpoint	20.0	ZN 712	ZN 716	°C
712	E	Reduced setpoint	16	ZN 714	ZN 710	°C
714	E	Frost protection setpoint	10.0	4	ZN 712	°C
716	F	Comfort setpoint max	35.0	ZN 710	35	°C
720	E	Heating curve slope	1.50	0.10	4.00	-
721	F	Heating curve displacement	0.0	-4.5	4.5	°C
726	F	Heating curve adaption Off On	Off			-
730	E	Summer/winter heating limit	18	--- / 8	30	°C
732	F	24-hour heating limit	-3	--- / -10	10	°C
740	I	Flow temp setpoint min	8	8	ZN 741	°C
741	I	Flow temp setpoint max	80	ZN 740	95	°C
750	F	room influence	20	--- / 1	100	%
760	F	Room temp limitation	1	--- / 0.5	4	°C
770	F	Boost heating	5	--- / 0	20	°C
780	F	Quick setback Off Down to reduced setpoint Down to frost prot setpoint	Down to reduced setpoint			-
790	F	Optimum start control max	0	0	360	min
791	F	Optimum stop control max	0	0	360	min
800	F	Reduced setp increase start	---	--- / -30	10	°C
801	F	Reduced setp increase end	-15	-30	ZN 800	°C
820	F	Overtemp prot pump circuit Off On	On			-
830	F	Mixing valve boost	10	0	50	°C
832	F	Actuator:type 2-position 3-position	3-position		-	
833	F	Switching differential 2-pos	2	0	20	°C
834	F	actuator: running time	120	30	873	s
850	I	Floor curing function Off Functional heating Curing heating Functional/curing heating Manually	Off			-
851	I	Floor curing setp manually	25	0	95	°C
860	I	Recooling storage tank Off Heating mode Always	Always			-

Operating line	User level	Function	Default value	Min	Max	Unit
Heating circuit 2						
1010	E	Comfort cooling setpoint	20.0	BZ 1012	BZ 1016	°C
1012	E	Reduced setpoint	16	BZ 1014	BZ 1010	°C
1014	E	Frost protection setpoint	10.0	4	BZ 1012	°C
1016	F	Comfort setpoint max	35.0	BZ 1010	35	°C
1020	E	Heating curve slope	1.50	0.10	4.00	-
1021	F	Heating curve displacement	0.0	-4.5	4.5	°C
1026	F	Heating curve adaption Off ; On	Off			-
1030	E	Summer/winter heating limit	18	--- / 8	30	°C
1032	F	24-hour heating limit	-3	--- / -10	10	°C
1040	I	Flow temp setpoint min	8	8	BZ 1041	°C
1041	I	Flow temp setpoint max	80	BZ 1040	95	°C
1050	F	Room influence	20	--- / 0	100	%
1060	F	Room temp limitation	1	--- / 0.5	4	°C
1070	F	Boost heating	5	--- / 0	20	°C
1080	F	Quick setback Off ; Down to reduced setpoint ; Down to frost prot setpoint	Down to reduced setpoint			-
1090	F	Optimum start control max	0	0	360	min
1091	F	Optimum stop control max	0	0	360	min
1100	F	Reduced setp increase start	---	--- / -30	10	°C
1101	F	Reduced setp increase end	-15	-30	BZ 1100	°C
1120	F	Overtemp prot pump circuit Off ; On	On			-
1130	F	Mixing valve boost	10	0	50	°C
1132	F	Actuator:type 2-position ; 3-position	3-position			-
1133	F	Switching differential 2-pos	2	0	20	°C
1134	F	Actuator: running time	120	30	873	s
1150	I	Floor curing function Off ; Functional heating ; Curing heating ; Functional/curing heating; Manually	Off			-
1151	I	Floor curing setp manually	25	0	95	°C
1160	F	Recooling storage tank Off ; Heating mode ; Always	Always			-
Heating circuit P						
1300	E	Operating mode Protection ; Automatic ; Reduced ; Comfort	Automatic			-
1310	E	Comfort cooling setpoint	20.0	BZ 1012	BZ 1016	°C
1312	E	Reduced setpoint	16	BZ 1014	BZ 1010	°C
1314	E	Frost protection setpoint	10.0	4	BZ 1012	°C
1316	F	Comfort setpoint max	35.0	BZ 1010	35	°C
1320	E	Heating curve slope	1.50	0.10	4.00	-
1321	F	Heating curve displacement	0.0	-4.5	4.5	°C
1326	F	Heating curve adaption Off ; On	Off			-
1330	E	Summer/winter heating limit	18	--- / 8	30	°C

Operating line	User level	Function	Default value	Min	Max	Unit
1332	F	24-hour heating limit	-3	--- / -10	10	°C
1340	I	Flow temp setpoint min	8	8	BZ 1041	°C
1341	I	Flow temp setpoint max	80	BZ 1040	95	°C
1350	F	Room influence	20	--- / 0	100	%
1360	F	Room temp limitation	---	--- / 0.5	4	°C
1370	F	Boost heating	5	--- / 0	20	°C
1380	F	Quick setback Off ; Down to reduced setpoint ; Down to frost prot setpoint	Down to reduced setpoint			-
1390	F	Optimum start control max	0	0	360	min
1391	F	Optimum stop control max	0	0	360	min
1400	F	Reduced setp increase start	---	--- / -30	10	°C
1401	F	Reduced setp increase end	-15	-30	BZ 1100	°C
1420	F	Overtemp prot pump circuit Off ; On	On			-
1450	I	Floor curing function Off ; Functional heating ; Curing heating ; Functional/curing heating ; Manually	Off			-
1451	I	Floor curing setp manually	25	0	95	°C
1455	I	Floor curing setp current	0	0	95	°C
1456	I	Floor curing day current	0	0	32	°C
1460	F	Recooling storage tank Off ; Heating mode ; Always	Always			-
Domestic hot water						
1610	E	Nominal setpoint	55	ZN 1612	ZN 1614 OEM	°C
1612	F	Reduced setpoint	40	8	ZN 1610	°C
1620	I	Release 24h/day ; Time programs HCs ; Time program 4/DHW	Time programs HCs			-
1630	I	Charging priority Absolute ; Shifting ; None ; MC shifting, PC absolute	MC shifting, PC absolute			-
1640	F	Legionella function Off ; Periodically ; Fixed weekday	Fixed weekday			-
1641	F	Legionella funct periodically	3	1	7	Days
1642	F	Legionella funct weekday Monday ; Tuesday ; Wednesday ; Thursday ; Friday ; Saturday ; Sunday	Montag			
1644	F	Legionella funct time	---	--- / 00:00	23:50	hh:mm
1645	F	Legionella funct setpoint	65	55	95	°C
1646	F	Legionella funct duration	30	--- / 10	360	min
1647	F	Legionella funct circ pump Off ; On	On			-
1660	I	Release of the circulating pump Time program 3/HCP ; DHW release ; Time program 4/DHW	DHW release			-
1661	I	Circulating pump cycling Off ; On	On			-
1663	F	Circulaton setpoint	45	8	80	°C
boiler						
2210	F	Setpoint min	40	ZN 2211 OEM	Setpoint manual control	°C
2212	F	Setpoint max	80	Setpoint manual control	ZN 2213 OEM	°C

Operating line	User level	Function	Default value	Min	Max	Unit
2270	F	Rücklaufsollwert Minimum	8	8	95	°C
Solar						
3810	F	Temp diff on	8	ZN 3811	40	°C
3811	F	Temp diff off	4	0	ZN 3812	°C
3812	F	Charg temp min DHW st tank	---	--- / 8	95	°C
3830	F	Collector start function	---	--- / 5	60	min
3831	F	Min run time collector pump	60	5	120	s
3840	F	Collector frost protection	---	--- / -20	5	°C
3850	F	Collector overtemp prot	---	--- / 30	200	°C
3860	F	Evaporation heat carrier	---	--- / 60	200	°C
DHW storage tank						
5020	F	Flow setpoint boost	16	0	30	°C
5022	F	Type of charging With B3 With B3/B31 With B3, legio B3/B31	With B3/B31			-
5050	F	Charging temp max	80	8	ZN 5051 OEM	°C
5055	F	Recooling temp	60	8	95	°C
5056	F	Recooling heat gen/HC Off On	Off			-
5057	F	Recooling collector Off Summer Always	Off			-
5060	F	Electric immersion heater:operating mode Substitute Summer Always	Substitute			-
5061	F	Electric immersion heater:release 24h/day DHW release Time program4/ DHW	DHW release			-
5062	F	EI immersion heater control External thermostat DHW sensor	DHW sensor			-
Configuration						
5710	I	Heating circuit 1 Off On	On			-
5715	I	Heating circuit 2 Off On	On			-
5730	I	DHW sensor B3 Sensor Thermostat	Sensors			-
5731	I	DHW controlling element Q3 None Charging pump Diverting valve	charging pump			-
5890	I	Relay output QX1 None Circulating pump Q4 EI imm heater DHW K6 Collector pump Q5 H1 pump Q15 Boiler pump Q1 Bypass pump Q12 Alarm output K10 2nd pump speed HC1 Q21 2nd pump speed HC2 Q22 2nd pump speed HCP Q23 Heating circuit pump HKP Q20 H2 pump Q18	None			-
5891	I	Relay output QX2 None Circulating pump Q4 EI imm heater DHW K6 Collector pump Q5 H1 pump Q15 Boiler pump Q1 Bypass pump Q12 Alarm output K10 2nd pump speed HC1 Q21 2nd pump speed HC2 Q22 2nd pump speed HCP Q23 Heating circuit pump HKP Q20 H2 pump Q18	None			-
5930	I	Sensor input BX1 None DHW sensor B31 Collector sensor B6 Return sensor B7	None			-
5931	I	Sensor input BX2 None DHW sensor B31 Collector sensor B6 Return sensor B7	None			-

Operating line	User level	Function	Default value		Max	Unit
				Min		
5950	I	Function input H1 Optg mode change HCs+DHW ; Optg mode changeover HCs ; Optg mode changeover HC1 ; Optg mode changeover HC2 ; Optg mode changeover HCP ; Heat generation lock ; Error/alarm message ; Min flow temp setpoint ; Heat request ; Pressure measurement	Optg mode change HCs+DHW			-
5951	I	Contact type H1 NC ; NO	NO contact			-
5952	I	Min flow temp setpoint H1	70	8	Tkmax (120°C)	°C
5954	I	Heat request 10V H1	100	5	130	°C
5956	I	Pressure value 3.5V H1	5.0	0.0	10.0	bar
5960	I	Function input H2 Optg mode change HCs+DHW ; Optg mode changeover HCs ; Optg mode changeover HC1 ; Optg mode changeover HC2 ; Optg mode changeover HCP ; Heat generation lock ; Error/alarm message ; Min flow temp setpoint ; Heat request ; Pressure measurement	Optg mode change HCs+DHW			-
5961	I	Contact type H2 NC ; NO	NO contact			-
5962	I	Min flow temp setpoint H2	70	8	TKmax	°C
5964	I	Heat request 10V H2	100	5	130	°C
5966	I	Pressure value 3.5V H2	5.0	0.0	10.0	bar
6097	F	Sensor type collector	0	-20	20	°C
6098	F	Readjustm collector sensor	0	-3	3	°C
6100	F	Readjustm outside sensor	0.0	-3.0	3.0	°C
6110	F	Time constant building	15	0	50	h
6120	F	Frost protection plant Off ; On	On			-
6200	I	Saving sensors No ; Yes	No			-
6205	F	Reset to default parameters No ; Yes	No			-
6212	I	Check no heat source 1	-	0	199999	-
6215	I	Check no storage tank	-	0	199999	-
6217	I	Check no heating circuits	-	0	199999	-
6220	F	Software version	-	0	99.9	-
error						
6710	I	Reset:alarm relay No ; Yes	No			-
6740	F	Flow temp 1 alarm	---	--- / 10	240	min
6741	F	Flow temp 2 alarm	---	--- / 10	240	min
6743	F	Boiler temp alarm	---	--- / 10	240	min
6800	F	History 1	-			
	F	Error code 1	-	0	255	-
6802	F	History 2	-			
	F	Error code 1	-	0	255	-
6804	F	History 3	-			
	F	Error code 1	-	0	255	-
6806	F	History 4	-			
	F	Error code 1	-	0	255	-
6808	F	History 5	-			

Operating line	User level	Function	Default value	Min	Max	Unit
	F	Error code 1	-	0	255	-
6810	F	History 6	-			
	F	Error code 1	-	0	255	-
6812	F	History 7	-			
	F	Error code 1	-	0	255	-
6814	F	History 8	-			
	F	Error code 1	-	0	255	-
6816	F	History 9	-			
	F	Error code 1	-	0	255	-
6818	F	History 10	-			
	F	Error code 1	-	0	255	-
Maintenance/service						
7040	F	Burner hours interval	---	--- / 10	10000	h
7041	F	Burner hrs since maintenance	0	0	10000	h
7042	F	Burner start interval	---	--- / 60	65535	-
7043	F	Burn starts since maint	0	0	65535	-
7044	F	Maintenance Interval	---	--- / 1	240	months
7045	F	Time since maintenance	0	0	240	months
7130	E	Chimney sweep function Off ; On	Off			-
7140	E	manual control Off ; On	Off			-
7150	I	Simulation outside temp	-	-50	50.0	°C
7170	I	Telephone customer service				-
Input/output test						
7700	I	relay test No test ; Everything off ; 1st burner stage T2 ; DHW pump Q3 ; Heating circuit pump Q2 ; Heat circ mix valve op Y1 ; Heat circ mix valve cl Y2 ; Heating circuit pump Q6 ; Heat circ mix valve op Y5 ; Heat circ mix valve cl Y6 ; Relay output QX1 ; Relay output QX2	No test			-
7730	I	Outside temp B9	-	-50	50	°C
7732	I	Flow temp B1	-	0	140	°C
7734	I	Flow temp B12	-	0	140	°C
7750	I	DHW temp B3	-	0	140	°C
7760	I	Boiler temp B2	-	0	140	°C
7820	I	Sensor temp BX1	-	-28	200	°C
7821	I	Sensor temp BX2	-	-28	200	°C
7840	I	Voltage signal H1	0	0	10	Volt
7841	I	Contact state H1 Open ; Closed	Open			-
7846	I	Contact state H2 Open ; Closed	Open			-
7870	I	Burner fault S3 0V ; 230V	0V			-
7881	I	1st burner stage E1 0V ; 230V	0V			-
State of plant						
8000	I	State heating circuit 1	-			-
8001	I	State heating circuit 2	-			-
8002	I	State heating circuit P	-			-

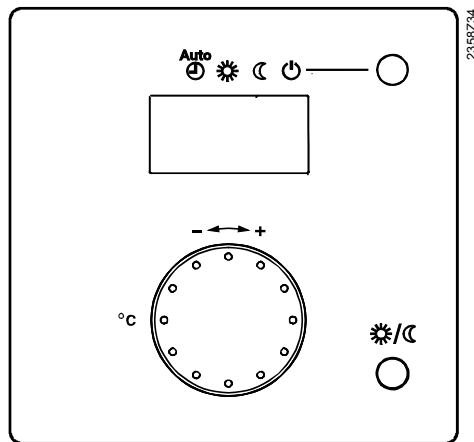
Operating line	User level	Function	Default value	Min	Max	Unit
8003	I	State DHW	-			-
8005	I	State boiler	-			-
8007	I	State solar	-			-
Diagnostics heat source						
8300	I	1st burner stage T2 Off On	-			-
8310	I	Boiler temp	-	0.0	140.0	°C
8311	I	Boiler temp setpoint	-	0.0	140.0	°C
8314	I	Boiler return temp	-	0.0	140.0	°C
8330	F	Hours run 1st stage	0	0	65535	h
8331	F	Start counter 1st stage	-	0	199'999	-
8510	I	Collector temp 1	-	-28.0	200.0	°C
8511	I	Collector temp 1 max	0	-28.0	200.0	°C
8512	I	Collector temp 1 min	0	-28.0	200.0	°C
8513	I	dT collector 1/DHW	-	-28.0	200.0	°C
8530	F	Hours run solar yield	-	00:00	65535	°C
8531	F	Hours run collect overtemp	-	00:00	65535	°C
Diagnostics consumers						
8700	I	Outside temperature	-	-50.0	50.0	°C
8703	I	Outside temp attenuated	-	-50.0	50.0	°C
8704	I	Composite outside temperature	-	-50.0	50.0	°C
8730	I	Heating circuit pump Q2 Off On	-			-
8731	I	Heat circ mix valve op Y1 Off On	-			-
8732	I	Heat circ mix valve cl Y2 Off On	-			-
8740	I	Room temp 1	-	0.0	50.0	°C
8741	I	Room setpoint 1	-	4.0	35.0	°C
8743	I	Flow temp 1	-	0.0	140.0	°C
8744	I	Flow temp setpoint 1	-	0.0	140.0	°C
8760	I	Heating circuit pump Q6 Off On	-			-
8761	I	Heat circ mix valve op Y5 Off On	-			-
8762	I	Heat circ mix valve cl Y6 Off On	-			-
8770	I	Room temp 2	-	0.0	50.0	°C
8771	I	Room setpoint 2	-	4.0	35.0	°C
8773	I	Flow temp 2	-	0.0	140.0	°C
8774	I	Flow temp setpoint 2	-	0.0	140.0	°C
8800	I	Room temp P	-	0.0	50.0	°C
8801	I	Room setpoint P	-	4.0	35.0	°C
8803	I	Flow temp setpoint P	-	0.0	140.0	°C
8820	I	DHW pump Q3 Off On	-			-
8830	I	DHW temp 1	-	0.0	140.0	°C
8831	I	DHW temp setpoint	-	8.0	80.0	°C
8832	I	DHW temp 2	-	0.0	140.0	°C
8835	I	DHW circulation temp	-	0.0	140.0	°C

Operating line	User level	Function	Default value	Min	Max	Unit
8950	I	Common flow temp	-	0.0	140.0	°C
8951	I	Common flow temperature setpoint	-	0.0	140.0	°C
9000	I	Flow temp setpoint H1	-	5.0	130.0	°C
9001	I	Flow temp setpoint H2	-	5.0	130.0	°C
9005	I	Water pressure H1	-	0.0	10.0	bar
9031	I	Relay output QX1 Off ; On	-			-
9032	I	Relay output QX2 Off ; On	-			-

5.2 QAA55...

5.2.1 Operation

Operating elements



Display choices

-  Heating to the Comfort setpoint
-  Heating to the Reduced setpoint
-  Burner in operation (only oil / gas burner)
-  Error messages

display

Display showing all available segments.



5.2.2 Programming

Configuration

A long press on the occupancy button enables the service level to be accessed.

settings

Used as

ru = 1 (factory setting)	The room unit is addressed as room unit 1
ru = 2	The room unit is addressed as room unit 2

Direct adjustment

P1 = 1 (factory setting)	Automatic storage: A setpoint readjustment with the knob is adopted either by pressing the operating mode button or without any further confirmation (timeout).
P1 = 2	Storage with confirmation: A setpoint readjustment with the knob is adopted only after pressing the operating mode button.

6 The settings in detail

6.1 Time of day and date

The controller has a yearly clock with time of day, weekday and date. To ensure that the controller works properly, both the time of day and date must be correctly set.

Line no.	Operating line
1	Hours/minutes
2	Day/month
3	Year
5	Start of summertime
6	End of summertime

Summer- / wintertime
changeover

The dates set for the changeover from wintertime to summertime, and vice versa, ensure that on the first Sunday after the set date the time of day will change from 02:00 (wintertime) to 03:00 (summertime), and from 03:00 (summertime) to 02:00 (wintertime).

6.2 Operator section

Operation and display

Line no.	Operating line
20	Language
22	Info Temporarily Permanently
26	Operation lock
27	Programming lock
40	Used as Room unit 1 Room unit 2 Operator unit Service unit

Info

Temporarily: After pressing the Info button, a change to the "predefined" basic display is made after a maximum of 8 minutes or by pressing the operating mode button (with the QAA78... only 2 minutes) .

Continuously: After pressing the Info button, a change back to the "new" basic display is made after a maximum of 8 minutes. The info value selected last will be adopted by the new basic display.
This setting is not possible with the QAA78...

Operation lock

When operation lock is activated, the following operating elements can no longer be adjusted:
Heating circuit operating mode, DHW operating mode, room Comfort setpoint (setting knob), and occupancy button.

Programming lock

When programming lock is activated, parameter values can still be displayed, but can no longer be changed.

- Temporary deactivation of programming lock.

Within the programming level, the programming lock can temporarily be overridden.

To do this, press the OK and ESC buttons simultaneously for 3 seconds. Temporary deactivation of the programming lock is maintained until programming is quit

- Constant deactivation of programming lock.
First, make the temporary deactivation, then go to operating line “Programming lock” (operating line 27) and deactivate the programming lock

Used as

This operating line is used to select usage of the operator unit. Depending on use, additional settings will then be required under “Assignment room unit 1”. When using several operator sections, it is thus possible to match individual units to specific requirements.



If several operator units are used, each application may only be used once.

Room unit 1

The operator unit supports the heating circuits released on operating line “Assignment room unit 1” (operating line 42) and activated in the basic unit. Operating lines 42 through 48 remain active.

Room unit 2

The operator unit only supports heating circuit 2. Operating lines 42 through 48 remain inactive.

Operator unit / service unit

The operator unit supports the heating circuits activated in the basic unit. Operating line 42 remains inactive. Operating lines 44 through 48 are active.



When using this setting, the operator unit does not acquire and deliver the room temperature.

Heating circuit assignment

Line no.	Operating line
42	assignment room unit 1 Heating circuit 1 Heating circuits 1 and 2
44	Operation HC2 Commonly with HC1 Independently
46	Operation HCP Commonly with HC1 Independently
48	Action occupancy button None Heating circuit 1 Heating circuit 2 Commonly

assignment room unit 1

As room unit 1 (setting 40), the action of the relevant operator section on heating circuit 1 or on both heating circuits can be assigned. The latter is required especially when using 2 heating circuits and only 1 room unit.

Operation HC2

Depending on operating line 40, the action of operation (operating mode button or setting knob) on room unit 1, on the operator unit or service unit can be defined for heating circuit 2.

Commonly with HC1

Operation acts jointly on heating circuits 1 and 2.

Independently

The action of operation is queried on the display as soon as the operating mode button is pressed or the setting knob is operated.

Operation HCP

Depending on operating line 40, the action of operation (operating mode button or setting knob) on room unit 1, on the operator unit or service unit can be defined for heating circuit P.

Commonly with HC1

Operation acts jointly on heating circuits 1 and 2.

Independently

Operating mode changes or readjustments of the Comfort setpoints are to be made in programming mode.

Action occupancy button

The action of the occupancy button on the operator unit can be assigned to the relevant heating circuits.

If only 1 heating circuit is assigned, the occupancy button always acts on that heating circuit.

Room sensor

<i>Line no.</i>	<i>Operating line</i>
54	Readjustment room sensor

The temperature display can be readjusted.

Device data

<i>Line no.</i>	<i>Operating line</i>
70	Software version

The display shows the current version of the room unit.

6.3 wireless

Binding

<i>Line no.</i>	<i>Operating line</i>
120	Binding
121	Test mode

For more detailed information, refer to the descriptions of the wireless components in section 3.7.

Binding

When commissioning the system, the wireless peripheral devices (room unit) are assigned to the basic unit.



Usage of the operator unit (operating line 40) must be correctly set before the binding!

Test mode

The test mode is used for checking the wireless communication. The test should be made when the installation is fully completed.

Device list wireless

<i>Line no.</i>	<i>Operating line</i>
130	Room unit 1 Missing Ready No reception Change batt
131	Room unit 2 Same as on operating line 130
132	Outside sensor Same as on operating line 130
133	Repeater Same as on operating line 130
134	Operator unit Same as on operating line 130
135	Service unit Same as on operating line 130
138	Delete all devices

Delete all devices

The wireless connection to all devices will be canceled. If radio communication is required again, a new binding must be established.

6.3.1 time programs

For the heating circuits and DHW heating, a number of switching programs are available. They are activated in "Automatic" operation and control the change of the temperature levels (and the associated setpoints) via the selected switching times.

Entering the switching times

The switching times can be set in a combined way, that is, either commonly for several days or in the form of separate times for individual days. When preselecting groups of days like for instance Mo...Fr and Sa...Su that use the same switching times, setting of the switching programs is simplified.

switching points

Line no.				Operating line
HC1	HC2	3/HCP	4/DHW	
500	520	540	560	Preselection Mo - Su Mo - Fr Sa - Su Mo - Su
501	521	541	561	1st phase on
502	522	542	562	1st phase off
503	523	543	563	2nd phase on
504	524	544	564	2nd phase off
505	525	545	565	3rd phase off
506	526	546	566	3rd phase off

Standard program

Line no.				Operating line
HC1	HC2	3/HCP	4/DHW	
516	536	556	576	Default values

All time programs can be reset to their default settings. Each time program has its own operating line to make the reset.



In that case, individual settings will be lost!

6.3.2 Holidays

Line no.			Operating line
HC1	HC2	HCP	
642	652	662	Start
643	653	663	End
648	658	668	Operating level Frost protection Reduced

The holiday program is used to switch the heating circuits to a selectable operating level according to calendar dates.



- The holiday program can only be used in "Automatic" operation

6.3.3 Heating circuits

For the heating circuits, there are various functions available which can be individually set for each heating circuit.

operating mode

Line no.	Operating line
1300	Operating mode Protection Automatic Reduced Comfort

The operating mode of heating circuits 1 and 2 is selected directly with the operating mode button while the operating mode of heating circuit P is to be selected in programming mode (operating line 1300).

This setting is used to switch between the different operating modes. The functionality corresponds to operating mode selection with the operating mode button. For details, refer to section "Operation".

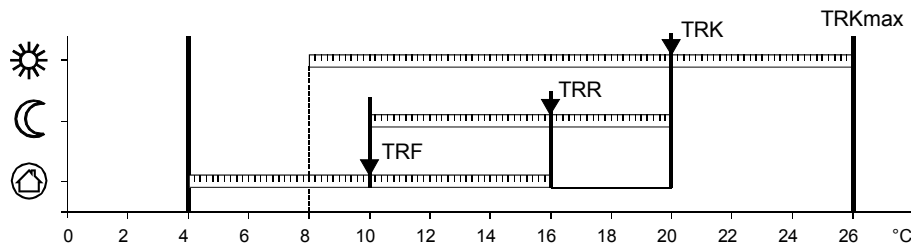
Setpoints

Line no.			Operating line
HC1	HC2	HCP	
710	1010	1310	Comfort setpoint
712	1012	1312	Reduced setpoint
714	1014	1314	Frost protection setpoint
716	1016	1316	Comfort setpoint max

Room temperature

The room temperature can be shifted according to different setpoints. These setpoints become active depending on the selected operating mode, thus producing different temperature levels in the rooms.

The ranges of adjustable setpoints result from the interdependencies, as this is shown in the following diagram.



2358Z01

- TRKmax Comfort setpoint max
- TRK Comfort cooling setpoint
- TRR Reduced setpoint
- TRF Frost protection setpoint

Frost protection

In Protection mode, the room temperature is prevented from falling below a certain level. This means that the frost protection setpoint of the room temperature will be maintained.

Comfort setpoint max

The room temperature can be shifted according to different setpoints. These setpoints become active depending on the selected operating mode, thus producing different temperature levels in the rooms.

The ranges of adjustable setpoints result from the interdependencies, as this is shown in the following graph.

heating curve

Line no.			Operating line
HC1	HC2	HCP	
720	1020	1320	Heating curve slope
721	1021	1321	Heating curve displacement
726	1026	1326	Heating curve adaption

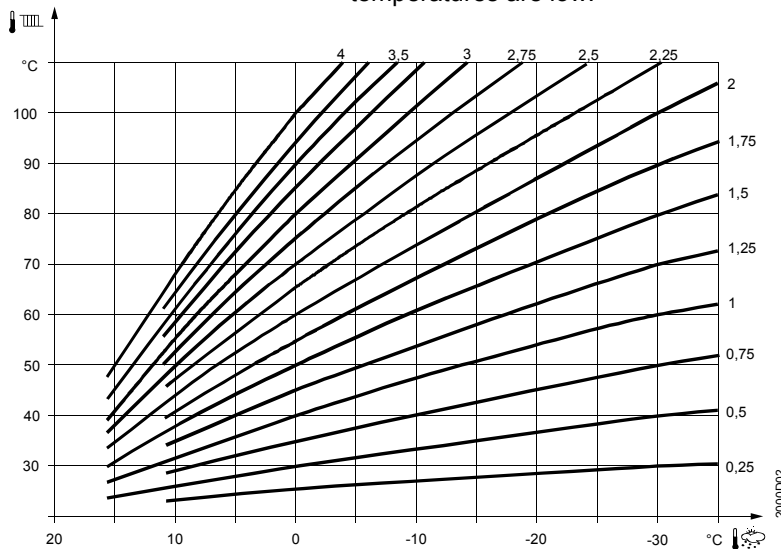
The heating curve is used to generate the flow temperature setpoint, which is used to maintain a certain flow temperature level depending on the prevailing weather conditions. The heating curve can be adjusted with a number of settings, thus matching heat output and room temperature to individual needs.

Heating curve slope

When the heating curve slope is raised, the rate of flow temperature increase is the quicker the lower the outside temperature or, in other words, if the room temperature is not correct at low outside temperatures but at higher outside temperatures, the heating curve slope requires readjustment.

Increase adjustment: Raises the flow temperature, especially when outside temperatures are low.

Decrease adjustment: Lowers the flow temperature, especially when outside temperatures are low.



Heating curve displacement

Parallel displacement of the heating curve is used to change the flow temperature evenly across the entire outside temperature range or, in other words, if the room temperature is always too high or too low, a readjustment must be made with the help of parallel displacement.

Heating curve adaption

Adaptation of the heating curve is used by the controller to automatically adapt the heating curve to the prevailing conditions. In that case, a readjustment of the heating curve slope and parallel displacement is not required. It can only be switched on or off.



To provide this function, following must be observed:

- A room sensor must be connected
- The "Room influence" setting must be selected between 1 and 99
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor) (If such valves are installed, they must be set to their fully open position)

ECO functions

Line no.			Operating line
HC1	HC2	HCP	
730	1030	1330	Summer/winter heating limit
732	1032	1332	24-hour heating limit

Summer/winter heating limit

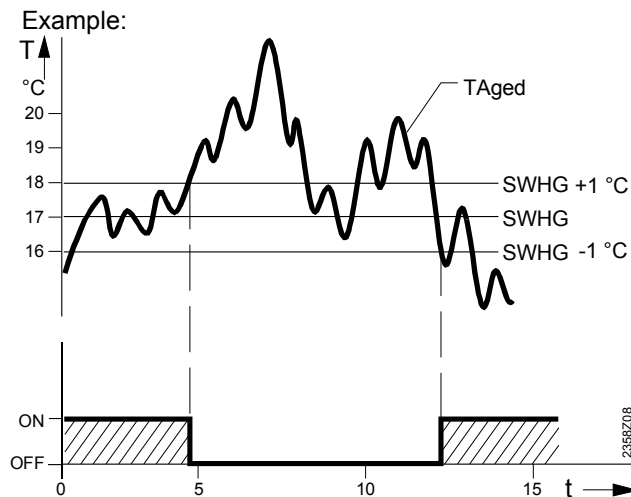
The summer / winter heating limit is used to switch the heating on and off in the course of the year, depending on the temperature conditions. In "Automatic" mode, switching on / off takes place automatically, so there is no need for the user to do this manually. By changing the setting, the respective periods of time will be shortened or extended.

Increase: Winter operation will start *earlier*
Summer operation will start *later*

Decrease: Winter operation will start *later*
Summer operation will start *earlier*



- The function is not active in operating mode "Continuously Comfort temperature" ☀
- The display will show ECO
- To give consideration to the building's thermal dynamics, the outside temperature will be attenuated



SWHG Summer/winter heating limit
TAged Attenuated outside temperature
t Temperature
t Days

24-hour heating limit

The 24-hour heating limit is used to switch the heating on and off in the course of the day, depending on the outside temperature. This function is used primarily during intermediate seasons (spring and autumn), enabling the system to respond to short-time temperature variations.

Example:

Setting line	E.g.
Comfort setpoint (TRw)	22°C
24-hour heating limit (THG)	-3°C
Changeover temperature (TRw-THG) heating off	= 19°C
Switching differential (fixed)	-1°C
Changeover temperature heating on	= 18°C

By changing the value entered, the respective heating periods will be shortened or extended.

Increase: Heating mode will start *earlier*,
changeover to ECO *later*.

Decrease: Heating mode will start *later*,
changeover to ECO *earlier*.

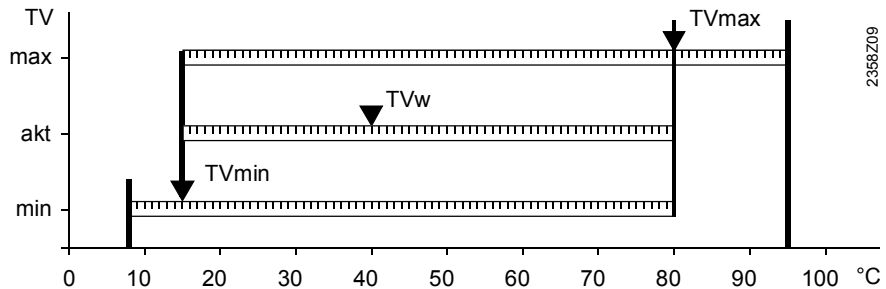


- The function is not active in operating mode "Continuously Comfort temperature" ☀
- The display will show ECO
- To give consideration to the building's thermal dynamics, the outside temperature will be attenuated

Flow temperature setpoint limitations

Line no.			Operating line
HC1	HC2	HCP	
740	1040	1340	Flow temp setpoint min
741	1041	1341	Flow temp setpoint max

Using this limitation, a temperature range for the flow temperature setpoint can be defined. If the flow temperature setpoint demanded by the heating circuit reaches the relevant limit and heat request increases or decreases, the flow temperature setpoint



will be maintained at the maximum or minimum limit.

TVw Current flow temperature setpoint
TVmax Flow temperature setpoint maximum
TVmin Flow temp setpoint min

room influence

Line no.			Operating line
HC1	HC2	HCP	
750	1050	1350	Room influence

Types of compensation:

When a room temperature sensor is used, there is a choice of 3 different types of compensation.

Setting	Type of compensation
— — — %	Pure weather compensation *
1...99 %	Weather compensation with room influence *
100 %	Pure room compensation

* Outside sensor required

Pure weather compensation

The flow temperature is calculated via the heating curve, depending on the composite outside temperature.

This type of compensation calls for a correct adjustment of the heating curve since in that case the control gives no consideration to the room temperature.

Weather compensation with room influence

Deviations of the actual room temperature from the setpoint are acquired and taken into account when controlling the temperature. Heat gains can thus be considered, facilitating more accurate room temperature control. The authority of deviation is set as a percentage figure. The better the reference room (correct room temperature, correct mounting location, etc.) the higher the value can be set.

• Example:

Approx. 60 % Good reference room conditions

Approx. 20 % Unfavorable reference room conditions



To provide the function, following must be considered:

- A room sensor must be connected
- "Room influence" must be set to a value between 1 and 99 %
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor). (If such valves are installed, they must be set to their fully open position)

Pure room compensation

The flow temperature is controlled depending on the room temperature setpoint, the current room temperature and the progression of the room temperature. For example, a slight increase in room temperature causes an immediate drop of the flow temperature.



To provide the function, following must be considered:

- A room sensor must be connected
- "Room influence" must be set to 100 %
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor). (If such valves are installed, they must be set to their fully open position)

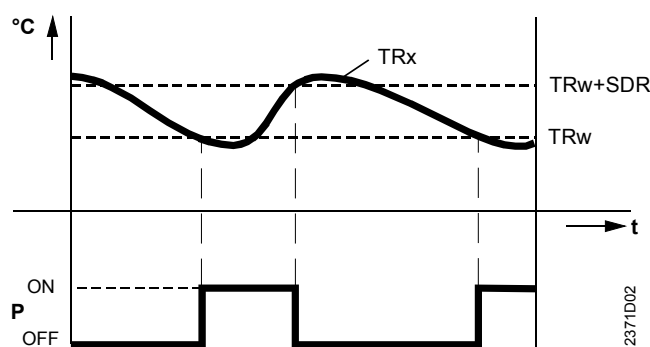
Room temp limitation

Line no.			Operating line
HC1	HC2	HCP	
760	1060	1360	Room temp limitation

In the case of pump heating circuits, a switching differential for temperature control must be set. The function necessitates a room temperature sensor.



Room temperature limitation does not work in the case of pure weather compensation.



TRx Actual value room temp
 TRw Room temperature setpoint
 SDR Room's switching differential
 P Pump
 T Time of day

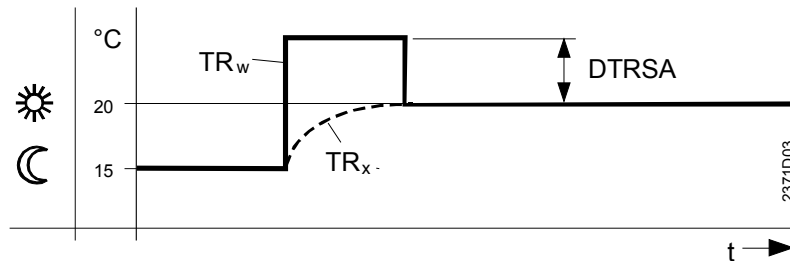
Boost heating

Line no.			Operating line
HC1	HC2	HCP	
770	1070	1370	Boost heating

Boost heating is used to reach the new setpoint more quickly when switching from the Reduced setpoint to the Comfort setpoint, thus reducing the heating up time. During boost heating, the room temperature setpoint is raised by the value set here. A higher setting leads to shorter heating up times, a lower setting to longer heating up times.



- Boost heating is possible with or without room sensor.



TRw Room temperature setpoint
 TRx Actual value of the room temperature
 DTRSA Increase of the room temperature setpoint

Quick setback

Line no.			Operating line
HC1	HC2	HCP	
780	1080	1380	Quick setback Off Down to reduced setpoint Down to frost prot setpoint

During quick setback, the heating circuit pump is deactivated and, in the case of mixing circuits, the mixing valve is fully closed.

- Function with room sensor:
 When using the room sensor, the function keeps the heating switched off until the room temperature has dropped to the level of the Reduced setpoint or the frost level. When the room temperature has fallen to the Reduced level or the frost level, the heating circuit pump will be activated and the mixing valve will be released.
- Function without room sensor:
 Quick setback switches the heating off for a certain period of time, depending on the outside temperature and the building time constant.

Example

Duration of quick setback when Comfort setpoint minus Reduced setpoint = 2 °C (e.g. Comfort setpoint = 20 °C, Reduced setpoint = 18 °C).

Outside temperature gemischt:	Building time constant:						
	0	2	5	10	15	20	50
15 °C	0	3.1	7.7	15.3	23	30.6	76.6
10 °C	0	1.3	3.3	6.7	10	13.4	33.5
5 °C	0	0.9	2.1	4.3	6.4	8.6	21.5
0 °C	0	0.6	1.6	3.2	4.7	6.3	15.8
-5 °C	0	0.5	1.3	2.5	3.8	5.0	12.5
-10 °C	0	0.4	1.0	2.1	3.1	4.1	10.3
-15 °C	0	0.4	0.9	1.8	2.6	3.5	8.8
-20 °C	0	0.3	0.8	1.5	2.3	3.1	7.7

Duration of quick setback in hours



- Quick setback is possible with or without room sensor

Optimum start / stop control

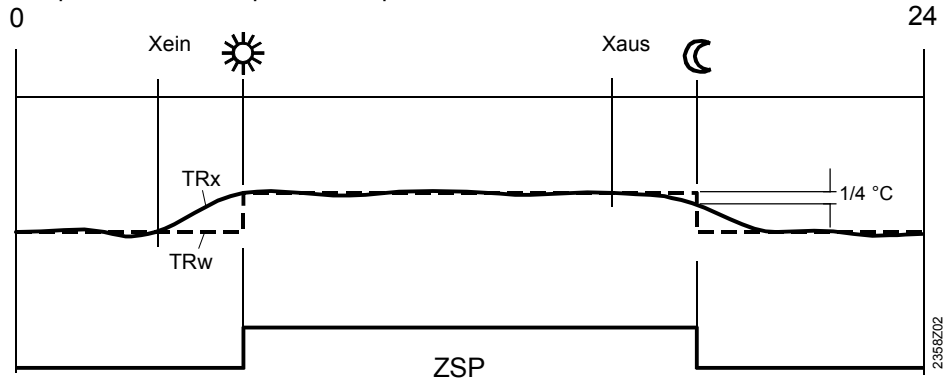
Line no.			Operating line
HC1	HC2	HCP	
790	1090	1390	Optimum start control max
791	1091	1391	Optimum stop control max

Optimum start control max The change from one temperature level to the other is optimized in a way that the Comfort setpoint will be reached at the relevant switching time.

Optimum stop control max The change from one temperature level to the other is optimized in a way that the Comfort setpoint minus 1/4 °C will be reached at the relevant switching time.



- Optimum start / stop control is possible with or without room sensor

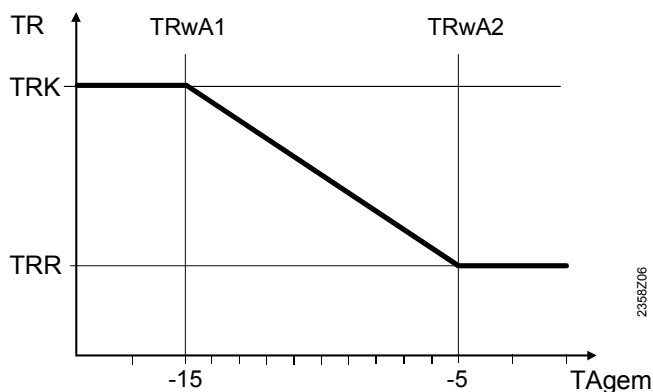


Xein Switch-on time shifted forward
 Xaus Switch-off time shifted forward
 ZSP Time program
 TRx Actual value room temperature
 TRw Room temperature setpoint

Increase of Reduced setpoint

Line no.			Operating line
HC1	HC2	HCP	
800	1100	1400	Red setpoint increase start
801	1101	1401	Red setpoint increase end

The function is used primarily in connection with heating systems having **little** spare capacity (e.g. low-energy houses). In that case, the heating up time would be too long if outside temperatures are low. When the Reduced setpoint is raised, the rooms are prevented from cooling down to too low levels, thus shortening the heating up time when changing to the Comfort setpoint.



TRwA1 Red setpoint increase start
 TRwA2 Red setpoint increase end

TRK Comfort setpoint
 TRR Reduced room temperature setpoint
 Tagem composite outside temperature

Overtemp prot pump heating circuit

Line no.			Operating line
HC1	HC2	HCP	
820	1120	1420	Overtemp prot pump circuit

In the case of heating plant with pump heating circuits, the flow temperature of the heating circuit can be higher than the flow temperature called for by the heating curve, due to higher requests from other heat consumers (mixing heating circuit, DHW charging, external heat demand), or a parameterized minimum heat pump temperature. As a result of this too high flow temperature, the pump heating circuit would assume excessive temperatures.

Function "Overtemperature protection for pump heating circuits" ensures that the energy supply for pump heating circuits corresponds to the demand from the heating curve by activating / deactivating the pump.

Mixing valve control

Line no.		Operating line
HC1	HC2	
830	1130	Mixing valve boost
832	1132	Actuator type 2-position 3-position
833	1133	Switching differential 2-pos
834	1134	Actuator running time

Only with RVS13.143 and RVS53.183

Mixing valve boost

For mixing, the actual value of the boiler flow temperature must be higher than the required setpoint of the mixing valve flow temperature since otherwise that temperature cannot be controlled. The controller generates the boiler temperature setpoint based on the increase set here and the current flow temperature setpoint.

Actuator:type

Selection of the type of actuator determines the way the control action impacts the type of mixing valve actuator used.

Switching differential 2-pos

For the 2-position actuator, the 2-position switching differential must also be adapted. This is not required when using 3-position actuators.

actuator: running time

Setting the actuator running time for the mixing valve used.

Floor curing function

Line no.			Operating line
HC1	HC2	HCP	
850	1150	1450	Floor curing function Off Functional heating (Fh) Curing heating (Bh) Functional/curing heating Curing heating/ functional heating Manually
851	1151	1451	Floor curing setp manually
		1455	Floor curing setp current
		1456	Floor curing day current

The floor curing function ensures controlled drying of the floor. It controls the flow temperature in accordance with a certain temperature profile. Drying of the floor is ensured via the floor heating system and the mixing or pump heating circuit.

Floor curing function

Off:

Function is deactivated.

Functional heating (Fh) :

The first part of the temperature profile is automatically completed.

Floor curing heating (Bh)

The second part of the temperature profile is traversed automatically.

Functional and floor curing heating

The entire temperature profile (first and second part) is traversed automatically.

Floor curing heating and functional heating

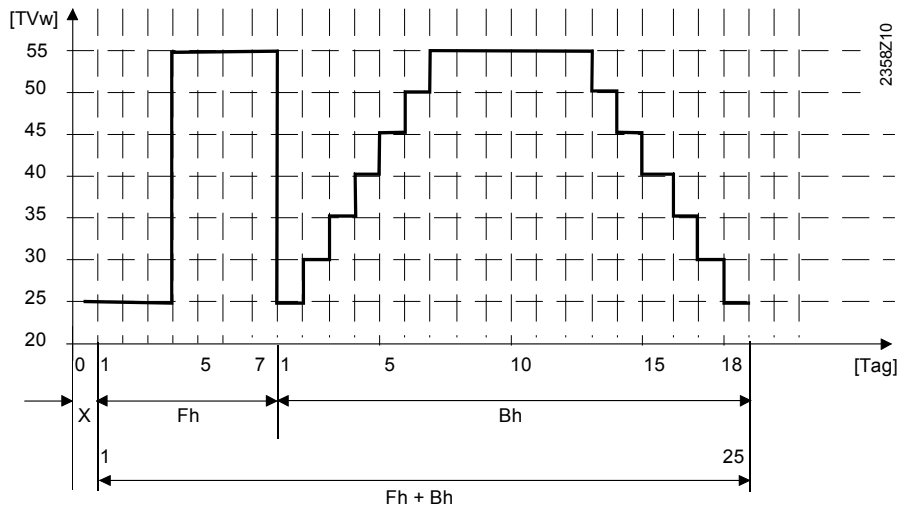
The entire temperature profile (first and second part) is traversed automatically.

Manually

It is not a temperature profile that is completed, but the floor setpoint is controlled manually.



- Observe the relevant standards and regulations of the floor manufacturer!
- Proper functioning is ensured only when the plant is correctly installed (hydraulic system, electrical installation, settings)!
If not observed, the floor might get damaged!
- The function can be aborted prematurely by choosing **Off**
- Maximum limitation of the flow temperature remains active



X Start day
Fh functional heating
Bh floor curing heating

recooling

Line no.			Operating line
HC1	HC2	HCP	
860	1160	1460	Recooling storage tank

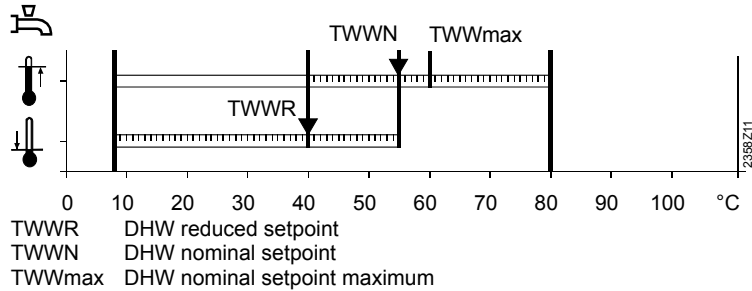
The surplus heat stored in the heat exchanger can be drawn off by space heating. This can be adjusted separately for each heating circuit. (Also refer to operating page "DHW storage tank", operating line "Recoolign boiler/HC")

6.4 Domestic hot water

Setpoints

Line no.	Operating line
1610	Nominal setpoint
1612	Reduced setpoint

The DHW can be heated up to different setpoints. These setpoints are activated depending on the selected operating mode, thus leading to different temperature levels in the DHW storage tank.



release

Line no.	Operating line
1620	Release 24h/day Time programs HCs Time program 4 / DHW

24h/day

The DHW temperature is constantly maintained at the nominal DHW setpoint, independent of any time programs.

Example:

Time programs HCs

The DHW setpoint is switched between the nominal DHW setpoint and the reduced DHW setpoint according to the heating circuits' time programs. The first switch-on point of each period is shifted forward in time by one hour.

Example:

Time program 4 / DHW

For DHW heating, time switch program 4 of the local controller is used. The set switching times of that program are used to switch between the nominal DHW setpoint and the reduced DHW setpoint. This way, the DHW is heated independently of the heating circuits.

Example:

Priority

Line no.	Operating line
1630	Charging priority Absolute Shifting None MC shifting, PC absolute

When both space heating and DHW heating demand heat, the “DHW priority“ function ensures that during DHW charging the boiler’s capacity is used primarily for DHW.

Absolute priority

The mixing and pump heating circuit stay locked until DHW heating is finished.

Shifting priority

If the capacity of the heat source is not sufficient, the mixing and pump heating circuit will be restricted until DHW is heated up.

No priority

DHW heating and space heating take place at the same time.

In the case of tightly sized boilers and mixing heating circuits, it can occur that the DHW setpoint will not be reached if space heating demands considerable amounts of heat.

Mixing heating circuit shifting, pump heating circuit absolute

The pump heating circuits stay locked until the DHW storage tank is heated up. If the capacity of the heat source is not sufficient, the mixing heating circuits will also be restricted.

legionella function

<i>Line no.</i>	<i>Operating line</i>
1640	Legionella function Off Periodically Fixed weekday
1641	Legionella funct periodically
1642	Legionella funct weekday Monday...Sunday
1644	Legionella funct time
1645	Legionella funct setpoint
1646	Legionella funct duration
1647	Legionella funct circ pump

legionella function

- Periodically

The legionella function is repeated according to the period of time set (line 1641). If the legionella setpoint is attained via a solar plant, independent of the period of time set, the period of time will be newly started.

- Fixed weekday

The legionella function can be activated on a fixed weekday (operating line 1642). When using this setting, heating up to the legionella setpoint takes place on the selected weekday, independent of previous storage tank temperatures.

Legionella funct time

The legionella function is started at the time set. The DHW setpoint is raised to the adjusted legionella setpoint and DHW charging is started.

If no time is parameterized, the legionella function is started on the respective day together with the first normal release of DHW heating. If on this day is no Release (continuously reduced) the legionella function will be prepared.

Legionella funct circ pump

During the time the legionella function is performed, the DHW circulating pump can be activated.



During the time the legionella function is performed, there is a risk of scalding when opening the taps.

circulating pump

<i>Line no.</i>	<i>Operating line</i>
1660	Circulating pump release Time program 3 / HCP

	DHW release Time program 4 / DHW
1661	Circulating pump cycling
1663	Circulaton setpoint

Circulating pump cycling

When the function is activated, the circulating pump is switched on for 10 minutes within the release time and then switched off again for 20 minutes.

Circulaton setpoint

If a sensor is installed in the DHW distribution pipe, the controller will monitor its actual value during the time the legionella function is performed. The adjusted setpoint must be maintained at the sensor during the adjusted dwelling time.

6.5 Boiler

Setpoints

Line no.	Operating line
2210	Setpoint min
2212	Setpoint max

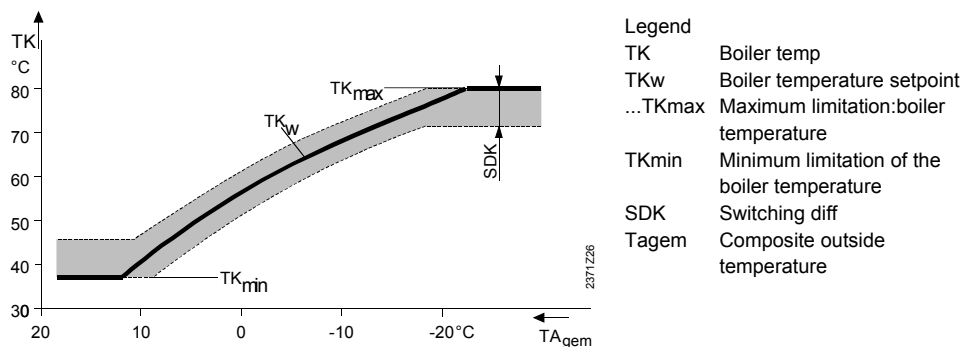
The controlled boiler temperature setpoint can be limited by selecting setpoint minimum and setpoint maximum. These limitations can be regarded as protective functions for the boiler.

In normal operation, minimum limitation of the boiler temperature is the lower limit value of the controlled boiler temperature setpoint, depending on the boiler's operating mode. In normal operation, maximum limitation of the boiler temperature is the upper limit value of the controlled boiler temperature setpoint and, at the same time, setpoint of the electronic limit thermostat (TR).



The setting range of setpoint minimum and setpoint maximum is limited by the setpoint of manual control.

Example when using boiler operating mode "Automatic":



Minimum limitation of the return temperature

Line no.	Operating line
2270	Return setpoint min

Return setpoint min

If the boiler return temperature falls below the return temperature setpoint, maintained boiler return temperature becomes active. Maintained boiler return temperature makes it possible to impact the consumers via the following settings:

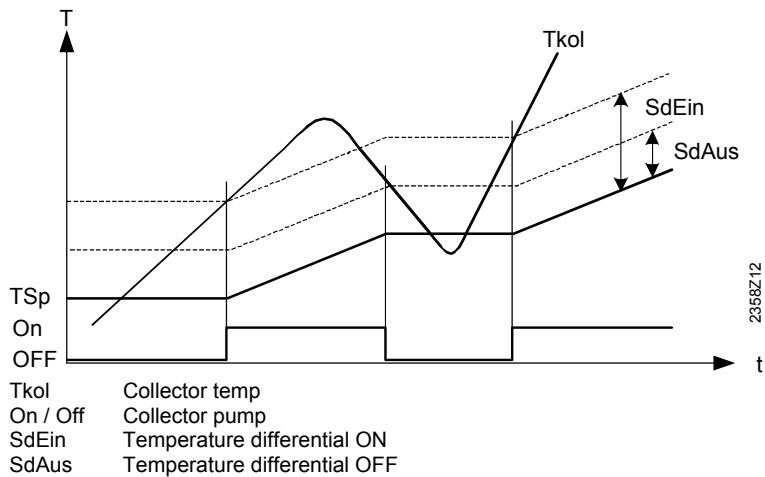
- "Return influence consumers", using operating line line 2272
- "Control bypass pump", using operating line 2291

6.6 Solar

Charging controller (dT)

Line no.	Operating line
3810	Temp diff on
3811	Temp diff off
3812	Charg temp min DHW st tank

To charge the DHW storage tank via the heat exchanger, a certain temperature differential between collector and storage tank is required, and the minimum charging temperature must be reached.



Start function

Line no.	Operating line
3830	Collector start function
3831	Min run time collector pump

Collector start function

If the collector temperature cannot be accurately acquired during the time the pump is deactivated (especially in the case of vacuum tubes), the pump can be switched on from time to time.

Min run time collector pump

The function periodically activates the collector pump for at least the selected minimum running time.

Frost protection for the collector

Line no.	Operating line
3840	Collector frost protection

When there is risk of frost at the collector, the collector pump will be activated to prevent the heat-carrying medium from freezing.

- If the collector temperature falls below the frost protection temperature, the collector pump will be activated: $TKol < TKolFrost$
- When the collector temperature returns to a level of 1 °K above the frost protection temperature, the collector pump will be deactivated again: $TKol > TKolFrost + 1$

Overtemperature protection for the collector

Line no.	Operating line
----------	----------------

Evaporation temperature of medium

<i>Line no.</i>	<i>Operating line</i>
3860	Evaporation heat carrier

If there is a risk of the heat carrying medium evaporating due to high collector temperatures, the collector pump will be deactivated to prevent it from exceeding certain temperature levels. This is a protective pump function.

6.7 DHW storage tank

Charging control

<i>Line no.</i>	<i>Operating line</i>
5020	Flow setpoint boost
5022	Type of charging With B3 With B3/B31 With B3, legio B3/B31

Flow setpoint boost

The DHW request to the boiler is made up of the current DHW setpoint plus the adjustable charging boost.

Type of charging

The storage tank can be charged using up to 2 sensors.
It is also possible to combine partial charging with 1 sensor and the legionella function with 2 sensors (setting 3).

Overtemperature protection

<i>Line no.</i>	<i>Operating line</i>
5050	Charging temperature max

Solar energy charges the DHW storage tank up to the adjusted maximum DHW charging level.



The protective collector overtemperature function can reactivate the collector pump until the maximum storage tank temperature is reached.

recooling

<i>Line no.</i>	<i>Operating line</i>
5055	Recooling temperature
5056	Recooling boiler/HC
5057	Recooling collector Off Summer Always

Recooling heat gen/HC

For recooling the DHW storage tank, there are 2 functions available:

- Heating energy can be drawn off either by space heating or the DHW storage tank. This can be selected separately for each heating circuit (operating page "Heating circuit 1...")

Recooling collector

- If the collector is cold, the energy can be emitted to the environment via the collector's surfaces

Electric immersion heater

<i>Line no.</i>	<i>Operating line</i>
5060	EI imm heater optg mode Substitute

	Summer Always
5061	EI immersion heater release 24h/day DHW release Time program 4 / DHW
5062	EI immersion heater control External control thermostat DHW sensor

electric immersion
heater:operating mode

Substitute

The electric immersion heater is only used if the boiler delivers a fault status message or if it has been shut down via boiler lock. This means that in normal situations the DHW is heated by the boiler.

Summer

The electric immersion heater is used as soon as all connected heating circuits have switched to summer operation. The DHW is again heated by the boiler as soon as at least one of the heating circuits has switched back to heating mode. But the electric immersion heater is also used if the boiler delivers a fault status message or has been shut down via boiler lock.

Always

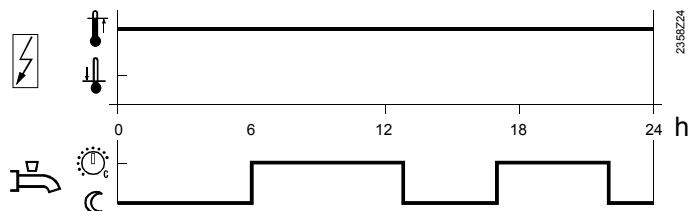
DHW is heated with the electric immersion heater throughout the year. This means that with this application, the boiler is never required for DHW heating.

electric immersion
heater:release

24h/day

The electric immersion heater is always released, independent of time programs.

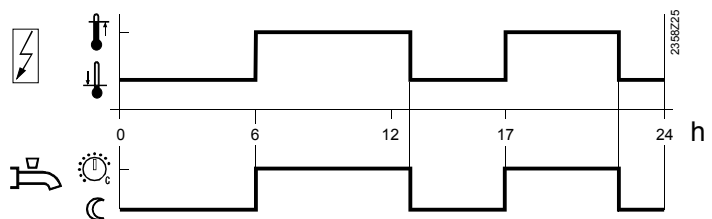
Example:



DHW release

The electric immersion heater is switched on and off according to the DHW release.

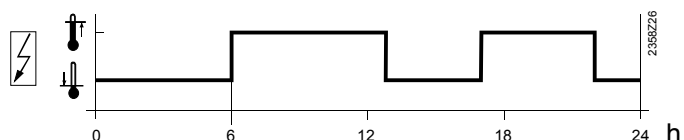
Example:



Time program 4 / DHW

For the electric immersion heater, time program 4/DHW of the local controller is used.

Example:



EI immersion heater
control

External control thermostat

The storage tank is charged with an external control thermostat without setpoint compensation of the controller.

DHW sensor

The storage tank is charged with an external control thermostat, but with setpoint compensation of the controller.

Important: To ensure that setpoint compensation works correctly, the external control thermostat must be set to its minimum setting value.

6.8 Configuration

Heating circuits 1 and 2

Line no.				Operating line
HC1	HC2	-	-	
5700	5710	-	-	Heating circuit 1, 2

Using this setting, the heating circuits can be switched on and off.

DHW sensor B3

Line no.	Operating line
5730	DHW sensor B3 Sensors thermostat

Sensors

The collector calculates the switching points including the switching differential from the DHW setpoint and the acquired DHW storage tank temperature.

Control thermostat

The DHW temperature is controlled based on the switching state of a control thermostat connected to B3.



When using a DHW control thermostat, Reduced mode is not possible. This means that when Reduced mode is active, DHW heating with the control thermostat is locked.



- The adjustment of the nominal DHW temperature setpoint must be equal to or higher than the setpoint adjustment on the control thermostat (thermostat calibrated at switch-off point)
- The flow temperature setpoint for DHW must be set to a minimum of 10 °C (with impact on the charging time)
- In that case, the DHW is not protected against frost

DHW controlling element Q3

Line no.	Operating line
5731	DHW actuating device Q3 None charging pump Diverting valve

None

No DHW charging via Q3.

Charging pump

The DHW is heated up with a pump connected to terminals Q3 / Y3.

Diverting valve

The DHW is heated up with a diverting valve connected to terminals Q3 / Y3. With this setting, pump Q2 becomes a boiler pump, provided the boiler pump is not yet defined for use at a multifunctional relay output QX...

output relay QX

Line no.	Operating line
5890	Relay output QX1

	None Circulating pump Q4 Electric immersion heater DHW K6 Collector pump Q5 H1 pump Q15 boiler pump Q1 bypass pump Q12 alarm output K10 2. 2nd pump speed HC1 Q21 2. 2nd pump speed HC2 Q22 2. 2nd pump speed HCP Q23 Heating circuit pump HCP Q20 H2 pump Q18
5891	Relay output QX2 None Circulating pump Q4 Electric immersion heater DHW K6 Collector pump Q5 H1 pump Q15 boiler pump Q1 bypass pump Q12 alarm output K10 2. 2nd pump speed HC1 Q21 2. 2nd pump speed HC2 Q22 2. 2nd pump speed HCP Q23 Heating circuit pump HCP Q20 H2 pump Q18

Only with RVS53.183

Depending on the selection made, setting of the relay outputs assigns appropriate extra functions to the basic diagrams. For detailed information, refer to section "Plant diagrams".

DHW circulating pump Q4

The connected pump serves as a DHW circulating pump.

Operation of the pump can be scheduled as required on operating page "DHW", operating line "Circulating pump release".

DHW electric immersion heater K6

Using the connected electric immersion heater, the DHW can be heated up according to operating page "DHW storage tank", operating line "Electric immersion heater". DHW heating mode must be switched on in addition.



The electric immersion heater must be equipped with a safety limit thermostat!

Collector pump Q5

When using a solar collector, a circulating pump for the collector circuit is required.

Pump H1 Q15

Pump H1 can be used for an additional consumer. Together with an external request for heat at input H1, it is possible to operate an air heater or similar.

Boiler pump Q1

The connected pump is used for circulating the boiler water.

Bypass pump Q12

The connected pump serves as a boiler bypass pump for maintaining the boiler return temperature.

Alarm output K10

The alarm relay signals faults, should they occur.

The relay is energized with a delay of 2 minutes.

When the fault is corrected, that is, when the error message is no longer present, the relay will be deenergized with no delay.



If the fault cannot immediately be corrected, it is still possible to reset the alarm relay. This is made on operating page "Faults".

2. 2nd pump speed

This function facilitates the control of a 2-speed heating circuit pump, allowing the pump's capacity to be lowered in reduced mode (e.g. during night setback). In that case, multifunctional relay QX is used to activate the 2nd pump speed in the following manner:

1st speed output Q2/Q6/Q20	2nd speed output Q21/Q22/Q23	Pump state
Off	Off	Off
On	Off	Part load
On	On	Full load
Off	On	Unused / not permitted

Heating circuit pump HCP Q20

Pump heating circuit P will be activated.

- Switching program

For heating circuit P, only time program 3/P is available. For more detailed information, refer to section "Time program".

Input sensor BX1,2

Line no.	Operating line
5930,5931	Sensor input BX1,2 None DHW sensor B31 Collector sensor B6 Return sensor B7 DHW circulation sensor B39

Depending on the selection made, setting of the sensor input assigns appropriate extra functions to the basic diagrams. For detailed information, refer to section "Plant diagrams".



Function "Return sensor B7" must be predefined by the boiler manufacturer.

input H1 / H2

Line no.	Operating line
5950	Function input H1 Optg mode change HCs+DHW Optg mode changeover HCs Optg mode changeover HC1 Optg mode changeover HC2 Optg mode changeover HCP Heat generation lock Error/alarm message minimum flow temperature setpoint Heat request pressure measurement
5951	contact type input H1 NC NO

5952	Min flow temp setpoint H1
5954	Heat request 10V H1
5956	Pressure value 3.5V H1

<i>Line no.</i>	<i>Operating line</i>
5960	Function input H2 Optg mode change HCs+DHW Optg mode changeover HCs Optg mode changeover HC1 Optg mode changeover HC2 Optg mode changeover HCP Heat generation lock Error/alarm message minimum flow temperature setpoint Excess heat discharge Heat request (nur bei RVS13..) pressure measurement (nur bei RVS13..)
5961	Contact type H2 NC NO
5962	Min flow temp setpoint H2
5964	Heat request 10V H2 (nur bei RVS13..)
5966	Pressure value 3.5V H2 (nur bei RVS13..)

Function of input H1 / H2

Changeover of operating mode

- heating circuit

The operating modes of the heating circuits are switched to Protection mode via terminals H1/H2 (e.g. using a remote telephone switch).

- Domestic hot water

DHW heating is locked only when using setting 1: HCs+DHW.

Heat generation lock

The heat source will be locked via terminals H1/H2.

All temperature requests made by the heating circuits and by DHW will be ignored. Frost protection for the boiler will be maintained.



The chimney sweep function can be activated although heat generation lock is switched on.

Error/alarm message

Input H1 generates a controller-internal error message.

If the "Alarm output" (relay outputs QX2-4, operating lines 5891 – 5894) is appropriately configured, the error message will be forwarded or displayed by an additional contact (e.g. external lamp or horn).

Minimum flow temperature setpoint TVHw

The adjusted minimum flow temperature setpoint will be activated when the switch connected to terminal H1 (e.g. an air heater function for a warm air curtain) closes its contact.

Heat request

Heat generation receives heat requests in the form of voltage signals (DC 0...10 V). The associated setpoint is to be adjusted on operating line 5954.

Pressure measurement

The voltage signal active at input H1 is converted to a pressure value in a linear manner.

The pressure value at 0.5 V is fixed at 0 bar.

The pressure value at 3.5 V can be adjusted using parameter "Pressure value 3.5 V H1" (line 5956).

Input H1 / H2

NC

The contact is normally closed and must be opened to activate the selected function.

NO

The contact is normally open and must be closed to activate the selected function.

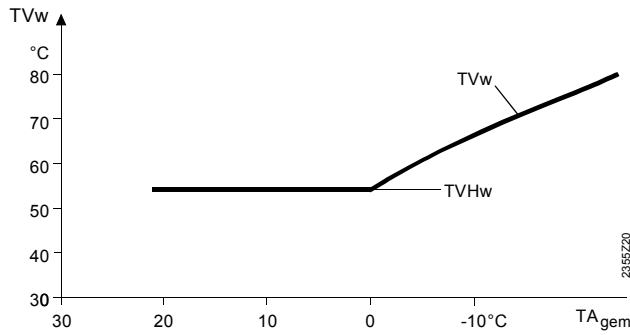
Minimum flow temperature setpoint H1 / H2

Function "Min flow temp setpoint" on operating line 5950 is activated via contact H1.

The boiler maintains the temperature level set here until contact H1 opens again or until a higher heat request is delivered.



If several heat requests are received at the same time (LPB, contact H1, DHW, or from the controller itself), the highest of them will automatically be selected.

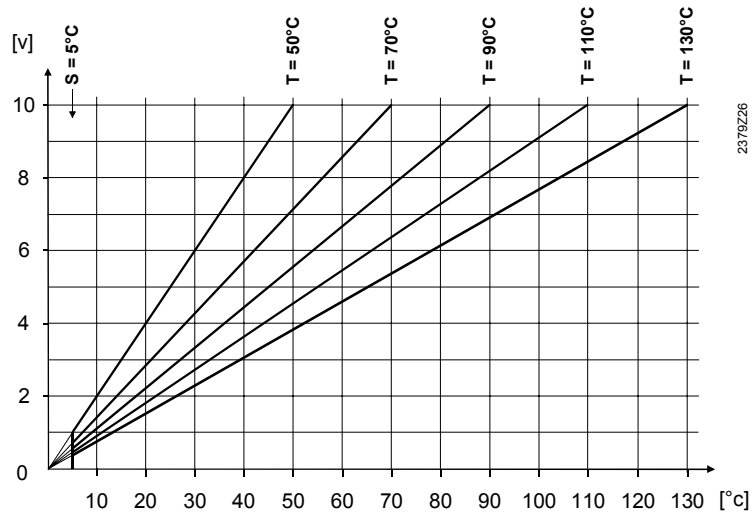


TV_{Hw} minimum flow temperature setpoint
TV_w Flow temperature setpoint

Heat request 10V H1/H2

The voltage signal present at input H1/H2 is converted to a temperature value in a linear manner and then forwarded as the flow temperature setpoint.

The flow temperature setpoint corresponding to the voltage level of 10 V can be adjusted with parameter "Heat request 10V H1/H2".



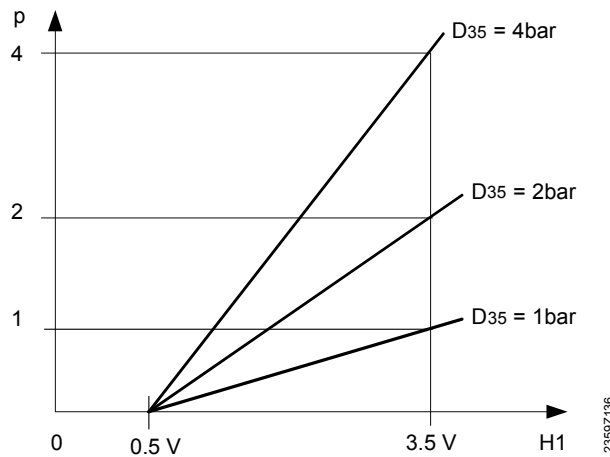
T = maximum value of heat request
 S = minimum limitation of heat request = 5 °C

Pressure value 3.5V
 H1/H2

The voltage signal present at input H1/H2 is converted to a pressure value in a linear manner.

The pressure value at 3.5 V can be adjusted with parameter "Pressure value 3.5V H1/H2".

Example:



Types of sensors/readjustments

Line no.	Operating line
6097	Sensor type collector NTC Pt 1000
6098	Readjustm collector sensor
6100	Readjustm outside sensor

Sensor type collector

Selection of type of sensor used. The controller will use the respective temperature characteristic.

Readjustm collector
 sensor

The temperature display can be readjusted.

Readjustm outside sensor

The measured value of the outside temperature can be readjusted by +/- 3 K.

Building and room model

<i>Line no.</i>	<i>Operating line</i>
6110	Time constant building

When the outside temperature varies, the room temperature changes at different rates, depending on the building's thermal storage capacity.

The above setting is used to adjust the response of the flow temperature setpoint to varying outside temperatures.

• Example:

> 20

The room temperature will respond more *slowly* to outside temperature variations.

10 - 20

This setting can be used for most types of buildings.

< 10

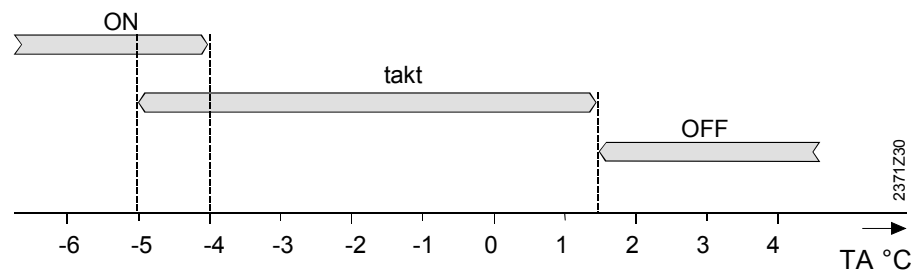
The room temperature will respond more *quickly* to outside temperature variations.

Frost protection plant

<i>Line no.</i>	<i>Operating line</i>
6120	Frost protection plant

The pumps are activated depending on the **current** outside temperature, even if there is no request for heat.

Outside temperature	Pump	Diagram
...-4 °C	Continuously on	ON
-5...1.5 °C	On for 10 minutes at 6-hour intervals	takt
1.5°C...	Continuously off	OFF



Sensor state

<i>Line no.</i>	<i>Operating line</i>
6200	Save sensors

At midnight, the basic unit saves the states at the sensor terminals.

If, after storage, a sensor fails, the basic unit generates an error message.

This setting is used to ensure immediate saving of the sensors. This becomes a requirement when, for instance, a sensor is removed because it is no longer needed.

parameter reset

<i>Line no.</i>	<i>Operating line</i>
6205	Reset to default parameters

All parameters can be reset to their default values. Exempted from this are the following operating pages: Time of day and date, operator section, radio communication, and all time programs.

Plant diagrams

<i>Line no.</i>	<i>Operating line</i>
6212	Check no. heat source 1
6215	Check no. storage tank
6217	Check no. heating circuits

To identify the current plant diagram, the basic unit generates a check number. The check number is made up of the lined up part diagram numbers. For the meaning of the numbers for the relevant operating lines, refer to the following tables:

Check no heat source 1

Solar		Oil / gas boiler	
0	No solar	00	No boiler
1	Solar with collector sensor and pump	01	1-stage burner
		03	1-stage burner, boiler pump
		05	1-stage burner, bypass pump
		07	1-stage burner, boiler pump Bypass pump

Check no storage tank

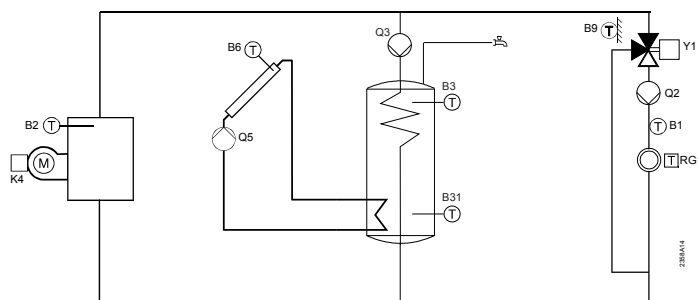
DHW storage tank	
0	No DHW storage tank
1	electric immersion heater
2	Solar connection
4	charging pump
5	Charging pump, solar connection
13	Diverting valve
14	Diverting valve, solar connection

Check no. heating circuits

Heating circuit P		Heating circuit 2		Heating circuit 1	
0	No heating circuit	00	No heating circuit	00	No heating circuit
2	Heating circuit pump	02	Heating circuit pump	01	Circulation via boiler pump
		03	Heating circuit pump, mixing valve	02	Heating circuit pump
				03	Heating circuit pump, mixing valve

Example

Heat source: Solar with collector sensor and pump,
1-stage burner and boiler pump
Storage tank: Charging pump and solar connection
Heating circuit 1: Heating circuit pump and mixing valve



Displays on the operator unit:


Check no heat source 1	101
Check no storage tank	5
Check no. heating circuits	3

The check numbers are always arranged from the right. Preceding 0s are not shown.

Device data

Line no.	Operating line
6220	Software version
	The software version indicated here represents the current version of the basic unit.

6.9 Faults

When a fault  is pending, an error message can be displayed on the info level by pressing the Info button. The display describes the cause of the fault.

Acknowledgements

<i>Line no.</i>	<i>Operating line</i>
6710	Reset alarm relay

When a fault is pending, an alarm can be triggered via relay QX... The QX... relay must be appropriately configured.

This setting can be used to reset the alarm relay.

Temperature alarms

<i>Line no.</i>	<i>Operating line</i>
6740	Flow temp 1 alarm
6741	Flow temp 2 alarm
6743	Boiler temp alarm

The difference of setpoint and actual temperature is monitored. A control offset beyond the set period of time triggers an error message.

Error history

<i>Line no.</i>	<i>Operating line</i>
6800...6819	History ...

The basic unit stores the last 10 faults in nonvolatile memory. Any additional entry deletes the oldest in the memory. For each error entry, error code and time of occurrence will be saved.

6.10 Maintenance / service

Maintenance functions

<i>Line no.</i>	<i>Operating line</i>
7040	Burner hours interval
7041	Burner hrs since maintenance
7042	Burner start interval
7043	Burn starts since maint
7044	Maintenance Interval
7045	Time since maintenance

Burner hours interval, burner start interval

As soon as the selected number of burner hours run or the selected number of burner starts has elapsed, a maintenance alarm will be displayed.

Counted for the alarm are the number of hours run and the number of starts of the first burner stage (input E1).

Burner hours run, burner starts since maintenance

The current value is summated and displayed. On this operating line, the value can be reset to 0.

Chimney sweep

<i>Line no.</i>	<i>Operating line</i>
7130	Chimney sweep function

The burner will be switched on. To achieve continuous burner operation, the only switch-off point used is the boiler temperature's maximum limitation (TKmax).

First, all connected loads will be locked, enabling the boiler temperature to reach the setpoint of 64 °C as quickly as possible.

When the minimum temperature of 64 °C is attained, the available heating circuits are switched on one by one, using a dummy load, to make sure that the heat generated by the boiler is drawn off so that the burner will remain in operation.

For safety reasons, the maximum boiler temperature limitation (TKmax) remains active as long as the chimney sweep function is active.



The function is deactivated by setting -- on this operating line, or automatically after a timeout of 1 hour.

Manual control


Line no.	Operating line
7140	Manual control

When manual control is activated, the relay outputs are no longer energized and deenergized according to the control state but are set to a predefined manual control state in accordance with their functions (see table below).

The burner relay energized in manual control can be deenergized by the electronic temperature controller (TR).

Marking		Output	State
Oil / gas boiler	Burner 1st stage	K4	On
	boiler pump	Q1	On
	Bypass pump	Q12	On
Solar	Collector pump	Q5	Off
DHW	charging pump	Q3	On
	Diverting valve	Q3	Off
	circulating pump	Q4	On
	electric immersion heater	K6	On
Heating circuits 1...3	Heating circuit pump	Q2	On
		Q6	
		Q20	
	Mixing valve opening / closing	Y1/Y2 Y5/Y6	Off
	Heating circuit pump 2nd speed	Q21 Q22 Q23	On
extra functions	pump H1	Q15	On
	Pump H2	Q18	On
	alarm output	K10	Off

Setpoint adjustment with manual control

After manual control has been activated, a change to the basic display must be made. There, the maintenance/special mode symbol  appears. Press the Info button to switch to info display "Manual mode", where the setpoint can be adjusted.

simulations

Line no.	Operating line
7150	Simulation outside temp

To facilitate commissioning and fault tracing, outside temperatures in the range from -50 to +50 °C can be simulated. During simulation, the actual, the composite and the attenuated outside temperature will be overridden by the set simulated temperature. During simulation, calculation of the 3 mentioned outside temperatures continues and the temperatures are available again when simulation is completed.



The function is deactivated by setting -- on this operating line, or automatically after a timeout of 5 hours.

Telephone customer service

Line no.	Operating line
7170	Telephone customer service

Setting of phone number that appears on the info display.

6.11 Input / output test

Line no.	Operating line
7700...7881	

The input / output test is used to check the correct functioning of the connected components.

When selecting a setting from the relay test, the relevant relay is energized, thus putting the connected component into operation. The correct functioning of the relays and wiring can thus be tested.



Important:

During the relay test, limitation of the boiler temperature by the electronic limit thermostat (TR) remains activated. Other limitations are deactivated.

Selector sensor values are updated within a maximum of 5 seconds.

The display is made with no measured value correction.

6.12 State of plant

The current operating state of the plant is visualized by means of state displays.

Messages

<i>Setting</i>	<i>Operating line</i>
8000	State heating circuit 1
8001	State heating circuit 2
8002	State heating circuit P
8003	State DHW
8005	State boiler
8007	State solar

State heating circuit

Enduser (info level)	Commissioning, heating engineer
Limit thermostat has cut out	Limit thermostat has cut out
Manual control active	Manual control active
Floor curing function active	Floor curing function active
Heating mode restricted	Overtemp protection active
	Restricted, boiler protection
	Restricted, DHW priority
	Restricted, buffer priority
Forced heat release	Forced discharging buffer storage tank
	Forced discharging DHW
	Forced discharging heat source
	Forced heat release
	Overrun active
Heating mode Comfort	Opt start control + boost heating
	optimum start control
	Boost heating
	Heating mode Comfort
Heating mode Reduced	optimum stop control
	Heating mode Reduced
Frost protection active	Frost protection room active
	Frost protection flow active
	Frost protection plant active

Summer operation	Summer operation
	24-hour Eco active
	Setback Reduced
	Setback frost protection
	Room temp lim
Off	Off

State DHW

Enduser (info level)	Commissioning, heating engineer
Limit thermostat has cut out	Limit thermostat has cut out
Manual control active	Manual control active
	Recooling via collector
	Recooling via Ht gen /HCs
Recooling active	
	Discharging protection active Charging time limitation active Charging locked
Charging lock active	
	Forced, max stor tank temp Forced, max charging temp Forced, legionella setpoint Forced, nominal setpoint
Forced charging active	
	Charging electric, legionella setpoint Charging electric, nominal setpoint Charging electric, Red setpoint Charging electric, frost setpoint EI imm heater released
Charging el im heater	
	Push, legionella setpoint Push, nominal setpoint
Push active	
	Charging, legionella setpoint Charging, nominal setpoint Charging, reduced setpoint
Charging active	
Frost protection active	Frost protection active
Overrun active	Overrun active
Charged, max stor tank temp	Charged, max stor tank temp
Charged, max charg temp	Charged, max charg temp
Charged, legio temp	Charged, legio temp
Charged, nominal temp	Charged, nominal temp
Charged, Reduced temp	Charged, Reduced temp
Off	Off

State boiler

Enduser (info level)	Commissioning, heating engineer
SLT has cut out	SLT has cut out
SLT test active	SLT test active
Fault	Fault
Limit thermostat has cut out	Limit thermostat has cut out
Manual control active	Manual control active
	Chimney sweep function, high-fire Chimney sweep function, low-fire
Chimney sweep function active	
	Locked, manually Locked, automatically
Locked	
	Minimum limitation, high-fire Minimum limitation, low-fire Minimum limitation active
Minimum limitation active	
	Protective startup, high-fire Protective startup, low-fire Return temperature limitation, high-fire Return temperature limitation, low-fire Released, high-fire Released, low-fire Overrun active
In operation	
Released	Released
	Frost protection plant active
Frost protection active	
Off	Off

<i>Enduser (info level)</i>	<i>Commissioning, heating engineer</i>
Manual control active	Manual control active
Fault	Fault
Frost protection collector active	Frost protection collector active
Recooling active	Recooling active
Max stor tank temp reached	Max stor tank temp reached
Evaporation protection active	Evaporation protection active
Overtemp protection active	Overtemp protection active
Max charg temp reached	Max charg temp reached
charging DHW	charging DHW
Charg buffer stor tank	Charg buffer stor tank
Charg swimm pool	Charg swimm pool
Radiation insufficient	Min charg temp not reached Temp diff insufficient Radiation insufficient

6.13 Diagnostics heat source

For making diagnostics, the various setpoints, actual values, relay switching states and meter readings can be displayed.

<i>Line no.</i>	<i>Operating line</i>
8610...8699	

6.14 Diagnostics consumers

For making diagnostics, the various setpoints, actual values, relay switching states and meter readings can be displayed.

<i>Line no.</i>	<i>Operating line</i>
8700...9099	

6.15 List of displays

6.15.1 Error code

Error code	Description of error	Priority
10	Outside temperature sensor error	6
20	Boiler temperature 1 sensor error	9
30	Flow temperature 1 sensor error	6
32	Flow temperature 2 sensor error	6
40	Return temperature 1 sensor error	6
50	DHW temperature 1 sensor error	9
52	DHW temperature 2 sensor error	9
57	DHW circulation temperature sensor error	6
60	Room temperature 1 sensor error	6
65	Room temperature 2 sensor error	6
68	Room temperature 3 sensor error	6
73	Collector temperature 1 sensor error	6
83	BSB wire short-circuit	6
85	BSB radio communication fault	6
98	Extension module 1 fault (common fault status message)	6
109	Fault boiler temperature supervision	9
117	Upper pressure limit (crossed)	6
118	Critical lower pressure limit (crossed)	6
121	Alarm flow temperature 1 (HC1)	6
122	Alarm flow temperature 2 (HC2)	6
127	Legionellentemperatur nicht erreicht	6
131	Burner fault	9
146	Configuration error sensor / controlling element	3
171	Alarm contact input H1 active	6
172	Alarm contact input H2 active	6

6.15.2 Maintenance code

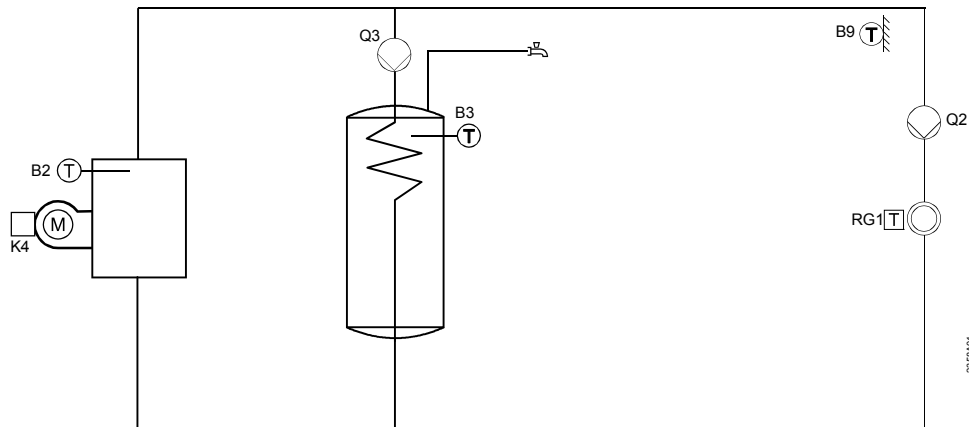
Maintenance code	Description of maintenance	Priority
1	Burner hours run exceeded	6
2	Burner starts exceeded	6
3	Maintenance interval exceeded	6
5	Water pressure heating circuit too low (pressure dropped below lower limit 1)	9
10	Replace battery of outside sensor	6
18	Water pressure 2 heating circuit too low (pressure dropped below lower limit 2)	9

7 Plant diagrams

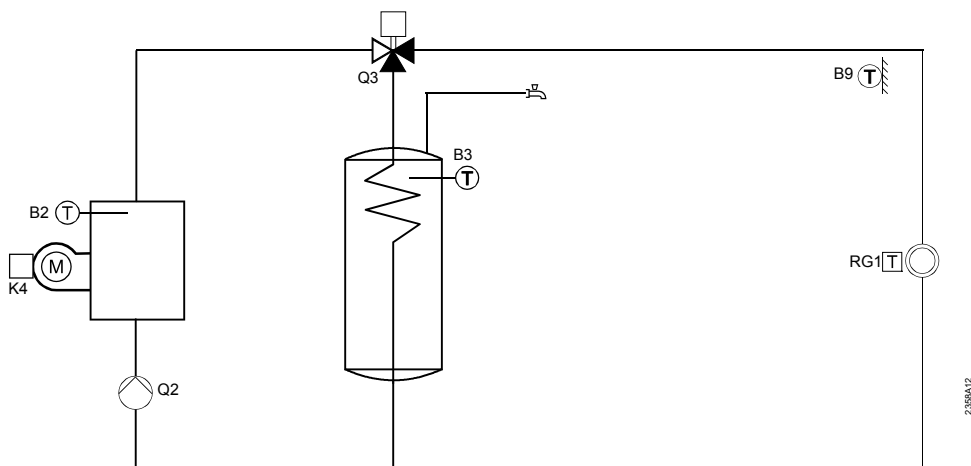
The various applications are shown in the form of basic diagrams and extra functions. The basic diagrams show possible applications that can be implemented without using the multifunctional outputs.

7.1 Basic diagram RVS13.123

Standard diagram

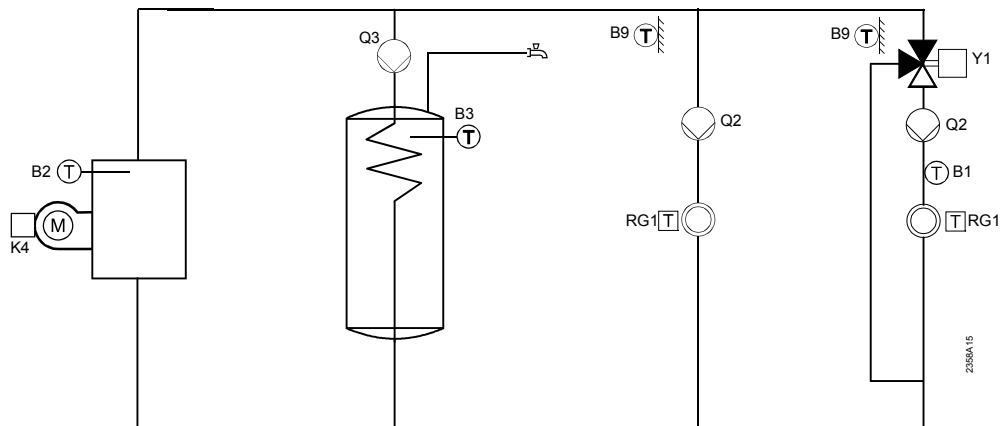


DHW heating with diverting valve



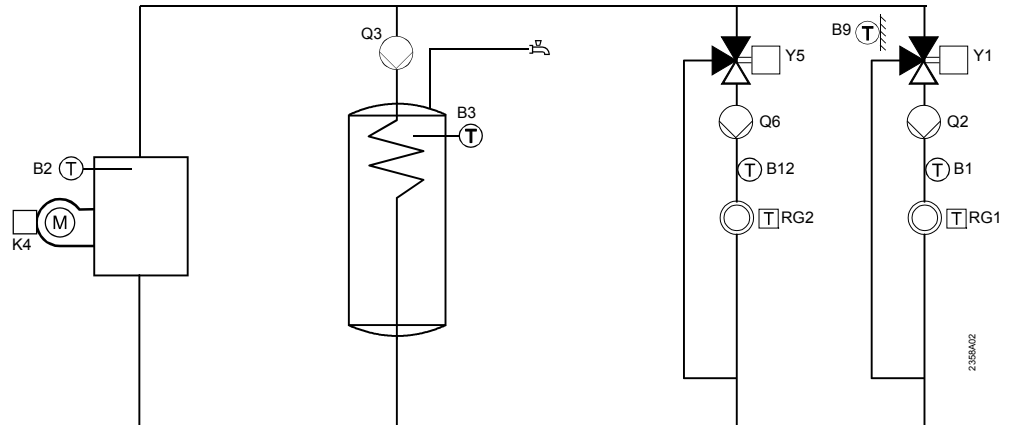
7.1.1 Basic diagram RVS13.12x with AVS75.390

Standard diagram



7.3 Basic diagram RVS53.183

Standard diagram

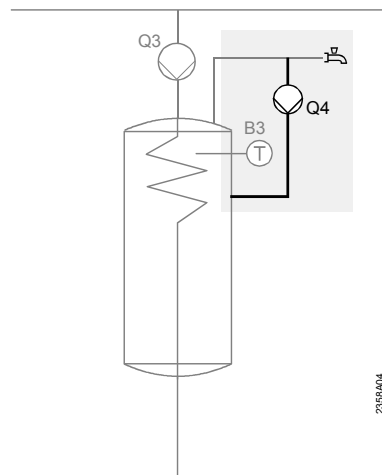


7.4 Extra functions

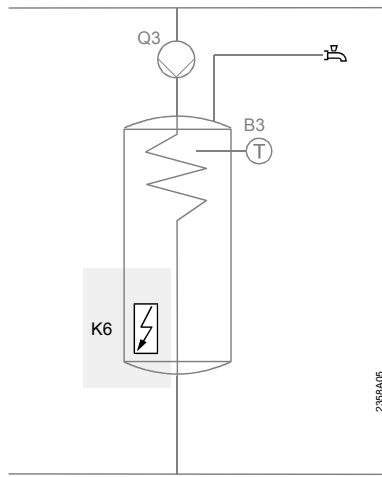
The auxiliary functions can be selected via operating page "Configuration" and complement the basic diagrams of the respective controllers.

The type and number of auxiliary functions that can be applied depend on the multifunctional outputs and inputs QX... or BX...

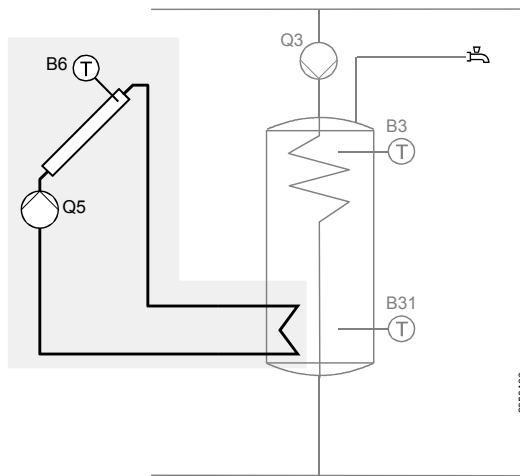
Circulating pump



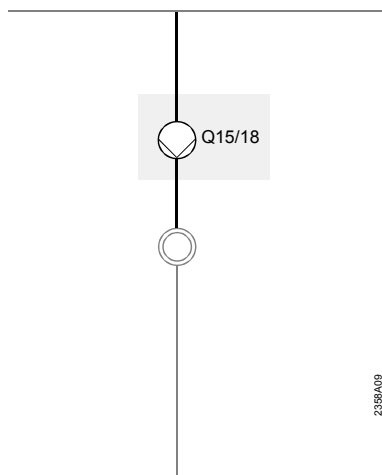
Electric immersion heater



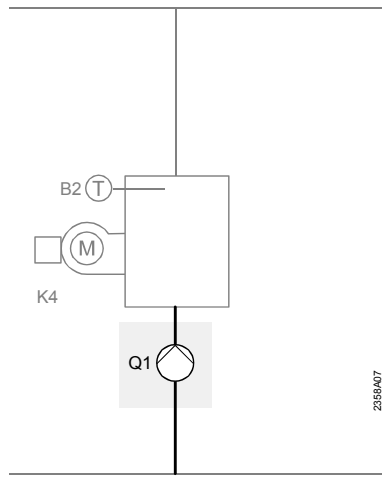
Collector pump and collector sensor



Pump H1/2

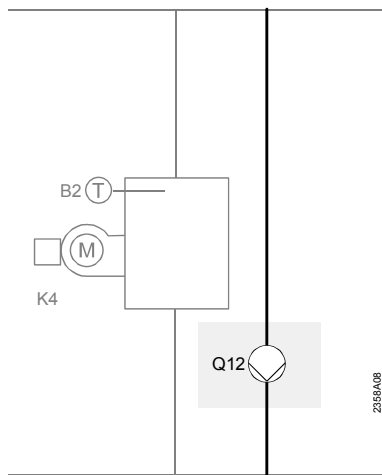


Boiler pump



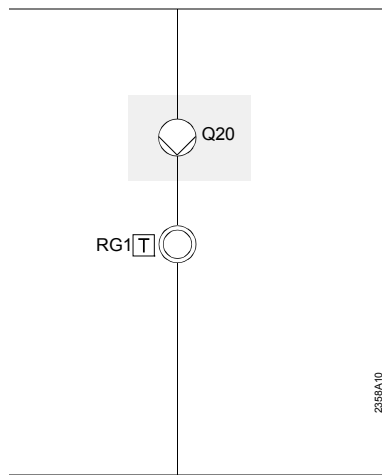
2358A07

Bypass pump



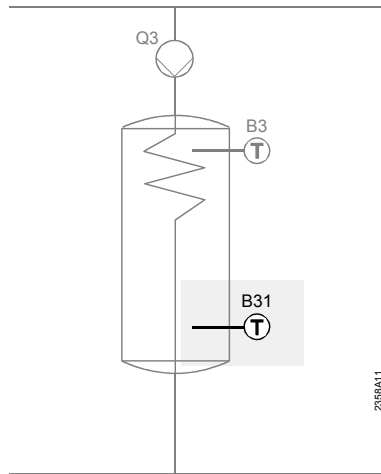
2358A08

Heating circuit pump HCP



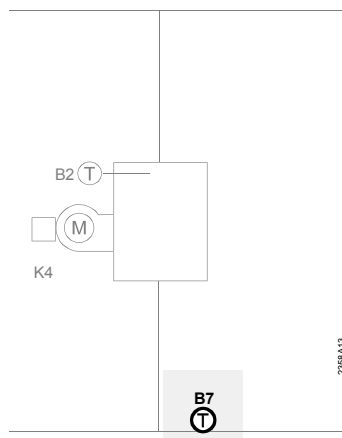
2358A10

2. DHW sensor



2359A11

Return sensor



2359A13

Legend

Mains voltage

Diagram	Function	Connection
K4	Burner 1st stage	T1, T2
Q1	boiler pump	QX1, QX2
Q2	1. eating circuit pump, boiler pump	Q2
Q3	DHW charging pump / diverting valve	Q3
Q4	circulating pump	QX1, QX2
Q5	Collector pump	QX1, QX2
Q6	2. Heating circuit pump	Q6
Q12	Bypass pump	QX1, QX2
Q15/18	Pump H1/2	QX1, QX2
Q20	heating circuit pump HCP	QX1, QX2
Y1	1. eating circuit mixing valve	Y1, Y2
Y5	2. eating circuit mixing valve	Y5, Y6
K6	electric immersion heater	QX1, QX2

Low-voltage

<i>Diagram</i>	<i>Function</i>	<i>Connection</i>
B1	Flow temperature sensor HC1	B1
B12	Flow temperature sensor HC2	B12
B2	Boiler temperature sensor TK1	B2
B3	DHW sensor top	B3
B31	2. DHW sensor bottom	BX1, BX2
B6	Collector sensor	BX1, BX2
B7	Return sensor	BX1, BX2
B9	Outside sensor	B9
RG1	Room unit 1	CL-, CL+
RG2	Room unit 2	CL-, CL+

8 Technical data

8.1 Basic units RVS...

Power supply	Rated voltage	AC 230 V ($\pm 10\%$)
	Rated frequency	50 / 60 Hz
	Max. power consumption	RVS13.123: 7.5 VA RVS13.143: 8 VA RVS53.x83: 10 VA
Wiring of terminals	Fusing of supply lines	max. 10 AT
	(Power supply and outputs)	solid or stranded wire (twisted or with ferrule): 1 core: 0.5...2.5 mm ² 2 cores 0.5...1.5 mm ²
Functional data	Software class	A
	Mode of operation to EN 60 730	1b (automatic operation)
Inputs	Digital inputs H1 and H2	safety extra low-voltage for potentialfree low-voltage contacts: voltage with contact open: DC 12 V current with contact closed: DC 3 mA
	Analog input H1	protective extra low-voltage operating range: DC (0...10) V internal resistance: > 100 k Ω
	Mains inputs S3 and 4	AC 230 V ($\pm 10\%$) internal resistance: > 100 k Ω
	Sensor input B9	NTC1 k (QAC34)
	Sensor inputs B1, B2, B3, B12, BX1 and BX2	NTC10k (QAZ36, QAD36)
	Perm. sensor cables (copper) with cross-sectional area: Max. length	0.25 0.5 0.75 1.0 1.5 mm ² 20 40 60 80 120 m
Outputs	Relay outputs	
	Rated current range	AC 0.02...2 (2) A
	Max. switch-on current	15 A for ≤ 1 s
	Max. total current (of all relays)	AC 6 A
	Rated voltage range	AC (24...230) V (for potentialfree outputs)
Interfaces	BSB	2-wire connection, not interchangeable
	Max. cable length	
	Basic unit – peripheral device	200 m
	Max. total length	400 m (max. cable capacitance) 60 nF
	Min. cross-sectional area	0.5 mm ²
Degree of protection and safety class	Degree of protection of housing to EN 60 529	IP 00
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class II, if correctly installed
	Degree of contamination to EN 60 730	normal contamination
Standards, safety, EMV etc.	CE conformity to	
	EMC directive	89/336/EEC
	- Immunity	- EN 61000-6-2
	- Emissions	- EN 61000-6-3
	Low-voltage directive	73/23/EEC
	- Electrical safety	- EN 60730-1, EN 60730-2-9
Climatic conditions	Storage to EN 60721-3-1	class 1K3, temperature -20...65 °C
	Transport to EN 60721-3-2	class 2K3, temperature -25...70 °C

	Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)
Weight	Weight (excl. packaging)	RVS13.123: 566 g
		RVS13.143: 566 g
		RVS53.183: 776 g

8.2 extension module AVS75.390

Power supply	Rated voltage	AC 230 V (±10%)
	Rated frequency	50 / 60 Hz
	Max. power consumption	4 VA
	Fusing of supply lines	max. 10 AT
Wiring of terminals	(Power supply and outputs)	solid or stranded wire (twisted or with ferrule): 1 core: 0.5...2.5 mm ² 2 cores 0.5...1.5 mm ²
Functional data	Software class	A
	Mode of operation to EN 60 730	1b (automatic operation)
Inputs	Digital inputs H2	safety extra low-voltage for potentialfree low-voltage contacts: voltage with contact open: DC 12 V current with contact closed: DC 3 mA
	Analog input H2	protective extra low-voltage operating range: DC (0...10) V internal resistance: > 100 kΩ
	Mains input L	AC 230 V (±10 %) internal resistance: > 100 kΩ
	Sensor inputs BX6, BX7	NTC10k (QAZ36, QAD36)
	Perm. sensor cables (copper) with cross-sectional area:	0.25 0.5 0.75 1.0 1.5 mm ²
	Max. length	20 40 60 80 120 m
Outputs	Relay outputs	
	Rated current range	AC 0.02...2 (2) A
	Max. switch-on current	15 A for ≤1 s
	Max. total current (of all relays)	AC 6 A
Interfaces	Rated voltage range	AC (24...230) V (for potentialfree outputs)
	BSB	2-wire connection, not interchangeable
	Max. cable length	
	Basic unit – peripheral device	200 m
	Max. total length	400 m (max. cable capacitance) 60 nF)
Degree of protection and safety class	Min. cross-sectional area	0.5 mm ²
	Degree of protection of housing to EN 60 529	IP 00
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class II, if correctly installed
	Degree of contamination to EN 60 730	normal contamination
Standards, safety, EMV etc.	CE conformity to	
	EMC directive	89/336/EEC
	- Immunity	- EN 61000-6-2
	- Emissions	- EN 61000-6-3
	Low-voltage directive	73/23/EEC
- Electrical safety	- EN 60730-1, EN 60730-2-9	
Climatic conditions	Storage to EN 60721-3-1	class 1K3, temperature -20...65°C
	Transport to EN 60721-3-2	class 2K3, temperature -25...70 °C

Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)
---------------------------	---

Weight

Weight (excl. packaging)	293 g
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8.3 Operator unit and room units AVS37... / QAA7x... / QAA55..

Power supply

For devices without batteries:

Bus power supply	BSB
------------------	-----

For devices with batteries:

Batteries	3 pcs
Type of batteries	1.5 V Alkali size AA (LR06)
Battery life	approx. 1.5 years

Room temperature measurement (only with QAA7x...) / QAA55...)

Measuring range	0..0.50 °C
-----------------	------------

According to EN 12098:

Range 15...25 °C	within tolerance of 0.8 K
Range 0..15 °C or 25...50 °C	within tolerance of 1.0 K
Resolution	1/10 K

Interfaces

AVS37../QAA75../QAA55..	BSB-W, 2-wire connection, not interchangeable
Max. cable length basic unit – peripheral device	QAA75... / QAA55... = 200 m AVS37... = 3 m

QAA78...	BSB-RF frequency band 868 MHz
----------	----------------------------------

Degree of protection and safety class

Degree of protection of housing to EN 60 529	IP20 für QAA7... / QAA55... IP40 for AVS37... IP20 (when mounted) normal contamination
--	--

Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class III, if correctly installed
---------------------------	--

Degree of contamination to EN 60 730	normal contamination
--------------------------------------	----------------------

Standards, safety, EMV etc.

CE conformity to	
EMC directive	89/336/EEC
- Immunity	- EN 61000-6-2
- Emissions	- EN 61000-6-3
Low-voltage directive	73/23/EEC
- Electrical safety	- EN 60730-1, EN 50090-2-2
wireless	EN 300 220-1 (25-1000 MHz)

Climatic conditions

For devices without batteries:	
Storage to EN 60721-3-1	class 1K3, temperature –20...65 °C
Transport to EN 60721-3-2	class 2K3, temperature –20...70 °C
Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)

For devices with batteries:	
Storage to EN 60721-3-1	class 1K3, temperature –20...30 °C
Transport to EN 60721-3-2	class 2K3, temperature –20...70 °C
Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)

Weight

Weight (excl. packaging)	AVS37.294: 160 g QAA75.61x: 170 g QAA78.610: 312 g QAA55.110: 115 g
--------------------------	--

8.4 Power supply AVS16.290

Power supply	Nominal voltage	AC 230 V ($\pm 10\%$)
	Nominal frequency	50 Hz
	Fuse	6,3 AT (5 x 20 mm)
	Max. power consumption	0.4 VA
	Fuse protection for incoming cable	max. 10 A
Functional data	Schaltleistung STB	16 (12) A, AC 230 V (+-10 %), 50Hz
Degree of protection and safety class	Degree of protection of housing to EN 60 529	IP40 (when mounted)
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class II, if correctly installed
	Degree of contamination to EN 60 730	normal contamination
Standards, safety	CE conformity to low-voltage directive electrical safety	73/23/EEC EN 60730-1, EN 60730-2-9
Climatic conditions	Storage to EN 60721-3-1	class 1K3, temperature -20...65°C
	Transport to EN 60721-3-2	class 2K3, temperature -25...70 °C
	Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)
Weight	Weight (excl. packaging)	310 g

8.5 Radio module AVS71.390

Power supply	Powered via Basic units RVS...	5,5V DC
	Max. power consumption	0.11 VA max.
Interfaces	Connection to Basic units RVS... (power supply, communication)	6-polar, prefabricated ribbon cable, fix mounted Length 1,5m
	Radio transmitter	BSB-RF frequency band 868 MHz
Degree of protection and safety class	Degree of protection of housing to EN 60 529	IP40
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class III, if correctly installed
	Degree of contamination to EN 60 730	normal contamination
Standards, safety, EMV etc.	CE conformity to EMC directive	89/336/EWG
	- Immunity	- EN 61000-6-1, EN 61000-6-2
	- Emissions	- EN 61000-6-3, EN 61000-6-4
	Low-voltage directive - Electrical safety	73/23/EWG - EN 60730, EN 50090-2-2
	wireless	EN 300 220-1 , -3 (25-1000MHz) EN 301 489-1 , -3
Climatic conditions	Storage to EN 60721-3-1	class 1K3, temperature -20...65°C
	Transport to EN 60721-3-2	class 2K3, temperature -25...70 °C
	Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)

Weight

Weight (excl. packaging)

54 g

8.6 Wireless outside sensor AVS13.399

Power supply	Batteries	2 pcs
	Type of batteries	1.5 V Alkali size AAA (LR03)
	Battery life	approx. 2 years
Interfaces	Radio transmitter	BSB-RF frequency band 868 MHz
	Degree of protection of housing to EN 60 529	IP20
Degree of protection and safety class	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class III, if correctly installed
	Degree of contamination to EN 60 730	normal contamination
	Standards, safety, EMV etc.	CE conformity to
EMC directive		89/336/EEC
- Immunity		- EN 61000-6-2
- Emissions		- EN 61000-6-3
Low-voltage directive		73/23/EEC
- Electrical safety wireless		- EN 60730-1, EN 50090-2-2 EN 300 220-1 (25-1000 MHz)
Climatic conditions	For devices without batteries:	
	Storage to EN 60721-3-1	class 1K3, temperature -20...65 °C
	Transport to EN 60721-3-2	class 2K3, temperature -20...70 °C
	Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)
	For devices with batteries:	
	Storage to EN 60721-3-1	class 1K3, temperature -20...30 °C
Transport to EN 60721-3-2	class 2K3, temperature -20...70 °C	
Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)	
Outside temperature acquisition	Outside sensor	QAC34/101
	Measuring range	-50...50 °C
	Cable length	max. 5 m
Weight	Weight (excl. packaging)	radio transmitter: 160 g outside sensor QAC34: 73 g 70 g cable

8.7 Radio repeater AVS14.390

Power supply	Nominal voltage	AC 230 V \pm 10 % (primary side AC/AC adapter)
	Nominal frequency	50 Hz \pm 6 %
	Max. power consumption	0.5 VA max.
Interfaces	Radio transmitter	BSB-RF frequency band 868 MHz
Degree of protection and safety class	Degree of protection of housing to EN 60 529	IP20
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class III, if correctly installed

	Degree of contamination to EN 60 730	normal contamination
Standards, safety, EMV etc.	CE conformity to	
	EMC directive	89/336/EEC
	- Immunity	- EN 61000-6-2
	- Emissions	- EN 61000-6-3
	Low-voltage directive	73/23/EEC
	- Electrical safety	- EN 60730-1, EN 50090-2-2
	wireless	EN 300 220-1 (25-1000 MHz)
Climatic conditions	Storage to EN 60721-3-1	class 1K3, temperature -20...65 °C
	Transport to EN 60721-3-2	class 2K3, temperature -25...70 °C
	Operation to EN 60721-3-3	class 3K5, temperature 0...50 °C (noncondensing)
Weight	Weight (excl. packaging)	radio repeater 112 g power supply 195 g

8.8 sensor characteristics

8.8.1 NTC 1 k

T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30.0	13'034	0.0	2'857	30.0	827
-29.0	12'324	1.0	2'730	30.5	811
-28.0	11'657	2.0	2'610	31.0	796
-27.0	11'031	3.0	2'496	32.0	767
-26.0	10'442	4.0	2'387	33.0	740
-25.0	9'889	5.0	2'284	34.0	713
-24.0	9'369	6.0	2'186	35.0	687
-23.0	8'880	7.0	2'093	36.0	663
-22.0	8'420	8.0	2'004	37.0	640
-21.0	7'986	9.0	1'920	38.0	617
-20.0	7'578	10.0	1'840	39.0	595
-19.0	7'193	11.0	1'763	40.0	575
-18.0	6'831	12.0	1'690	41.0	555
-17.0	6'489	13.0	1'621	42.0	536
-16.0	6'166	14.0	1'555	43.0	517
-15.0	5'861	15.0	1'492	44.0	500
-14.0	5'574	16.0	1'433	45.0	483
-13.0	5'303	17.0	1'375	46.0	466
-12.0	5'046	18.0	1'320	47.0	451
-11.0	4'804	19.0	1'268	48.0	436
-10.0	4'574	20.0	1'218	49.0	421
-9.0	4'358	21.0	1'170	50.0	407
-8.0	4'152	22.0	1'125		
-7.0	3'958	23.0	1'081		
-6.0	3'774	24.0	1'040		
-5.0	3'600	25.0	1'000		
-4.0	3'435	26.0	962		
-3.0	3'279	27.0	926		
-2.0	3'131	28.0	892		
-1.0	2'990	29.0	859		

8.8.2 NTC 10 k

T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30.0	175203	50.0	3605	130.0	298
-25.0	129289	55.0	2989	135.0	262
-20.0	96360	60.0	2490	140.0	232
-15.0	72502	65.0	2084	145.0	206
-10.0	55047	70.0	1753	150.0	183
-5.0	42158	75.0	1481	155.0	163
0.0	32555	80.0	1256	160.0	145
5.0	25339	85.0	1070	165.0	130
10.0	19873	90.0	915	170.0	117
15.0	15699	95.0	786	175.0	105
20.0	12488	100.0	677	180.0	95
25.0	10000	105.0	586	185.0	85
30.0	8059	110.0	508	190.0	77
35.0	6535	115.0	443	195.0	70
40.0	5330	120.0	387	200.0	64
45.0	4372	125.0	339		

8.8.3 PT1000

T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30	882.2	50	1194.0	130	1498.3
-25	901.9	55	1213.2	135	1517.1
-20	921.6	60	1232.4	140	1535.8
-15	941.2	65	1251.6	145	1554.6
-10	960.9	70	1270.8	150	1573.3
-5	980.4	75	1289.9	155	1591.9
0	1000.0	80	1309.0	160	1610.5
5	1019.5	85	1328.0	165	1629.1
10	1039.0	90	1347.1	170	1647.7
15	1058.5	95	1366.1	175	1666.3
20	1077.9	100	1385.1	180	1684.8
25	1097.3	105	1404.0	185	1703.3
30	1116.7	110	1422.9	190	1721.7
35	1136.1	115	1441.8	195	1740.2
40	1155.4	120	1460.7	200	1758.6
45	1174.7	125	1479.5		

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