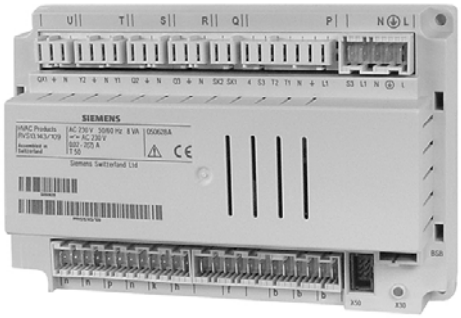
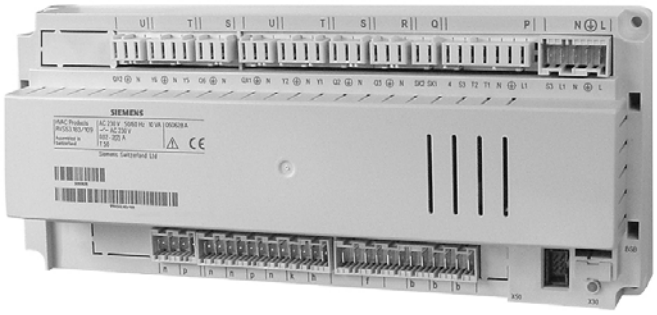




ZONE CONTROLLER

CLIMA MIX (RVS46)

User and OEM Manual

RVS46..
AVS75..
AVS37..
QAA75..
QAA55..

Contents

ZONE CONTROLLER
CLIMA MIX (RVS46)

USER MANUAL

1 Summary

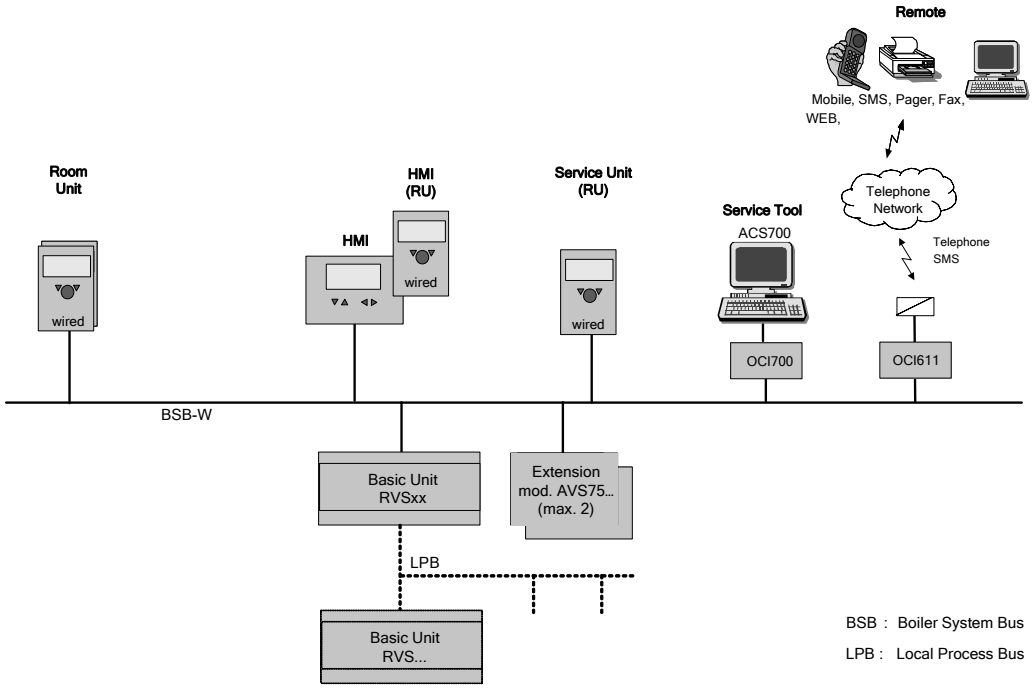
The present User Manual describes the products listed in the following table and covers handling and configuration of the controls for readers ranging from end users to heating engineers.

Type reference (ASN)	Series	Name
RVS46.530	B	Basic unit boiler
AVS75.390	B	Extension module
AVS37.294	B	operator unit
QAA75.610	B	Room unit, wired
QAA75.611	B	Room unit with backlight, wired
QAA55.110	A	Room unit basic

1.1 Type summary

1.1.1 Topology

Wired



2 Mounting and installation

2.1 Regulations

Electrical installation

- Prior to installing the controller, the power supply 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 may not be run in the same duct

2.2 Basic units RVS…

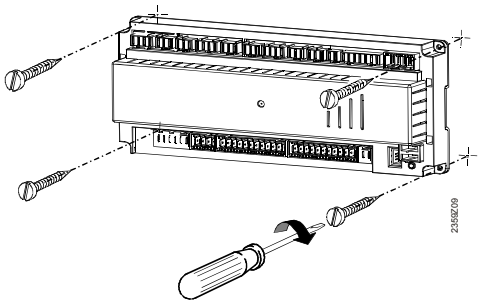
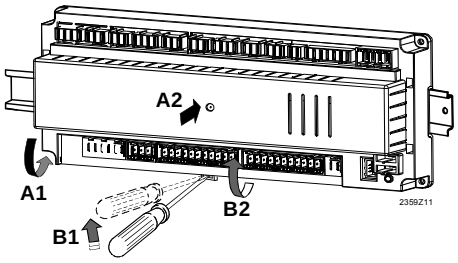
Engineering

- Air circulation around the controller 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 controller's cooling slots which are situated a the top and bottom of the housing.
  The 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 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

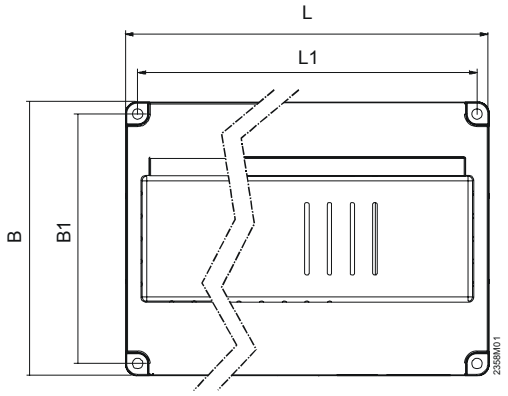
Mounting method

Screwed	On DIN rail
	

A: Mounting / B: Removal

Note:
To mount the controller on a DIN rail, a mounting clip is required!

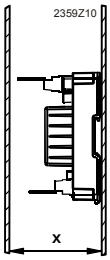
Dimensions and drilling plan



Dimensions in mm

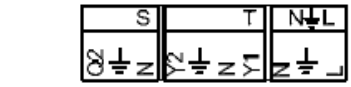
	L	*B*	*H*	*L1*	*B1*
RVS46…	109	121	52	98	110

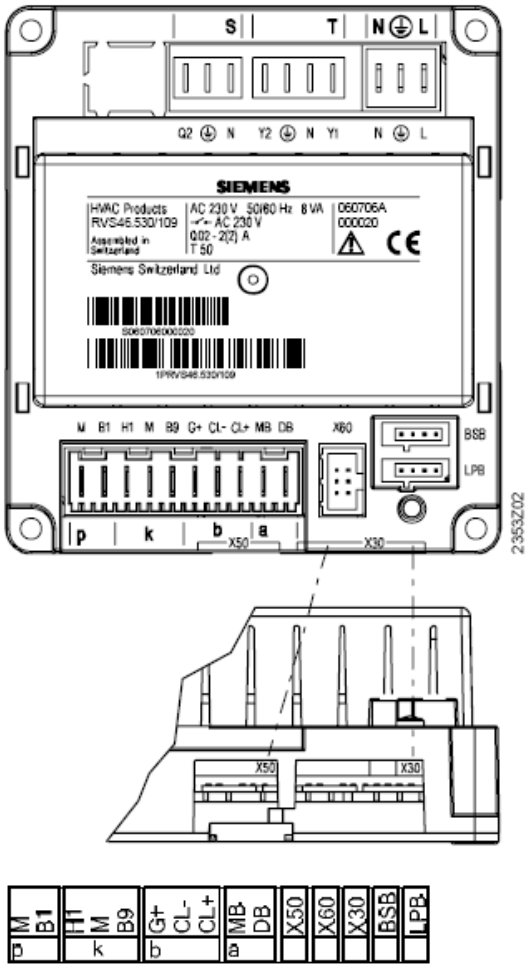
Total height required



Dimension X:
Connectors with tongues minimum 70 mm
Connector without tongues minimum 60 mm

2.2.1 Connection terminals of RVS46.530





Mains voltage

Terminal markings

	Use	*Slot*	*Connector type*
L ⏚ N	Line AC 230 V basic unit Protective earth Neutral conductor	N ⏚ L	AGP4S.05A/109
N ⏚ Q3	Neutral conductor Protective earth DHW charging pump / diverting valve	R	AGP8S.03A/109
N ⏚ Q2	Neutral conductor Protective earth 1st heating circuit pump	S	AGP8S.03B/109
Y1 N ⏚ Y2	1st heating circuit mixing valve opening Neutral conductor Protective earth 1st heating circuit mixing valve closing	T	AGP8S.04B/109
N ⏚ QX1	Neutral conductor Protective earth Multifunctional output 1	U	AGP8S.03C/109

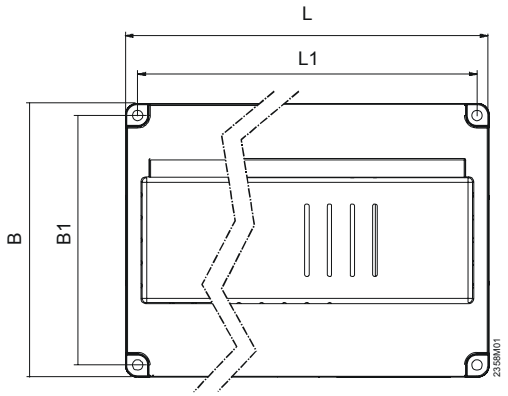
Low voltage

	Use	*Slot*	*Connector type*
BSB	Service tool OCI700	-	-
LPB	Local bus process	-	-
X50	Extension module AVS75.390	-	AVS82.490/109
X30	Operator unit / boiler control panel	-	AVS82.491/109
DB	LPB data		AGP4S.02H/109
MB	LPB ground		
CL+	BSB data		AGP4S.02A/109
CL-	BSB ground	b	
CL+	Room unit 1 data		AGP4S.02A/109
CL-	Room unit 1 ground	b	AGP4S.03D/109
G+	Room unit power supply 12 V		
B3	DHW sensor top		AGP4S.02C/109
M	Ground	h	
B9	Outside sensor		AGP4S.02D/109
M	Ground	k	
H1	Digital / DC 0...10 V input		AGP4S.02F/109
M	Ground	n	
B1	Flow temperature sensor HK1		AGP4S.02G/109
M	Ground	p	
BX1	Multifunctional sensor input 1		AGP4S.02F/109
M	Ground	n	
BX2	Multifunctional sensor input 2		AGP4S.02F/109
M	Ground	n	

2.3 Extension module AVS75.390

For planning, mounting location and mounting method, refer to the information given for the basic modules.

Dimensions and drilling plan



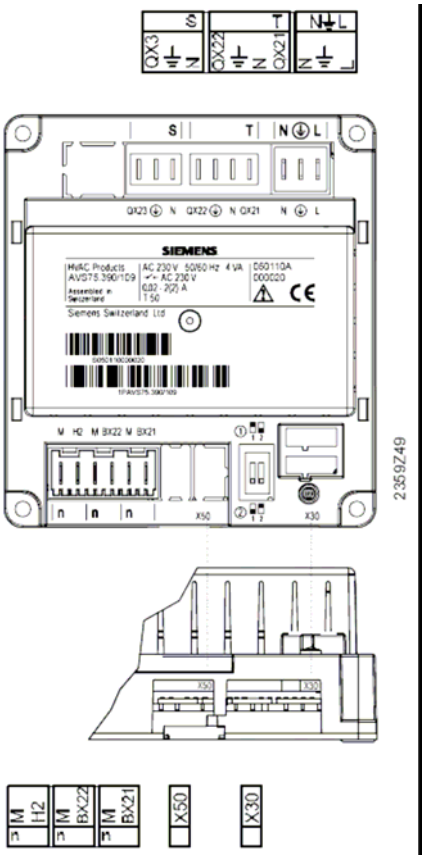
Dimensions in mm

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

Connections

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

2.3.1 Connection terminals of AVS75.390



① 1 2 = Module 1

② 1 2 = Module 2

Terminal markings

Mains voltage

	Use	*Slot*	*Connector type*
L ⏚ N	Line AC 230 V basic unit Protective earth Neutral conductor	N ⏚ L	AGP4S.03E/109
QX21 N ⏚ QX22	Assignment according to function Neutral conductor Protective earth Assignment according to function	T	AGP8S.04B/109
N ⏚ QX23	Neutral conductor Protective earth Assignment according to function	S	AGP8S.03B/109

Low voltage

	Use	*Space*	*Connector type*
X30	Operator unit / boiler control panel	-	AVS82.491/109
X50	Basic unit		AVS82.490/109
BX21 M	Assignment according to function Ground	 n	AGP4S.02F/109
BX22 M	Assignment according to function Ground	 n	AGP4S.02F/109
H2 M	Digital / DC 0...10 V input Ground	 n	AGP4S.02F/109

Assignment of terminals

The two following parameters define the usage of the respective module:

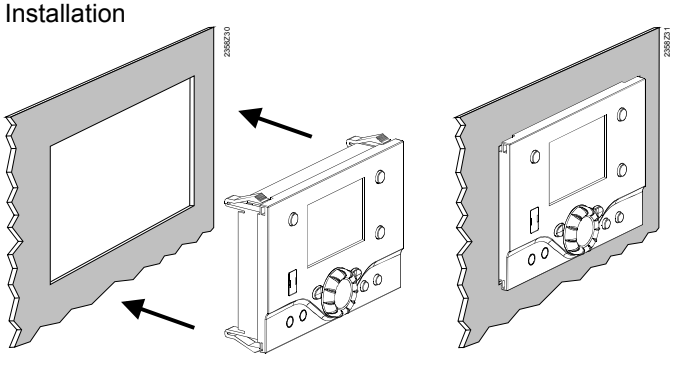
- Function extension module 1 (operating line 6020)
- Function extension module 2 (operating line 6021)

.

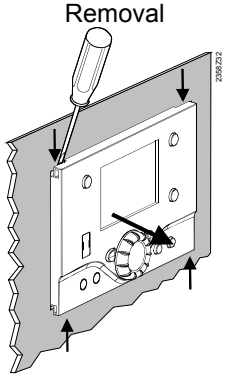
2.4 Operator unit AVS37.294

Mounting method

Installation



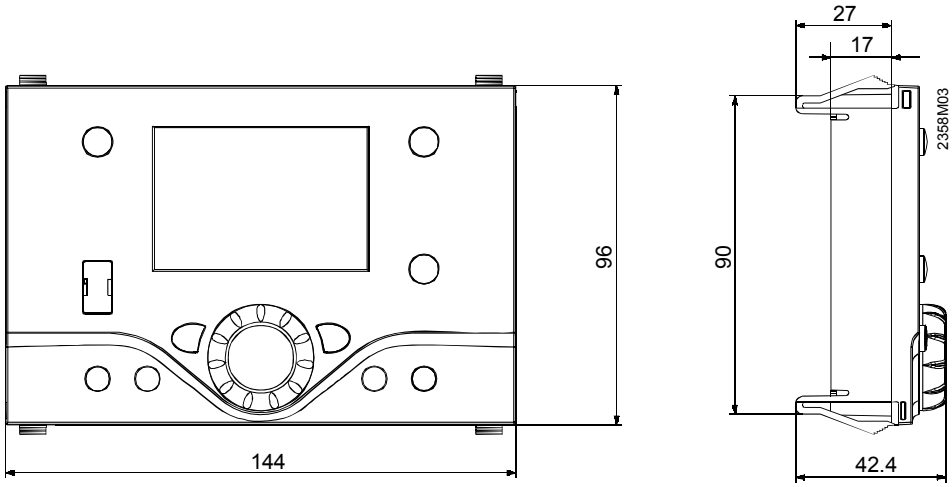
Removal



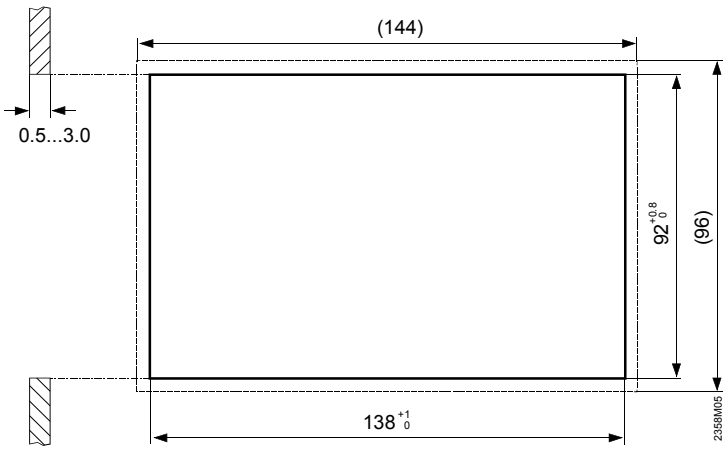
Connections

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.

Ground

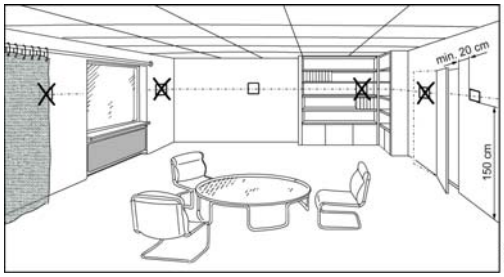


Panel cutout



2.5 Room unit QAA55…

Engineering

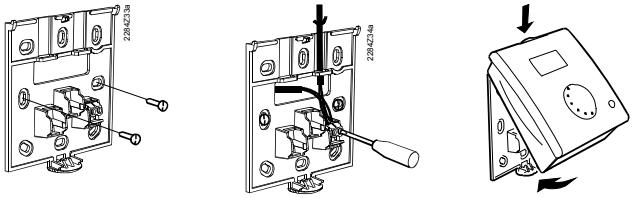


The room unit should be located in the main living room while giving consideration to the following points:

- The place of installation should be chosen so 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

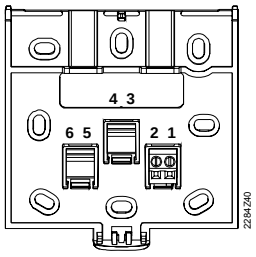
When the unit is removed from its base, power is cut off so that the unit is out of operation.

Mounting method



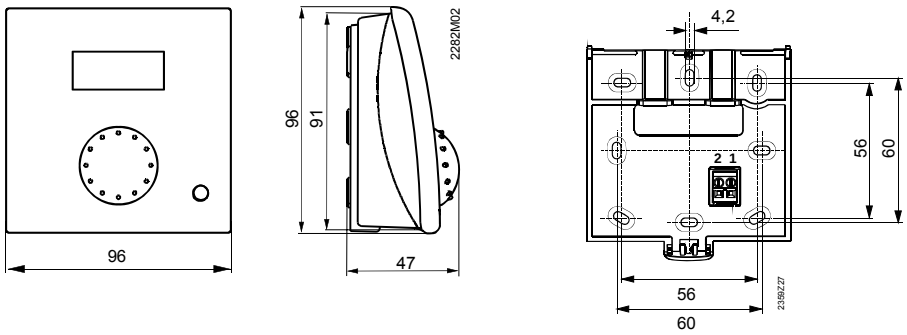
- The controller must not be exposed to dripping water

Connections



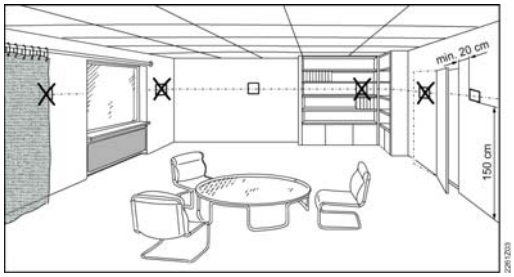
1	CL+	BSB data
2	CL-	BSB ground

Dimensions and drilling plan



2.6 Room unit QAA75…

Engineering

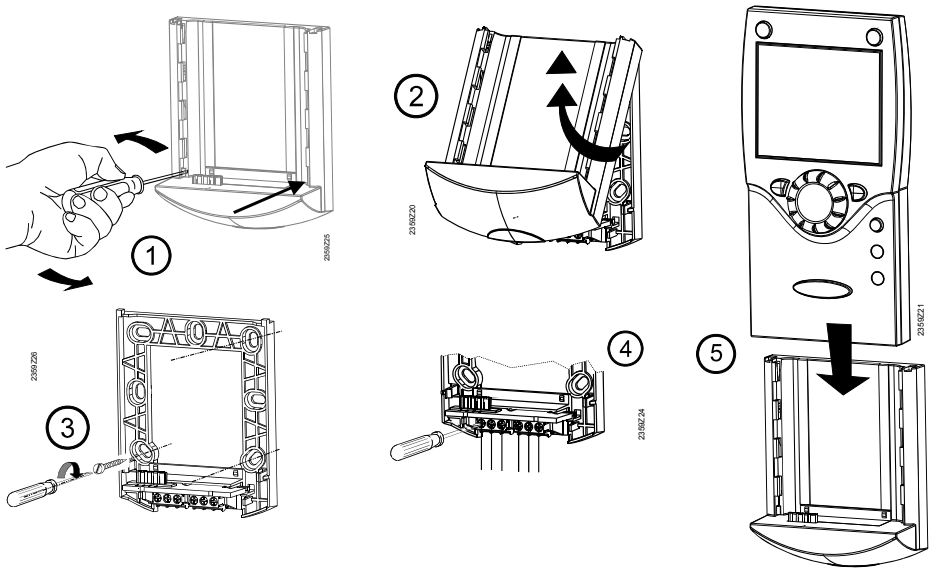


The room unit should be located in the main living room while giving consideration to the following points:

- The place of installation should be chosen so 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 cut off so that the unit is out of operation.

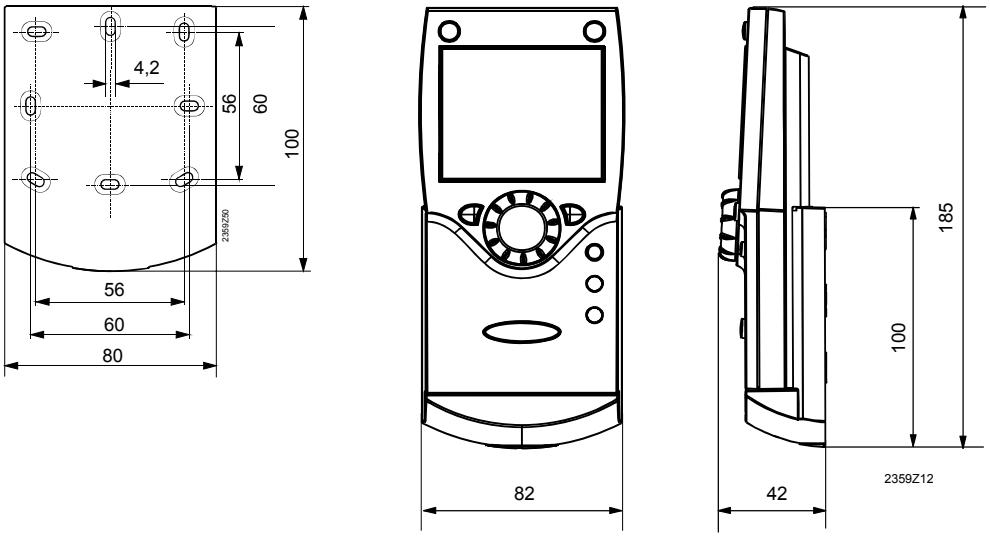
Mounting method



Connections

Terminal	Name	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 Commissioning

Prerequisites

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

- Prerequisite is the correct mounting and correct electrical installation and, in the case of wireless solutions, correctly working radio connections to all required 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 OK 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 OK.
- 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))
- Memorise the sensor readings by entering “YES” in parameter 6200. This step is necessary to monitor the functioning status of the sensors and to eliminate any old readings.

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, switch to operating page “Input / output test“ and go through all available setting lines.

Operating state

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

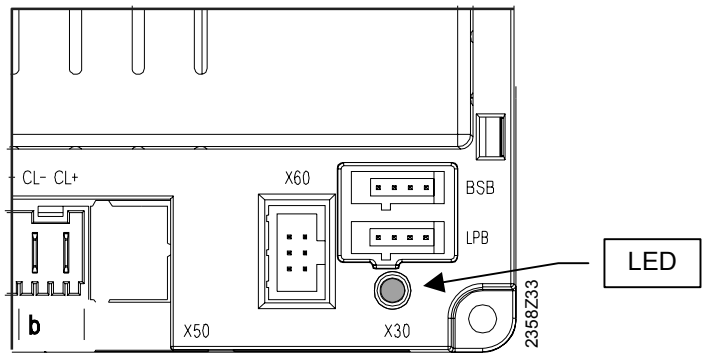
Diagnosis

For detailed diagnostics of the plant, check operating pages “diagnostics heat source“ and “diagnostics consumer”.

3.1 Basic units

Checking the LED

LED off:	No power supply
LED on	Ready
LED flashes	Local fault



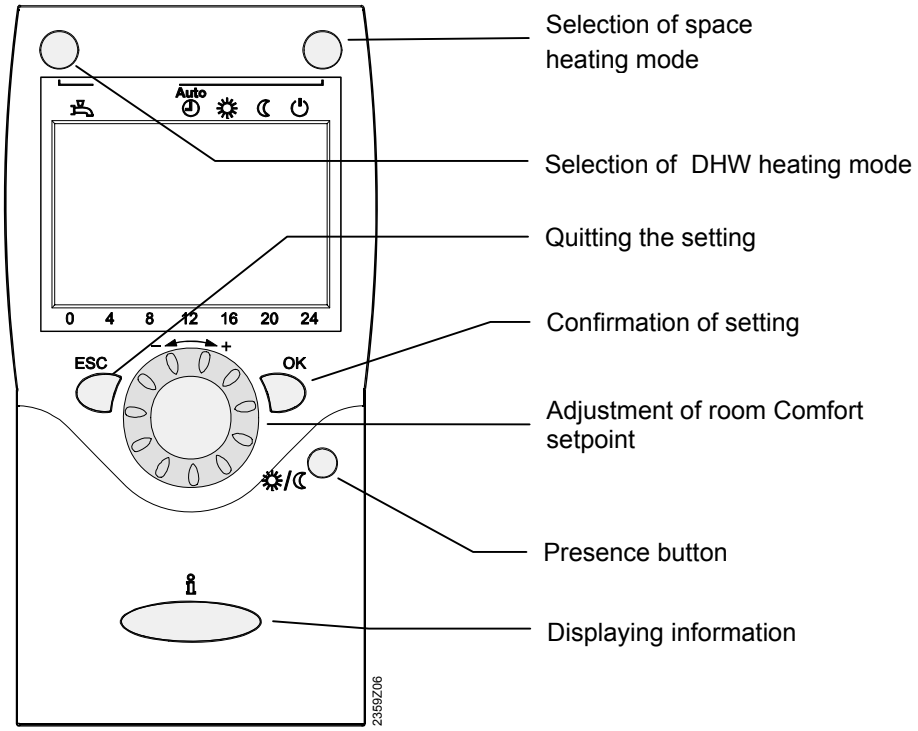
4 Handling

4.1 QAA75.. / QAA78… / AVS37..

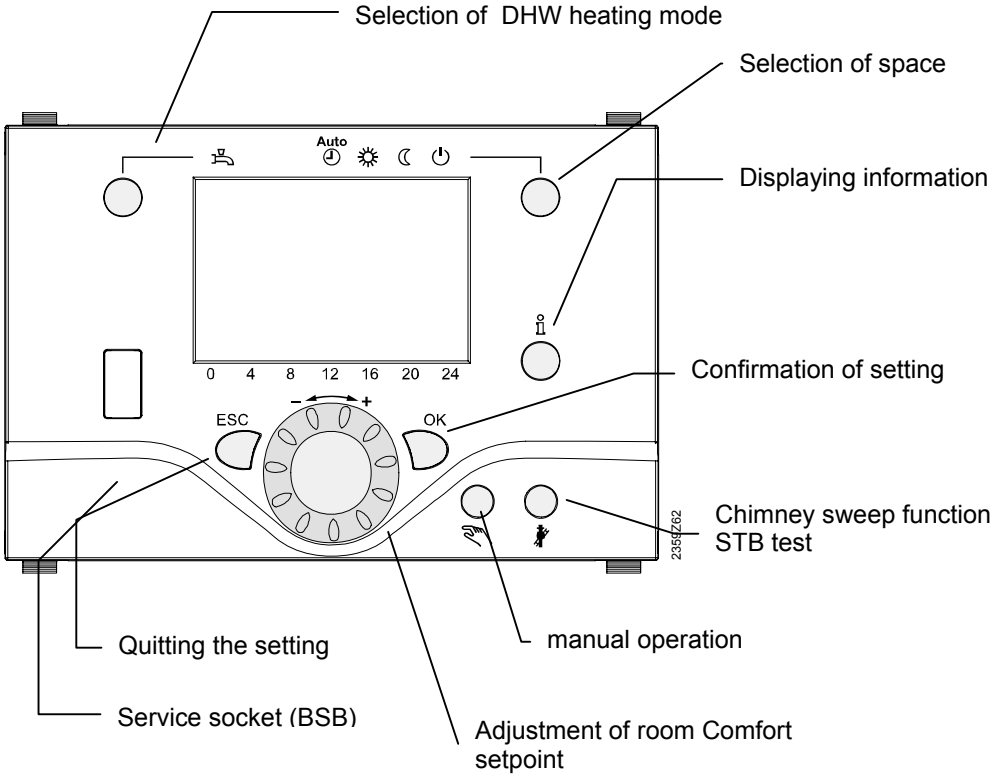
4.1.1 Operation

Operating elements

Type of room unit



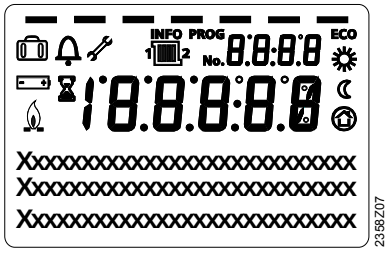
Operator unit



Display options

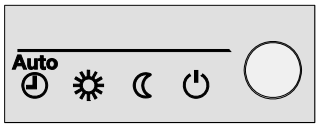
- Heating to Comfort setpoint
- Heating to Reduced setpoint
- Heating to frost protection setpoint
- Process running – please wait
- Change battery
- Burner operating (only oil / gas boiler)
- INFO Info level activated
- PROG Programming activated
- ECO Heating temporarily switched off / ECO function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

Display — Display of all symbols and segments.



Selection of space heating mode

This setting is used to switch between the different operating modes. The selection made is indicated by a bar which appears below the respective symbol.



Automatic mode AUTO

Automatic mode controls the room temperature according to the time program.
Characteristics of automatic mode:
- Heating mode according to the time program
- Temperature setpoints according to the 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 Comfort setpoint
- ☾ Heating to Reduced setpoint

Characteristics of continuous operation:
- Heating mode with no time program
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and 24-hour heating limit inactive in the case of continuous operation with Comfort setpoint

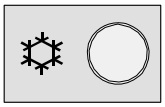
Protection

When using Protection mode, 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

Selection of cooling mode

The "Cooling" mode is selected by use of the Cooling button. The choice made is indicated by a bar which appears below the symbol.



Cooling mode ❄

Cooling mode controls the room temperature in accordance with the time program.

Characteristics of cooling mode:

- Manual cooling mode
- Cooling mode based on time program
- Temperature setpoint based on "Comfort setpoint, cooling"
- Protective functions active
- Automatic summer/winter changeover active
- Summer compensation

Selecting the DHW heating mode

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

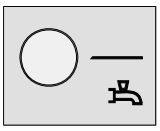
DHW heating mode

- On

The DHW is heated according to the selected switching program.

- Off

No DHW heating, but the protective function is active.



DHW push

Triggering is effected by keeping the DHW operating mode button on the operator or room unit depressed for at least 3 seconds.

It can also be started when:

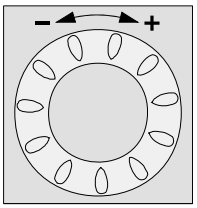
- The operating mode is “Off“
- Operating mode changeover acts via H1 or centrally (LPB)
- All heating circuits use the holiday function

Adjusting the room temperature setpoint

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

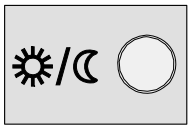
For the **Reduced setpoint** ☾

- Press OK
- Select operating page “Heating circuit“ and
- adjust the “Reduced setpoint“



After each readjustment, wait at least 2 hours, allowing the room temperature to adapt.

Presence button



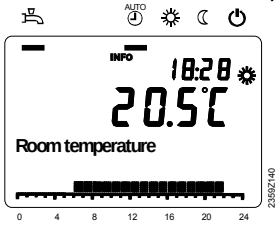
If you do not use the rooms for a certain period of time, you can press the presence button to reduce the room temperature, thus saving heating energy.
When the rooms are occupied again, press again the presence button to resume heating operation.

☼ Heating to Comfort setpoint
☾ Heating to Reduced setpoint

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

Displaying information

Various data can be displayed by pressing the info button.



Possible displays

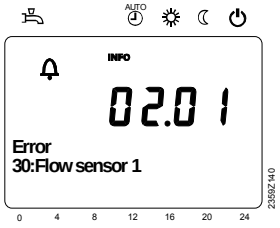
Depending on the type of unit, configuration and operating state, some of the info lines listed below may not appear.
Display:
- Possible error messages from the error code list
- Possible service messages from the maintenance code list
- Possible special mode messages

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

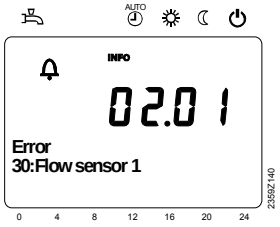
Exception

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

Error messages
If this symbol appears, an error in the plant has occurred. Press the info button and read further information.

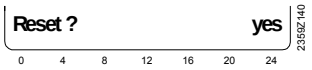


Maintenance or special operation
If this symbol appears, a maintenance alarm is delivered or the plant has changed to special mode. Press the info button and read further information.

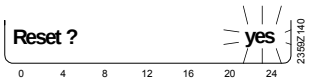


Reset function

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 (end user / commissioning / heating engineer).



After activation with the OK button, the display will show a flashing “Yes“.



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

Manual operation

When manual operation is active, the relays are no longer energized and deenergized according to the control state, but are set to a predefined manual operation state depending on their function.
The burner relay energized in manual control can be deenergized by the electronic temperature controller (TR).

Setpoint adjustment in 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. This function produces the operating state required to make emission measurements (flue gas).

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 may only be made by qualified staff since the boiler temperature will be raised above the maximum limits.

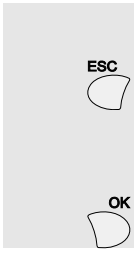
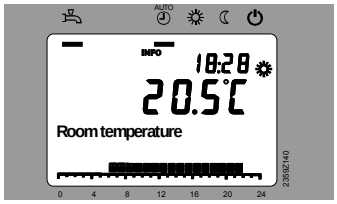
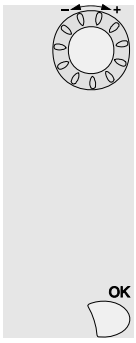
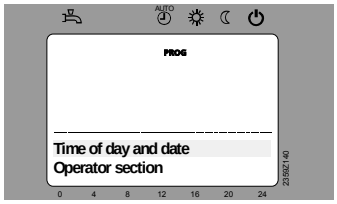
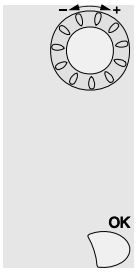
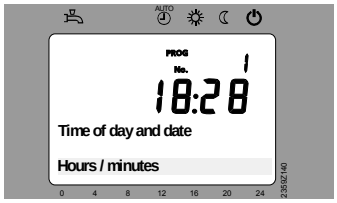
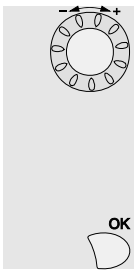
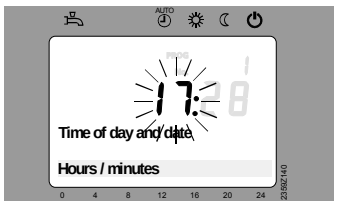
4.1.2 Programming

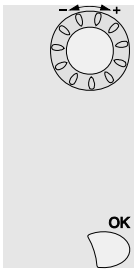
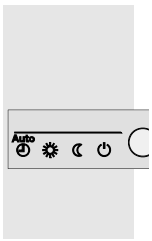
Setting principle

Settings that cannot be made directly with the operating elements require 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 shows how to set the time of day and the date.

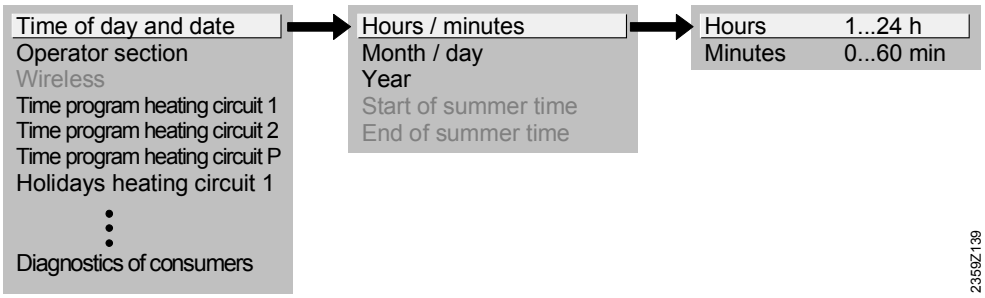
Example: “Setting the time of day“

- Press *ESC* to go one step back at a time, readjusted values are not be adopted
- If no setting is made for 8 minutes, the display returns automatically to the basic display
- Operating lines may be hidden, depending on the type of controller, the configuration made and the user level

	Operation	Display example	Description
1			Basic display. If the basic display is not shown, press the ESC button to return to it. Press OK.
2			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. Press OK to confirm.
3			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. To confirm, press OK.
4			The display shows the hours flashing. Turn the setting knob until the hours of the time of day are correct. To confirm, press OK.

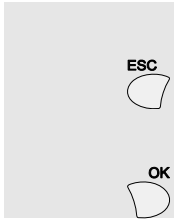
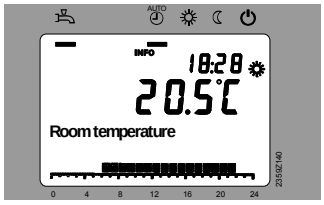
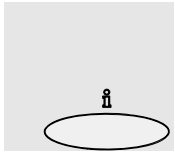
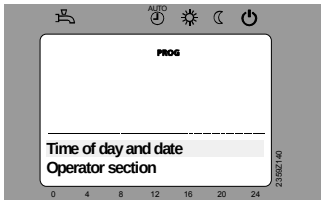
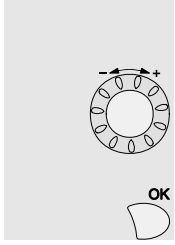
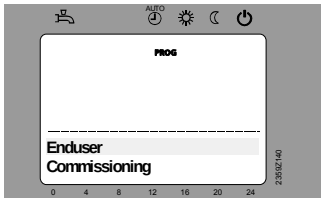
5			The display shows the minutes flashing. Turn the setting knob until the minutes of the time of day are correct. To confirm, press OK.
6			The settings are saved and the displays stops flashing. Now, you can make further settings or you press the operating mode button to return to the basic display.
7			Now, you see the basic display again.

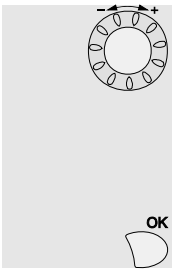
Example of menu structure



4.1.3 User levels

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

	Operation	Display example	Description
1			Basic display. If the basic display is not shown, press the ESC button to return to it. Press OK.
2			You are on the user level *End user*. Press INFO for 3 seconds.
3			You are now given a choice of user levels. Turn the setting knob until the required user level is reached. Press OK.

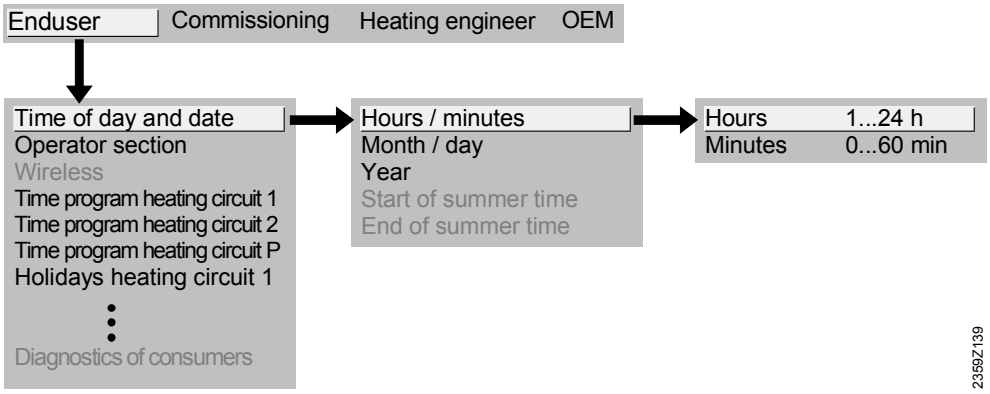


You are now on the required user level.

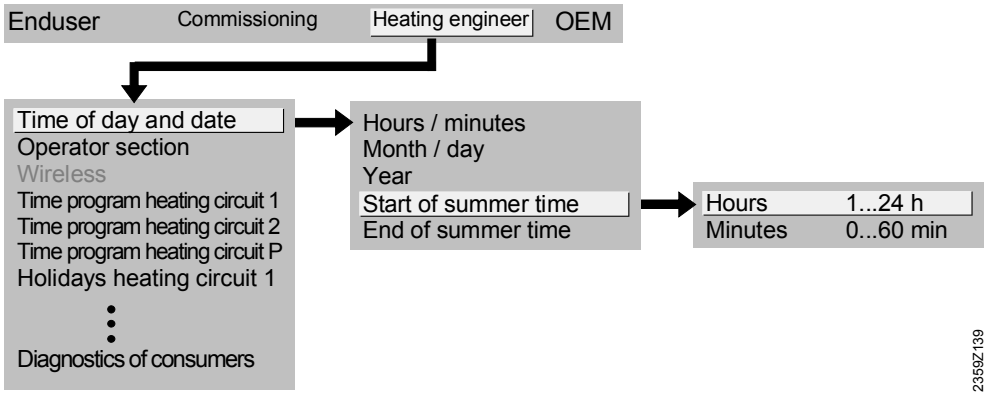
To reach the OEM level, the relevant code must be entered.

Setting the structure “End user“

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.



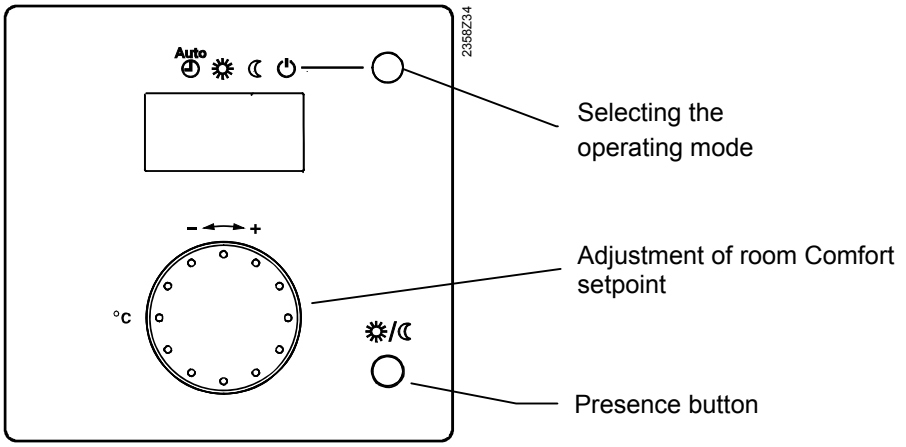
Setting the structure ”Heating engineer“



4.2 QAA55...

4.2.1 Operation

Operating elements



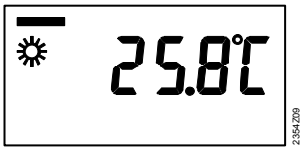
Display options

☼	Heating to Comfort setpoint		Burner operating (only oil / gas boiler)
☾	Heating to Reduced setpoint		Error messages

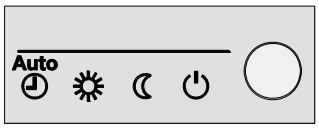
Display

Display of all displayable symbols and segments.

Example of basic display:



Selection of space heating mode



This setting is used to switch between the different operating modes. The selection made is indicated by a bar which appears below the respective symbol.

Automatic mode AUTO

Automatic mode controls the room temperature according to the time program.
Characteristics of automatic mode:

- Heating mode according to the time program
- Temperature setpoints according to the 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 Comfort setpoint
☾ Heating to Reduced setpoint

Characteristics of continuous operation:

- Heating mode with no time program
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and 24-hour heating limit inactive in the case of continuous operation with Comfort setpoint

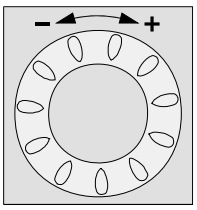
Protection ⏻

When using Protection, the heating system is off. However, 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

Adjusting the room temperature setpoint

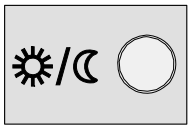
Turn the setting knob to increase or decrease the **Comfort setpoint** ☼ .
For the **Reduced** setpoint ☾
– Press OK
– Select operating page “Heating circuit“ and
– adjust the “Reduced setpoint“



After each readjustment, wait at least 2 hours, allowing the room temperature to adapt.

Presence button

If you do not use the rooms for a certain period of time, you can press the presence button to reduce the room temperature, thus saving heating energy.
When the rooms are occupied again, press again the presence button to resume heating operation.



☼ Heating to Comfort setpoint
☾ Heating to Reduced setpoint

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

4.2.2 Programming

Configuration	A long press on the presence 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
	ru = 3	The room unit is addressed as room unit 3
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.

4.3 Overview of settings

The table 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 = End user I = Commissioning F = Heating engineer
BZ = Operating line
(*) QAA7X.. only

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	dd.MM
3	E	Year	-	2004	2099	yyyy
5	F	Start of summertime	25.03	01.01	31.12	dd.MM
6	F	End of summertime	25.10	01.01	31.12	dd.MM
Operator unit						
20	E	Language German ¦ …	German			-
21	O	Display special operation Off ¦ On	On			
22	F	Info Temporarily ¦ Permanently	Temporarily			-
26	F	Operation lock Off ¦ On	Off			-
27	F	Programming lock Off ¦ On	Off			-
28	I	Direct adjustment Automatic storage ¦ Save with acknowledgment	Save with acknowledgment			
30	O	Save basic settings No ¦ Yes	No			
31	O	Activate basic settings No ¦ Yes	No			
40 (*)	I	Used as Room unit 1 ¦ Room unit 2 ¦ Room unit P ¦ Operator unit 1 ¦ Operator unit 2 ¦ Operator unit P ¦ Service unit	Room unit 1			-
42(*)	I	Assignment device 1 Heating circuit 1 ¦ Heating circuits 1 and 2 ¦ Heating circuits 1 and P ¦ All heating circuits	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	-
Time prog heating circuit 1						
500	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-

Operating line	User level	Function	Default value	Min	Max	Unit
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			-

Operating line	User level	Function	Default value	Min	Max	Unit
Time program 5						
600	E	Preselection Mo - Su ¦ Mo - Fr ¦ Sa - Su ¦ Mo ¦ Tu ¦ We ¦ Th ¦ Fr ¦ Sa ¦Su	Mo - Su			-
601	E	1st phase on	6:00	00:00	24:00	hh:mm
602	E	1st phase off	22:00	00:00	24:00	hh:mm
603	E	2nd phase on	24:00	00:00	24:00	hh:mm
604	E	2nd phase off	24:00	00:00	24:00	hh:mm
605	E	3rd phase on	24:00	00:00	24:00	hh:mm
606	E	3rd phase off	24:00	00:00	24:00	hh:mm
616	E	Default values No ¦ Yes	No			-
Holidays heating circuit 1						
641	E	Preselection Period 1 ¦ Period 2 ¦ Period 3¦ Period 4¦ Period 5¦ Period 6¦ Period 7¦ Period 8	Period 1			-
642	E	Start	--.--	01.01	31.12	dd.mm
643	E	End	--.--	01.01	31.12	dd.mm
648	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Holidays heating circuit 2						
651	E	Preselection Period 1 ¦ Period 2 ¦ Period 3¦ Period 4¦ Period 5¦ Period 6¦ Period 7¦ Period 8	Period 1			-
652	E	Start	--.--	01.01	31.12	dd.mm
653	E	End	--.--	01.01	31.12	dd.mm
658	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Holidays heating circuit P						
661	E	Preselection Period 1 ¦ Period 2 ¦ Period 3¦ Period 4¦ Period 5¦ Period 6¦ Period 7¦ Period 8	Period 1			-
662	E	Start	--.--	01.01	31.12	dd. mm
663	E	End	--.--	01.01	31.12	dd.mm
668	E	Operating level Frost protection ¦ Reduced	Frost protection			-
Heating circuit 1						
710	E	Comfort cooling setpoint	20.0	Operating line 712	Operating line 716	°C
712	E	Reduced setpoint	16	Operating line 714	Operating line 710	°C
714	E	Frost protection setpoint	10.0	4	Operating line 712	°C
716	F	Comfort setpoint maximum	35.0	Operating line 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

Operating line	User level	Function	Default value	Min	Max	Unit
726	F	Heating curve adaptionOff ¦ 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	Operating line 741	°C
741	I	Flow temp setpoint max	80	Operating line 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 setp	Down to reduced setpoint			-
790	F	Optimum start control max	0	0	360	min
791	F	Optimum top control max	0	0	360	min
800	F	Reduced setp increase start	– – –	– – – / -30	10	°C
801	F	Reduced setp increase end	-15	-30	Operating line 800	°C
820	F	Overtemp prot pump circuit Off ¦ On	On			-
830	F	Mixing valve boost	5	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
835	O	Mixing valve Xp	32	1	100	°C
836	O	Mixing valve Tn	120	10	873	s
850	I	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/ curing heating¦ Curing/functional heating ¦ Manually	Off			-
851	I	Floor curing setp manual	25	0	95	°C
861	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			
870	F	With buffer storage tank No ¦ Yes	Yes			-
872	F	With primary controller / system pump No ¦ Yes	Yes			
900	F	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode			
Cooling circuit 1						
901	E	Operating mode Off ¦ Automatic	Automatically			-
902	E	Comfort cooling setpoint	24.0	15	40	°C
907	E	release 24h/day ¦ Time programs HCs ¦ Time program 5	24 h/day			-

Operating line	User level	Function	Default value	Min	Max	Unit
908	I	Flow setpoint at OT 25°C	20	8	35	°C
909	I	Flow setpoint at OT 35°C	16	8	35	°C
912	I	Cooling limit at OT (outside temperature)	20	– – – / 8	355	°C
913	F	Locking period at end of heating	24	– – – / 8	100	h
918	F	Start of summer compensation at OT	26	20	35	°C
919	F	End of summer compensation at OT	35	20	35	°C
920	F	Summer compensation setpoint increase	4	– – – / 1	10	°C
923	I	Flow setpoint min. OT 25°C	18	8	35	°C
924	I	Flow setpoint min. OT 35°C	18	8	35	°C
928	F	Room influence	80	– – – / 1	10	%
932	F	Room temp limitation	0.5	– – – / 0.5	4	°C
938	F	Mixing valve subcooling	0	0	20	°C
939	F	Actuator type 2-position ¦ 3-position	3-position			
940	F	Switching differential 2-pos	2	0	20	°C
941	F	Actuator running time	120	30	873	s
942	O	Mixing valve Xp	12	1	100	°C
943	O	Mixing valve Tn	90	10	873	s
945	F	Mixing valve in heating mode Control ¦ Open	Controls			
946	F	Dewpt monitor locking time	60	– – – / 10	600	min
947	F	Flow setpt increase hygro	3	– – – / 1	10	°C
948	F	Start flow increase at R.H.	60	0	100	%
950	I	Flow temp diff dewpoint	2	– – – / 0	10	°C
962	F	With buffer storage tank No ¦ Yes	No			
963	F	With primary controller / system pump No ¦ Yes	No			
969	I	Optg mode changeover None ¦ Off ¦ Automatic	Off			
Heating circuit 2						
1010	E	Comfort cooling setpoint	20.0	Op line 1012	Operating line 1016	°C
1012	E	Reduced setpoint	16	Op line 1014	Operating line 1010	°C
1014	E	Frost protection setpoint	10.0	4	Operating line 1012	°C
1016	F	Comfort setpoint maximum	35.0	Op line 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			-

Operating line	User level	Function	Default value	Min	Max	Unit
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	Operating line 1041	°C
1041	I	Flow temp setpoint max	80	Op line 1040	95	°C
1050	F	Room influence	20	– – – / 1	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 setp	Down to reduced setpoint			-
1090	F	Optimum start control max	0	0	360	min
1091	F	Optimum top control max	0	0	360	min
1100	F	Reduced setp increase start	– – –	– – – / -30	10	°C
1101	F	Reduced setp increase end	-15	-30	Operating line 1100	°C
1120	F	Overtemp prot pump circuit Off ¦ On	On			-
1130	F	Mixing valve boost	5	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
1135	O	Mixing valve Xp	32	1	100	°C
1136	O	Mixing valve Tn	120	10	873	s
1150	F	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/curing heating¦ Curing/functional heating ¦ Manually	Off			-
1151	F	Floor curing setp manual	25	0	95	°C
1161	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			
1170	F	With buffer storage tank No ¦ Yes	Yes			-
1172	F	With primary controller / system pump No ¦ Yes	Yes			
1200	F	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode			
Heating circuit P						
1300	E	Operating mode Protection ¦ Automatic ¦ Reduced ¦ Comfort	Automatically			-
1310	E	Comfort cooling setpoint	20.0	Op line 1312	Operating line 1316	°C
1312	E	Reduced setpoint	16	Op line 1314	Operating line 1310	°C
1314	E	Frost protection setpoint	10.0	4	Operating	°C

Operating line	User level	Function	Default value	Min	Max	Unit
					line 1312	
1316	F	Comfort setpoint maximum	35.0	Op line 1310	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
1332	F	24-hour heating limit	-3	– – – / -10	10	°C
1340	F	Flow temp setpoint min	8	8	Operating line 1341	°C
1341	F	Flow temp setpoint max	80	Op line 1340	95	°C
1350	F	Room influence	20	– – – / 1	100	%
1360	F	Room temp limitation	1	– – – / 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 setp	Down to reduced setpoint			-
1390	F	Optimum start control max	0	0	360	min
1391	F	Optimum top control max	0	0	360	min
1400	F	Reduced setp increase start	– – –	– – – / -30	10	°C
1401	F	Reduced setp increase end	-15	-30	Operating line 1400	°C
1420	F	Overtemp prot pump circuit Off ¦ On	On			-
1450	I	Floor curing function Off ¦ Functional heating ¦ Curing heating ¦ Functional/ curing heating¦ Curing/functional heating ¦ Manually	Off			-
1451	I	Floor curing setp manual	25	0	95	°C
1455	F	Floor curing setp current	0	0	95	°C
1456	F	Floor curing day current	0	0	32	
1457	F	Floor curing days complete	0	0	32	
1461	F	Excess heat draw Off ¦ Heating mode ¦ Always	Always			
1470	F	With buffer storage tank No ¦ Yes	Yes			-
1472	F	With primary controller / system pump No ¦ Yes	Yes			
1500	F	Optg mode changeover None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic	Protection mode			
DHW						
1610	E	Nominal setpoint	55	Op line 1612	BZ 1614 OEM	°C
1612	F	Reduced setpoint	40	8	Operating	°C

Operating line	User level	Function	Default value	Min	Max	Unit
					line 1610	
1614	O	Nominal setpoint max	65	8	80	°C
1620	O	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	Monday			
1644	F	Legionella function time	– – –	– – – / 00:00	23:50	hh:mm
1645	F	Setpoint of Legionella function	65	55	95	°C
1646	F	Legionella function dwelling time	30	– – – / 10	360	min
Pumps H						
2008	O	H1 DHW charging priority No ¦ Yes	Yes			
2010	F	H1 Excess heat draw Off ¦ On	On			
2012	F	H1 with buffer storage tank No ¦ Yes	Yes			-
2014	F	H1 prim contr/system pump No ¦ Yes	Yes			-
2015	F	H1 Refrig demand 2-pipe system ¦ 4-pipe system	2-pipe system			
2033	O	H2 DHW charging priority No ¦ Yes	Yes			
2035	F	H2 Excess heat draw Off ¦ On	On			
2037	F	H2 with buffer storage tank No ¦ Yes	Yes			-
2039	F	H2 prim contr/system pump No ¦ Yes	Yes			-
2040	F	H2 Refrig demand 2-pipe system ¦ 4-pipe system	2-pipe system			
Primary controller / system pump						
2110	O	Flow temp setpoint min	8	8	95	°C
2111	O	Flow temp setpoint max	80	8	95	°C
2112	O	Flow setpoint, cooling min	8	8	20	°C
2130	O	Mixing valve boost	10	0	50	°C
2131	O	Mixing valve subcooling	0	0	20	°C
2132	O	Actuator type 2-position ¦ 3-position	3-position			
2133	O	Switching differential 2-pos	2	0	20	°C
2134	O	Actuator running time	120	30	873	s
2135	O	Mixing valve Xp	32	1	100	°C

Operating line	User level	Function	Default value	Min	Max	Unit
2136	O	Mixing valve Tn	120	10	873	s
2150	I	Primary controller / system pump Before buffer st tank ¦ After buffer st tank	After buffer st tank			
Configuration						
5710	I	Heating circuit 1 Off ¦ On	On			-
5711	I	Cooling circuit 1 Off ¦ 4-pipe system ¦ 2-pipe system				
5712	I	Use of mixing valve 1 Heating ¦ Cooling ¦ Heating and cooling	Heating and cooling			
5715	I	Heating circuit 2Off ¦ On	Off			-
5950	I	Function of input H1 Optg mode changeover HCs + DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Excess heat discharge ¦ Dewpoint monitor ¦ Flow setp increase hygro ¦ Refrig demand ¦Heat request 10V ¦ Refrig. demand 10V ¦ Pressure measurement 10V ¦ Rel. room humidity 10V ¦ Room temperature 10V	Optg mode changeover HCs+DHW			-
5951	I	Contact type H1 NC ¦ NO	NO			-
5952	I	Function value, contact type H1	70	8	130	°C
5953	I	Voltage value 1, H1		0	10	Volt
5954	I	Function value 1, H1		-100	500	-
5955	I	Voltage value 2, H1		0	10	Volt
5956	I	Function value 2, H1		-100	500	-
6014	I	Function mixing group 1 Heating circuit 1 ¦ Return temp controller ¦ Prim contr/system pump ¦ Cooling circuit 1 ¦ Heating circuit / Cooling circuit 1[)]	Heating circuit			-
6020	I	Function extension module 1 None ¦ Multifunctional ¦ Heating circuit 2 ¦ Prim contr/system pump ¦ Cooling circuit 1	None			-
6021	I	Function extension module 1 None ¦ Multifunctional ¦ Heating circuit 2 ¦ Prim contr/system pump ¦ Cooling circuit 1	None			-
6030	I	Relay output QX21 None ¦ H1 pump Q15 ¦ Alarm output K10 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Heat circuit pump HCP Q20 ¦ H2 pump Q18 ¦ System pump Q14 ¦ Time program 5 K13 ¦ Heat request K27 ¦ Refrig. request K28 ¦ Air dehumidif. K29 ¦ Diverting valve, cooling Y21	None			
6031	I	Relay output QX22 None ¦ H1 pump Q15 ¦ Alarm output K10 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23 ¦ Heat circuit pump HCP Q20 ¦ H2 pump Q18 ¦ System pump Q14 ¦ Time program 5 K13 ¦ Heat request K27 ¦ Refrig. request K28 ¦ Air dehumidif. K29 ¦ Diverting valve, cooling Y21	None			
6032	I	Relay output QX23 None ¦ H1 pump Q15 ¦ Alarm output K10 ¦ 2nd pump speed HC1 Q21 ¦ 2nd pump speed HC2 Q22 ¦ 2nd pump speed HCP Q23	None			

Operating line	User level	Function	Default value	Min	Max	Unit
		¦ Heat circuit pump HCP Q20 ¦ H2 pump Q18 ¦ System pump Q14 ¦ Time program 5 K13 ¦ Heat request K27 ¦ Refrig. request K28 ¦ Air dehumidif. K29 ¦ Diverting valve, cooling Y21				
6046	I	Function of input H2 Optg mode changeover HCs + DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HCP ¦ Error/alarm message ¦ Min flow temp setpoint ¦ Excess heat discharge ¦ Dewpoint monitor ¦ Flow temp. setpt increase, hygro ¦ Refrig request ¦ Heat request 10V ¦ Refrig. request 10V ¦ Pressure measurement 10V ¦ Rel. room humidity 10V ¦ Room temperature 10V	Optg mode changeover HCs+DHW			
6047	I	Contact type H2 NC ¦ NO	NO			-
6048	I	Function value, contact H2	70	8	130	°C
6049	I	Voltage value 1, H2	0	0	10	Volt
6050	I	Function value 1, H2	0	-100	500	-
6051	I	Voltage value 2, H2	10	0	10	Volt
6052	I	Function value 2, H2	70	-100	500	-
6100	F	Readjustm outside sensor	0	-3.0	3.0	°C
6110	F	Time constant building	15	0	50	h
6112	O	Gradient room model	60	0	300	Min/°C
6120	F	Frost protection for the plant Off ¦ On	Off			-
6128	F	Heat request below OT	– – –	– – – / -50	50	°C
6129	F	Heat request above OT	– – –	– – – / -50	50	°C
6135	F	Air dehumidifier Off ¦ On	Off			
6136	F	Air dehumidifier enable 24h/day ¦ Time progr. heating circuit ¦ Time program 5	24 h/day			
6137	F	Air dehumidifier r.h. ON	55	0	100	%
6138	F	Air dehumidifier r.h. SD	5	2	50	%
6140	O	Water pressure max	– – –	– – – / 0.0	10.0	bar
6141	O	Water pressure min	– – –	– – – / 0.0	10.0	bar
6142	O	Water pressure critical min	– – –	– – – / 0.0	10.0	bar
6150	O	Water pressure 2 max	– – –	– – – / 0.0	10.0	bar
6151	O	Water pressure 2 min	– – –	– – – / 0.0	10.0	bar
6152	O	Water press 2 critical min	– – –	– – – / 0.0	10.0	bar
6200	I	Save sensors No ¦ Yes	No			-
6204	O	Save parameters No ¦ Yes	No			
6205	F	Reset to default parameters No ¦ Yes	No			-
6215	I	Check-No. storage tank	-	0	199999	-

Operating line	User level	Function	Default value	Min	Max	Unit
6217	I	Check-No. heating circuits	-	0	199999	-
6220	F	Software version	-	0	99.9	-
6222	O	Device hours run	0	0	65535	h
LPB system						
6600	I	Device address	1	0	16	-
6601	F	Segment address	0	0	14	-
6604	F	Bus power supply function Off ¦ Automatically	Automatically			-
6605	F	Bus power supply state Off ¦ On	On			-
6610	O	Display system messages No ¦ Yes	Yes			
6612	O	Alarm delay	– – –	– – – / 2	60	min
6620	F	Action changeover functions Segment ¦ System	System			-
6621	F	Summer changeover Locally¦ Centrally	Locally			-
6623	F	Optg mode changeover Locally¦ Centrally	Centrally			
6625	F	Assignment of DHW heating Local HCs ¦ All HCs in segment ¦ All HCs in system	All HCs in system			-
6627	F	Refrigeration demand Locally¦ Centrally	Locally			
6640	I	Clock mode Autonomously ¦ Slave without remote ¦ Slave with remote setting ¦ Master	Autonomously			-
6650	F	Outside temp source	0	0	239	-
Errors						
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
6746	F	Flow temp alarm, cooling 1	– – –	– – – / 10	240	min
6800	F	History 1	-			
	F	Error code 1	-	0	255	-
6802	F	History 2	-			
	F	Error code 2	-	0	255	-
6804	F	History 3	-			
	F	Error code 3	-	0	255	-
6806	F	History 4	-			
	F	Error code 4	-	0	255	-
6808	F	History 5	-			
	F	Error code 5	-	0	255	-
6810	F	History 6	-			
	F	Error code 6	-	0	255	-

Operating line	User level	Function	Default value	Min	Max	Unit
6812	F	History 7	-			
	F	Error code 7	-	0	255	-
6814	F	History 8	-			
	F	Error code 8	-	0	255	-
6816	F	History 9	-			
	F	Error code 9	-	0	255	-
6818	F	History 10	-			
	F	Error code 10	-	0	255	-
6820	O	Reset history No ¦ Yes	No			-
Maintenance / special operation						
7044	F	Maintenance interval	– – –	– – – / 1	240	Months
7045	F	Time since maintenance	0	0	240	Months
7140	E	manual operation Off ¦ On	Off			-
7150	I	Simulation outside temperature	-	-50.0	50	°C
7170	I	Telephone customer service				-
Input / output test						
7700	I	Relay test No test ¦ Everything off ¦ ¦ DHW pump Q3 ¦ Heating circuit pump Q2 ¦ Heat circ mix valve op Y1 ¦ Heat circ mix valve cl Y2 ¦ Relay output QX21 module 1 ¦ Relay output QX22 module 1 ¦ Relay output QX23 module 1 ¦ Relay output QX21 module 2 ¦ Relay output QX22 module 2 ¦ Relay output QX23 module 2	No test			-
7730	I	Outside temp B9	-	-50.0	50	°C
7732	I	Flow temp B1	-	0.0	140	°C
7841	I	Contact state H1 Open ¦ Closed	-			-
7845	I	Voltage signal H2	0	0	10	°C
7846	I	Contact state H2 Open ¦ Closed	-			-
State						
8000	I	State of heating circuit 1	-			-
8001	I	State of heating circuit 2	-			-
8002	I	State heating circuit P	-			-
8003	I	State of DHW	-			-
8004	I	State of cooling circuit	-			-
Diagnostics, consumers						
8700	I	Outside temperature (OT)	-	-50.0	50.0	°C
8703	I	Outside temp attenuated	-	-50.0	50.0	°C
8704	I	Outside temperature composite	-	-50.0	50.0	°C

Operating line	User level	Function	Default value	Min	Max	Unit
8720	I	Relative room humidity	-	0	100	%
8721	I	Outside temperature (OT)	-	0	50.0	°C
8722	I	Dewpoint temperature 1	-	0	50.0	°C
8730	I	Heating circuit pump Q2 Off ¦ On	-			-
8731	I	Heating 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
8742	O	Room temp 1 model	-	0.0	50.0	°C
8743	I	Flow temperature 1	-	0.0	140.0	°C
8744	I	Flow temp setpoint 1	-	0.0	140.0	°C
8751	I	Cooling circuit pump 1 Off ¦ On	-			
8752	I	Cooling circuit mixing valve 1 Open Off ¦ On	-			
8753	I	Cooling circuit mixing valve 1 Closed Off ¦ On	-			
8754	I	Cooling diverting valve 1 Off ¦ On	-			
8756	I	Flow temperature, cooling 1	-	0	140	°C
8757	I	Flow temperature, cooling 1	-	0	140	°C
8760	I	Heating circuit pump 2 Off ¦ On	-			-
8761	I	Heat circ mix valve 2 open Off ¦ On	-			-
8762	I	Heat circ mix valve 2 close Off ¦ On	-			-
8770	I	Room temp 2	-	0.0	50	°C
8771	I	Room setpoint 2	-	4.0	35	°C
8772	O	Room temp 2 model	-	0.0	50	°C
8773	I	Flow temperature 2	-	0.0	140	°C
8774	I	Flow temp setpoint 2	-	0.0	140	°C
8800	I	Room temp P	-	0.0	50	°C
8801	I	Room setpoint P	-	4.0	35	°C
8802	O	Room temp P model	-	0.0	50	°C
8803	I	Flow temp setpoint P	-	0.0	140	°C
8830	I	DHW temp 1	-	0.0	140	°C
8831	I	DHW temp setpoint	-	8.0	80	°C
8930	I	Primary controller temp	-	0.0	140.0	°C
8931	I	Primary controller setpoint	-	0.0	140.0	°C
9000	I	Flow temperature setpoint H1	-	5.0	130.0	°C
9001	I	Flow temp setpoint H2	-	5.0	130.0	°C

Operating line	User level	Function	Default value	Min	Max	Unit
9005	I	Water pressure H1	-	0.0	10.0	bar
9006	I	Water pressure H2	-	0.0	10.0	bar
9050	I	Relay output QX21 module 1 Off ¦ On	-			-
9051	I	Relay output QX22 module 1 Off ¦ On	-			-
9052	I	Relay output QX23 module 1 Off ¦ On	-			-
9053	I	Relay output QX21 module 2 Off ¦ On	-			-
9054	I	Relay output QX22 module 2 Off ¦ On	-			-
9055	I	Relay output QX23 module 2 Off ¦ On	-			-

5 The settings in detail

5.1 Time of day and date

The controller has a yearly clock with time of day, weekday and date. To ensure the controller's functionality, both the time of day and the 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).

5.2 Operator unit

Operation and display

Line no.	*Operating line*
20	**Language**
22	**Info** Temporary Permanently
26	**Operation lock**
27	**Programming lock**
28	**Direct adjustment** Automatic storage Save with acknowledgment

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 presence button.

Programming lock

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

- Temporary deactivation of the 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

Line no.	*Operating line*
40	**Used as** Room unit 1 Room unit 2 Room unit P Operator unit 1 Operator unit 2 Operator unit P Service unit

This operating line is used to select the use of the operator unit. Depending on use, additional settings will then be required under “Heating circuit assignment“. When using several operator units, it is thus possible to match individual units to specific requirements.

⚠
- In the case several operator units are used, each application may only be used once.
- The AVS37.294 operator unit is supplied as operator unit 1 (operating line 40) acting on all heating circuits (operating line 42) and can only be readjusted on operating lines 44, 46 and 48

Depending on the selected use of the unit (operating line 40), the following settings (marked with X) can be made when assigning the heating circuit.

Operating line					
40	42	44	46	48	54
Room unit 1	Heating circuit 1				X
	Heating circuits 1 and 2	X		X	X
	Heating circuits 1 and P		X	X	X
	All heating circuits	X	X	X	X
Room unit 2					X
Room unit P					X
Operator unit 1	Heating circuit 1				
	Heating circuits 1 and 2	X		X	
	Heating circuits 1 and P		X	X	
	All heating circuits	X	X	X	
Operator unit 2					
Operator unit P					
Service unit					

Room unit 1
The operator unit supports the heating circuits released on operating line 42 “Assignment room unit 1” and activated in the basic unit.

Room unit 2
The operator unit only supports heating circuit 2.

Operator unit / service unit
The operator unit supports the heating circuits activated in the basic unit.

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

Heating circuit assignment

Line no.	*Operating line*
42	**Assignment device 1** Heating circuit 1 Heating circuits 1 and 2 Heating circuits 1 and P All heating circuits
44	**Operation HC2** Commonly with HC1 Independently
46	**Operation HCP** Commonly with HC1 Independently
48	**Action of presence button** None. Heating circuit 1 Heating circuit 2 Jointly

Assignment device 1

As room unit 1 (setting 40), the action of the relevant operator unit 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 commonly 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 commonly on heating circuits 1 and 2.

Independently

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

Action presence button

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

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

Room sensor

Line no.	*Operating line*
54	**Readjustment room sensor**

The temperature display can be readjusted.

Device data

Line no.	*Operating line*
70	**Software version**

The display shows the current version of the room unit.

5.3 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*	*5*	
500	**520**	**540**	**560**	**600**	**Preselection** Mo - Su Mo - Fr Sa - Su Mo - Su
501	**521**	**541**	**561**	**601**	**1st phase on**
502	**522**	**542**	**562**	**602**	**1st phase off**
503	**523**	**543**	**563**	**603**	**2nd phase on**
504	**524**	**544**	**564**	**604**	**2nd phase off**
505	**525**	**545**	**565**	**605**	**3rd phase on**
506	**526**	**546**	**566**	**606**	**3rd phase off**

Standard program

Line no.	*Operating line*
516, 536, 556, 576, 616	**Default values**

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

In that case, individual settings will be lost!

5.4 Holidays

Line no.			*Operating line*
HC1	*HC2*	*HCP*	
641	**651**	**661**	**Preselection**
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" mode

5.5 Heating circuits

For 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 mode Automatically 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).

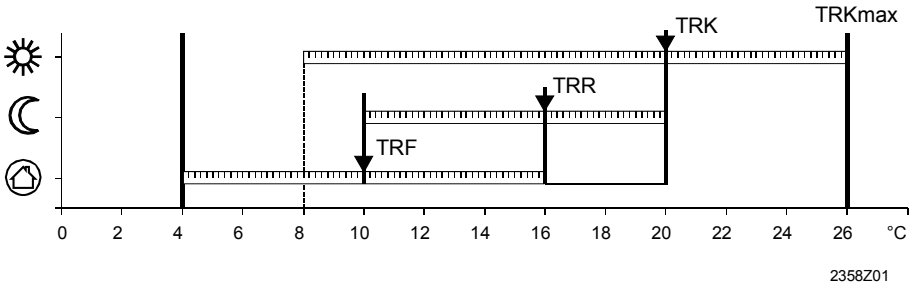
This setting is used to switch between the different operating modes. The functionality corresponds to operating mode selection with the operating mode button. For details, refer to section ”Operation“.

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.



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 diagram.

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.

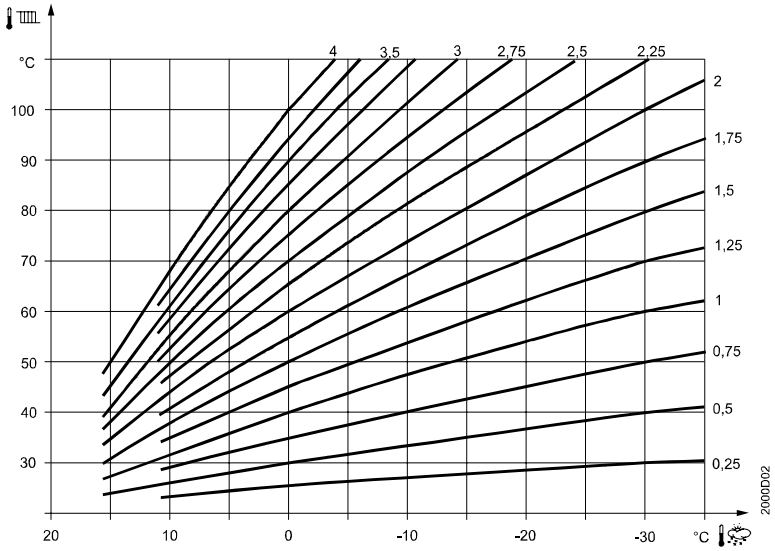
Heating curve slope

As the heating curve slope is raised, the flow temperature increases the quicker the lower the outside temperature or, in other words, if the room temperature is not correct at low outside temperatures but correct 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.

The programmed heating curve is based on a room setpoint of 20°C. If the room setpoint is adjusted, the heating curve automatically adapts to the new value.



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 the 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 heating curve slope and parallel displacement is not required. It can only be switched on or off.

To assure 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 room sensor) (if such valves are present, 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

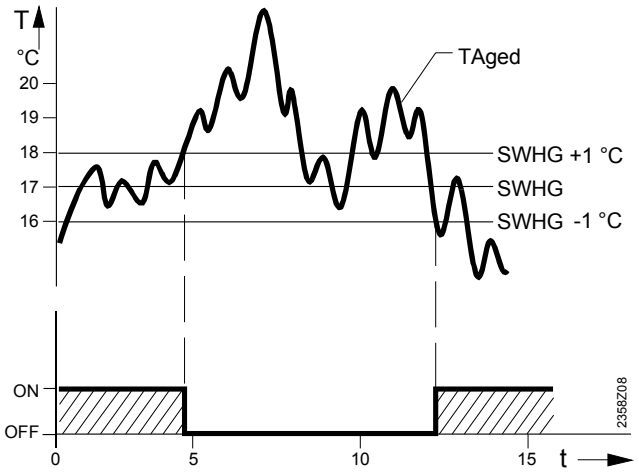
The summer / winter heating limit is used to switch the heating on and off in the course of the year, depending on temperature conditions. In Automatic mode, switching on / off takes place automatically, so there is no need for the user to do this manually. By changing the setting, the respective periods 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 shows ECO
- To incorporate the building's thermal dynamics, the outside temperature is attenuated

Example:



SWHG Summer/winter heating limit
TAged The 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 spring and autumn to respond to short-term 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.*

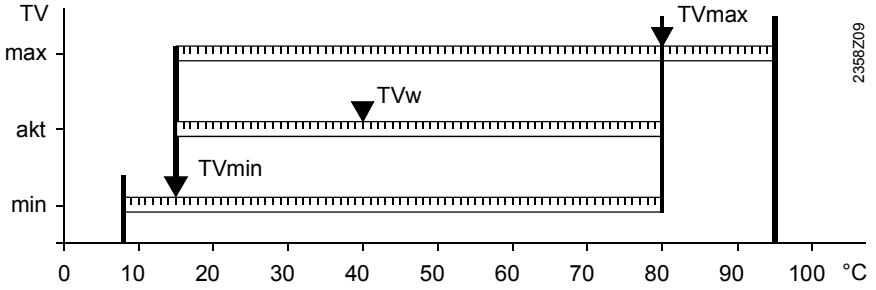
- The function is not active in operating mode ”Continuously Comfort temperature“

- The display shows ECO
- To give consideration to the building's thermal dynamics, the outside temperature will be attenuated

Flow temperature setpoint limits

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 the 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 minimum

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.

Weather compensation only

The flow temperature is calculated via the heating curve, depending on the compsite 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

To activate 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 present, they must be set to their fully open position).

Room compensation only

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 of the room temperature causes an immediate drop of the following temperature.

To activate the function, following must be considered:

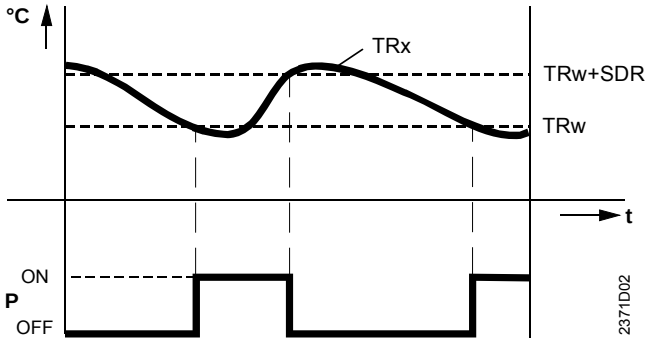
- A room sensor must be connected.
- “Room influence“ must be set to 100 %.
- There should be no thermostatic radiator valves in the reference room (mounting location of the room sensor). (if such valves are present, they must be set to their fully open position).

Room temp limitation

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

With the "Room temperature limitation" function, the heating circuit pump can be disabled if the room temperature exceeds the current room temperature setpoint by more than the preset differential.
The heating circuit pump is re-enabled when the room temperature returns to a level below the current room temperature setpoint.
While the "Room temperature limitation" function is active, no demand signals are sent to the heat source.

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



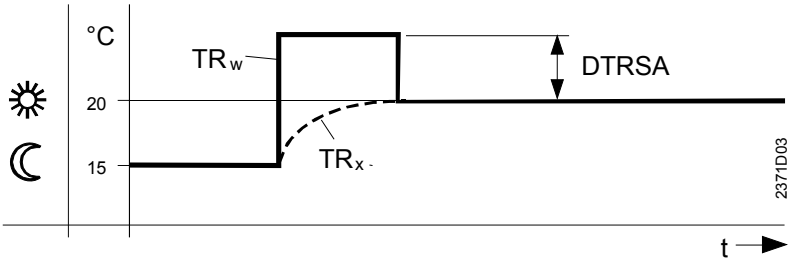
TRx	Actual value room temp
TRw	Room temperature setpoint
SDR	Room switching differential
P	Pump
t	Time

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 heat-up time. During boost heating, the room temperature setpoint is raised by the value set here. A higher setting leads to shorter heat- up times, a lower setting to longer heat-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 valve 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 and Reduced setpoint =18°C)

Outside temperature composite:	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 a room sensor

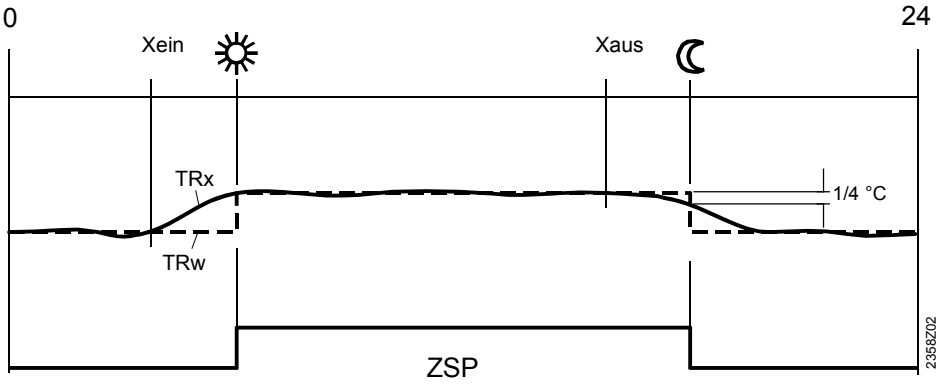
Optimum start / stop control

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 is reached at the relevant switching time.

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

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

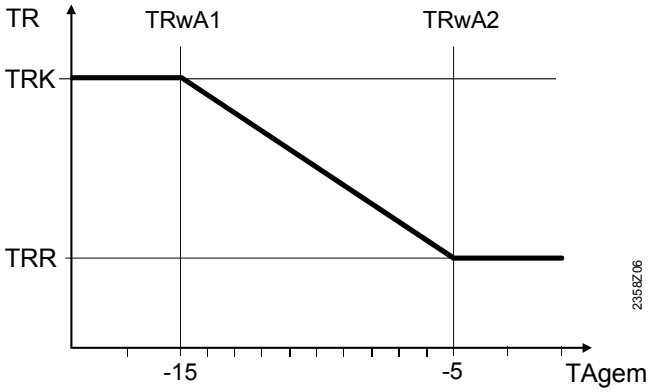


Xein — Switch-on time shifted forward in time
Xaus — Switch-off time shifted forward in time
ZSP — Time switch program
TRx — Actual value room temp
TRw — Room temperature setpoint

Raising the 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 with **only** little spare capacity (e.g. low-energy houses). In such cases, the heating up time would be too long at low outside temperatures. 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 Reduced setp increase start
TRwA2 Reduced setp increase end
TRK Comfort cooling setpoint
TRR Reduced room temperature setpoint
TAgem Composite outside temperature

Overtemp prot pump 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 demanded by the heating curve, due to requests from other heat consumers (mixing heating circuit, DHW charging, external heat demand), or a parameterized minimum boiler temperature. As a result of this too high flow temperature, the pump heating circuit would assume excessive temperatures.
The 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**

Actuator type — The selection of the type of actuator determines the control behavior for 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 a 3-position actuator.

Mixing valve boost — To ensure proper mixing valve flow temperature control, the flow temperature must be higher than the demanded setpoint of the mixing valve flow temperature. The value set here is added to the request.

Actuator running time — Setting the running time of the actuator used with the mixing valve.

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**
		1457	**Floor curing days complete**

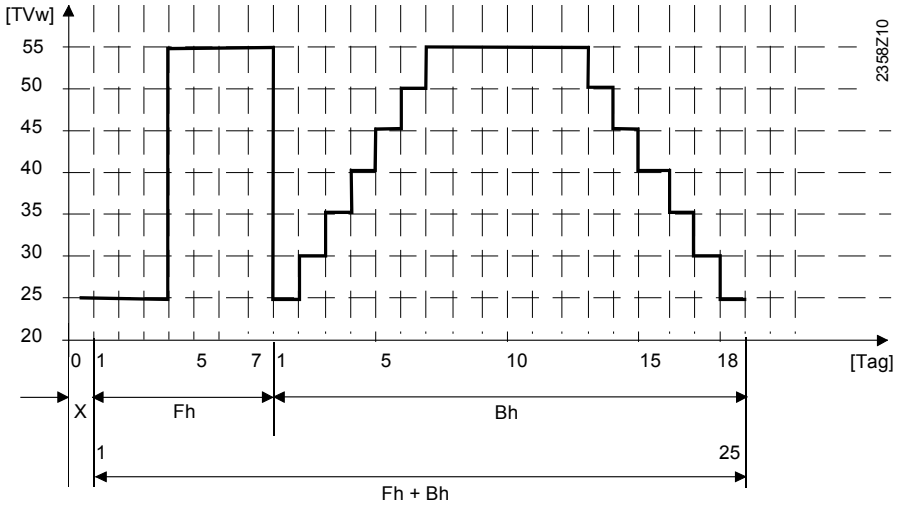
RVS43.. only

The floor curing function ensures controlled drying of the floor. It controls the flow temperature according to a 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 passed 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 by choosing **Off**.
- Maximum limitation of the flow temperature remains active.



X Start day
Fh Functional heating
Bh Floor curing heating

Floor curing setp manual

The flow temperature setpoint for the "Manual" floor-curing function can be set separately for each heating circuit.

Floor curing setp current

Shows the current flow temperature setpoint of the floor-curing process in progress

Floor curing day current

Shows the current day of the floor-curing process in progress.

Excess heat draw

Line no.				Operating line
HC1	HC2	HC3P		
861	**1161**	**1461**		**Excess heat draw** Off Heating mode Always

Excess heat draw can be triggered by the following functions:
- Inputs H1, H2, H3 or EX2
- Storage tank recooling
- Solid fuel boiler excess heat draw

When dissipation of excess heat is activated, it can be drawn by space heating. This can be adjusted separately for each heating circuit.

Buffer storage tank / primary controller

Line no.			Operating line
HC1	HC2	HCP	
870	**1170**	**1470**	**With buffer storage tank**
872	**1172**	**1472**	**With primary controller / system pump**

With buffer storage tank

If there is a buffer storage tank, specify whether the heating circuit can draw heat from it.
When using alternative heat sources, the buffer storage tank temperature is used as a control criterion for the release of additional heat sources.

With primary controller / system pump

Specify whether the heating circuit receives its heat via the primary controller or with the help of the system pump (depending on the type of plant).

Remote control

Line no.			Operating line
HC1	HC2	HCP	
900	**1200**	**1500**	**Optg mode changeover** None ¦ Protection ¦ Reduced ¦ Comfort ¦ Automatic

In the case of external changeover via inputs H1 / H2 / H3, the operating mode to be used can be selected.

5.6 Cooling circuit

For the operation of a cooling circuit, the cooling function must be enabled (operating line 901) and released in accordance with a time program (operating line 907). The system automatically operates in cooling mode when the room temperature rises above the Comfort cooling setpoint (operating line 902).
Cooling mode is interrupted if there is a heating demand from heating/cooling circuit 1, or if a heating demand signal is received from the DHW circuit or another heating circuit.

Operating mode

Line no.	*Operating line*
901	**Operating mode** Off ¦ Automatic

This line is used to set the operating mode for cooling.

This setting is the same as the selection of cooling mode with the cooling button on a room unit.

Off
The cooling function is switched off.

Automatic
Automatic mode controlled by the time program, presence button or holiday program, subject to the enable conditions set via operating line 907.

If the cooling enable signal is set to 24h/day via operating line 907, then the cooling button can be used as an on/off button.

Setpoints

Line no.	*Operating line*
902	**Comfort cooling setpoint**

Room setpoint in cooling mode.
Summer compensation, operating line 920 can raise the setpoint as a function of the outside temperature.

Release

Line no.	*Operating line*
907	**Release** 24h/day ¦ Time programs HCs ¦ Time program 5

The parameter "Release" determines the time program in accordance with which cooling is enabled.

24 h/day
Cooling is released continuously (24 hours a day)
Time programs, HCs
Cooling is released in accordance with the heating circuit time program
Time program 5
Cooling is released in accordance with time program 5.

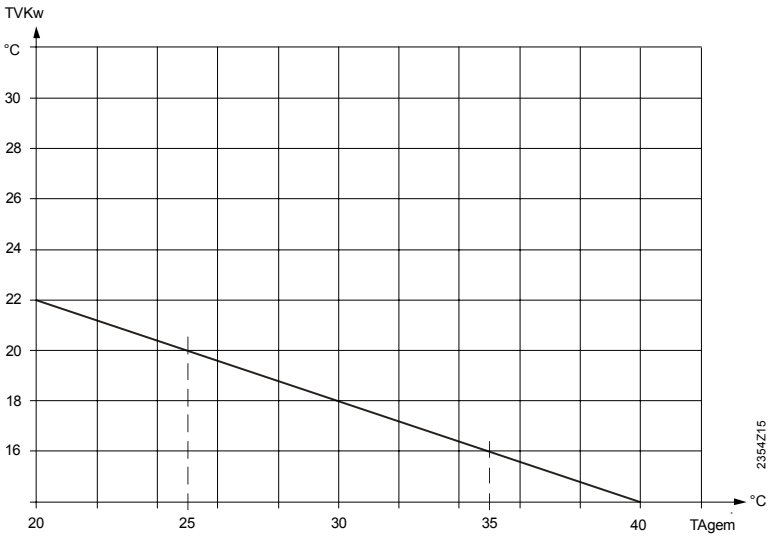
Cooling curve

Line no.	*Operating line*
908	**Flow setpoint at outside temperature of 25°C**
909	**Flow setpoint at outside temperature of 35°C**

Flow temperature setpoint

The controller determines the required flow temperature at a specific composite outside temperature. The cooling curve is determined by defining two fixed points (the flow temperature setpoint at 25°C and 35°C).

The programmed cooling curve is based on a room setpoint of 25°C. If the room setpoint is adjusted, the cooling curve automatically adapts to the new value.



TVKw Flow temperature setpoint, cooling
TAgem Composite outside temperature

ECO

Line no.	*Operating line*
912	**Cooling limit at OT (outside temperature)**
913	**Locking period at end of heating**

Cooling limit at TA (outside temperature)

If the composite outside temperature rises above the cooling limit temperature, cooling is enabled; cooling is disabled when the outside temperature drops to at least 0.5°C below the cooling limit temperature.

Locking period at end of heating

To avoid too rapid a change to cooling at the end of the heating phase, the cooling function is disabled for the period which can be set here. This "locking period" begins when there is no heating demand from heating circuit 1.

The locking period is ignored if the cooling function is enabled via the operating mode button.

Summer compensation

Line no.	*Operating line*
918	**Start of summer compensation at OT**
919	**End of summer compensation at OT**
920	**Summer compensation setpoint increase**

In summer, the cooling comfort setpoint (902) is shifted upwards as the outside temperature increases. This saves cooling energy, and prevents too great a differential between the room and outside air temperature.

Start of summer compensation at OT

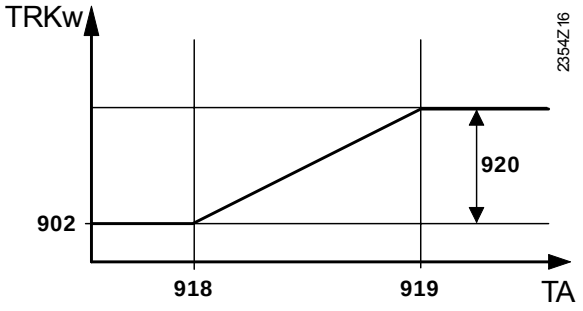
Summer compensation starts to take effect at the outside temperature set here. If the outside temperature continues to rise, the comfort setpoint is raised in parallel.

End of summer compensation at OT

Summer compensation takes full effect at this outside temperature (920). The comfort setpoint is not affected by any further increase in the outdoor temperature.

Summer compensation setpoint increase

This setting determines the maximum permissible increase in the comfort setpoint.



TRKw Cooling setpoint
TA Outside temperature (OT)

Flow temperature setpoint limits

Line no.	*Operating line*
923	**Min. flow setpoint at OT 25°C**
924	**Min. flow setpoint at OT 35°C**

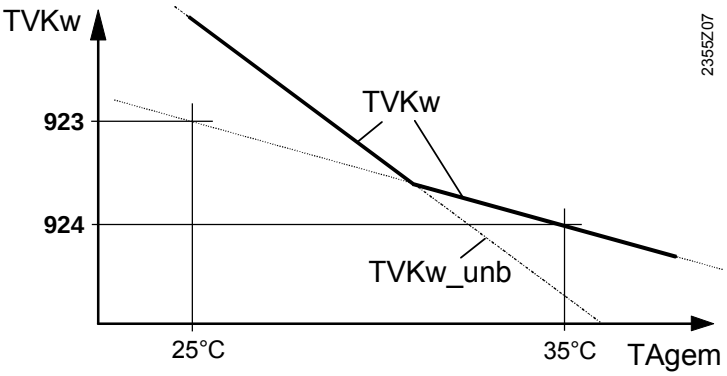
A low limit can be defined for the cooling flow temperature.
The limit curve is determined by defining two fixed points.

There is also a low limit for the resulting flow setpoint, which must not fall below 5 °C.

Min. flow setpoint

This defines the lowest permissible flow temperature at a composite outside temperature of 25°C/25°C.

⚠ If there is no valid outside air temperature available, the controller uses the value "Flow setpoint min TA = 35°C"



TVKw Flow temperature setpoint for cooling (with low limit control)
TVKw_unb Flow temperature setpoint for cooling (without low limit control)
TAgem Composite outside temperature

Room influence

Line no.	*Operating line*
928	**Room influence**

Compensation variants

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

Setting	*Type of compensation*
– – – %	Weather compensation only *
1…99 %	Weather compensation with room influence
100 %	Room compensation only

* Outside sensor required.

Weather compensation only

The flow temperature is calculated via the cooling curve as a function of the composite outside temperature.
This type of compensation requires correct adjustment of the heating curve, since in this case, the control does not take account of the room temperature.

Weather compensation with room influence

The deviation of the actual room temperature from the setpoint is measured and taken into account when controlling the temperature. In this way, account is taken of room temperature deviations, to facilitate more accurate room temperature control. The effect of the 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

To activate the function, following must be considered:
- A room sensor must be connected.
- The ”Room influence“ setting must be selected between 1 and 99
- There should be no controlled 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 compensation only

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 of the room temperature causes an immediate drop of the following temperature.

To activate the function, following must be considered:
- A room sensor must be connected.
- “Room influence“ must be set to 100 %.
- There should be no controlled 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*
932	**Room temp limitation**

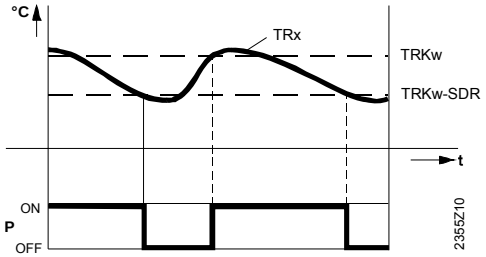
The room temperature limitation function makes it possible to disable the cooling circuit pump if the room temperature falls by more than the programmed offset from the effective room setpoint (with summer compensation, operating line 920).

The cooling circuit pump is activated again as soon as the room temperature returns to a level above the current room temperature setpoint.

While the “Room temperature limitation“ function is active, no cooling request is sent to the heat source.

The function is deactivated in the following circumstances:

- No room temperature sensor
- "Room temp limitation" = ---
- "Room influence“ (928) = --- (weather compensation only)



TRx Actual value room temp

TRKw Room temp. setpoint cooling (with summer compensation)

SDR Room switching differential

P Pump

t Time

Mixing valve control

Line no.	*Operating line*
938	**Mixing valve cooling offset**
939	**Actuator type** 2-position ¦ 3-position
940	**Switching differential 2-pos**
941	**Actuator running time**
945	**Mixing valve in heating mode** Control ¦ Open

Mixing valve cooling offset

The refrigeration demand from the mixing valve circuit to the heat source is reduced by the value set here. The purpose of this reduction is to enable the mixing valve controller to compensate for the fluctuation in temperature caused by the heat source (2-point control action).

Actuator type

2-position
The controller drives the actuator with only 1 relay output. When the output delivers a signal, the valve opens. When there is no signal, the valve will close automatically.

3-position
The controller drives the actuator with 2 relay outputs. 1 of the outputs is used for opening the valve and 1 for closing the valve.

Switching differential 2-pos

For the 2-position actuator, the "2-position switching differential" must also be adapted. Three-position actuators are not affected by the switching differential.

Actuator running time

For the 3-position actuator, the running time of the mixing valve actuator can be adjusted. The actuator running time has no effect on two-position actuators.

Mixing valve in heating mode

Defines the position of the mixing valve (Y1/Y2) when heating mode is active.
This parameter has no effect in systems with hydraulically separate heating and cooling circuits.

Controls The valve is used for control in heating and cooling mode.

Open The valve is used for control in cooling mode and is open in heating mode.

Dewpoint monitoring

Line no.	*Operating line*
946	**Dewpt monitor locking time**
947	**Flow setpt increase hygro**
948	**Start flow increase at R.H.**
950	**Flow temp diff dewpoint**

Dewpt monitor locking time

When the connected dewpoint monitor detects the **formation of condensation** it closes the contact, thereby **deactivating the cooling**.
The "dewpoint monitor locking time" set here starts running as soon as the contact re-opens. Cooling can only start after expiry of this locking time.

⚠ The dewpoint monitor must be assigned to the H.. input as "dewpoint monitor".

Flow setpt increase hygro

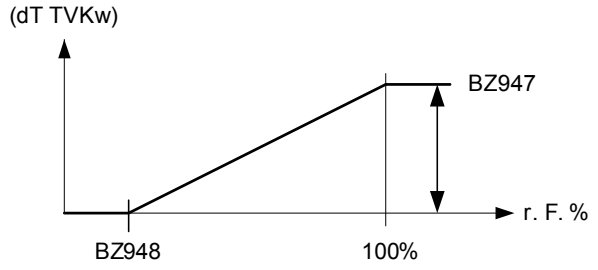
To prevent the formation of condensation due to excess indoor air humidity, a hygrostat can be used to implement a **fixed increase in the flow temperature**.
As soon as the air humidity rises above the value set on the hygrostat, the contact is closed and the flow temperature setpoint is increased by the amount programmed here.

⚠ The hygrostat must be assigned to the H.. input as "Flow setpt increase hygro".

Start flow increase at R.H.

To prevent the formation of condensation due to excess indoor air humidity, a 0…10 V humidity measurement can be used to implement a **proportional increase in the flow temperature**.
If the relative humidity in the room exceeds the value defined by "Start flow increase at R.H." the flow temperature setpoint is increased proportionally. The start of the increase (operating line 949) and the maximum increase (operating line 947) can be programmed.

⚠ The humidity sensor must be assigned to the H.. input as "Relative room humidity 10V".



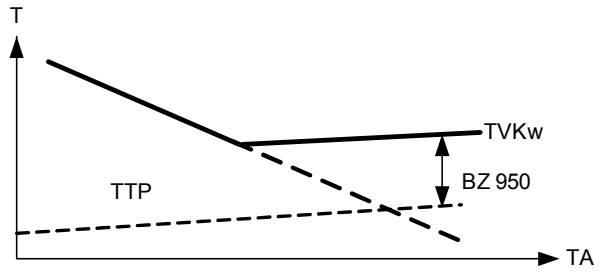
dT TVKw Flow setpoint increase
r.F. Relative humidity
BZ Operating line

Flow temp diff dewpoint

The dewpoint temperature is determined on the basis of the relative humidity of the indoor air and the associated room air temperature.
To prevent the formation of condensation on surfaces, a minimum limit is applied to the

flow temperature so that it remains above the dew point temperature by the value set here (operating line 950).
The function can be disabled with the setting – – –.

⚠ The humidity sensor must be assigned to an H.. input as "Relative room humidity 10V", and a room temperature sensor must also be available (assigned to the H.. input as "Room temperature 10V" or room unit).



TVKw	Flow temperature setpoint, cooling
TTP	Dew point temperature
OT	Outside temperature
BZ	Operating line

Buffer storage tank / primary controller

Line no.	*Operating line*
962	**With buffer storage tank** No ¦ Yes
963	**With primary controller / system pump** No ¦ Yes

With buffer storage tank — If there is a buffer storage tank, this setting defines whether the cooling circuit can draw cooling energy from it.

With primary controller / system pump — This determines whether the cooling circuit is supplied via the primary controller or with the help of the system pump (depending on the type of plant).

Remote control

Line no.	*Operating line*
969	**Changeover of operating mode** None ¦ Off ¦ Automatic

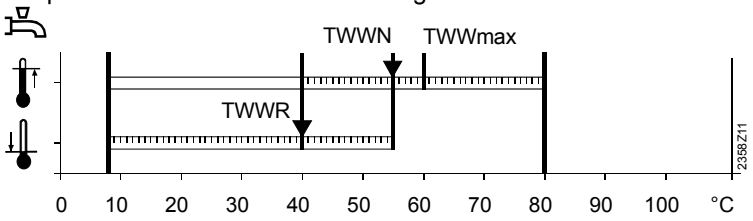
In the case of external changeover via inputs H1 / H2 / H3, the operating mode to be used can be selected.

5.7 DHW

Setpoints

Line no.	*Operating line*
1610	**Nominal setpoint**
1612	**reduced setpoint**

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



TWWR DHW reduced setpoint
TWWN DHW nominal setpoint
TWWmax DHW nominal setpoint maximum

Priority

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

When both space heating and DHW heating call for heat, the “DHW priority“ function ensures that while DHW charging is in progress, the capacity of the boiler 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 happen 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

Line no.	*Operating line*
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**

Legionella function

- Periodically

The legionella function is repeated according to the period of time set (operating line 1641). 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.

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

Circulating pump

Line no.	*Operating line*
1660	**Circulating pump release** Time program 3 / HCP DHW release Time program 4 / DHW Time program 5
1661	**Circulating pump cycling**
1663	**Circulation 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.

Circulation 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“.

5.8 H.. pumps

H.. pumps

Line no.	*Operating line*
2010	**H1 Excess heat draw**
2012	**H1 with buffer storage tank**
2014	**H1 prim contr/system pump**
2015	**H1 Refrig demand** 2-pipe system 4-pipe system
2035	**H2 Excess heat draw**
2037	**H2 with buffer storage tank**
2039	**H2 prim contr/system pump**
2040	**H2 Refrig demand** 2-pipe system 4-pipe system

Excess heat draw

Excess heat draw can be triggered by the following functions:
- Inputs H1, H2 or EX2
- Storage tank recooling
- Solid fuel boiler excess heat draw

When dissipation of excess heat is activated, it can be drawn by space heating. This can be adjusted separately for each heating circuit.

With buffer storage tank

If there is a buffer storage tank, this defines whether the H1/H2 circuit can draw heat from it.
When using alternative heat sources, the buffer storage tank temperature is used as a control criterion for the release of additional heat sources.

With primary controller / system pump

This defines whether the H1/H2 circuit receives its heat via the primary controller or with the help of the system pump (depending on the type of plant).

Refrigeration demand

2-pipe system
The cooling circuit with Hx and the heating circuits request cooling/heating from the same circuit.
4-pipe system
The cooling circuit with Hx and the heating circuits demand cooling/heating from separate circuits.

5.9 Primary controller / system pump

Primary controller / system pump

Line no.	*Operating line*
2150	**Primary controller / system pump** Before buffer st tank After buffer st tank

If the plant uses a buffer storage tank, it is to be set here whether, hydraulically, the primary controller or the system pump is installed upstream from the buffer storage tank.

5.10 Configuration

Heating circuits

Line no.				*Operating line*
HC1	*HC2*			
5710	**5715**			**Heating circuit 1, 2**

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

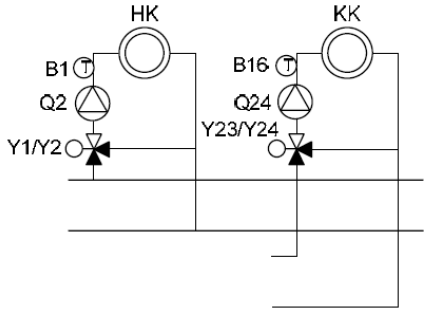
Line no.	*Operating line*
5711	Cooling circuit 1 Off 4-pipe system 2-pipe system
5712	Use of mixing valve 1 Heating Cooling Heating and cooling

Cooling circuit 1

Off

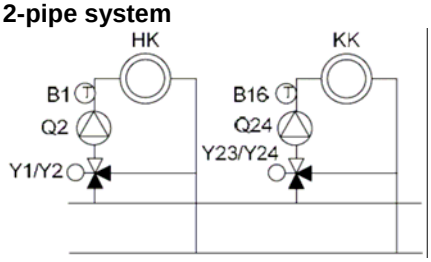
The cooling circuit is deactivated.

4-pipe system



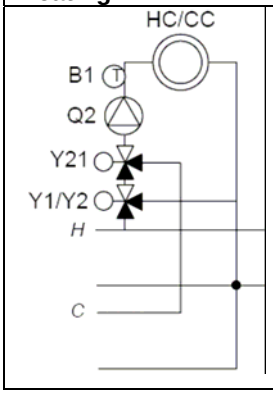
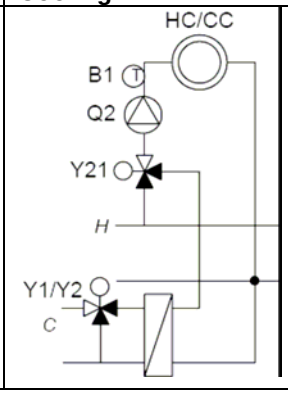
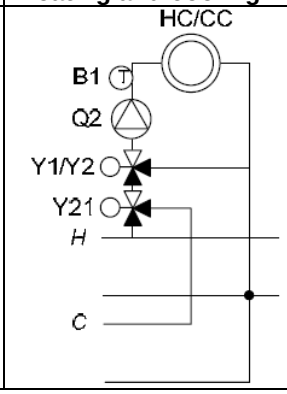
The cooling and heating circuits draw their cooling/heating energy from separate primary circuits.

2-pipe system



The cooling and heating circuits draw their cooling/heating energy from the same primary circuit.

Use of mixing valve 1

Heating	Cooling	Heating and cooling
		

The setting is required when a QX… relay output (configuration) is used as a diverting cooling valve Y21.

Input H1

Line no.	*Operating line*
5950	**Function of input H1** Optg mode changeover HCs+DHW Optg mode changeover HCs Optg mode changeover HC1 Optg mode changeover HC2 Optg mode changeover HCP Error / alarm message Min flow temp setpoint Excess heat discharge Dew point monitor Flow setpt increase hygro Refrigeration demand Heat request 10V Refrig demand 10V Pressure measurement 10V Relative room humidity 10V Room temperature 10V
5951	**Contact type input H1** NC N/O
5952	**Function value, contact type H1**
5953	**Voltage value 1, H1**
5954	**Function value 1, H1**
5955	**Voltage value 2, H1**
5956	**Function value 2, H1**

Function of input H1

Changeover of operating mode

- Heating circuit

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

- DHW

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

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. an external lamp or horn).

Minimum flow temperature setpoint TVHw

The adjusted minimum flow temperature setpoint will be activated via terminals H1/2 (e.g. an air heater function for a warm air curtain) closes its contact.

The setpoint must be set via operating line 5952.

Excess heat discharge

Active dissipation of excessive heat enables an external heat source to force consumers (heating circuit, DHW storage tank, Hx pump) to draw excessive heat by delivering a forced signal.
The parameter “Excessive heat draw“ can be used to determine for every consumer whether or not it should take account of the "forced" signal, and hence whether or not that consumer should participate in the dissipation of heat.

- Local effect

When using LPB device address 0 or >1, excessive heat dissipation only acts on the local consumers connected to the controller.

- Central effect (LPB)

When using LPB device address = 1, excessive heat dissipation also acts on the consumers connected to the other controllers in the same segment.
The distribution of excessive heat from segment 0 across other segments of the system is not possible.

Dewpoint monitor
The dewpoint monitor detects the formation of condensate. If the dewpoint monitor responds to condensation, the cooling switches off immediately.
The cooling is enabled when the monitor is no longer signalling condensation and when a definable "locking time" (operating line 946) has expired.

Flow setpoint increase, hygrostat
If the hygrostat responds, the flow setpoint is increased by the fixed value defined in "Flow setpt increase hygro" (operating line 947). As soon as the hygrostat reverts to normal, the flow setpoint returns to the "normal value".

Refrigeration demand
The refrigeration demand is transmitted to the refrigeration generating plant via a contact.

The setpoint must be set via operating line 5952.

Heating demand 10V
Heat generation receives heat requests in the form of voltage signals (DC 0...10V).
The linear characteristic curve is defined via two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

Refrig demand 10V
Refrigeration generation receives the refrigeration demand in the form of a voltage signal (DC 0...10 V).
The linear characteristic curve is defined via two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

Pressure measurement 10V
The voltage signal at input H… is converted to a pressure value in a linear manner.
The linear characteristic curve is defined via two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

Relative room humidity 10V
The voltage signal present at input Hx is converted into a linearized relative humidity value. This is used for the dewpoint calculation and dewpoint protection functions of the cooling circuit and for control of the dehumidifier.
The linear characteristic curve is defined via two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

Room temperature 10V

The voltage signal present at input Hx is converted into a linearized room temperature value. This, in conjunction with the indoor relative humidity, is used to calculate the dewpoint temperature in the cooling circuit.
If there is no room unit with a room sensor (BSB) connected for heating/cooling circuit 1, the room temperature measured at Hx is also used for room heating/cooling 1 (variant with compensation and room influence).
The linear characteristic curve is defined via two fixed points (voltage value 1 / function value 1 and voltage value 2 / function value 2).

Contact type, input H...

N/C

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

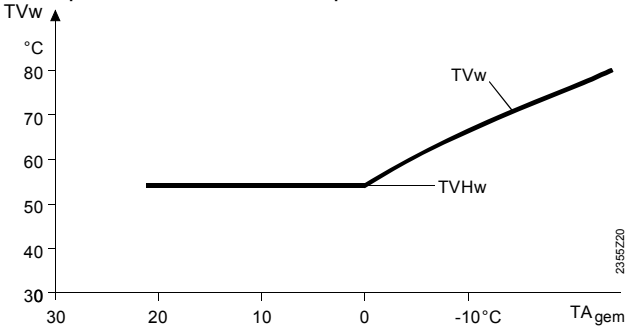
N/O

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

Function value, contact H..

The function “Min flow temp setpoint” on operating line 5950 or 6046 is activated via contact H... The generating plant is controlled constantly at the temperature level set here, either until contact H.. opens again or until a higher heating/cooling demand is delivered.

Example of minimum flow setpoint:

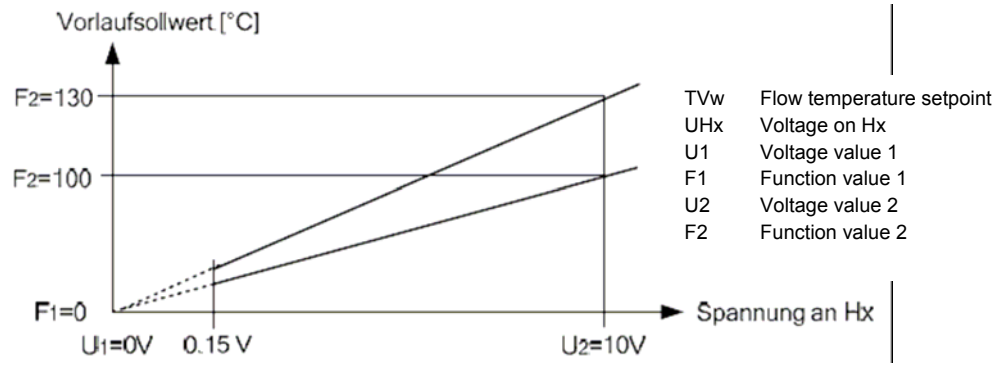


TVHw Minimum flow temperature setpoint
TVw Flow temperature setpoint

Voltage value 1
Function value 1
Voltage value 2
Function value 2

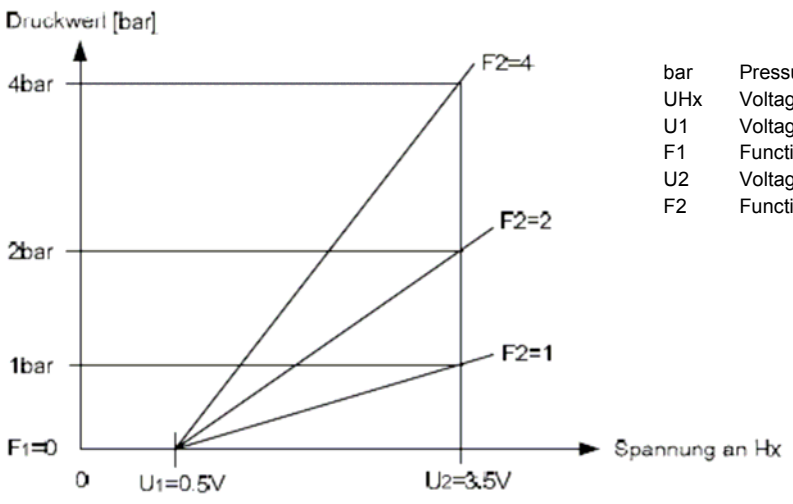
The linear characteristic is defined via two fixed points. The setting uses two parameter pairs for *Function value* and *Voltage value* (F1/U1 and F2/U2).

- Example for "Heating demand 10V" and "Cooling demand 10V"

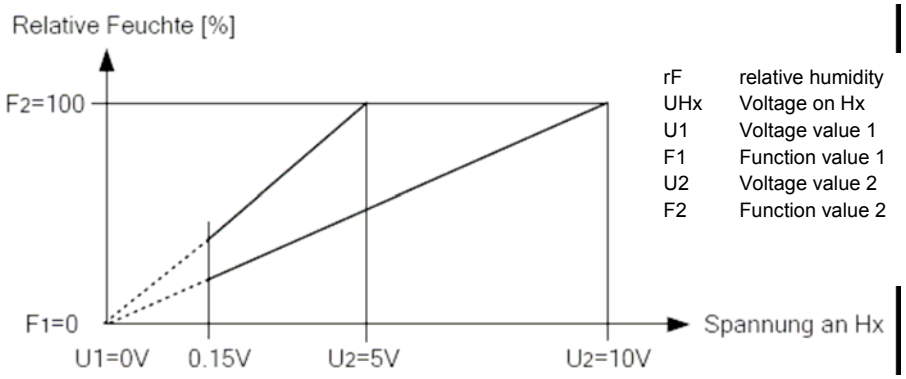


If the input signal drops below the limit value of 0.15 V, the heating demand is invalid and therefore has no effect.

- Example of pressure measurement 10V

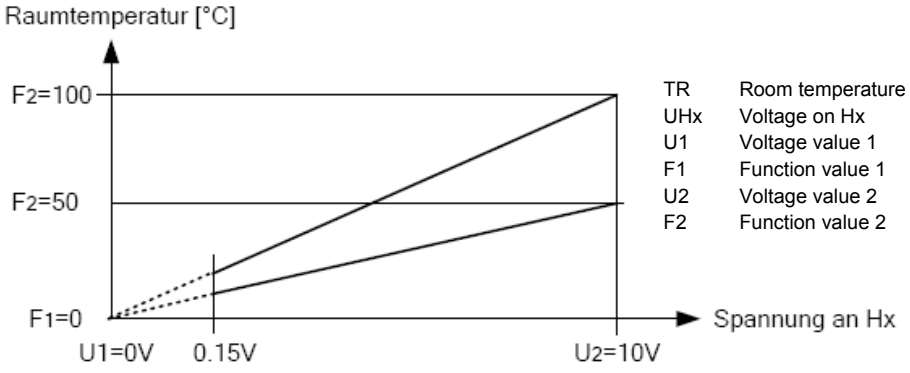


- Example of relative room humidity 10V



If the measured value is below 0.15V it is regarded as invalid and an error message is generated.

- Example of room temperature 10V



If the measured value is below 0.15V it is regarded as invalid and an error message is generated.

Mixing valve groups basic unit

Line no.	*Operating line*
6014	**Function mixing group 1** Heating circuit 1/2 Primary controller / system pump Cooling circuit 1 Heating circuit/cooling circuit 1

The mixing valve groups are assigned to the following connections:

Mixing valve group 1
Q2, Y1, Y2, B1

Heating circuit 1/2
For this application, the respective settings of operating page “Heating circuit 1/2” can be adapted.
Primary controller / system pump
For this application, the respective settings of operating page “Primary controller / system pump” can be adapted.
Cooling circuit 1
For this application, the respective settings of operating page “Cooling circuit 1” can be adapted.
Heating circuit/cooling circuit 1
For this application, the respective settings of operating page “Heating circuit 1 and cooling circuit 1” can be adapted.

Extension module

6020, 6021	**Function extension module 1, 2** No function Multifunctional Heating circuit 2 Primary controller / system pump Cooling circuit 1

Multifunctional
Functions that can be assigned to the multifunctional inputs / outputs appear on operating lines 6030, 6031, 6032 and 6040, 6041.
Heating circuit 2
For this application, the respective settings of operating page “Heating circuit 2” can be adapted.
Primary controller / system pump
For this application, the respective settings of operating page “Primary controller / system pump” can be adapted.
Cooling circuit 1
For this application, the respective settings of operating page “Cooling circuit 1” can be adapted.

Connections:

	QX21	QX22	QX23	BX21	BX22	H2
Multifunction	*	*	*	*	*	*
Heating circuit 2	Y5	Y6	Q6	B12	*	*
Primary controller	Y19	Y20	Q14	B15	*	*
Cooling circuit 1	Y23	Y24	Q24	B16	*	*

* Freely selectable in QX…/ BX...

QX extension module

Can be configured for freely selectable QX…/ BX...

Line no.	*Operating line*
6030 **6031** **6032**	**Relay output QX21, QX22, QX23** None 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 Heat circ pump HCP Q20 H2 pump Q18 System pump Q14 Heat request K27 Refrig demand K28 Dehumidifier K29 Diverting valve, cooling Y21

Refer to function description, operating line "Relay output QX1".

H2 extension module

Line no.	*Operating line*
6046	**Function input H2** Optg mode changeover HCs+DHW Optg mode changeover HCs Optg mode changeover HC1 Optg mode changeover HC2 Optg mode changeover HCP Error / alarm message Min flow temp setpoint Excess heat discharge Dew point monitor Flow setpt increase hygro Refrigeration demand Heat request 10V Refrig demand 10V Pressure measurement 10V Relative room humidity 10V Room temperature 10V
6047	**Contact type H2** NC N/O
6048	**Function value, contact H2**
6049	**Voltage value 1, H2**
6050	**Function value 1, H2**
6051	**Voltage value 2, H2**
6052	**Function value 2, H2**

The settings for input H2 on the extension module are the same as those of the H.. inputs on the basic unit. They are described under the operating line "Function of input H..".

Building and room model

Line no.	*Operating line*
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 when the outside temperature varies.

- Example:

> 20 hours
The room temperature responds *more slowly* to outside temperature variations.

10 - 20 hours
This setting can be used for most types of buildings.

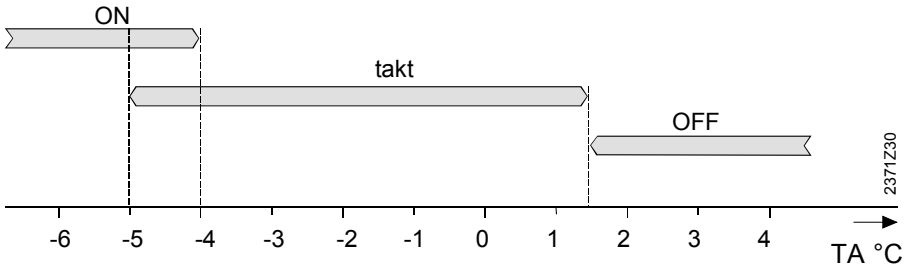
< 10 hours
The room temperature responds *more quickly* to outside temperature variations.

Frost protection for the plant

Line no.	*Operating line*
6120	**Frost protection plant**

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

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



External requirements

Line no.	*Operating line*
6128	**Heat request below OT**
6129	**Heat request above OT**

Heat request below OT

The heat source (K27 with QX… or output UX) is put into operation only if the outside temperature lies below / above the threshold.

Sensor state

Line no.	*Operating line*
6200	**Save sensors**

At midnight, the basic unit stores 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

Line no.	*Operating line*
6205	**Reset to default parameters**

All parameters can be reet 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 diagram

Line no.	*Operating line*
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.

Structure of control number

Every control number consists of 3 columns, each representing the application of a plant component. Every column shows a number with a maximum of 2 digits. Exception is the first column. If the first digit in the first column is a 0, the 0 will be hidden.

	1st column 2 digits	2nd column 2 digits	3rd column 2 digits
BZ6215		Buffer storage tank	DHW storage tank
BZ6217	Heating circuit P	Heating circuit 2	Heating circuit 1

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

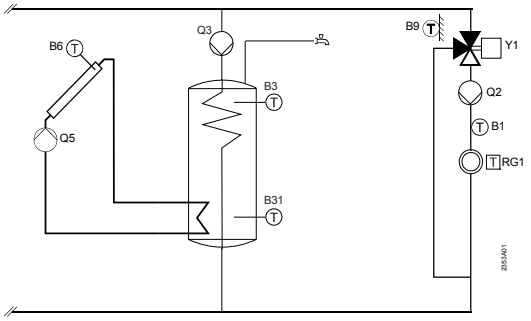
Check-No. heating circuit

Heating circuit P		Heating circuit 2		Heating circuit 1	
0	No heating circuit	00	No heating circuit	0	No heating circuit
2	2nd heating circuit pump	02	2nd heating circuit pump	1	Circulation via boiler pump
		03	Heating circuit pump, mixing valve	2	2nd heating circuit pump
				3	Heating circuit pump, mixing valve
				5..7	Heating/cooling, 2-pipe, common distribution
				8..10	Cooling only, 2-pipe
				12	Heating/cooling, 4-pipe, common distribution
				14..16	Heating/cooling, 4-pipe, common distribution
				20..27	Heating/cooling, 2-pipe, separate distribution
				30..38	Heating/cooling, 4-pipe, separate distribution
				40..42	Cooling only, 4-pipe

Example

Heat source Solar with collector sensor and 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				1	0	0
Check-No. storage tank						5
Check-No. heating circuit						3

Device data

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

5.11 LPB

Address / power supply

Line no.	*Operating line*
6600	**Device address**
6601	**Segment address**
6604	**Bus power supply function** Off Automatically
6605	**Bus power supply state** Off On

Device address and segment address

The controller LPB address is divided into 2 parts each consisting of two 2-digit numerals. Example:

14	.	16
Segment number		Device number

Bus power supply

The bus power supply enables the bus system to be powered directly by the individual controllers (no central bus power supply). The type of bus power supply can be selected.

- Off: No bus power supply via the controller.
- Automatically: The bus power supply (LPB) via the controller is automatically switched on and off depending on the requirements of the LPB.

Bus power supply state

The display shows whether the controller currently supplies power to the bus:

- Off: The bus power supply via controller is currently inactive.
- On: The bus power supply via controller is currently active. At the moment, the controller supplies some of the power required by the bus.

Central functions

Line no.	*Operating line*
6621	**Summer changeover** Local Centrally
6623	**Changeover of operating mode**
6624	**Manual source lock**
6625	**DHW assignment** Local HCs All heating circuits in the segment: All HCs in system
6627	**Refrigeration demand** Locally¡ Centrally

⚠ These settings are only relevant for device address 1.

Summer changeover

The scope of summer changeover is as follows:

- Local entry:
  Local action; the local heating circuit is switched based on operating lines 730, 1030 and 1330.
- Central entry:
  Central action; depending on the setting made on operating line “Action changeover functions“, “ either the heating circuits in the segment or those of the entire system are switched based on operating line 730.

Changeover of operating mode

The scope of the operating mode changeover via input H is as follows:

- Local entry:
  Local action; the local heating circuit is switched on and off.

- Central entry:
  Central action; depending on the setting made on operating line “Action changeover functions“, either the heating circuits in the segment or those of the entire system are switched based on operating line 730.

Manual source lock

The range of action of summer changeover is as follows:
- Local entry:
  Local action; the local source is locked.
- Entry segment:
  Central action; all sources of the cascade are locked.

Assignment of DHW heating

Assignment of DHW heating is required only if it is controlled by a heating circuit program (refer to operating lines 1620 and 5061).
Settings:
- Local heating circuits:
  DHW is only heated for the local heating circuit
- All heating circuits in the segment:
  DHW is heated for all heating circuits in the segment
- All heating circuits in the system:
  DHW is heated for all heating circuits in the system.

With all settings, controllers in holiday mode are also considered for DHW heating.

Refrigeration demand

"Refrigeration demand K28" sets the relay parameter on the QX.. for the output of the refrigeration demand.

Depending on the setting (local/central) the demand is transmitted by the local cooling circuit or all cooling circuits in the system. This option applies only to the device with device address 1.

Clock

6640	**Clock mode** Autonomously Slave without remote Slave with remote setting Master
6650	**Outside temp source**

Clock mode

This setting defines the impact of the system time on the controller's time setting. The impact is as follows :

- Autonomously: The time of day on the controller can be readjusted
  The controller's time of day is not matched to the system time
- Slave without remote adjustment: The time of day on the controller cannot be readjusted
  The controller's time of day is constantly and automatically matched to the system time
- Slave with remote adjustment: The time of day on the controller can be readjusted; at the same time, the system time is readjusted since the change is adopted from the master.
  The controller's time of day is still automatically and constantly matched to the system time
- Master: The time of day on the controller can be readjusted
  The time of day on the controller is used for the system. The system time will be readjusted

outside temperature source

Only 1 outside temperature sensor is required in the LPB plant. This sensor is connected to a freely selectable controller and delivers via LPB the signal to the controllers without sensor.
The first numeral to appear on the display is the segment no. followed by the device no.

5.12 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

Line no.	*Operating line*
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

Line no.	*Operating line*
6740	**Flow temp 1 alarm**
6741	**Flow temp 2 alarm**
6746	**Flow temp., Cooling 1 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

Line no.	*Operating line*
6800…6819	**History …**

The basic unit stores the last 10 faults in non-volatile memory. Any additional entry deletes the oldest in the memory. For each error entry, error code and time of occurrence is saved.

5.13 Maintenance/special mode

Maintenance functions

Line no.	*Operating line*
7044	**Maintenance interval**
7045	**Time since maintenance**

Manual operation

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).

Name		relay	State
Solar	Collector pump	Q5	Off
DHW	Charging pump	Q3	On
	Diverting valve	Q3	Off
	Mixing pump	Q32	Off
	Intermediate circuit pump	Q33	On
	Mixing valve opening / closing	Y31/Y32	Off
	Circulating pump	Q4	On
Heating circuit 1...3	2nd heating circuit pump	Q2 Q6 Q20	On
	Heating circuit mixing valve opening / closing	Y1 / Y2 Y5 / Y6	Off
	Heating circuit pump 2nd speed	Q21 Q22 Q23	On
Cooling circuit 1	Cooling circuit pump	Q24	On
	Cooling circuit mixing valve opening / closing	Y23/Y24	Off
	Diverting valve for cooling	Y21	Off
Primary controller	System pump	Q14	On
	Mixing valve opening / closing	Y19/Y20	Off
Hx group	Pump H1	Q15	On
	Pump H2	Q18	On
	Pump H3	Q19	On
Auxiliary functions	Alarm output	K10	Off
	Time program 5	K13	Off
	Heat demand	K27	On
	Refrigeration demand	K28	Off
	Storage tank transfer pump	Q11	Off

Setpoint adjustment in 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 1 hour.

Telephone customer service

Line no.	*Operating line*
7170	**Telephone customer service**

Setting of phone number that appears on the info display.

5.14 Input / output test

Line no.	*Operating line*
7700…7999	

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 control thermostat (TR) remains activated. Other limits are deactivated.
Selector sensor values are updated within a maximum of 5 seconds.
The display is made with no measured value correction.

5.15 State

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

Messages

Line no.	*Operating line*
8000	**State of heating circuit 1**
8001	**State of heating circuit 2**
8002	**State heating circuit P**
8003	**State of DHW**

State heating circuit

End user (info level)	Commissioning, heating engineer	
Limit thermostat has cut out	Limit thermostat has cut out	3
Manual control active	Manual control active	4
Floor curing function active	Floor curing function active	102
	Overtemp protection active	56
	Restricted, boiler protection	103
	Restricted, DHW priority	104
	Restricted, buffer priority	105
Heating mode restricted		106
	Forced discharging buffer storage tank	107
	Forced discharging DHW	108
	Forced discharging heat source	109
	Forced heat release	110
	Overrun active	17
Forced heat release		110
	Opt start control + boost heating	111
	Optimum start control	112
	Boost heating	113
Heating mode Comfort	Heating mode Comfort	114
	Optimum stop control	115
Heating mode Reduced	Heating mode Reduced	116
	Frost protection room active	101
	Frost protection flow active	117
	Frost protection plant active	23
Frost protection active		24
Summer operation	Summer operation	118
	24-hour Eco active	119
	Setback Reduced	120
	Setback frost protection	121
	Room temp lim	122
Off	Off	25

Cooling

End user (info level)	*Commissioning, heating engineer*	
Dewpoint monitor active	Dewpoint monitor active	133
Manual control active	Manual control active	4
Fault.	Fault.	2
	Frost protection flow active	117
Frost protection active		24
	Locking period at end of heating	135
	Locked, energy source	205
	Locked, buffer	206
Cooling mode locked		146
	Flow setpt increase hygro	136
	Min. flow limit, dewpoint	177
	Min. flow limit, outside temp	178
Cooling mode, restricted		144
	Cooling mode, Comfort	150
	Overrun active	17
Cooling mode, Comfort		150
Protection mode, cooling	Protection mode, cooling	149
	Frost protection plant active	23
Frost protection active		24
Cooling limit OT active	Cooling limit OT active	134
	Off	25
	Room temp lim	122
	Flow limit reached	179
Off		25
Cooling mode off	Cooling mode off	138

State of DHW

End user (info level)	Commissioning, heating engineer	
Limit thermostat has cut out	Limit thermostat has cut out	3
Manual control active	Manual control active	4
Draw-off mode	Draw-off mode	199
	Recooling via collector	77
	Recooling via DHW/HCs	78
Recooling active		53
	Discharging protection active	79
	Charging time limitation active	80
	DHW charging locked	81
Charging lock active		82
	Forced, max stor tank temp	83
	Forced, max charging temp	84
	Forced, legionella setpoint	85
	Forced, nominal setpoint	86
Forced charging active		67
	Charging electric, leg setpoint	87
	Charging electric, nominal setpoint	88
	Charging electric, Red setpoint	89
	Charging electric, frost setpoint	90
	El imm heater released	91
Charging el im heater		66
	Push, leg setpoint	92
	Push, nominal setpoint	93
Push active		94
	Charging, leg setpoint	95
	Charging, nominal setpoint	96
	Charging, reduced setpoint	97
Charging active		69
Frost protection active	Frost protection active	24
Overrun active	Overrun active	17
Stand-by charging	Stand-by charging	201
	Charged, max stor temp	70
	Charged, max charg temp	71
	Forced, legio temp	98
	Charged, nominal temp	99
	Forced, Reduced temp	100
Charged		75
Off	Off	25
Ready	Ready	200

State of boiler

End user (info level)	*Commissioning, heating engineer*	
SLT has cut out	SLT has cut out	1
SLT test active	SLT test active	123
Fault.	Fault.	2
Limit thermostat has cut out	Limit thermostat has cut out	3
Manual control active	Manual control active	4
	Chimney sweep function, high-fire	5
	Chimney sweep function, low-fire	6
Chimney sweep function active		7
	Locked, manually	8
	Locked, solid fuel boiler	172
	Locked, automatically	9
	Locked, outside temperature	176
	Locked, Economy mode	198
Locked		10
	Minimum limitation	20
	Minimum limitation, low-fire	21
Minimum limitation active	Minimum limitation active	22
	Protective start-up	11
	Protective startup, low-fire	12
	Return limitation	13
	Return temperature limitation, low-fire	14
In operation		18

Charging buffer storage tank In operation for HC, DHW In partial load operation for HC, DHW Released for HC, DHW In operation for DHW In partial load operation for DHW Released for DHW In operation for heating circuit In partial load operation for HC Released for HC Overrun active	Charging buffer storage tank In operation for HC, DHW In partial load operation for HC, DHW Released for HC, DHW In operation for DHW In partial load operation for DHW Released for DHW In operation for heating circuit In partial load operation for HC Released for HC Overrun active	59 170 171 173 168 169 174 166 167 175 17
Released	Released Frost protection plant active	19 23
Frost protection active		24
Off	Off	25

State of solar

End user (info level)	*Commissioning, heating engineer*	
Manual control active	Manual control active	4
Fault.	Fault.	2
Frost protection collector active	Frost protection collector active	52
Recooling active	Recooling active	53
Max stor tank temp reached	Max stor tank temp reached	54
Evaporation protection active	Evaporation protection active	55
Overtemp protection active	Overtemp protection active	56
Max charg temp reached	Max charg temp reached	57
Charging DHW+buffer+swi pool	Charging DHW+buffer+swi pool	151
Charging DHW+buffer	Charging DHW+buffer	152
Charging DHW+swi pool	Charging DHW+swi pool	153
Ladung Puffer+Schwimmbad	Charging buffer+swimming pool	154
Charging DHW	Charging DHW	58
Charging buffer storage tank	Charging buffer storage tank	59
Charg swimm pool	Charg swimm pool Min charg temp not reached Temp diff insufficient	60 61 62
Radiation insufficient	Radiation insufficient	63

5.16 Diagnostics, consumers

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

Line no.	*Operating line*
8700...9099	

5.17 List of displays

Priorities are assigned to pending errors. From priority 6, alarm messages are delivered, which are used by remote supervision (OCI). In addition, the alarm relay will be set.

5.17.1 Error code

Error code	Description of error	Priority
0	No error	
10	Outside temperature sensor error	6
20	Boiler temperature 1 sensor error	9
25	Solid fuel boiler temperature (wood) sensor error	9
26	Common flow temperature sensor error	6
28	Flue gas temperature sensor error	6
30	Flow temperature 1 sensor error	6
31	Flow temperature 1 cooling, sensor error	6
32	Flow temperature 2 sensor error	6
38	Flow temperature primary controller sensor error	6
40	Return temperature 1 sensor error	6
46	Return temperature cascade sensor error	6
47	Common return temperature sensor error	6
50	DHW temperature 1 sensor error	9
52	DHW temperature 2 sensor error	9
54	DHW primary controller sensor error	6
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
70	Buffer storage tank temperature 1 sensor error	6
71	Buffer storage tank temperature 2 sensor error	6
72	Buffer storage tank temperature 3 sensor error	6
73	Collector temperature 1 sensor error	6
74	Collector temperature 2 sensor error	6
81	Short-circuit LPB	6
82	LPB address collision	3
83	BSB wire short-circuit	6
84	BSB address collision	3
85	BSB radio communication fault	6
98	Extension module 1 fault (common fault status message)	6
99	Extension module 2 fault (common fault status message)	6
100	2 clock time masters (LPB)	3
102	Clock time master without backup (LPB)	3
105	Maintenance message	5
109	Boiler temperature supervision	9
110	Lockout by SLT	9
117	Upper pressure limit (crossed)	6
118	Critical lower pressure limit (crossed)	6
121	Flow temperature 1 (HC1) supervision	6
122	Flow temperature 2 (HC2) supervision	6
126	DHW charging supervision	6
127	Legionella temperature not reached	6
131	Burner fault	9
146	Configuration error common message	3
171	Alarm contact 1 (H1) active	6
172	Alarm contact 2 (H2) active	6
173	Alarm contact 3 (EX2/230VAC) active	6
174	Alarm contact 4 (H3) active	6
176	Upper pressure limit 2 (crossed)	6
177	Critical lower pressure limit 2 (crossed)	6
178	Temperature limiter heating circuit 1	3
179	Temperature limiter heating circuit 2	3
207	Error, cooling circuit	6
217	Sensor error common message	6
217	Sensor error common message	6
218	Pressure supervision common message	6
241	Flow sensor, solar sensor error	6
242	Return sensor, solar sensor error	6
243	Swimming pool temperature sensor error	6

320	DHW charging temperature sensor error	6
321	Instantaneous DHW heater outlet temperature sensor error	6
322	Upper pressure limit 3 (crossed)	6
323	Critical lower pressure limit 3 (crossed)	6
324	BX same sensors	3
325	BX/extension module same sensors	3
326	BX/mixing valve group same sensors	3
327	Extension module same function	3
328	Mixing valve group same function	3
329	Extension module / mixing valve group same function	3
330	Sensor BX1 no function	3
331	Sensor BX2 no function	3
332	Sensor BX3 no function	3
333	Sensor BX4 no function	3
334	Sensor BX5 no function	3
335	Sensor BX21 no function	3
336	Sensor BX22 no function	3
337	Sensor BX1 no function	3
338	Sensor BX12 no function	3
339	Collector pump Q5 missing	3
340	Collector pump Q16 missing	3
341	Collector sensor B6 missing	3
342	Solar DHW sensor B31 missing	3
343	Solar integration missing	3
344	Solar controlling element buffer K8 missing	3
345	Solar controlling element swimming pool K18 missing	3
346	Solid fuel boiler pump Q10 missing	3
347	Solid fuel boiler comparison sensor missing	3
348	Solid fuel boiler address error	3
349	Buffer return valve Y15 missing	3
350	Buffer storage tank address error	3
351	Primary controller / system pump address error	3
352	Pressureless header address error	3
353	Cascade sensor B10 missing	3
357	Flow temperature cooling circuit 1 monitoring	6
366	Room temperature Hx sensor error	6
367	Relative room humidity Hx sensor error	6

5.17.2 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 (dropped below lower pressure limit 1)	9
18	Water pressure 2 heating circuit too low (dropped below lower pressure limit 2)	9
10	Replace battery of outside sensor	6
21	Maximum flue gas temperature exceeded	6
22	Water pressure 3 heating circuit too low (dropped below lower pressure limit 3)	9

5.17.3 Special operation code

Special operation code	Description
301	Manual operation
302	SLT test
303	Chimney sweep function
309	Simulation outside temperature
310	Alternative energy operation
314	Economy mode

CONTROLLER
CLIMA MIX (RVS46)

OEM MANUAL

6 The OEM settings in detail

6.1 Operator unit

Operation and display

Line no.	*Operating line*
21	**Display special operation** Off On
30	**Save basic settings** No Yes
31	**Activate basic settings** No Yes

Save basic settings

The setting data of all operating levels are copied from the controller to the memory of the operator unit. This means that previous data in the operator unit are overwritten.

Activate basic settings

With the exception of the data listed below, the setting data of all operating levels are transferred from the memory of the operator unit to the connected controller. Previous setting data in the controller are overwritten.

The following operating lines will not be overwritten:

Line no.	*Operating line*
6600	Device address
6601	Segment address
6222	Device hours run

The following data will not be overwritten either:
RF list, hours run / start counter, yield meter, maintenance meter, slave pointer, and error history.

6.2 Heating circuits

Mixing valve control

Line no.				*Operating line*
HC1	HC2	HC3P		
835	**1135**			**Mixing valve Xp**
836	**1136**			**Mixing valve Tn**

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve actuator is matched to the behavior of the plant (controlled system).

Xp influences the P-action of the controller.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve actuator is matched to the behavior of the plant (controlled system).

Tn influences the I-action of the controller.

6.3 Cooling circuit

Mixing valve control

Line no.	*Operating line*
942	**Mixing valve Xp**
943	**Mixing valve Tn**

Mixing valve Xp

By setting the right proportional band, the control action of the mixing valve actuator is matched to the behavior of the plant (controlled system).

Xp influences the P-action of the controller.

Mixing valve Tn

By setting the right integral action time, the control action of the mixing valve actuator is matched to the behavior of the plant (controlled system).

Tn influences the I-action of the controller.

6.4 DHW

Setpoints

Line no.	*Operating line*
1614	**Nominal setpoint max**

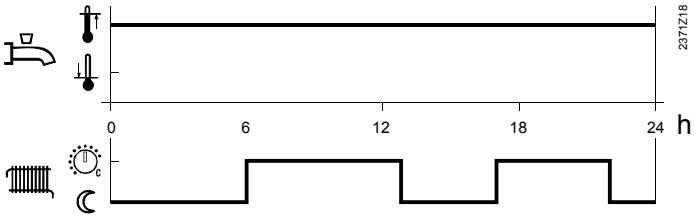
This operating line is used to limit the “Nominal setpoint“ (operating line 1610) at the top.

Release

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

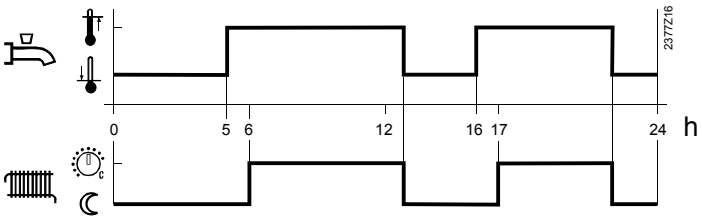
24 h/day
The DHW temperature is constantly maintained at the nominal DHW setpoint, independent of any time programs.

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.

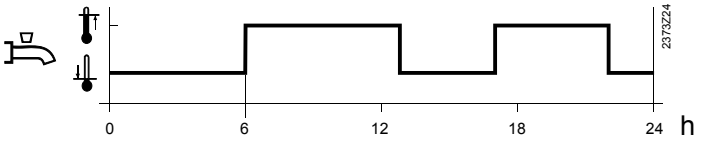
Example:



Time program 4/DHW

For DHW heating, time program 4 of the local controller is taken into consideration. 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:



6.5 Pumps H

Pump Hx

Line no.				*Operating line*
H1	H2	H3		
2008	**2033**	**2044**		**H1/H2/H3 DHW charging priority** Off ¦ On

H1/H2/H3 DHW charging priority

When using this setting, the connected pump H can be excluded from / included in the effect of DHW charging priority.
In the case of a ventilation system, for example, it is thus possible to ensure a constant supply of heat with no impact from the DHW charging priority.

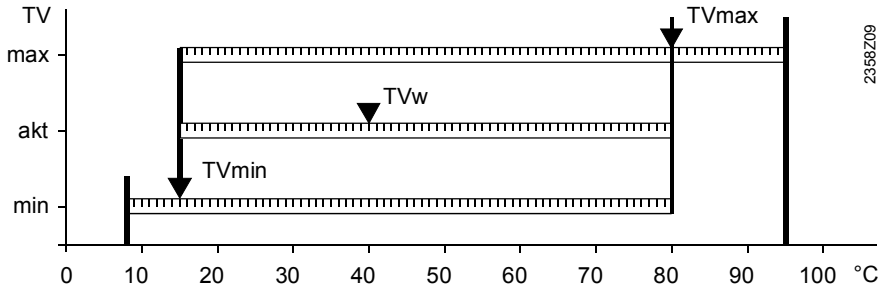
6.6 Primary controller / system pump

Flow temperature setpoint limits

Line no.	*Operating line*
2110	**Flow temp setpoint min**
2111	**Flow temp setpoint max**
2112	**Flow setpoint, cooling min**

Flow temp setpoint minimum/maximum

These limit values can be used to define a temperature range for the heating flow temperature setpoint.



TVw Current flow temperature setpoint
TVmax Flow temp setpoint maximum
Tvmin Flow temp setpoint minimum

Flow setpoint, cooling min

This limit value can be used to define the low limit for the flow temperature setpoint for cooling.

Mixing valve control

Line no.	*Operating line*
2130	**Mixing valve boost**
2131	**Mixing valve cooling offset**
2132	**Actuator type**
2133	**Switching differential 2-pos**
2134	**Actuator running time**
2135	**Mixing valve Xp**
2136	**Mixing valve Tn**

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.

Mixing valve cooling offset

To ensure proper mixing, the actual flow temperature of the cooling aggregate must be lower than the required mixing valve flow temperature setpoint. The cooling demand is reduced by the value set here.

6.7 Configuration

Building and room model

Line no.	*Operating line*
6112	**Gradient room model**

Gradient room model

The room model gradient gives the period of time in minutes room heating needs to raise the temperature by 1 °C. The settings made applies to all circuits.

The setting is used to calculate the fictive room temperature of rooms that have no room temperature sensor installed (operating lines 8742, 8772, and 8802).

Pressure acquisition H1, H2

Line no.				*Operating line*
H1	H2	H3		
6140	**6150**	**6180**		**Water pressure max**
6141	**6151**	**6181**		**Water pressure min**
6142	**6152**	**6182**		**Water pressure critical min**

Water pressure max

If the pressure acquired at input H1, H2 or H3 exceeds the limit value set here, an appropriate error message will be delivered.

117: Water pressure too high
176: Water pressure 2 too high
322: Water pressure 3 too high

If the pressure drops below the limit value by one switching differential, the error will be canceled.

Water pressure min

If the pressure acquired at input Hx drops below the set limit value (parameter “Water pressure min“), the appropriate maintenance alarm will be delivered.

5: Water pressure too low
18: Water pressure 2 too low
22: Water pressure 3 too low

If the pressure exceeds the limit value by one switching differential, the maintenance alarm will be canceled.

Water pressure critical min

If the pressure acquired at input H1 or H2 falls below the limit value set here, an appropriate error message will be delivered and both burner stages immediately shut down.

118: Water pressure too low
177: Water pressure 2 low
323: Water pressure 3 low

When the pressure exceeds the limit value by a switching differential, the error is canceled.

Line no.	*Operating line*
6222	**Device hours run**

Device hours run

This indicates the total number of hours run since the controller was first commissioned.

6.8 LPB system

Error/maintenance/alarms

Line no.	*Operating line*
6610	**Display system messages**
6612	**Alarm delay**

Display system messages

This setting enables system messages transmitted via LPB to be suppressed at the connected operator unit.

Alarm delay

Delivery of the alarm to the OCI can be delayed in the basic unit by setting a delay. This ensures that unnecessary notifications of a service center resulting from short-time errors (e.g. temperature limiter cut out, communication error) can be prevented.
It is to be noted, however, that errors occurring for a short period of time, and reoccurring constantly and rapidly, will also be filtered.

Action changeover functions

Line no.	*Operating line*
6620	**Action changeover functions** Segment ¦ System

⚠

- The setting is only relevant for device address 1.

Range of action of changeover

The range of action of central changeover can be defined.
This concerns:

- Summer changeover (when selecting ”Central“ on line 6623)
- Summer changeover (with ”Central“ setting on operating line 6621)

Entries:

- Segment: Changeover takes place with all controllers in the same segment.
- System: Changeover takes place with all controllers in the entire system (in all segments). The controller must be located in segment 0!

6.9 Errors

History 1..10

Line no.	*Operating line*
6820	**Reset history** No Yes

Reset history

The error history with the last 10 errors will be deleted.

6.10 Diagnostics, consumers

Heating circuit 1, heating circuit 2, heating circuit P

Line no.	*Operating line*
8742	**Room temp 1 model**
8772	**Room temp 2 model**
8802	**Room temp P model**

Room temperature 1 / 2 / P model

The room model calculates a fictive room temperature for rooms that have no room temperature sensor. The value calculated for each heating circuit is indicated on these operating lines.

This allows boost heating, quick setback and optimum start and stop control to be implemented with no need for using a room temperature sensor.
The calculation takes into account the attenuated outside temperature (operating line 8703), the room model gradient (operating line 6112) for switching to a higher setpoint and the building's time constant (operating line 6110) for switching to a lower setpoint.

7 Plant diagrams

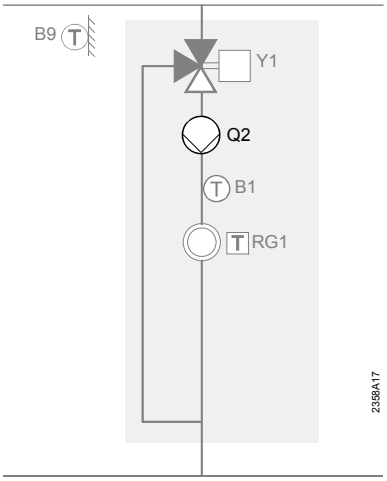
The various applications are shown in the form of basic diagrams and extra functions. The basic diagrams show possible applications that can be implemented without the use of multifunctional outputs.

7.1 Basic diagrams

The basic diagrams are examples of plant that can be implemented with standard outputs requiring only a few settings.

7.1.1 Basic diagram RVS46.

Standard diagram

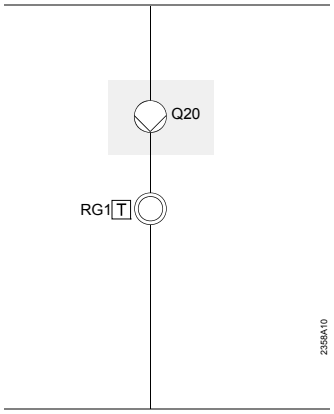


7.2 Extra functions in general

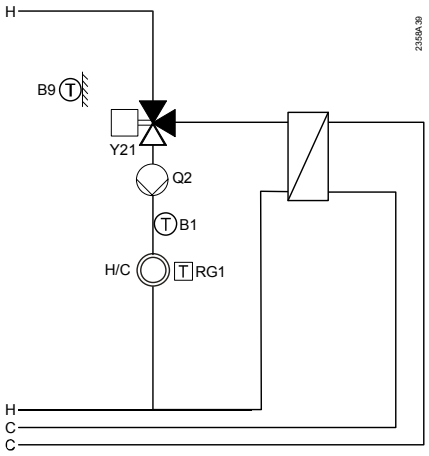
The extra functions can be selected via operating page “Configuration” and complement the basic diagrams of the respective controllers.
The type and number of extra functions that can be applied depend on the multifunctional outputs and inputs QX… or BX…
Depending on the type of application, the use of extra functions necessitates a number of appropriate operating line settings.

Heating/cooling circuit

Heating circuit pump HCP

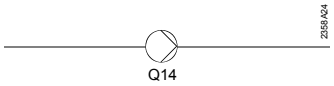


Diverting valve for cooling



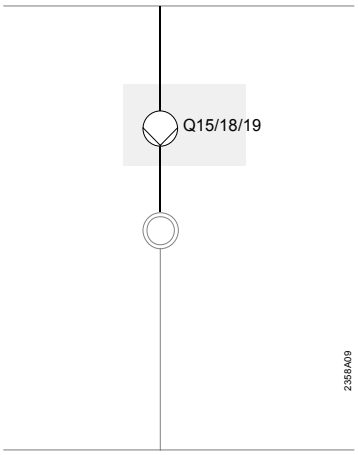
Heat converter

System pump Q14



Extra functions

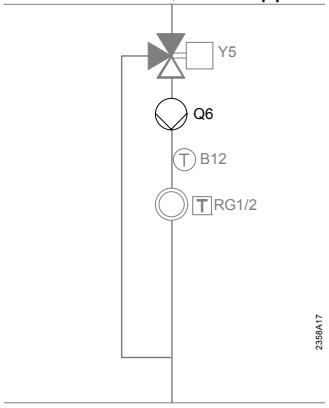
H.. Pump



7.3 Additional funct. with mix. valve group or extension module AVS75.390

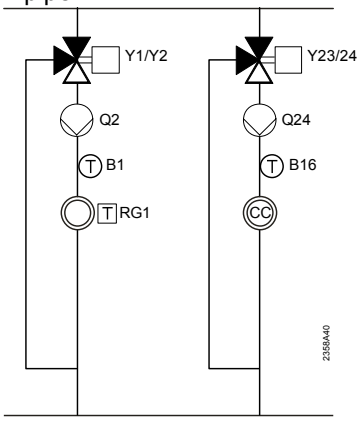
The extra functions can be selected via operating page “Configuration“, operating lines 6020 and 6021, and supplement the basic diagrams of the respective controllers.

2nd Mixing valve heating circuit

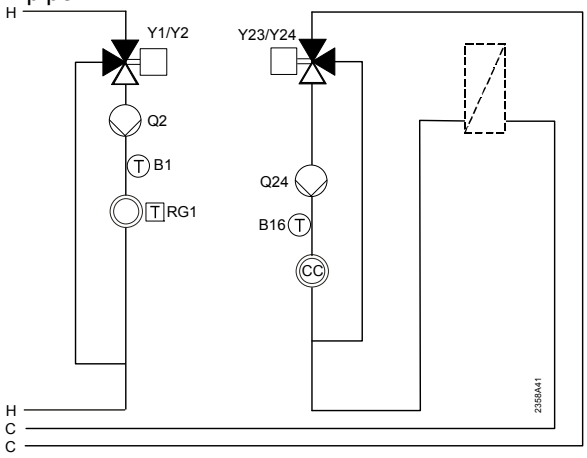


Cooling circuit

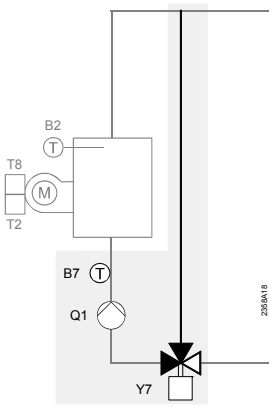
2-pipe



4-pipe



Return temp controller



Legend mains voltage

Diagram	*Function*
Q2	1st heating circuit pump
Q3	DHW charging pump / diverting valve
Q4	circulating pump
Q6	2nd heating circuit pump
Q14	System pump
Q15/18/19	H1/2/3 pump
Q20	Heating circuit pump HCP
Q24	Cooling circuit pump
Y1	1st Heating circuit mixing valve
Y2	1st Heating circuit mixing valve
Y5	2nd Heating circuit mixing valve opening
Y6	2nd Heating circuit mixing valve closing
Y21	Diverting valve for cooling
Y23	mixing valve for cooling opening
Y24	mixing valve for cooling closing

Legend low-voltage

B1	Flow temperature sensor HK1
B12	Flow temperature sensor HK2
B3	DHW sensor top
B31	2nd DHW sensor bottom
B35	DHW flow temperature sensor
B36	DHW charging sensor
B38	DHW temperature outlet sensor
B15	Flow sensor primary controller
B39	DHW circulation sensor B39
B6	Collector sensor
B9	Outside sensor.
RG1	Room unit 1
RG2	Room unit 2
F_S	Flow switch

8 Technical data

8.1 Basic units RVS…

Power supply	Rated voltage	AC 230 V (±10%)
	Rated frequency	50/60 Hz
	Power consumption	RVS46.530: 8 VA
	Fusing of supply lines	max. 10 AT
Wiring of terminals	Power supply and outputs	solid wire or stranded wire (twisted or with ferrule): 1 core: 0.5...2.5 mm^2 2 cores: 0.5. mm^2..1.5 mm^2 3 cores: Not permitted
Functional data	Software class	A
	Mode of operation to EN 60 730	1.B (automatic)
Inputs	Digital inputs H1 and H2	safety extra low-voltage for potential free low-voltage contacts: voltage with contact open: DC 12 V current with contact closed: DC 3 mA
	Analog input H1, H2	protective extra low-voltage operating range: DC (0...10) V internal resistance: > 100 kΩ
	Mains voltage S3, 4 and EX2	AC 230 V (±10 %) internal resistance: > 100 kΩ
	Sensor input B9	NTC1k (QAC34)
	Sensor inputs B1, B2, B3, B12, BX1, BX2, BX3, BX4	NTC10k (QAZ36, QAD36)
	Sensor inputs BX1…BX4	PT1000 (optionally for collector and flue gas sensor)

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 während ≤1 s
	Max. total current (of all relays)	AC 10 A
	Rated voltage range	AC (24...230) V (for potential-free outputs)
	Triac output QX3 (custom solution only)	
	Rated current range	
	On / off operation	AC 0.05…2 (2) A
	Speed control	AC 0.05…0.4 (1) A
	Max. switch-on current	4 A for ≤1 s
	Analogous to output U1	output is short-circuit-proof
	Output voltage	U_{out} = 0 ... 10.0 V
	Current rating	±2 mA RMS; ±2.7 mA peak
	Ripple	≦ 50 mVpp
	Accuracy at zero point	< ± 80 mV
	Error remaining range	≦ 130 mV

Interfaces, cable lengths	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
	LPB	(copper cable 1.5 mm^2, 2-wire **not** interchangeable)
	with bus power supply via controller (per controller)	250 m
	With central bus power supply	460 m
	Bus loading number	E = 3
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 pollution to EN 60 730	Normal pollution
Standards, safety, EMC, 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 IEC721-3-1 class 1K3	temp. -20…65 °C
	Transport to IEC721-3-2 class 2K3	temp. -25…70°C
	Operation to IEC721-3-3 class 3K5	temp. 0...50 °C (non-condensing)
Weight	Without packaging	RVS46.530: 431 g

8.2 Extension module AVS75.390

Power supply	Rated voltage	AC 230 V (±10%)
	Bemessungsfrequenz	50/60 Hz
	Power consumption	4 VA
	Fusing of supply lines	max. 10 AT
Wiring of terminals	(Power supply and outputs)	solid wire 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 potential-free 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
	Rated voltage range	AC (24...230) V (for potential-free 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 pollution to EN 60 730	Normal pollution
Standards, safety, EMC, 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 IEC721-3-1 class 1K3	temp. -20…65 °C
	Transport to IEC721-3-2 class 2K3	temp. -25…70°C
	Operation to IEC721-3-3 class 3K5	temp. 0...50 °C (non-condensing)
Weight	Without packaging	293 g

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 alkaline, size AA (LR06)
	Battery life	approx. 1.5 years
Room temperature measurement (only with QAA7x...) / QAA55...)	Measuring range	0...50 °C
	According to EN12098:	
	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 for QAA7../ QAA55.. IP40 for AVS37… IP20 (when mounted) Normal pollution
	Safety class to EN 60 730	low-voltage-carrying parts meet the requirements of safety class III, if correctly installed
	Degree of pollution to EN 60 730	Normal pollution
Standards, safety, EMC, 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
	Radio	EN 300 220-1 (25-1000MHz)
Climatic conditions	For devices without batteries:	
	Storage to IEC721-3-1 class 1K3	temperature -20…65 °C
	Transport to IEC721-3-2 class 2K3	temperature –20...70 °C
	Operation to IEC721-3-3 class 3K5	temperature 0...50 °C (non-condensing)
	For devices with batteries:	
	Storage to IEC721-3-1 class 1K3	temperature -20…30 °C
	Transport to IEC721-3-2 class 2K3	temperature –20...70 °C
	Operation to IEC721-3-3 class 3K5	temperature 0...50 °C (non-condensing)
Weight	Without packaging	AVS37.294: 160 g QAA75.61x: 170 g QAA55.110: 115 g

8.4 Sensor characteristics

8.4.1 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	31.0	796
-28.0	11,657	2.0	2,610	32.0	767
-27.0	11,031	3.0	2,496	33.0	740
-26.0	10,442	4.0	2,387	34.0	713
-25.0	9,889	5.0	2,284	35.0	687
-24.0	9,369	6.0	2,186	36.0	663
-23.0	8,880	7.0	2,093	37.0	640
-22.0	8,420	8.0	2,004	38.0	617
-21.0	7,986	9.0	1,920	39.0	595
-20.0	7,578	10.0	1,840	40.0	575
-19.0	7,193	11.0	1,763	41.0	555
-18.0	6,831	12.0	1,690	42.0	536
-17.0	6,489	13.0	1,621	43.0	517
-16.0	6,166	14.0	1,555	44.0	500
-15.0	5,861	15.0	1,492	45.0	483
-14.0	5,574	16.0	1,433	46.0	466
-13.0	5,303	17.0	1,375	47.0	451
-12.0	5,046	18.0	1,320	48.0	436
-11.0	4,804	19.0	1,268	49.0	421
-10.0	4,574	20.0	1,218	50.0	407
-9.0	4,358	21.0	1,170		
-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		

8.4.2 NTC 10 k

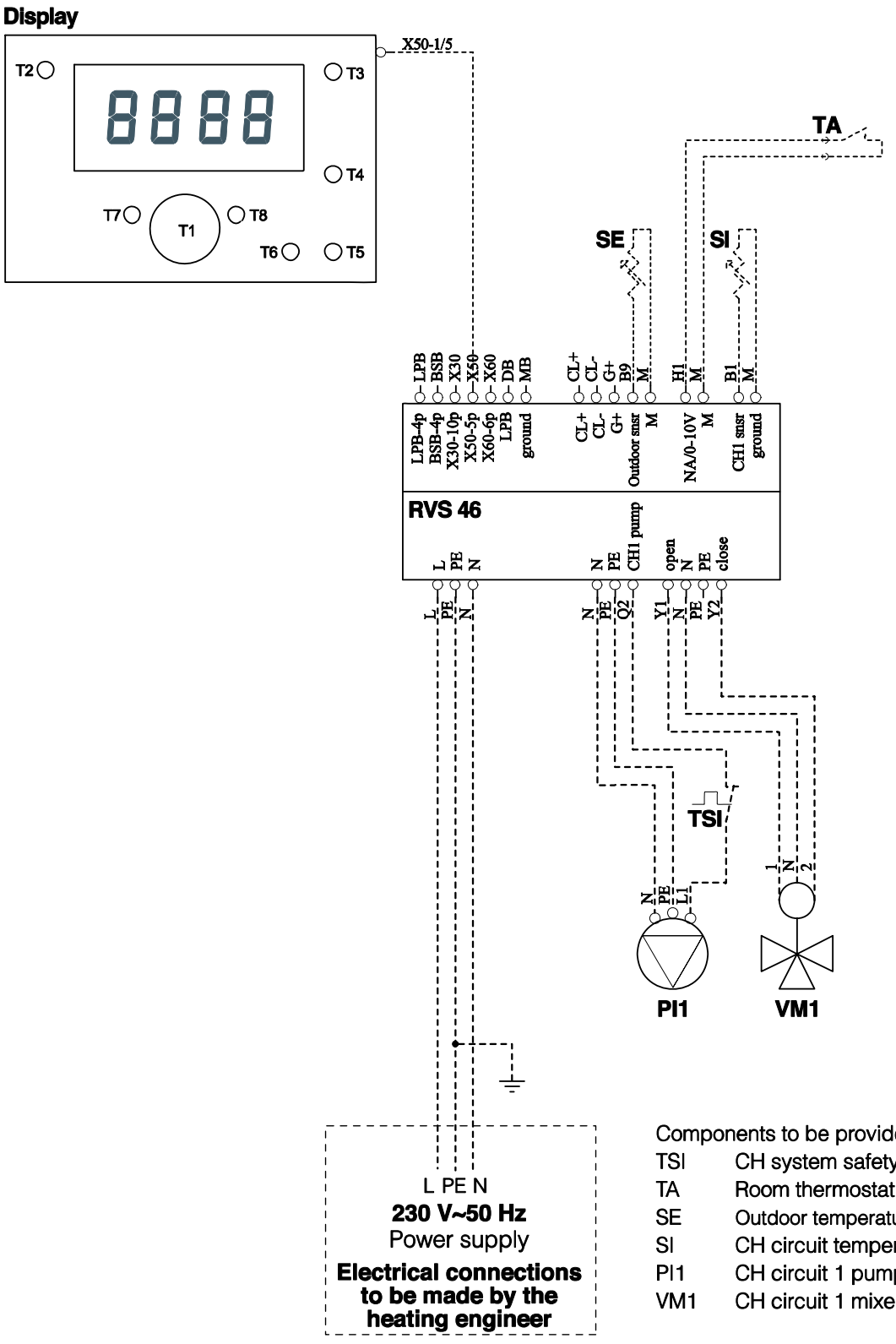
T [°C]	R[Ohm]	T [°C]	R[Ohm]	T [°C]	R[Ohm]
-30.0	175203	50.0	3605	130.0	298
-25.0	129289	55.0	2989	135.0	262
-20.0	96360	60.0	2490	140.0	232
-15.0	72502	65.0	2084	145.0	206
-10.0	55047	70.0	1753	150.0	183
-5.0	42158	75.0	1481	155.0	163
0.0	32555	80.0	1256	160.0	145
5.0	25339	85.0	1070	165.0	130
10.0	19873	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		

8.4.3 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		

TYPICAL COMPONENT CONNECTION DIAGRAM FOR SYSTEM WITH

RVS 46...



Components to be provided by the installer

TSI	CH system safety thermostat
TA	Room thermostat
SE	Outdoor temperature sensor (optional)
SI	CH circuit temperature sensor
PI1	CH circuit 1 pump
VM1	CH circuit 1 mixer valve

NB. Connect up the various components to suit the type of boiler and the configuration of the individual central heating system.