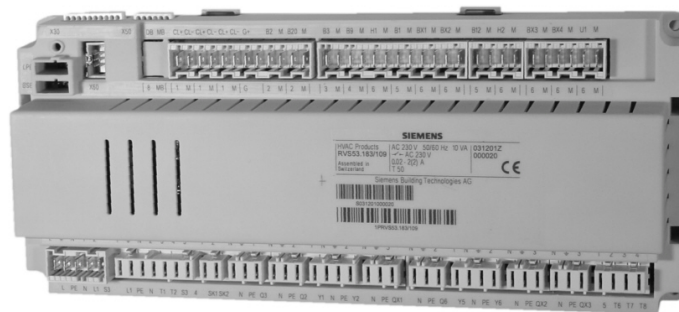
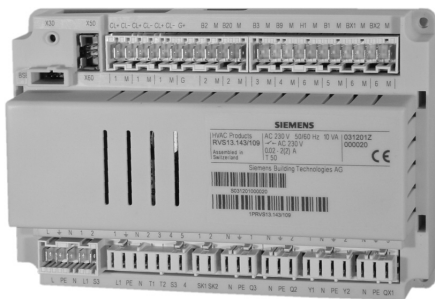


# SIEMENS



## Albatros<sup>2</sup> Boiler Controllers User Manual

**RVS13..  
RVS53..**



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# 1 Summary

---

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

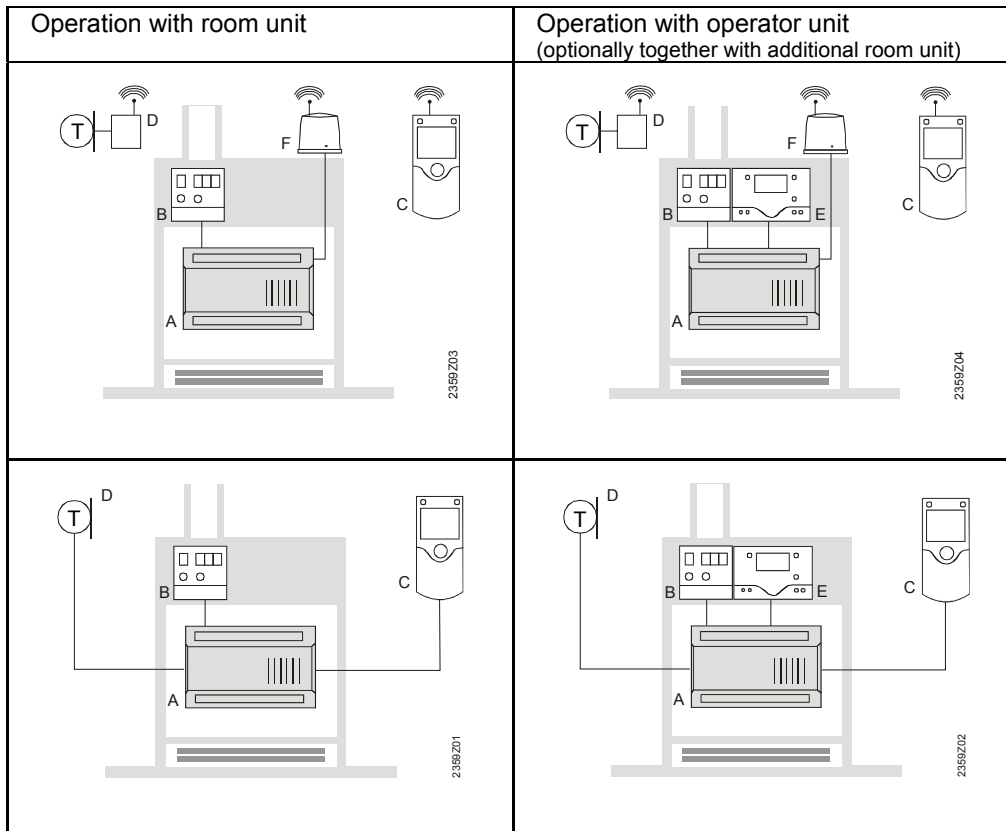
| Type reference (ASN) | Name                      |
|----------------------|---------------------------|
| RVS13.122            | Basic unit boiler         |
| RVS13.143            | Basic unit boiler         |
| RVS53.183            | Basic unit boiler         |
| AVS75.390            | Extension module          |
| AVS37.294            | Operator unit             |
| QAA75.610            | Room unit, wired          |
| QAA75.611            | Backlit room unit, wired  |
| QAA78.610            | Room unit, wireless       |
| AVS16.290            | Power section             |
| AVS38.291            | Dummy cover (96 x 144 mm) |
| AVS71.390            | Radio module              |
| AVS14.390            | Radio repeater            |
| AVS13.399            | Wireless outside sensor   |

The following products are described in separate pieces of documentation:

|       |                              |
|-------|------------------------------|
| QAC34 | Outside sensor               |
| QAD36 | Strap-on temperature sensor  |
| QAZ36 | Immersion temperature sensor |

# 1.1 Type summary

Wireless



Wired

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



## 2 Safety notes

### 2.1 Product liability

---

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

# 3 Mounting and installation

## 3.1 Regulations

### Electrical installation

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

## 3.2 Basic units RVS...

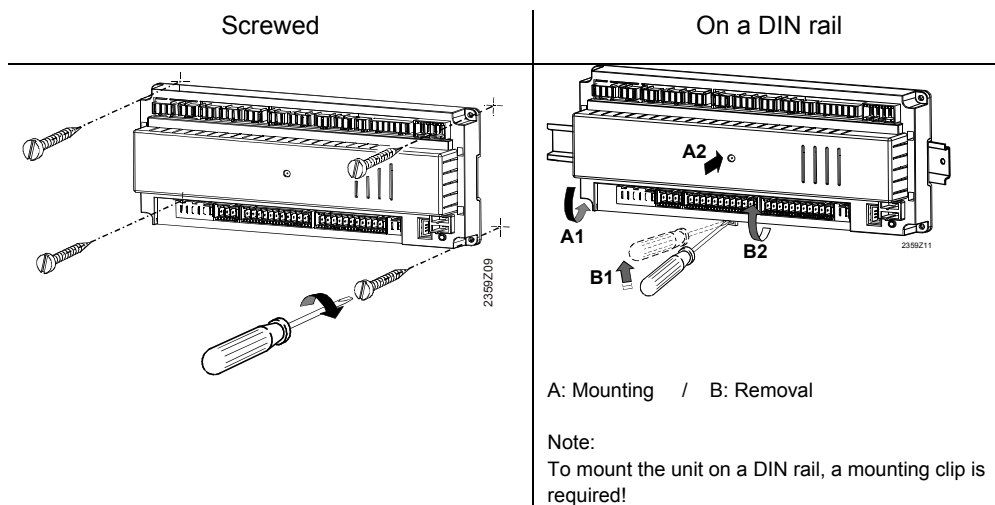
### Planning

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

### Mounting location

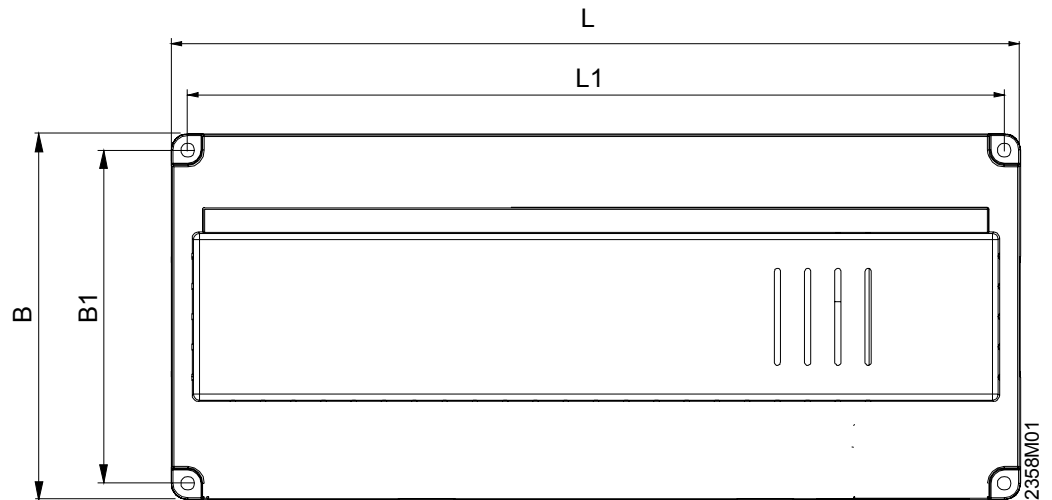
14. Boiler
15. Control panel
16. Housing for wall mounting

### Mounting method



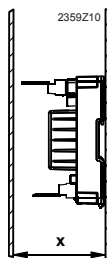
## Dimensions and drilling plan

Dimensions in mm



|                  | L     | B     | H    | L1  | B1  |
|------------------|-------|-------|------|-----|-----|
| <b>RVS53...</b>  | 280.7 | 120.7 | 51.7 | 270 | 110 |
| <b>RVS13...</b>  | 180.7 | 120.7 | 51.7 | 170 | 110 |
| <b>AVS75.390</b> | 108.7 | 120.7 | 51.7 | 98  | 110 |

Free space in front of the unit

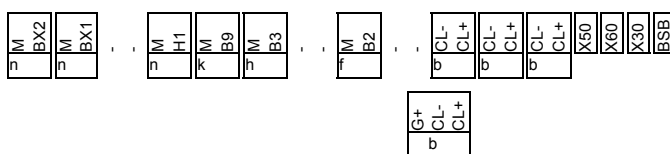
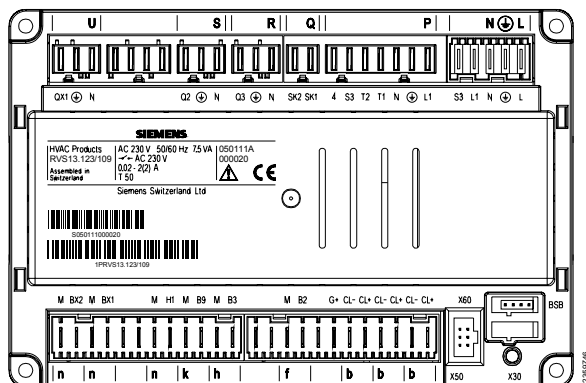
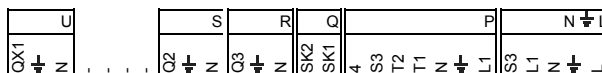


Dimension X:

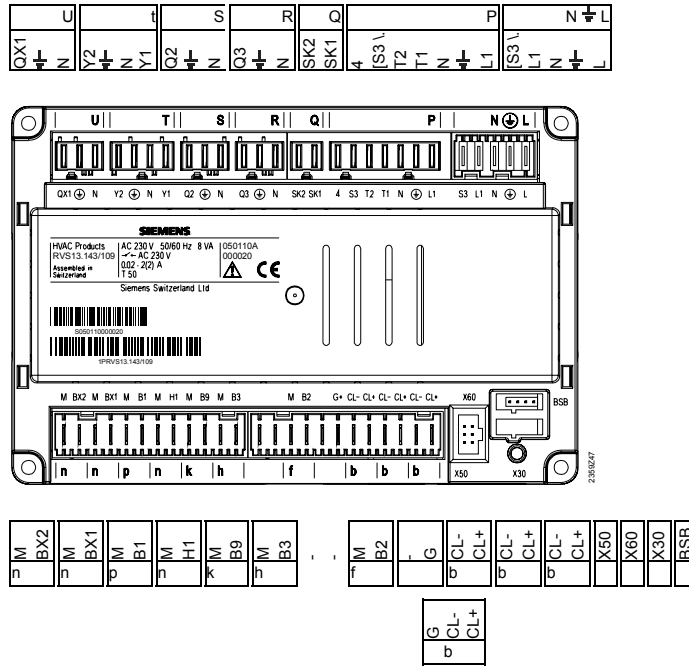
For connectors with tongues: Minimum 70 mm

For connectors without tongues: Minimum 60 mm

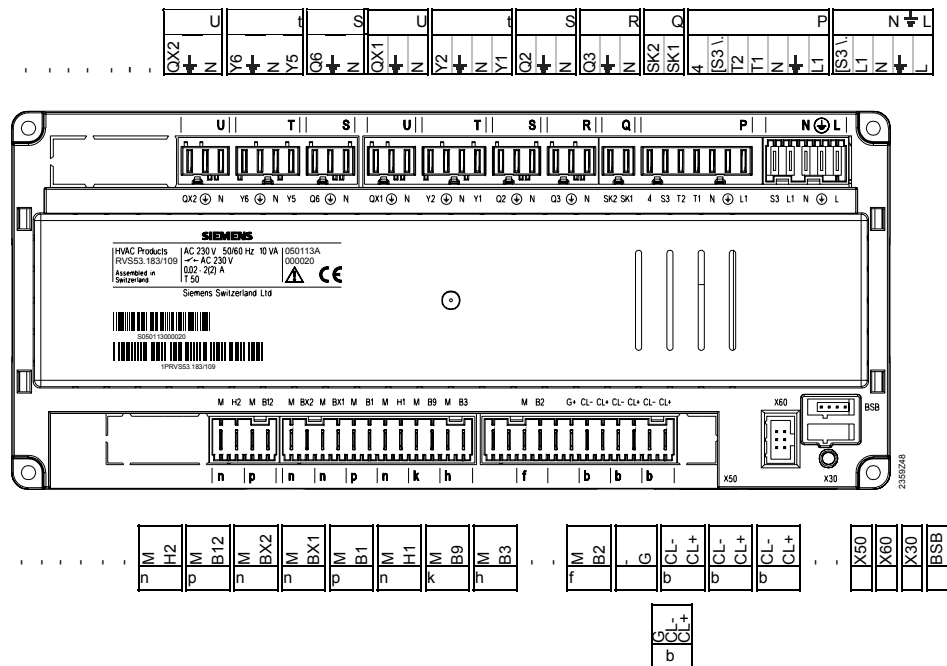
### 3.2.1 Connection terminals of RVS13.123



### 3.2.2 Connection terminals of RVS13.143



### 3.2.3 Connection terminals of RVS53.183



## Terminal markings

### Mains voltage

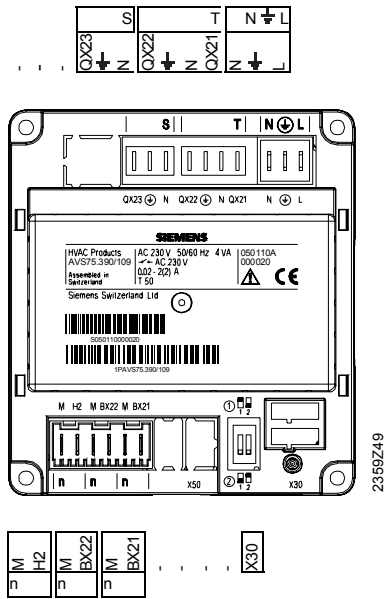
|         | <i>Use</i>                               | <i>Terminal</i> | <i>Type of connector</i> |
|---------|--|-----------------|--------------------------|
| L       | Phase AC 230 V basic unit                | N $\perp$ L     | AGP4S.05A/109            |
| $\perp$ | Protective earth            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

### Low-voltage

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

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

### 3.2.4 Connection terminals of AVS75.390



#### Terminal markings

##### Mains voltage

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

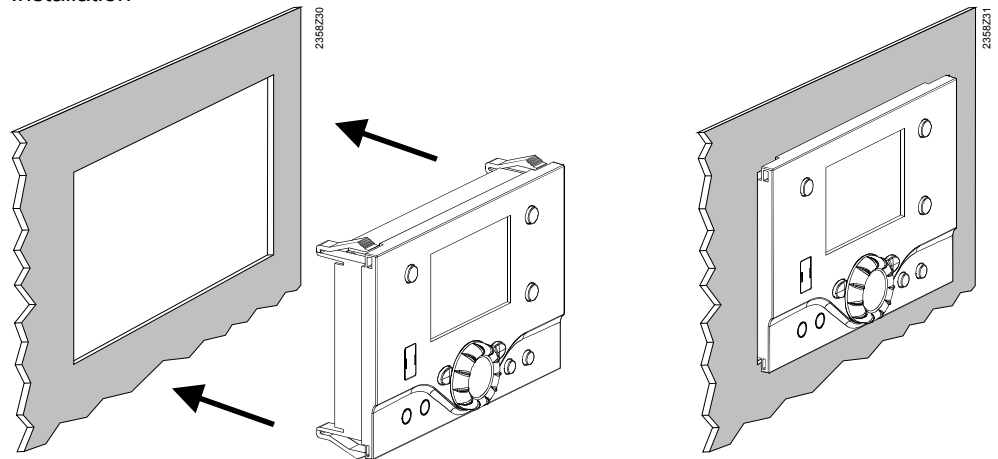
##### Low-voltage

|      | Use                                  | Terminal | Type of connector |
|------|--------------------------------------|----------|-------------------|
| X30  | Operator unit / boiler control panel | -        | AVS82.491/109     |
| BX21 | Flow sensor HC1                      | n        | AGP4S.02F/109     |
| M    | Ground                               |          |                   |
| BX22 | Flow sensor HC2                      | n        | AGP4S.02F/109     |
| M    | Ground                               |          |                   |
| H2   | Digital input                        | n        | AGP4S.02F/109     |
| M    | Ground                               |          |                   |

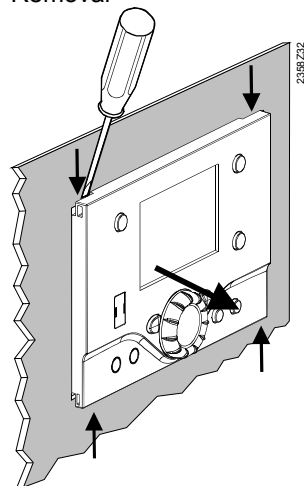
### 3.3 Operator unit AVS37.294

#### Mounting method

#### Installation



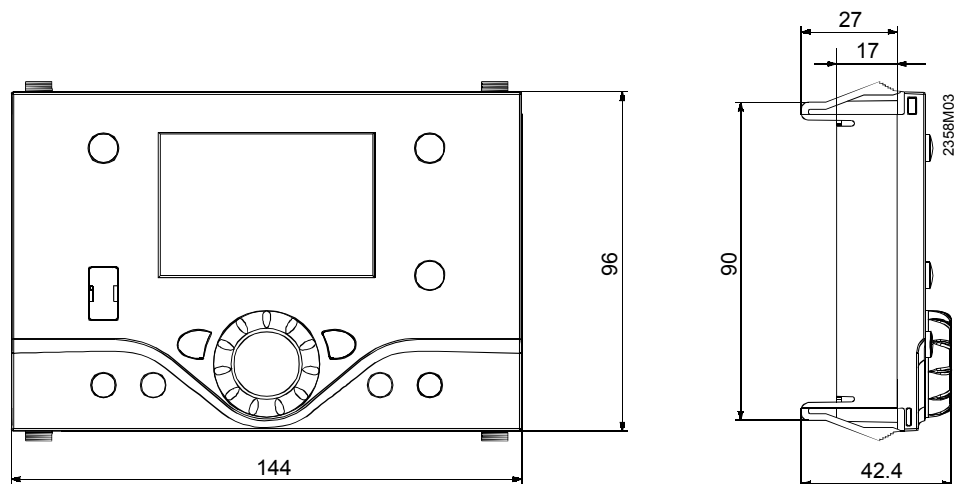
#### Removal



#### Connections

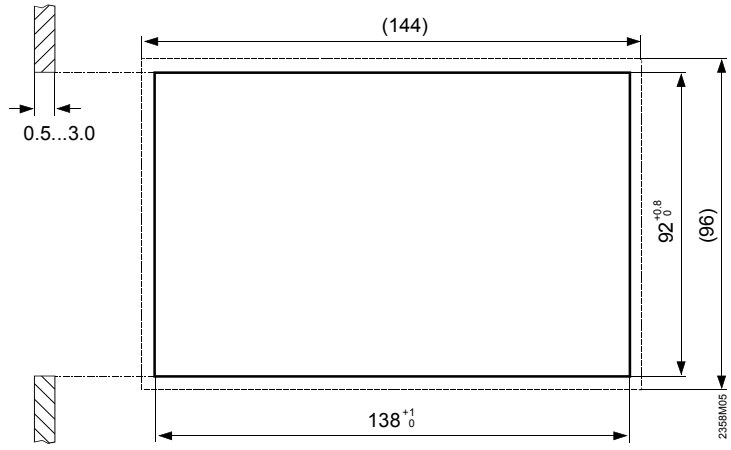
The AVS37.294 operator unit must be connected to terminal X30 of the basic unit using the AVS82.491/109 connecting cable. The connectors are coded.

#### Dimensions



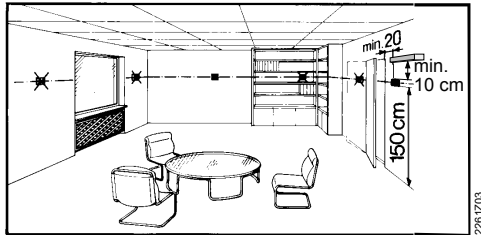


Panel cutout



## 3.4 Room unit QAA75...

### Planning



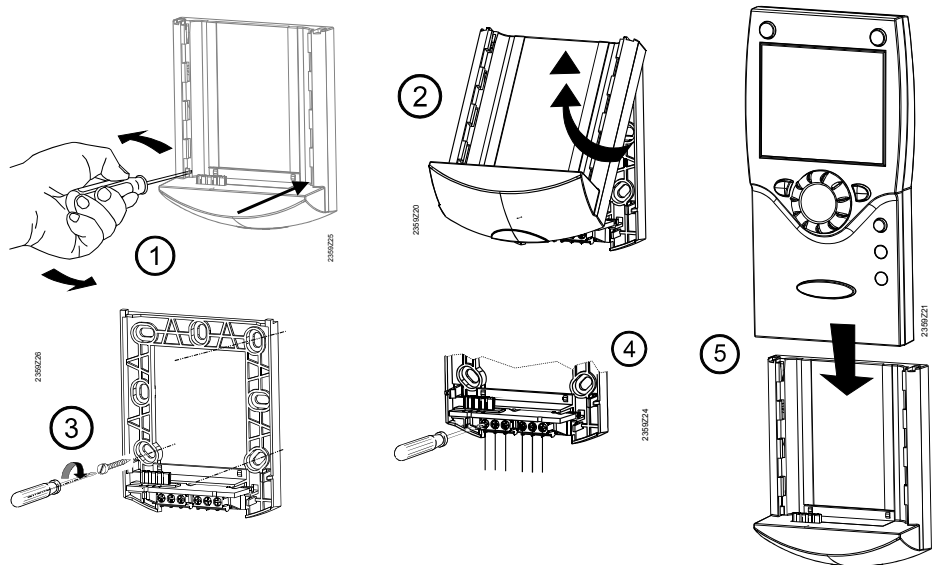
The room unit should be located in the main living room while giving consideration to the following points:

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



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

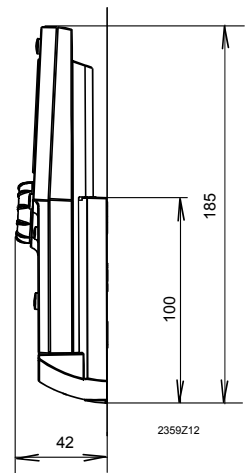
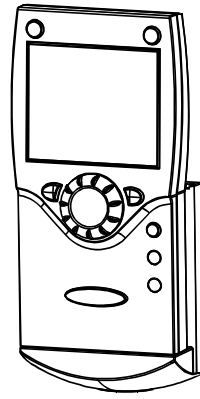
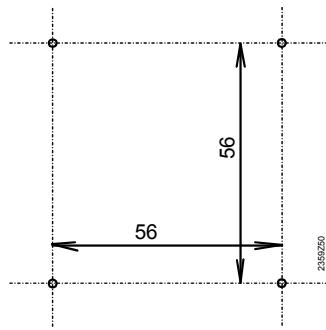
### Mounting method



### Connections

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

## Dimensions and drilling plan



## 3.5 Wireless components

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

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

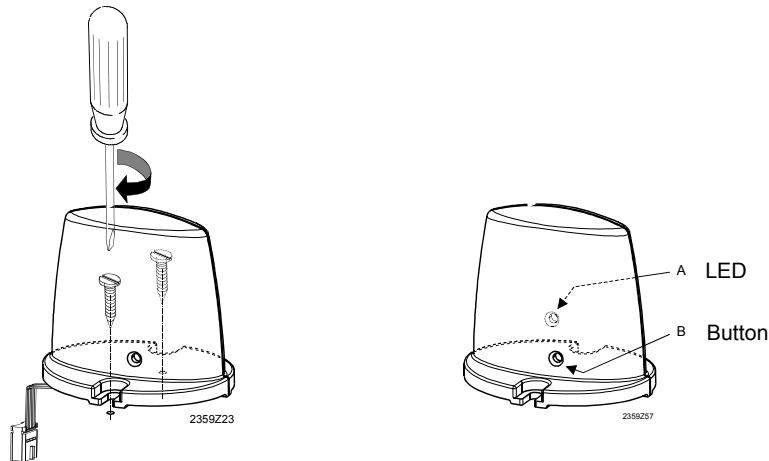
### 3.5.1 Radio module AVS71...

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

#### Planning

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

#### Mounting method



#### Connection



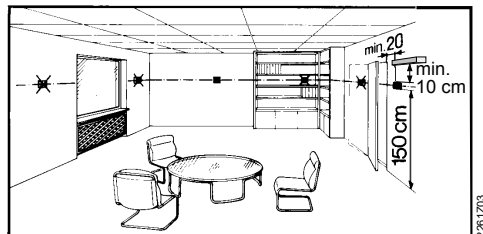
The prefabricated cable must be connected to terminal X60 of the controller. Prior to connecting, the basic unit must be disconnected from power!

#### Radio link

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

### 3.5.2 Room unit QAA78...

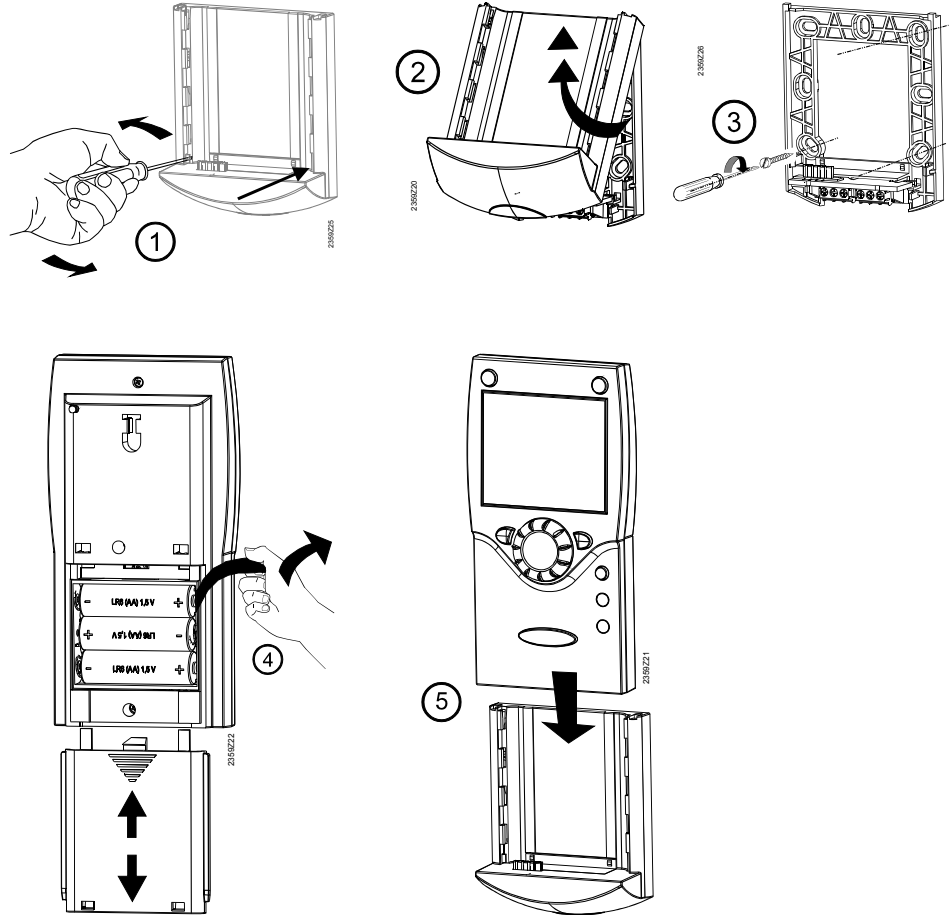
#### Planning



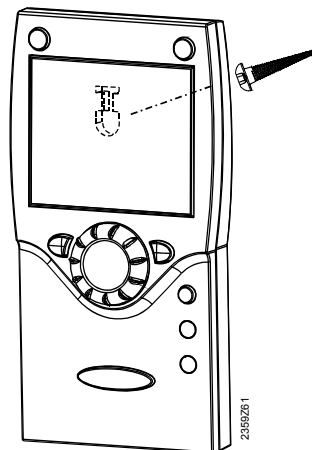
The room unit should be located in the main living room while giving consideration to the following points:

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

**Mounting with base**



**Mounting without base**



**Terminals / power supply**

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

## Radio link



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

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

### Establishing the link

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

### Testing

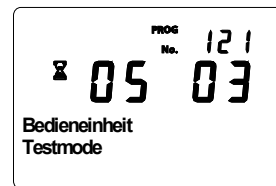


The test is made to check the quality of the radio link.

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

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

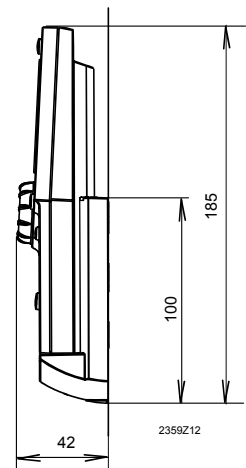
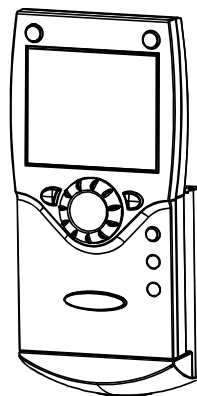
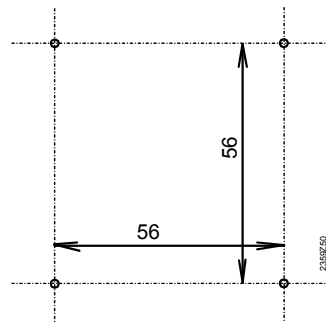
Example of a display during the test:



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

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

## Dimensions and drilling plan

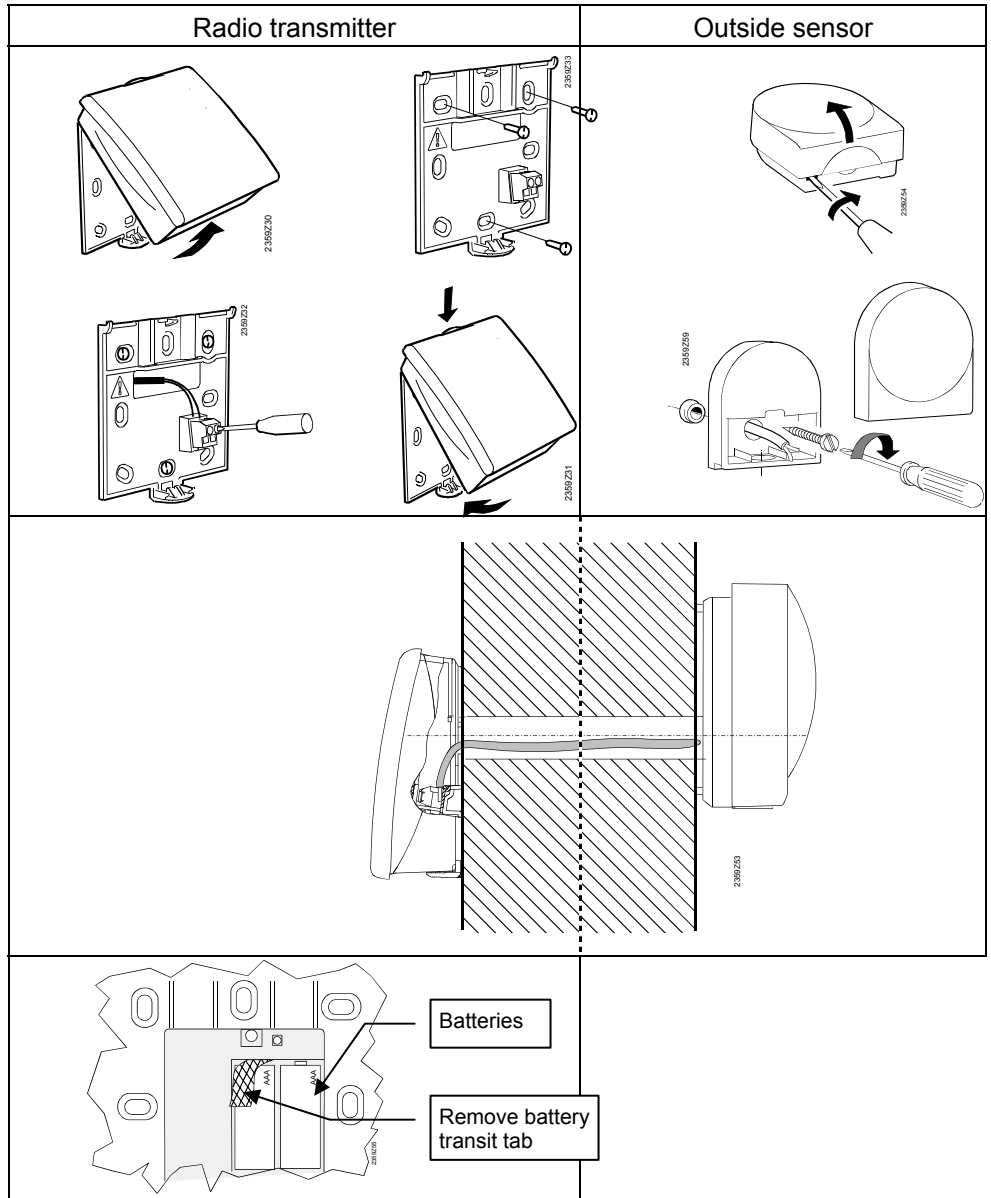


### 3.5.3 Wireless outside sensor AVS13.399



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

#### Mounting method



#### Connections

The units are to be connected via a 2-core cable; the wires are interchangeable. Power is supplied by two 1.5 V batteries type AAA (LR03).

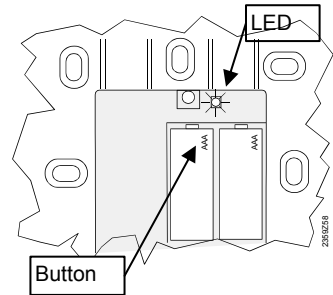
## Radio link

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

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

### 9. Establishing the link

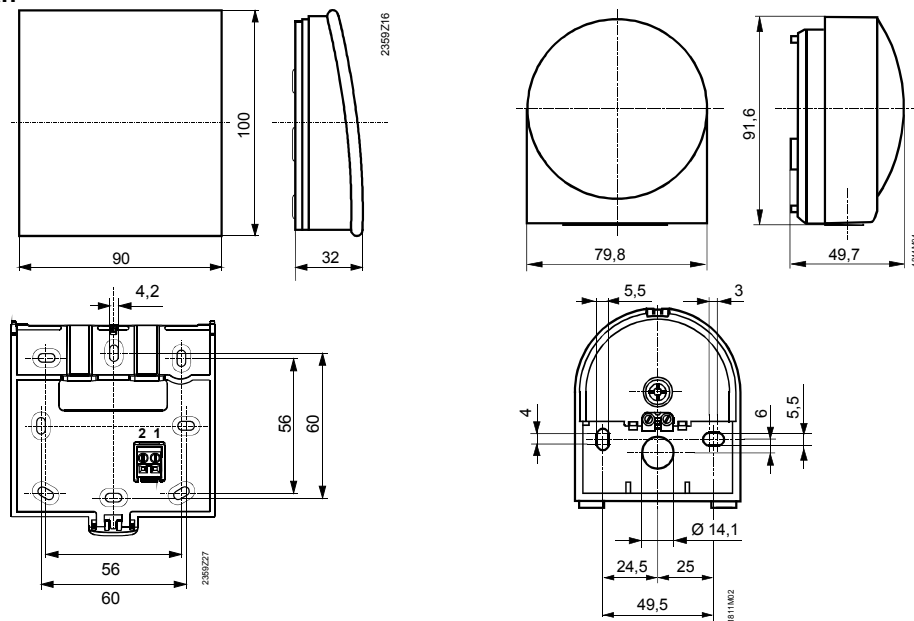
1. Press the button on the radio module for at least 8 seconds until the LED on the radio module starts flashing at **high frequency**.
2. Press the button on the transmitter of the wireless outside sensor for at least 8 seconds until that LED also starts flashing at **high frequency**.
3. The link is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



### 10. Testing

5. Press button 3 on the transmitter of the wireless outside sensor for a maximum of 8 seconds until the LED start flashing at **low frequency**.
6. If radio communication works, the LED on the radio module flashes briefly at 10-second intervals.
7. After the test, press the button on the transmitter of the wireless outside sensor again briefly until the LED extinguishes.

## Dimensions and drilling plan



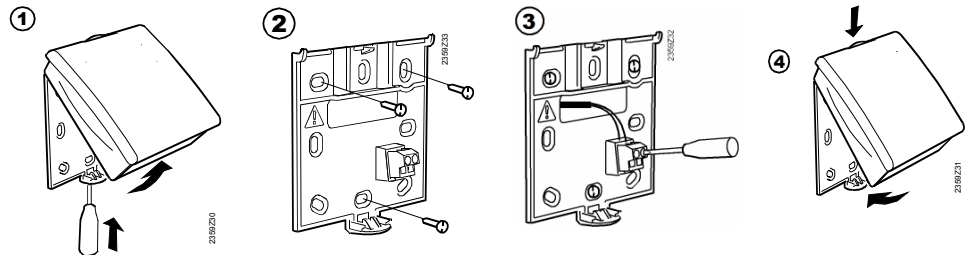


### 3.5.4 Radio repeater AVS14.390



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

#### Mounting method



#### Connections

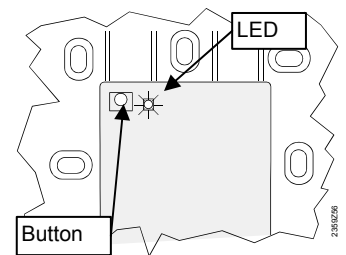
Power is supplied via the enclosed power pack. The wires are interchangeable.

#### Radio link

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

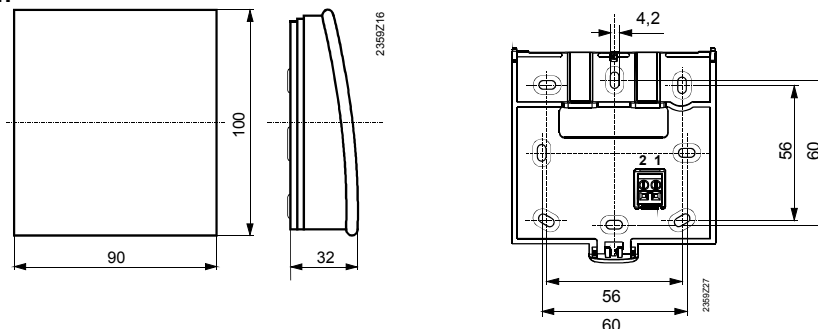
Prerequisite for the radio link is that all components receive power, which means that the radio module must be correctly connected to the basic unit and power must be correctly supplied to the radio repeater.

13. Establishing the link
14. Press the button on the radio module for at least 8 seconds until the LED on the radio module starts flashing at **high frequency**.
15. Press the button on the installed radio repeater until the LED starts flashing at **high frequency**.
16. The link is established when the LED on the radio module extinguishes.



17. Testing
18. Press button 3 on the radio repeater for a maximum of 8 seconds until the LED starts flashing at **low frequency**.
19. If radio communication works, the LED on the radio module flashes briefly at 10-second intervals.
20. After the test, press the button on the radio repeater again briefly until the LED extinguishes.

#### Dimensions and drilling plan



### 3.5.5 Checking the wireless components

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

## 3.6 Power pack AVS16.290

### Mounting notes

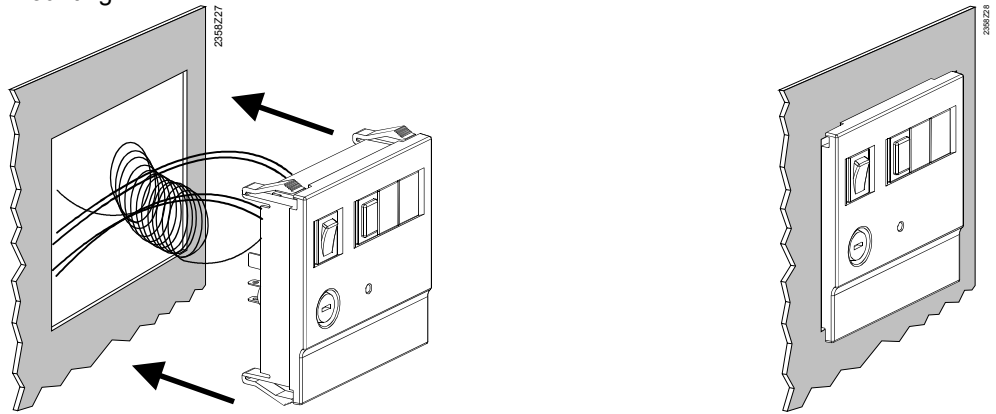


The boiler control panel is designed for installation in floor-standing or wall-hung oil or gas boilers and may only be used for that purpose. For installation, the following points must be observed:

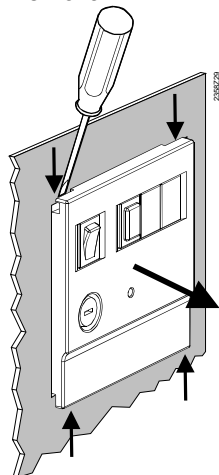
21. Dimensions of cutout 92 x 92 mm, sheet metal thickness 0.5 to 3.0 mm
22. The boiler control panel must be secured with the 4 clips provided on the panel
23. Power to the control panel may be supplied only after it is completely fitted in the cut-out. Extensions or dummy covers for which cutouts are provided must also be fitted beforehand
24. Control panel wiring to the connection terminals does not feature strain relief so that the cables must be secured inside the boiler
25. Local regulations for electrical installation must be complied with

### Mounting method

#### Mounting



#### Removal



### Connections

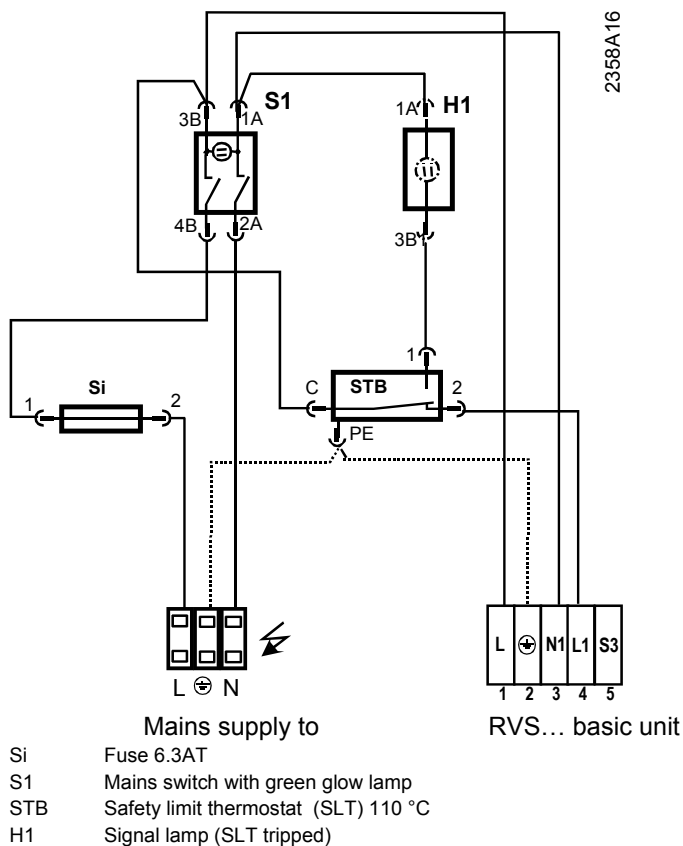
#### Mains

| Terminal | Name           |      |
|----------|----------------|------|
| L        | Phase AC 230 V | Blue |

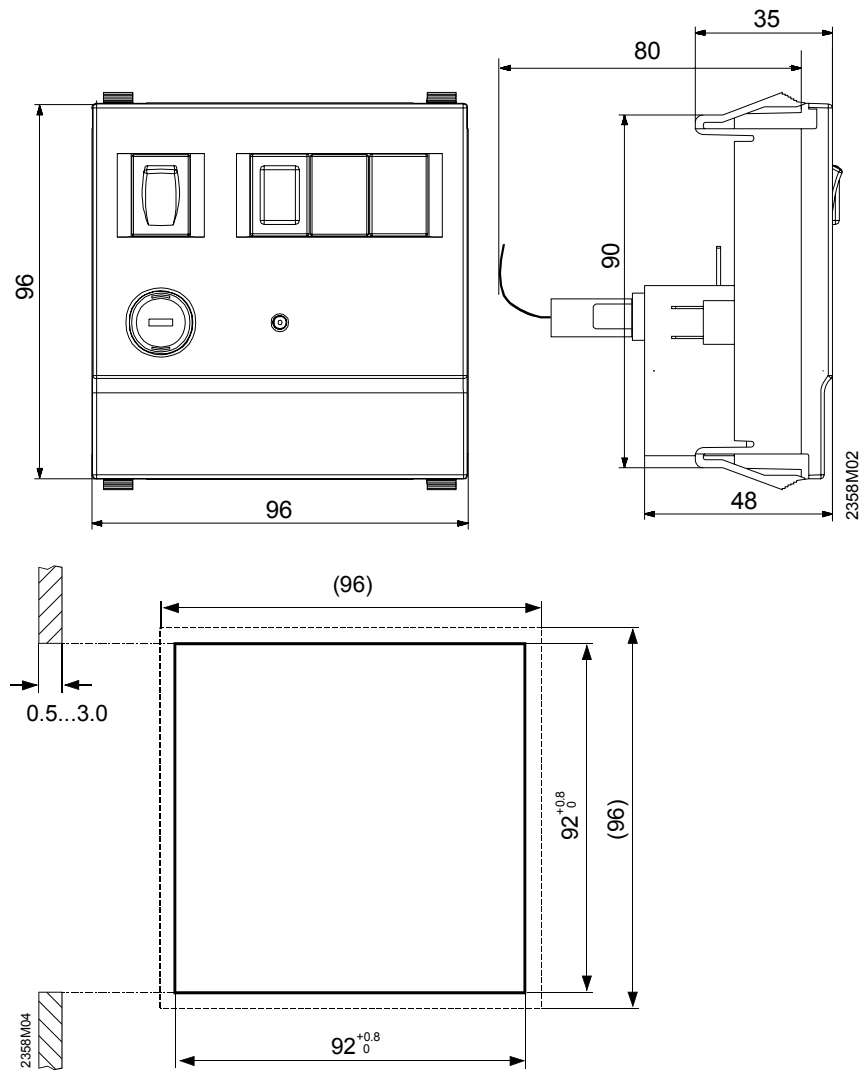
|   |                   |                |
|---|-------------------|----------------|
| ⊕ | Protective earth  | Green + yellow |
| N | Neutral conductor | Blue           |

Connections to the basic unit

| Terminal | Name |                           |                |
|----------|------|---------------------------|----------------|
| 1        | L    | Phase AC 230 V basic unit | Brown          |
| 2        | ⊕    | Protective earth          | Green + yellow |
| 3        | N    | Neutral conductor         | Blue           |
| 4        | L1   | Phase AC 230 V burner     | Black          |
| 5        | S3   | Input burner fault        | -              |



## Dimensions



## 4 Commissioning

### Prerequisites

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

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

### Functional check

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

### Operating state

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

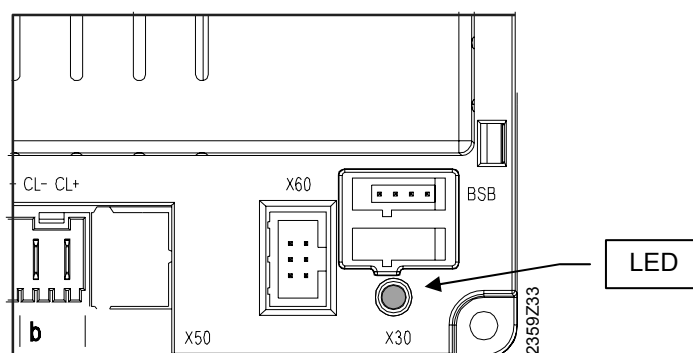
### Diagnostics

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

## 4.1 Basic units

### Checking the LED

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

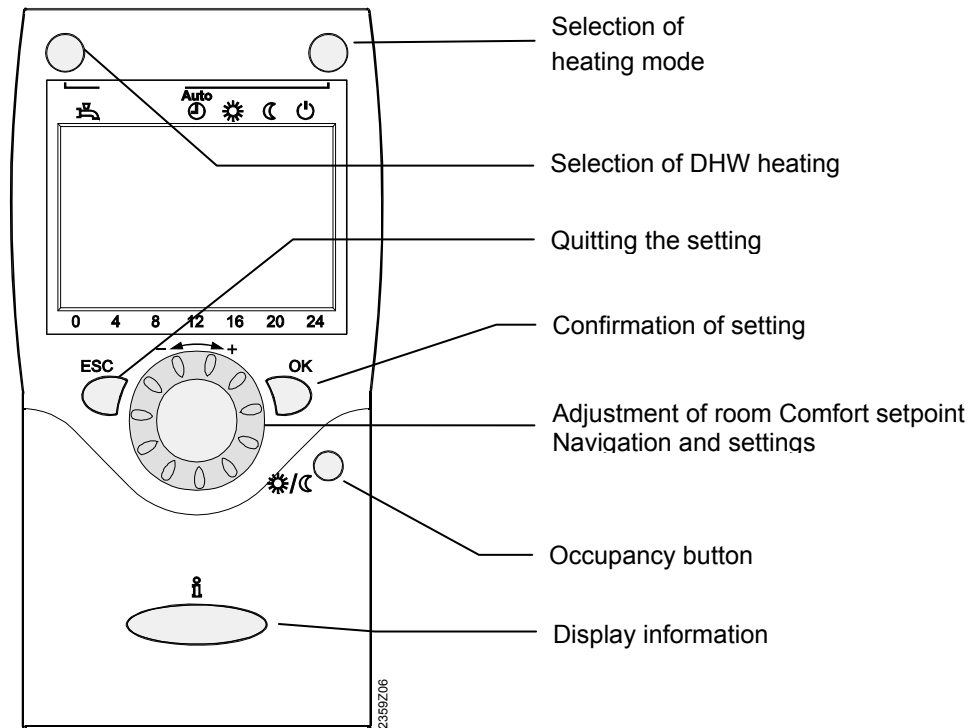


# 5 Handling

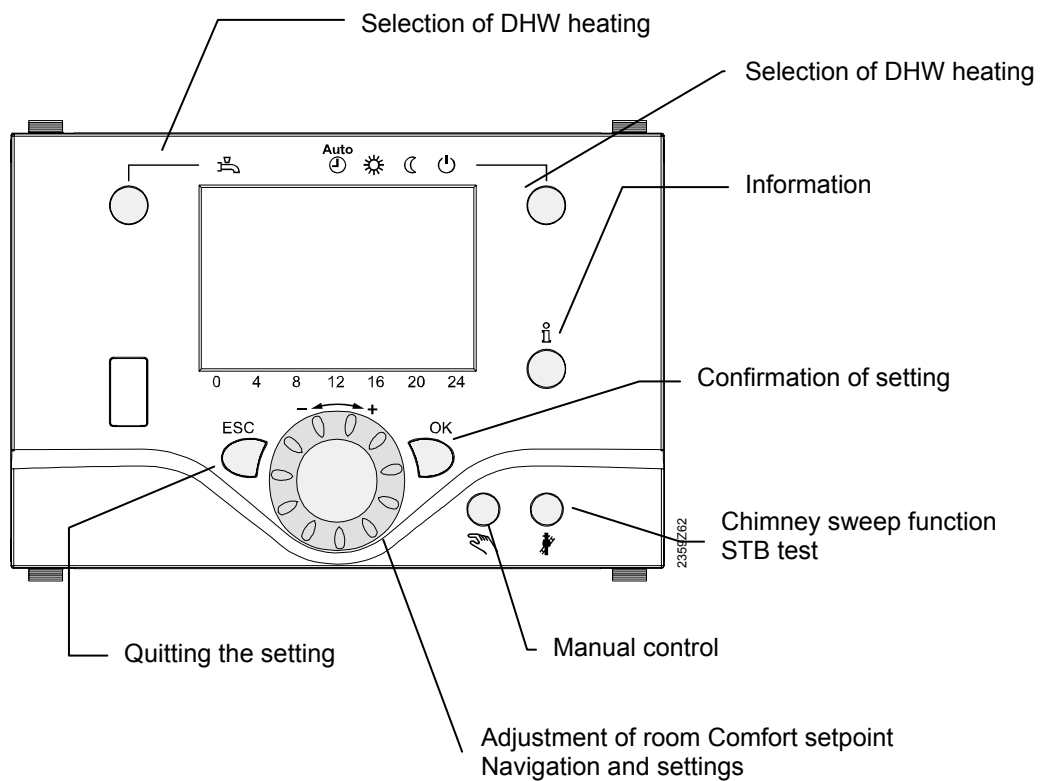
## 5.1 Operation (operating elements)

### Operating elements











Type of room unit



### Operator unit

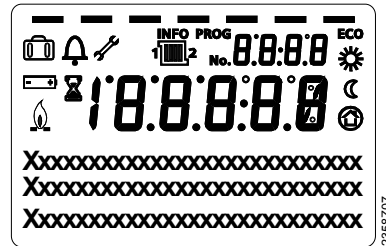


## Display choices

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

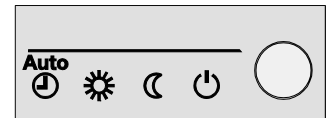
## Display

Display showing all available segments.



## Selecting heating mode



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



### **Automatic operation** AUTO



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

Characteristics of automatic operation:

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

### **Continuous operation** or

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

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

Characteristics of continuous operation:

- 30. Heating mode with no time program
- 31. Protective functions active
- 32. 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. But it remains protected against frost (frost protection temperature), provided there is no power failure.

Characteristics of Protection:

- 33. Heating off
- 34. Temperature according to frost protection

- 35. Protective functions active
- 36. Automatic summer / winter changeover (ECO functions) and automatic 24-hour heating limit active

### Selecting DHW heating mode

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

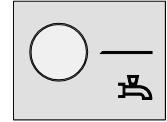
**DHW mode** 

37. On


The DHW is heated according to the selected switching program.

38. Off

No DHW heating, the protective function is active.

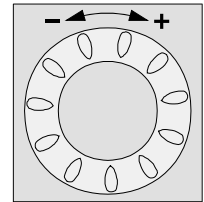


### Adjusting the room temperature setpoint

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

For the **Reduced setpoint** 

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

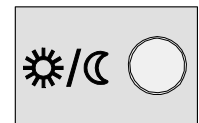




Each time you make a readjustment, wait at least 2 hours, allowing the room temperature to adapt.

### Occupancy button

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

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



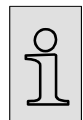
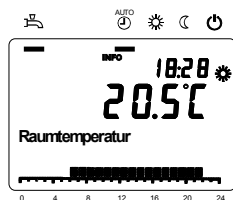
-  Heating to the Comfort setpoint
-  Heating to the Reduced setpoint



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

### Displaying information

The Info button is used to display information.



Available information

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

- Error message
- Maintenance alarm
- Special mode
- Room temperature



- Room temperature minimum
- Room temperature maximum
- Boiler temperature
- Outside temperature
- Outside temperature minimum
- Outside temperature maximum
- DHW temperature 1
- State boiler
- State solar
- State DHW
- State heating circuit 1
- State heating circuit 2
- State heating circuit P
- Time of day / date
- Telephone customer service

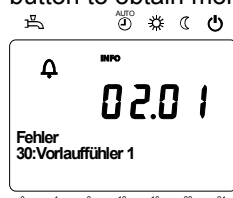
#### Exceptional cases

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



#### Error messages

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



#### Maintenance or special mode

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




A list of possible displays is given on page 74.

#### Manual control

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

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

#### Setpoint adjustment with manual control

After manual control has been activated, a change to the basic display must be made. There, the maintenance / special mode symbol  appears.

Press the Info button to switch to info display "Manual control" where the setpoint can be adjusted.

#### Chimney sweep function

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

#### SLT test

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



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

## 5.2 Programming

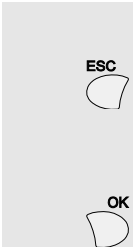
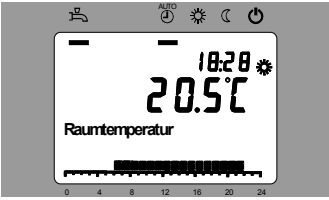
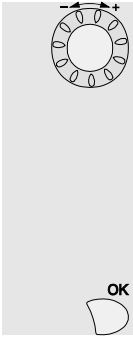
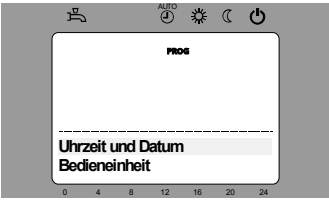
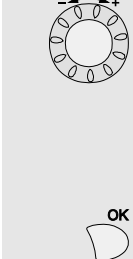
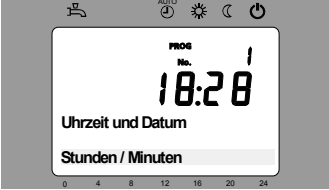
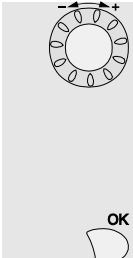
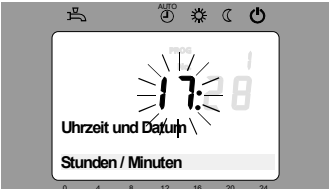
### 5.2.1 Setting principle

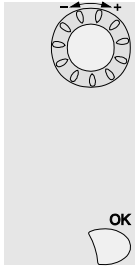

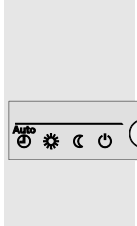
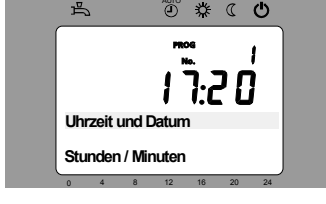

Settings that cannot be made directly with the help of operating elements are made through programming. For this purpose, the individual settings are structured in the form of operating pages and operating lines, thus forming practical groups of settings. The following example which shows the setting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

#### Example “Setting the time of day“

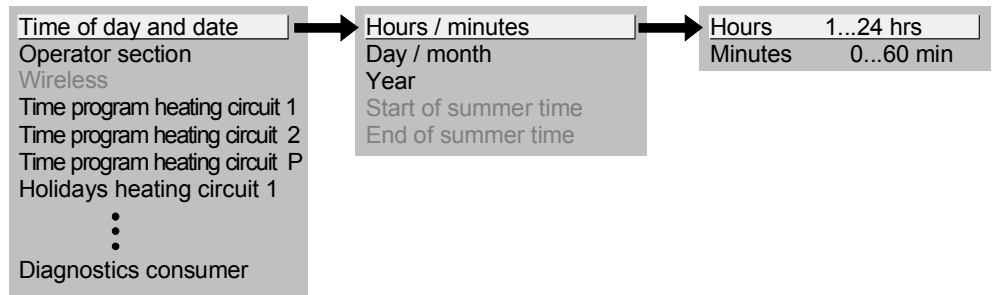


41. When pressing the ESC button, you go one step back; adjusted values will not be adopted
42. If no setting is made for 8 minutes, the unit will automatically return to the basic display
43. Operating lines may be hidden, depending on the type of unit, the configuration and user level

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

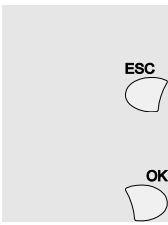
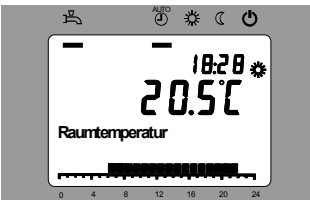
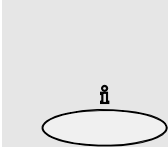
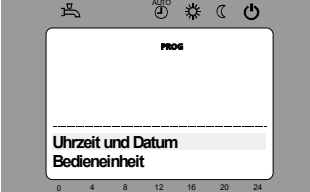
- 5**   The display shows the minutes flashing.  
Turn the setting knob until the minutes of the time of day are correct.  
To confirm, press the OK button.
- 6**   The settings are saved, the displays stops flashing.  
You can continue to make other settings, or you press the operating mode button to return to the basic display.
- 7**  Now, you have returned to the basic display.

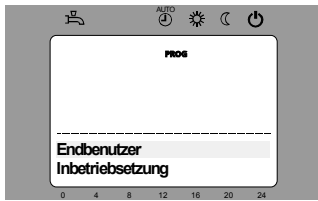
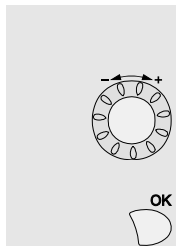
Example of menu structure



## 5.2.2 User levels

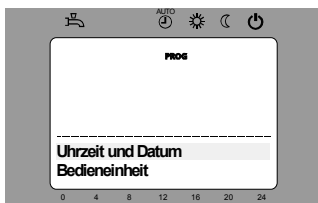
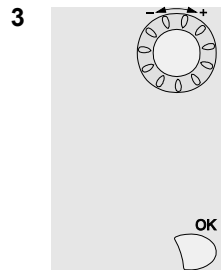
Certain user levels only allow certain user groups to make settings. To reach the required user level, proceed as follows:

| Operation  | Display example  | Description  |
|--|--|--|
| <b>1</b>  |  | You see the basic display.<br>If the basic display is not shown, press the ESC button to return to it.<br><br>Press the OK button: |
| <b>2</b>  |  | You are on user level "Enduser".<br><br>Press the Info button for 3 seconds.   |



You are given a choice of user levels.  
Turn the setting knob until the required user level is reached.

Press the OK button.

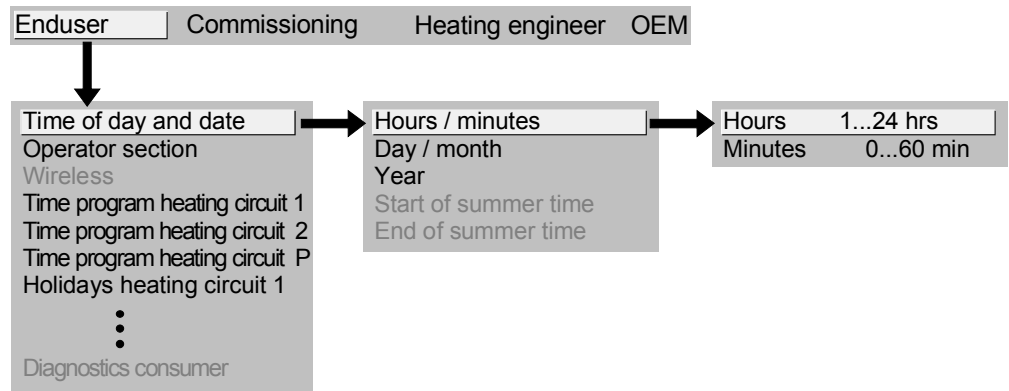


You are now on the required user level.

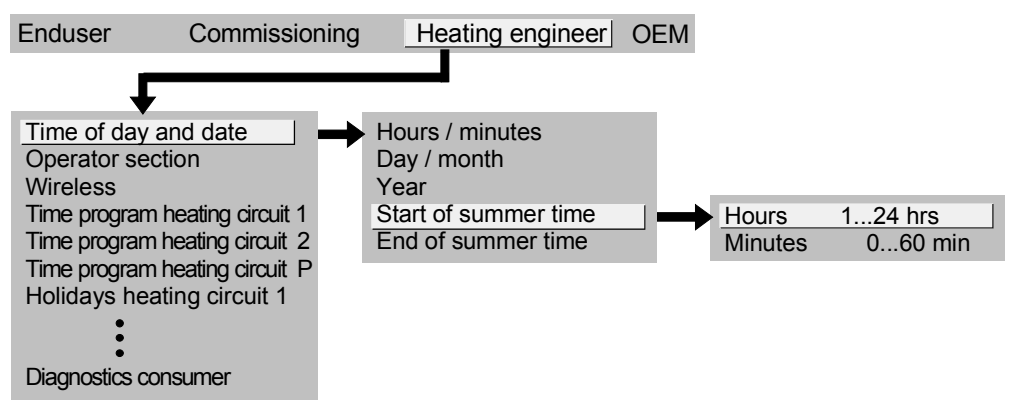
To reach the OEM level, enter the relevant code.

### Setting structure for "Enduser"

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



### Setting structure for "Heating engineer"



## 5.2.3 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 = enduser    I = commissioning    F = heating engineer  
BZ = operating line

| Operating line              | User level | Function   | Default value     | Minimum | Maximum | Unit  |
|-----------------------------|------------|--|-------------------|---------|---------|-------|
| <b>Time of day and date</b> |            |  |                   |         |         |       |
| 1                           | E          | Hours / minutes  | -                 | 00:00   | 23:59   | hh:mm |
| 2                           | E          | Month, day   | -                 | 01.01   | 31.12   | tt.MM |
| 3                           | E          | Year   | -                 | 2004    | 2099    | jjjj  |
| 5                           | F          | Start of summertime  | 25.03             | 01.01   | 31.12   | tt.MM |
| 6                           | F          | End of summer time   | 25.10             | 01.01   | 31.12   | tt.MM |
| <b>Operator unit</b>        |            |  |                   |         |         |       |
| 20                          | E          | Language<br>German   ...   | German            |         |         | -     |
| 22                          | F          | Info<br>Temporarily   Permanently  | Temporarily       |         |         | -     |
| 26                          | F          | Operation lock<br>Off   On   | Off               |         |         | -     |
| 27                          | F          | Programming lock<br>Off   On   | Off               |         |         | -     |
| 40                          | I          | Used as<br>Room unit 1   Room unit 2   Operator unit   Service unit                | Room unit 1       |         |         | -     |
| 42                          | I          | Assignment room unit 1<br>Heating circuit 1   Heating circuits 1 and 2             | Heating circuit 1 |         |         | -     |
| 44                          | I          | Operation HC2<br>Commonly with HC1   Independently                                 | Commonly with HC1 |         |         | -     |
| 46                          | I          | Operation HCP<br>Commonly with HC1   Independently                                 | Commonly with HC1 |         |         | -     |
| 48                          | I          | Action occupancy button<br>None   Heating circuit 1   Heating circuit 2   Commonly | Heating circuit 1 |         |         | -     |
| 54                          | F          | Readjustment room sensor   | 0.0               | -3      | 3       | °C    |
| 70                          | F          | Unit version   | -                 | 0       | 99.9    | -     |
| <b>Wireless</b>             |            |  |                   |         |         |       |
| 120                         | I          | Binding<br>No   Yes  | No                |         |         |       |
| 121                         | I          | Test mode<br>Off   On  | Off               |         |         |       |
| 130                         | I          | Room unit 1<br>missing   ready   no reception   change batt                        | -                 |         |         | -     |
| 131                         | I          | Room unit 2<br>missing   ready   no reception   change batt                        | -                 |         |         | -     |
| 132                         | I          | Outside sensor<br>missing   ready   no reception   change batt                     | -                 |         |         | -     |
| 133                         | I          | Repeater<br>missing   ready   no reception   change batt                           | -                 |         |         | -     |
| 134                         | I          | Operator unit<br>missing   ready   no reception   change batt                      | -                 |         |         | -     |
| 135                         | I          | Service unit<br>missing   ready   no reception   change batt                       | -                 |         |         | -     |
| 138                         | I          | Delete all devices   | No                |         |         | -     |

| Operating line                                     | User level | Function   | Default value            | Minimum   | Maximum | Unit  |
|--|------------|--|--------------------------|-----------|---------|-------|
|  |            | No   Yes   |                          |           |         |       |
| <b>Time program heating circuit 1</b>              |            |  |                          |           |         |       |
| 500  | E          | Preselection<br>Mo - Su   Mo - Fr   Sa - Su   Mo   Tu   We   Th   Fr   Sa   Su | Mo - Su                  |           |         | -     |
| 501  | E          | 1st phase on   | 6:00                     | 00:00     | 24:00   | hh:mm |
| 502  | E          | 1st phase off  | 22:00                    | 00:00     | 24:00   | hh:mm |
| 503  | E          | 2nd phase on   | 24:00                    | 00:00     | 24:00   | hh:mm |
| 504  | E          | 2nd phase off  | 24:00                    | 00:00     | 24:00   | hh:mm |
| 505  | E          | 3rd phase on   | 24:00                    | 00:00     | 24:00   | hh:mm |
| 506  | E          | 3rd phase off  | 24:00                    | 00:00     | 24:00   | hh:mm |
| 516  | E          | Default values<br>No   Yes   | No                       |           |         | -     |
| <b>Time program heating circuit 2</b>              |            |  |                          |           |         |       |
| 520...536 (same as time program heating circuit 1) |            |  |                          |           |         |       |
| <b>Time program 3 / HCP</b>                        |            |  |                          |           |         |       |
| 540...556 (same as time program heating circuit 1) |            |  |                          |           |         |       |
| <b>Time program 4 / DHW</b>                        |            |  |                          |           |         |       |
| 560...576 (same as time program heating circuit 1) |            |  |                          |           |         |       |
| <b>Holidays heating circuit 1</b>                  |            |  |                          |           |         |       |
| 642  | E          | Start  | --,--                    | 01.01     | 31.12   | tt.MM |
| 643  | E          | End  | --,--                    | 01.01     | 31.12   | tt.MM |
| 648  | E          | Operating level<br>Frost protection   Reduced                                  | Frost protection         |           |         | -     |
| <b>Holidays heating circuit 2</b>                  |            |  |                          |           |         |       |
| 650...658 (same as holidays heating circuit 1)     |            |  |                          |           |         |       |
| <b>Holidays heating circuit P</b>                  |            |  |                          |           |         |       |
| 660...668 (same as holidays heating circuit 1)     |            |  |                          |           |         |       |
| <b>Heating circuit 1</b>                           |            |  |                          |           |         |       |
| 710  | E          | Comfort setpoint   | 20.0                     | ZN 712    | ZN 716  | °C    |
| 712  | E          | Reduced setpoint   | 16                       | ZN 714    | ZN 710  | °C    |
| 714  | E          | Frost protection setpoint  | 10.0                     | 4         | ZN 712  | °C    |
| 716  | F          | Comfort setpoint max   | 35.0                     | ZN 710    | 35      | °C    |
| 720  | E          | Heating curve slope  | 1.50                     | 0.10      | 4.00    | -     |
| 721  | F          | Heating curve displacement   | 0.0                      | -4.5      | 4.5     | °C    |
| 726  | F          | Heating curve adaption<br>Off   On   | Off                      |           |         | -     |
| 730  | E          | Summer/winter heating limit  | 18                       | --- / 8   | 30      | °C    |
| 732  | F          | 24-hour heating limit  | -3                       | --- / -10 | 10      | °C    |
| 740  | I          | Flow temp setpoint min   | 8                        | 8         | ZN 741  | °C    |
| 741  | I          | Flow temp setpoint max   | 80                       | ZN 740    | 95      | °C    |
| 750  | F          | Room influence   | 20                       | --- / 0   | 100     | %     |
| 760  | F          | Room temp limitation   | ---                      | --- / 0.5 | 4       | °C    |
| 770  | F          | Boost heating  | 5                        | --- / 0   | 20      | °C    |
| 780  | F          | Quick setback<br>Off   Down to reduced setpoint   Down to frost prot setpoint  | Down to reduced setpoint |           |         | -     |
| 790  | F          | Optimum start control max  | 0                        | 0         | 360     | min   |
| 791  | F          | Optimum stop control max   | 0                        | 0         | 360     | min   |
| 800  | F          | Red setpoint increase start  | ---                      | --- / -30 | 10      | °C    |
| 801  | F          | Red setpoint increase end  | -15                      | -30       | ZN 800  | °C    |

| Operating line                          | User level | Function   | Default value                  | Minimum                 | Maximum                 | Unit  |
|---|------------|--|--------------------------------|-------------------------|-------------------------|-------|
| 820                                     | F          | Overtemp prot pump circuit<br>Off   On   | On                             |                         |                         | -     |
| 830                                     | F          | Mixing valve boost   | 10                             | 0                       | 50                      | °C    |
| 832                                     | F          | Actuator type  | 1                              | 0                       | 1                       | -     |
| 833                                     | F          | Switching differential 2-pos   | 2                              | 0                       | 20                      | °C    |
| 834                                     | F          | Actuator running time  | 120                            | 30                      | 873                     | s     |
| 850                                     | I          | Floor curing function<br>Off   Functional heating   Curing heating  <br>Functional/curing heating   Manually | Off                            |                         |                         | -     |
| 851                                     | I          | Floor curing setp manually   | 25                             | 0                       | 95                      | °C    |
| 860                                     | F          | Recooling storage tank<br>Off   Heating mode   Always  | Always                         |                         |                         | -     |
| <b>Heating circuit 2</b>                |            |  |                                |                         |                         |       |
| 1010...1160 (same as heating circuit 1) |            |  |                                |                         |                         |       |
| <b>Heating circuit P</b>                |            |  |                                |                         |                         |       |
| 1300                                    | E          | Operating mode<br>Protection   Automatic   Reduced   Comfort   | Automatic                      |                         |                         | -     |
| 1310...1460 (same as heating circuit 1) |            |  |                                |                         |                         |       |
| <b>DHW</b>                              |            |  |                                |                         |                         |       |
| 1610                                    | E          | Nominal setpoint   | 55                             | ZN 1612                 | ZN 1614 OEM             | °C    |
| 1612                                    | F          | Reduced setpoint   | 40                             | 8                       | ZN 1610                 | °C    |
| 1620                                    | I          | Release<br>24h/day   Time programs HCs   Time program 4/DHW  | Time programs heating circuits |                         |                         | -     |
| 1630                                    | F          | Charging priority<br>Absolute   Shifting   None   MC shifting, PC absolute                                   | MC shifting, PC absolute       |                         |                         | -     |
| 1640                                    | F          | Legionella function<br>Off   Periodically   Fixed weekday  | Fixed weekday                  |                         |                         | -     |
| 1641                                    | F          | Legionella funct periodically  | 3                              | 1                       | 7                       | Tag   |
| 1642                                    | F          | Legionella funct weekday<br>Monday   Tuesday   Wednesday   Thursday   Friday  <br>Saturday   Sunday          | Monday                         |                         |                         |       |
| 1644                                    | F          | Legionella funct time  | ---                            | --- / 00:00             | 23:50                   | hh:mm |
| 1645                                    | F          | Legionella funct setpoint  | 65                             | 55                      | 95                      | °C    |
| 1646                                    | F          | Legionella funct duration  | 30                             | --- / 10                | 360                     | min   |
| 1647                                    | F          | Legionella funct circ pump<br>Off   On   | On                             |                         |                         | -     |
| 1660                                    | F          | Circulating pump release<br>Time program 3/HCP   DHW release   Time program<br>4/DHW                         | DHW release                    |                         |                         | -     |
| 1661                                    | F          | Circulating pump cycling<br>Off   On   | On                             |                         |                         | -     |
| 1663                                    | F          | Circulating setpoint   | 45                             | 8                       | 80                      | °C    |
| <b>Boiler</b>                           |            |  |                                |                         |                         |       |
| 2210                                    | F          | Setpoint min   | 40                             | ZN 2210 OEM             | Setpoint manual control | °C    |
| 2212                                    | F          | Setpoint max   | 80                             | Setpoint manual control | ZN 2213 OEM             | °C    |
| <b>Solar</b>                            |            |  |                                |                         |                         |       |
| 3810                                    | F          | Temp diff ON exchanger 1   | 8                              | ZN 3811                 | 40                      | °C    |
| 3811                                    | F          | Temp diff OFF exchanger 1  | 4                              | 0                       | ZN 3812                 | °C    |
| 3812                                    | F          | Charg temp min exchanger 1   | ---                            | --- / 8                 | 95                      | °C    |

| Operating line          | User level | Function   | Default value                        | Minimum   | Maximum     | Unit |
|-------------------------|------------|--|--------------------------------------|-----------|-------------|------|
| 3830                    | F          | Collector start function   | ---                                  | --- / 5   | 60          | min  |
| 3831                    | F          | Min run time collector pump  | 60                                   | 5         | 120         | s    |
| 3840                    | F          | Collector frost protection   | ---                                  | --- / -20 | 5           | °C   |
| 3850                    | F          | Collector overtemp prot  | ---                                  | --- / 30  | 200         | °C   |
| 3860                    | F          | Evaporation heat carrier   | ---                                  | --- / 60  | 200         | °C   |
| <b>DHW storage tank</b> |            |  |                                      |           |             |      |
| 5020                    | F          | Flow setpoint boost  | 16                                   | 0         | 30          | °C   |
| 5022                    | F          | Type of charging<br>With B3 ; With B3/B31 ; With B3, legio B3/B31  | With B3/B31                          |           |             | -    |
| 5050                    | F          | Charging temperature max   | 80                                   | 8         | ZN 5051 OEM | °C   |
| 5055                    | F          | Recooling temperature  | 60                                   | 8         | 95          | °C   |
| 5056                    | F          | Recooling boiler/HC<br>Off ; On  | Off                                  |           |             | -    |
| 5057                    | F          | Recooling collector<br>Off ; Summer ; Always   | Off                                  |           |             | -    |
| 5060                    | F          | Ei imm heater optg mode<br>Substitute ; Summer ; Always  | Substitute                           |           |             | -    |
| 5061                    | F          | Ei immersion heater release<br>24h/day ; DHW release ; Time program4/ DHW  | DHW release                          |           |             | -    |
| 5062                    | F          | Ei immersion heater control<br>External thermostat ; DHW sensor  | DHW sensor                           |           |             | -    |
| <b>Configuration</b>    |            |  |                                      |           |             |      |
| 5710                    | I          | Heating circuit 1<br>Off ; On  | On                                   |           |             | -    |
| 5715                    | I          | Heating circuit 2<br>Off ; On  | On                                   |           |             | -    |
| 5730                    | I          | DHW sensor B3<br>Sensor ; Thermostat   | Sensor                               |           |             | -    |
| 5731                    | I          | DHW control element Q3<br>None ; Charging pump ; Diverting valve   | Charging pump                        |           |             | -    |
| 5890                    | I          | Relay output QX1<br>None ; Circulating pump Q4 ; Ei imm heater DHW K6 ;<br>Collector pump Q5 ; H1 pump Q15 ; Boiler pump Q1 ;<br>Bypass pump Q12 ; Alarm output K10 ; 2nd pump speed<br>HC1 Q21 ; 2nd pump speed HC2 Q22 ; 2nd pump speed<br>HCP Q23 ; Heating circuit pump HCP Q20 ; H2 pump<br>Q18 | None                                 |           |             | -    |
| 5891                    | I          | Relay output QX2<br>None ; Circulating pump Q4 ; Ei imm heater DHW K6 ;<br>Collector pump Q5 ; H1 pump Q15 ; Boiler pump Q1 ;<br>Bypass pump Q12 ; Alarm output K10 ; 2nd pump speed<br>HC1 Q21 ; 2nd pump speed HC2 Q22 ; 2nd pump speed<br>HCP Q23 ; Heating circuit pump HKP Q20 ; H2 pump Q18    | None                                 |           |             | -    |
| 5930                    | I          | Sensor input BX1<br>None ; DHW sensor B31 ; Collector sensor B6 ; Return<br>sensor B7  | None                                 |           |             | -    |
| 5931                    | I          | Sensor input BX2<br>None ; DHW sensor B31 ; Collector sensor B6 ; Return<br>sensor B7  | None                                 |           |             | -    |
| 5950                    | I          | Function input H1<br>Optg mode change HCs+DHW ; Optg mode changeover<br>HCs ; Optg mode changeover HC1 ; Optg mode<br>changeover HC2 ; Optg mode changeover HCP ; Heat<br>generation lock ; Error/alarm message ; Min flow temp<br>setpoint ; Heat request ; Pressure measurement                    | Operating mode<br>changeover HCs+DHW |           |             | -    |
| 5951                    | I          | Contact type H1  | NO contact                           |           |             | -    |



| Operating line | User level | Function  | Default value                     | Minimum  | Maximum          | Unit |
|----------------|------------|---|-----------------------------------|----------|------------------|------|
|                |            | NC ; NO   |                                   |          |                  |      |
| 5952           | I          | Min flow temp setpoint H1   | 70                                | 8        | ...TKmax (120°C) | °C   |
| 5954           | I          | Heat request 10V H1   | 100                               | 5        | 130              | °C   |
| 5956           | I          | Pressure value 3.5V H1  | 5.0                               | 0.0      | 10.0             | bar  |
| 5960           | I          | Function input H2<br>Optg mode change HCs+DHW ; Optg mode changeover HCs ; Optg mode changeover HC1 ; Optg mode changeover HC2 ; Optg mode changeover HCP ; Generation lock; Min flow temp setpoint | Operating mode changeover HCs+DHW |          |                  | -    |
| 5961           | I          | Contact type H2<br>NC ; NO  | NO contact                        |          |                  | -    |
| 5962           | I          | Min flow temp setpoint H2   | 70                                | 8        | ...TKmax         | °C   |
| 6100           | F          | Readjustm outside sensor  | 0.0                               | -3.0     | 3.0              | °C   |
| 6110           | F          | Time constant building  | 20                                | 0        | 50               | h    |
| 6120           | F          | Frost protection plant<br>Off ; On  | On                                |          |                  | -    |
| 6200           | I          | Save sensors<br>No ; Yes  | No                                |          |                  | -    |
| 6205           | F          | Reset to default parameters<br>No ; Yes   | No                                |          |                  | -    |
| 6212           | I          | Check no heat source 1  | -                                 | 0        | 199999           | -    |
| 6215           | I          | Check no storage tank   | -                                 | 0        | 199999           | -    |
| 6217           | I          | Check no heating circuits   | -                                 | 0        | 199999           | -    |
| 6220           | F          | Software version  | -                                 | 0        | 99.9             | -    |
| <b>Error</b>   |            |   |                                   |          |                  |      |
| 6710           | I          | Reset alarm relay<br>No ; Yes   | No                                |          |                  | -    |
| 6740           | F          | Flow temperature 1 alarm  | ---                               | --- / 10 | 240              | min  |
| 6741           | F          | Flow temperature 2 alarm  | ---                               | --- / 10 | 240              | min  |
| 6743           | F          | Boiler temperature alarm  | ---                               | --- / 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              | -    |
| 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  | -                                 |          |                  |      |

| Operating line                 | User level | Function   | Default value | Minimum  | Maximum | Unit   |
|--------------------------------|------------|--|---------------|----------|---------|--------|
|                                | F          | Error code 10  | -             | 0        | 255     | -      |
| <b>Maintenance / service</b>   |            |  |               |          |         |        |
| 7040                           | F          | Burner hours interval  | ---           | --- / 10 | 10000   | h      |
| 7041                           | F          | Burner hrs since maintenance   | 0             | 0        | 10000   | h      |
| 7042                           | F          | Burner starts interval   | ---           | --- / 60 | 65535   | -      |
| 7043                           | F          | Burn starts since maint  | 0             | 0        | 65535   | -      |
| 7044                           | F          | Service Interval   | ---           | --- / 1  | 240     | Months |
| 7045                           | F          | Time since maintenance   | 0             | 0        | 240     | Months |
| 7130                           | E          | Chimney sweep function<br>Off ; On   | Off           |          |         | -      |
| 7140                           | E          | Manual control<br>Off ; On   | Off           |          |         | -      |
| 7150                           | I          | Simulation outside temp  | -             | -50.0    | 50.0    | °C     |
| 7170                           | I          | Telephone customer service   |               |          |         | -      |
| <b>Input / output test</b>     |            |  |               |          |         |        |
| 7700                           | I          | Relay test<br>No test ; Everything off ; 1st burner stage T2 ; DHW pump Q3 ; Heating circuit pump Q2 ; Heat circ mix valve op Y1 ; Heat circ mix valve cl Y2 ; Heating circuit pump Q6 ; Heat circ mix valve op Y5 ; Heat circ mix valve cl Y6 ; Relay output QX1 ; Relay output QX2 | No test       |          |         | -      |
| 7730                           | I          | Outside temperature B9   | -             | -50.0    | 50.0    | °C     |
| 7732                           | I          | Flow temperature B1  | -             | 0.0      | 140.0   | °C     |
| 7734                           | I          | Flow temperature B12   | -             | 0.0      | 140.0   | °C     |
| 7750                           | I          | DHW temperature B3   | -             | 0.0      | 140.0   | °C     |
| 7760                           | I          | Boiler temperature B2  | -             | 0.0      | 140.0   | °C     |
| 7820                           | I          | Sensor temperature BX1   | -             | -28.0    | 200.0   | °C     |
| 7821                           | I          | Sensor temperature BX2   | -             | -28.0    | 200.0   | °C     |
| 7840                           | I          | Voltage signal H1  | -             | 0.0      | 10.0    | Volt   |
| 7841                           | I          | Contact state H1<br>Open ; Closed  | Open          |          |         | -      |
| 7846                           | I          | Contact state H2<br>Open ; Closed  | Open          |          |         | -      |
| 7870                           | I          | Burner fault S3<br>0V ; 230V   | 0V            |          |         | -      |
| 7881                           | I          | 1st burner stage E1<br>0V ; 230V   | 0V            |          |         | -      |
| <b>State</b>                   |            |  |               |          |         |        |
| 8000                           | I          | State heating circuit 1  | -             |          |         | -      |
| 8001                           | I          | State heating circuit 2  | -             |          |         | -      |
| 8002                           | I          | State heating circuit P  | -             |          |         | -      |
| 8003                           | I          | State DHW  | -             |          |         | -      |
| 8005                           | I          | State boiler   | -             |          |         | -      |
| 8007                           | I          | State solar  | -             |          |         | -      |
| <b>Diagnostics heat source</b> |            |  |               |          |         |        |
| 8300                           | I          | 1st burner stage T2<br>Off ; On  | -             |          |         | -      |
| 8310                           | I          | Boiler temperature   | -             | 0.0      | 140.0   | °C     |
| 8311                           | I          | Boiler temperature setpoint  | -             | 0.0      | 140.0   | °C     |
| 8314                           | I          | Boiler return temperature  | -             | 0.0      | 140.0   | °C     |
| 8330                           | F          | Hours run 1st stage  | 0             | 0        | 65535   | h      |

| Operating line              | User level | Function                                   | Default value | Minimum | Maximum | Unit |
|-----------------------------|------------|--|---------------|---------|---------|------|
| 8331                        | F          | Start counter 1st stage                    | -             | 0       | 199'999 | -    |
| 8510                        | I          | Collector temperature 1                    | -             | -28.0   | 200.0   | °C   |
| 8511                        | I          | Collector temperature 1 max                | 0             | -28.0   | 200.0   | °C   |
| 8512                        | I          | Collector temperature 1 min                | 0             | -28.0   | 200.0   | °C   |
| 8513                        | I          | dT collector 1/exchanger 1                 | -             | -28.0   | 200.0   | °C   |
| 8530                        | F          | Hours run solar yield                      | -             | 00:00   | 15:00   | °C   |
| 8531                        | F          | Hours run collect overtemp                 | -             | 00:00   | 15:00   | °C   |
| <b>Diagnostics consumer</b> |            |  |               |         |         |      |
| 8700                        | I          | Outside temperature                        | -             | -50.0   | 50.0    | °C   |
| 8703                        | I          | Outside temp attenuated                    | -             | -50.0   | 50.0    | °C   |
| 8704                        | I          | Outside temp composite                     | -             | -50.0   | 50.0    | °C   |
| 8730                        | I          | Heating circuit pump Q2<br>Off   On        | -             |         |         | -    |
| 8731                        | I          | Heating circ mix valve open Y1<br>Off   On | -             |         |         | -    |
| 8732                        | I          | Heat circ mix valve closed Y2<br>Off   On  | -             |         |         | -    |
| 8740                        | I          | Room temperature 1                         | -             | 0.0     | 50.0    | °C   |
| 8741                        | I          | Room setpoint 1                            | -             | 4.0     | 35.0    | °C   |
| 8743                        | I          | Flow temperature 1                         | -             | 0.0     | 140.0   | °C   |
| 8744                        | I          | Flow temperature setpoint 1                | -             | 0.0     | 140.0   | °C   |
| 8760                        | I          | Heating circuit pump Q6<br>Off   On        | -             |         |         | -    |
| 8761                        | I          | Heat circ mix valve open Y5<br>Off   On    | -             |         |         | -    |
| 8762                        | I          | Heat circ mix valve close Y6<br>Off   On   | -             |         |         | -    |
| 8770                        | I          | Room temperature 2                         | -             | 0.0     | 50.0    | °C   |
| 8771                        | I          | Room setpoint 2                            | -             | 4.0     | 35.0    | °C   |
| 8773                        | I          | Flow temperature 2                         | -             | 0.0     | 140.0   | °C   |
| 8774                        | I          | Flow temperature setpoint 2                | -             | 0.0     | 140.0   | °C   |
| 8800                        | I          | Room temperature P                         | -             | 0.0     | 50.0    | °C   |
| 8801                        | I          | Room setpoint P                            | -             | 4.0     | 35.0    | °C   |
| 8803                        | I          | Flow temperature setpoint P                | -             | 0.0     | 140.0   | °C   |
| 8820                        | I          | DHW pump Q3<br>Off   On                    | -             |         |         | -    |
| 8830                        | I          | DHW temperature 1                          | -             | 0.0     | 140.0   | °C   |
| 8831                        | I          | DHW temperature setpoint                   | -             | 8.0     | 80.0    | °C   |
| 8832                        | I          | DHW temperature 2                          | -             | 0.0     | 140.0   | °C   |
| 8835                        | I          | DHW circulating temperature                | -             | 0.0     | 140.0   | °C   |
| 8950                        | I          | Common flow temperature                    | -             | 0.0     | 140.0   | °C   |
| 8951                        | I          | Common flow temp setpoint                  | -             | 0.0     | 140.0   | °C   |
| 9000                        | I          | Flow temp setpoint H1                      | -             | 5.0     | 130.0   | °C   |
| 9001                        | I          | Flow temp setpoint H2                      | -             | 5.0     | 130.0   | °C   |
| 9005                        | I          | Water pressure H1                          | -             | 0.0     | 10.0    | bar  |
| 9031                        | I          | Relay output QX1<br>Off   On               | -             |         |         | -    |
| 9032                        | I          | Relay output QX2<br>Off   On               | -             |         |         | -    |

## 5.3 The settings in detail

### 5.3.1 Time of day and date

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

| Line no. | Operating line       |
|----------|----------------------|
| 1        | Hours/minutes        |
| 2        | Month/day            |
| 3        | Year                 |
| 5        | Start of summer time |
| 6        | End of summer time   |

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).

### 5.3.2 Operator unit

Operation and display

| Line no. | Operating line                     |
|----------|------------------------------------|
| 20       | Language                           |
| 22       | Info<br>Temporarily<br>Permanently |
| 26       | Operation lock                     |
| 27       | Programming lock                   |

Info

Temporarily: After 8 minutes, the info display returns to the basic display.  
Continuously: When retrieved with the Info button, the info display is continuously maintained.

Operation lock

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

Programming lock

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

44. Temporary deactivation of programming lock.

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

45. Constant deactivation of programming lock.

First, make the temporary deactivation, then go to operating line "Programming lock" (line 27) and deactivate the programming lock

Used as:

| Line no. | Operating line  |
|----------|---|
| 40       | Used as<br>Room unit 1<br>Room unit 2<br>Operating unit<br>Service unit |

This operating line is used to select usage of the operator unit. Depending on use, additional settings will then be required under "Assignment room unit 1". When using

several operator sections, it is thus possible to match individual units to specific requirements.



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

#### Room unit 1

The operator unit supports the heating circuits released on operating line "Assignment room unit 1" (line 42) and activated in the basic unit.

Operating lines 42 through 48 remain active.

#### Room unit 2

The operator unit only supports heating circuit 2.

Operating lines 42 through 48 remain inactive.

#### Operator unit / service unit

The operator unit supports the heating circuits activated in the basic unit.

Operating line 42 remains inactive.

Operating lines 44 through 48 are active.



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

### Heating circuit assignment

| <i>Line no.</i> | <i>Operating line</i>  |
|-----------------|--|
| <b>42</b>       | <b>Assignment room unit 1</b><br>Heating circuit 1<br>Heating circuits 1 and 2               |
| <b>44</b>       | <b>Operation HC2</b><br>Commonly with HC1<br>Independently                                   |
| <b>46</b>       | <b>Operation HCP</b><br>Commonly with HC1<br>Independently                                   |
| <b>48</b>       | <b>Action occupancy button</b><br>None<br>Heating circuit 1<br>Heating circuit 2<br>Commonly |

#### Assignment room unit 1

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

#### Operation HC2

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

##### **Commonly with HC1**

Operation acts jointly on heating circuits 1 and 2.

##### **Independently**

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

#### Operation HCP

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

##### **Commonly with HC1**

Operation acts jointly on heating circuits 1 and 2.

##### **Independently**

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

Action of occupancy button

The action of the occupancy button on the operator unit can be assigned to the relevant heating circuits.  
If only 1 heating circuit is assigned, the occupancy button always acts on that heating circuit.

### Room sensor

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

The temperature display can be readjusted.

### Device data

| <i>Line no.</i> | <i>Operating line</i> |
|-----------------|-----------------------|
| <b>70</b>       | <b>Unit version</b>   |

The display shows the current version of the room unit.

## 5.3.3 Wireless

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### Binding

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

For more detailed information, refer to the descriptions of the wireless components in section 3.5.

Binding

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

Test mode

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

### Device list wireless

| <i>Line no.</i> | <i>Operating line</i>   |
|-----------------|---|
| <b>130</b>      | <b>Room unit 1</b><br>missing<br>ready<br>no reception<br>change batt |
| <b>131</b>      | <b>Room unit 2</b><br>Same as on setting line 130                     |
| <b>132</b>      | <b>Outside sensor</b><br>Same as on setting line 130                  |
| <b>133</b>      | <b>Repeater</b><br>Same as on setting line 130                        |
| <b>134</b>      | <b>Operator unit</b><br>Same as on setting line 130                   |
| <b>135</b>      | <b>Service unit</b><br>Same as on setting line 130                    |
| <b>138</b>      | <b>Delete all devices</b>   |

Delete all devices

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

## 5.3.4 Time programs

---

For the heating circuits and DHW heating, a number of switching programs are available. They are activated in "Automatic" mode 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

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

### Standard program

| <i>Line no.</i>           | <i>Operating line</i> |
|---------------------------|-----------------------|
| <b>516, 536, 556, 576</b> | <b>Default values</b> |

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



In that case, individual settings will be lost!

### 5.3.5 Holidays

| <i>Line no.</i> |            |            | <i>Operating line</i>                                 |
|-----------------|------------|------------|---|
| <i>HC1</i>      | <i>HC2</i> | <i>HCP</i> |   |
| <b>642</b>      | <b>652</b> | <b>662</b> | <b>Start</b>  |
| <b>643</b>      | <b>653</b> | <b>663</b> | <b>End</b>  |
| <b>648</b>      | <b>658</b> | <b>668</b> | <b>Operating level</b><br>Frost protection<br>Reduced |

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



46. The holiday program can only be used in "Automatic" mode

### 5.3.6 Heating circuits

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

## Operating mode

| Line no.    | Operating line   |
|-------------|--|
| <b>1300</b> | <b>Operating mode</b><br>Protection<br>Automatic<br>Reduced<br>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 (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".

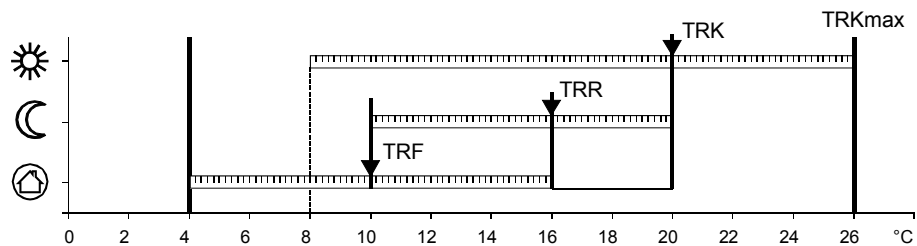
## Setpoints

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

## Room temperature

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

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



2358Z01

TRKmax Comfort setpoint maximum  
 TRK Comfort 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.

## Heating curve

| Line no.   |             |             | Operating line                    |
|------------|-------------|-------------|-----------------------------------|
| HC1        | HC2         | HCP         |                                   |
| <b>720</b> | <b>1020</b> | <b>1320</b> | <b>Heating curve slope</b>        |
| <b>721</b> | <b>1021</b> | <b>1321</b> | <b>Heating curve displacement</b> |
| <b>726</b> | <b>1026</b> | <b>1326</b> | <b>Heating curve adaption</b>     |

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

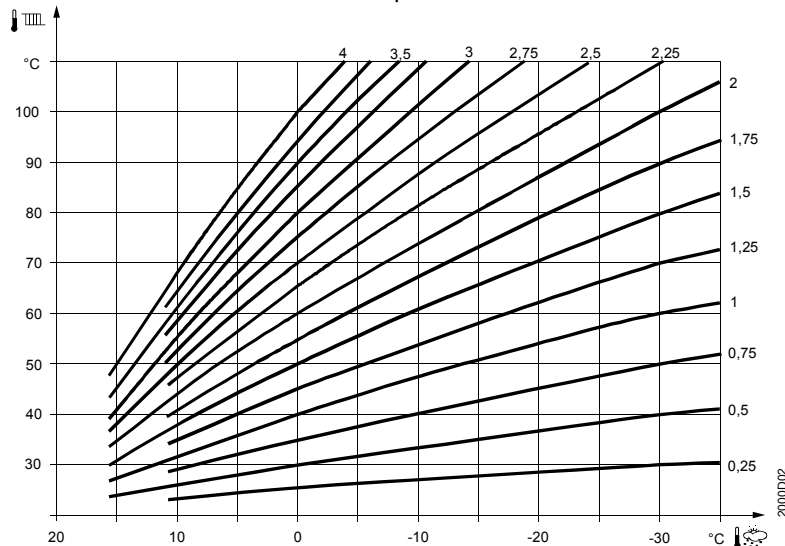


## Heating curve slope

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

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

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



## Displacement of heating curve

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

## Adaptation of the heating curve

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



To provide this function, following must be observed:

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

## ECO functions

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

## Summer / winter compensation

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

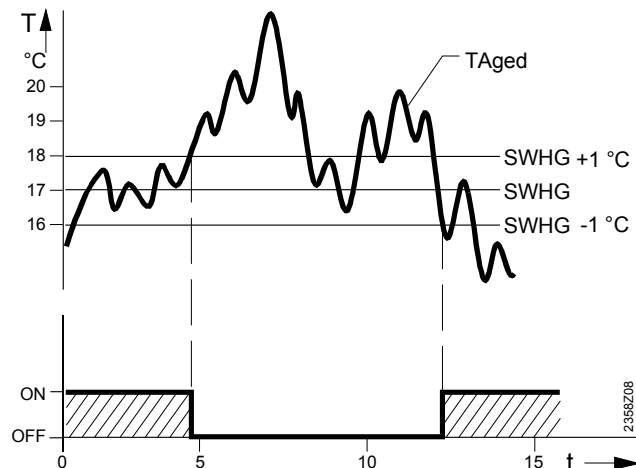
Increase: Winter operation will start *earlier*  
Summer operation will start *later*

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



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

Example:



SWHG Summer / winter heating limit  
 T<sub>Aged</sub> Attenuated outside temperature  
 t Temperature  
 t Days

#### 24-hour heating limit

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

Example:

| Setting line  | E.g.    |
|---|---------|
| Comfort setpoint (TR <sub>w</sub> )                       | 22 °C   |
| 24-hour heating limit (THG)                               | -3 °C   |
| Changeover temperature (TR <sub>w</sub> -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 operation will start *earlier*,  
changeover to ECO *later*.

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



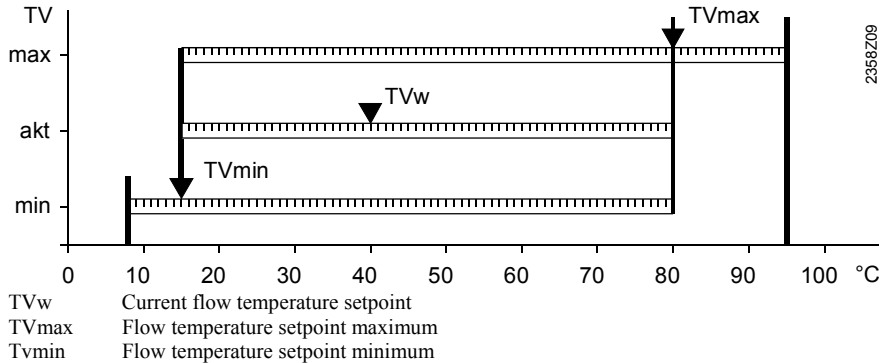
- 50. The function is not active in operating mode "Continuously Comfort temperature"  
☀
- 51. The display will show "ECO"
- 52. To give consideration to the building's thermal dynamics, the outside temperature will be attenuated

#### Flow temperature setpoint limitations

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

| HC1 | HC2  | HCP  |                        |
|-----|------|------|------------------------|
| 740 | 1040 | 1340 | Flow temp setpoint min |
| 741 | 1041 | 1341 | Flow temp setpoint max |

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



## Room influence

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

Types of compensation:

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

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

\* Outside sensor required

Pure weather compensation

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

This type of compensation demands 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, thus 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.

53. Example:

Approx. 60 % Good reference room conditions

Approx. 20 % Unfavorable reference room conditions



To provide the function, following must be considered:

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

## Pure room compensation

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



To provide the function, following must be considered:

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

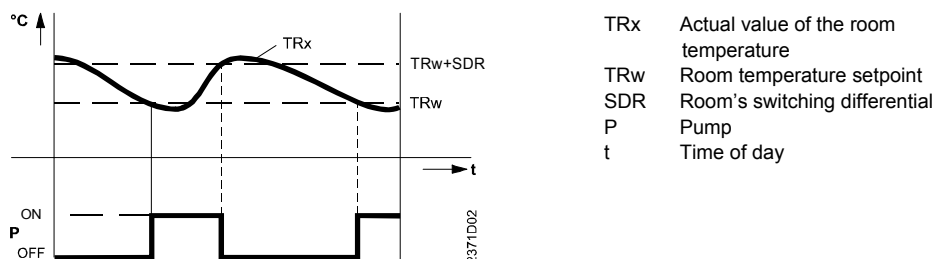
## Room temperature limitation

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

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



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



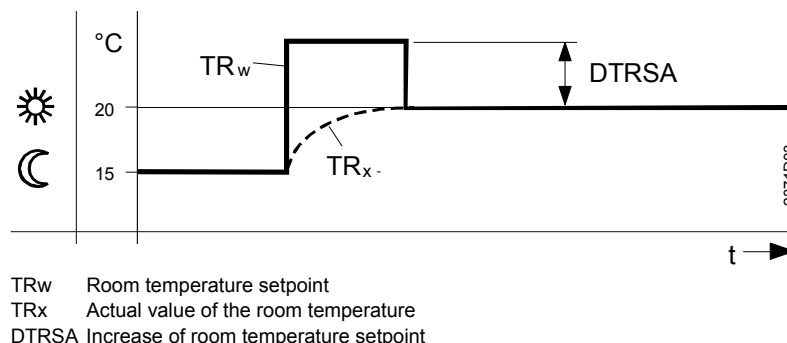
## Boost heating

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

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



- Boost heating is possible with or without room sensor



## Quick setback

| Line no.   |             |             | Operating line   |
|------------|-------------|-------------|--|
| HC1        | HC2         | HCP         |  |
| <b>780</b> | <b>1080</b> | <b>1380</b> | <b>Quick setback</b><br>Off<br>Down to reduced setpoint<br>Down to frost prot setpoint |

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

- Function with room sensor:

When using the room sensor, the function keeps the heating switched off until the room temperature has dropped to the level of the Reduced setpoint or the frost level. When the room temperature has fallen to the Reduced level or the frost level, the heating circuit pump will be activated and the mixing valve will be released.

- Function without room sensor:

Quick setback switches the heating off for a certain period of time, depending on the outside temperature and the building time constant.

### Example

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

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

Duration of quick setback in hours



- Quick setback is possible with or without room sensor

## Optimum start / stop control

| Line no.   |             |             | Operating line                   |
|------------|-------------|-------------|----------------------------------|
| HC1        | HC2         | HCP         |                                  |
| <b>790</b> | <b>1090</b> | <b>1390</b> | <b>Optimum start control max</b> |
| <b>791</b> | <b>1091</b> | <b>1391</b> | <b>Optimum stop control max</b>  |

### Optimum start control max

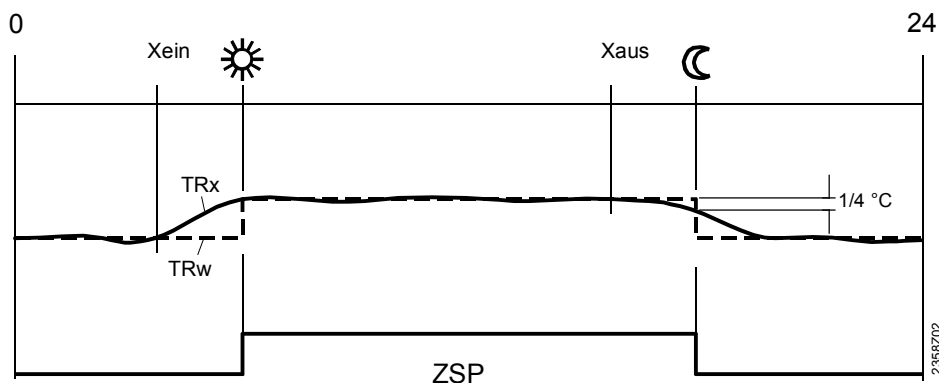
The change from one temperature level to the other is optimized in a way that the Comfort setpoint will be reached at the relevant switching time.

### Optimum stop control max

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



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

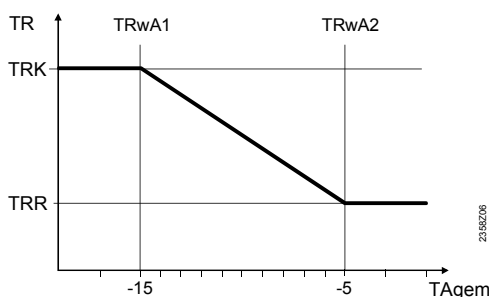


Xein Switch-on time shifted forward  
 Xaus Switch-off time shifted forward  
 ZSP Time program  
 TRx Actual value of the room temperature  
 TRw Room temperature setpoint

### Increase of Reduced setpoint

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

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



TRwA1 Reduced increase start  
 TRwA2 Reduced increase end  
 TRK Comfort setpoint  
 TRR Reduced room temperature setpoint  
 Tagem Composite outside temperature

### Overtemperature protection pump heating circuit

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

In the case of heating plant with pump heating circuits, the flow temperature of the heating circuit can be higher than the flow temperature 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.

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         |  |
| <b>830</b> | <b>1130</b> | <b>Mixing valve boost</b>                        |
| <b>832</b> | <b>1132</b> | <b>Actuator type</b><br>2-position<br>3-position |
| <b>833</b> | <b>1133</b> | <b>Switching differential 2-pos</b>              |
| <b>834</b> | <b>1134</b> | <b>Actuator running time</b>                     |

↑  
Only with RVS13.143 and RVS53.183

#### Mixing valve boost

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

#### Type of actuator

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

#### Switching differential 2-position

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

#### Actuator running time

Setting the actuator running time for the mixing valve used.

### Floor curing function

| Line no.   |             |             | Operating line   |
|------------|-------------|-------------|--|
| HC1        | HC2         | HCP         |  |
| <b>850</b> | <b>1150</b> | <b>1450</b> | <b>Floor curing function</b><br>Off<br>Functional heating (Fh)<br>Curing heating (Bh)<br>Functional/curing heating<br>Manually |
| <b>851</b> | <b>1151</b> | <b>1451</b> | <b>Floor curing setp manually</b>  |

#### Floor curing function

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

##### Off:

The function is deactivated.

##### Functional heating (Fh) :

The first part of the temperature profile is traversed automatically.

##### Floor curing heating (Bh)

The second part of the temperature profile is traversed automatically.

##### Functional and floor curing heating

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

##### Manually

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

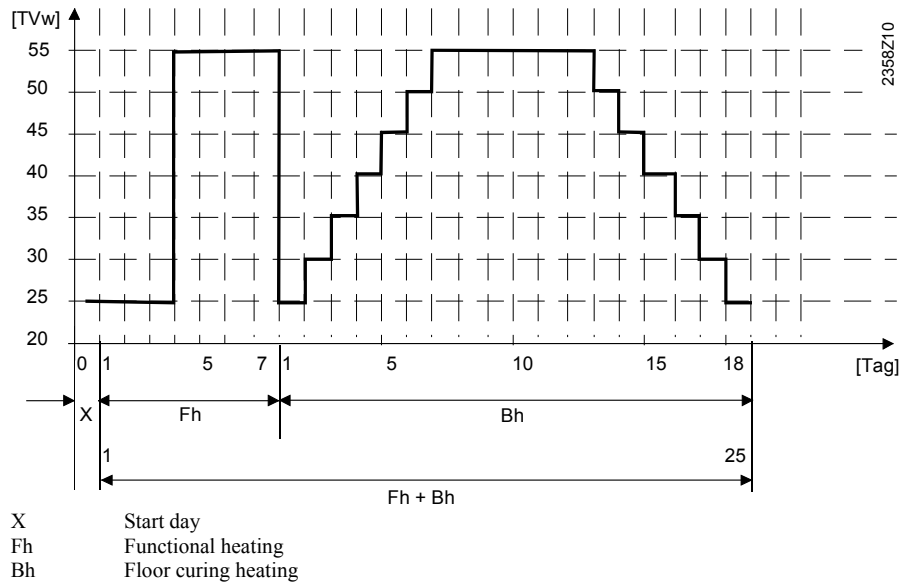


54. Observe the relevant standards and regulations of the floor manufacturer!

55. Proper functioning is ensured only when the plant is correctly installed (hydraulic system, electrical installation, settings)!

If not observed, the floor might get damaged!

- 56. The function can be aborted prematurely by choosing **Off**
- 57. Maximum limitation of the flow temperature remains active



### Recooling

| Line no.   |             |             | Operating line                |
|------------|-------------|-------------|-------------------------------|
| HC1        | HC2         | HCP         |                               |
| <b>860</b> | <b>1160</b> | <b>1460</b> | <b>Recooling storage tank</b> |

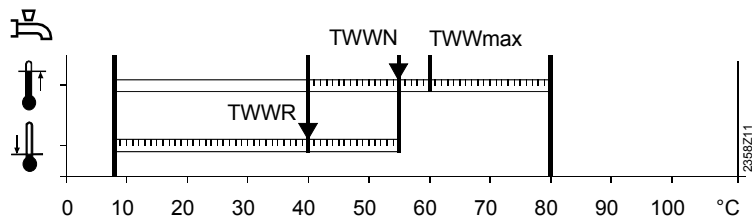
The surplus heat stored in the heat exchanger can be drawn off by space heating. This can be adjusted separately for each heating circuit. (Also refer to operating page "DHW storage tank", operating line "Recoolign boiler/HC")

### 5.3.7 DHW

#### Setpoints

| Line no.    | Operating line          |
|-------------|-------------------------|
| <b>1610</b> | <b>Nominal setpoint</b> |
| <b>1612</b> | <b>Reduced setpoint</b> |

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



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

#### Release

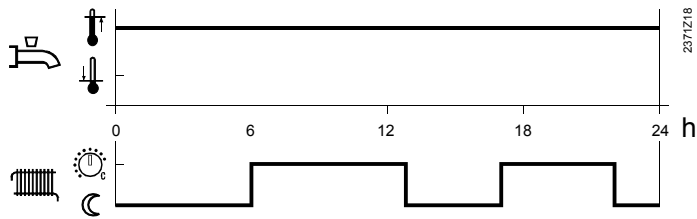
| Line no.    | Operating line   |
|-------------|--|
| <b>1620</b> | <b>Release</b><br>24h/day<br>Time programs HCs<br>Time program 4/DHW |



### 24 h/day

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

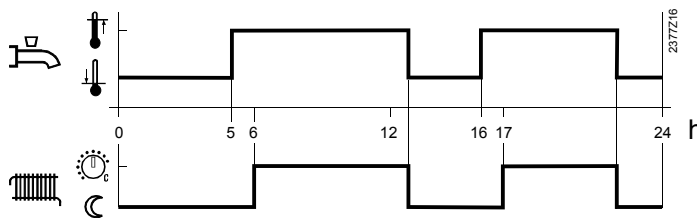
Example:



### Time programs heating circuits

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

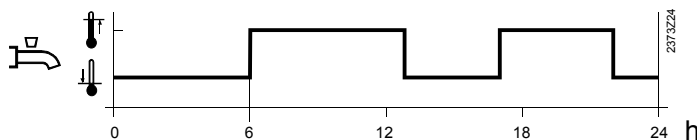
Example:



### Time program 4/DHW

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

Example:



## Priority

| Line no.    | Operating line   |
|-------------|--|
| <b>1630</b> | <b>Charging priority</b><br>Absolute<br>Shifting<br>None<br>MC shifting, PC absolute |

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

### Absolute priority

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

### Shifting priority

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

### No priority

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

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

### Mixing heating circuit shifting, pump heating circuit absolute

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

## Legionella function

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

### Legionella function

#### 58. Periodically

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

#### 59. Fixed weekday

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

### Legionella function circulating pump

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



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

## Circulating pump

| Line no.    | Operating line   |
|-------------|--|
| <b>1660</b> | <b>Circulating pump release</b><br>Time program 3/HCP<br>DHW release<br>Time program 4/DHW |
| <b>1661</b> | <b>Circulating pump cycling</b>  |

### Circulating pump cycling operation

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.

## 5.3.8 Boiler

### Setpoints

| Line no.    | Operating line      |
|-------------|---------------------|
| <b>2210</b> | <b>Setpoint min</b> |
| <b>2212</b> | <b>Setpoint max</b> |

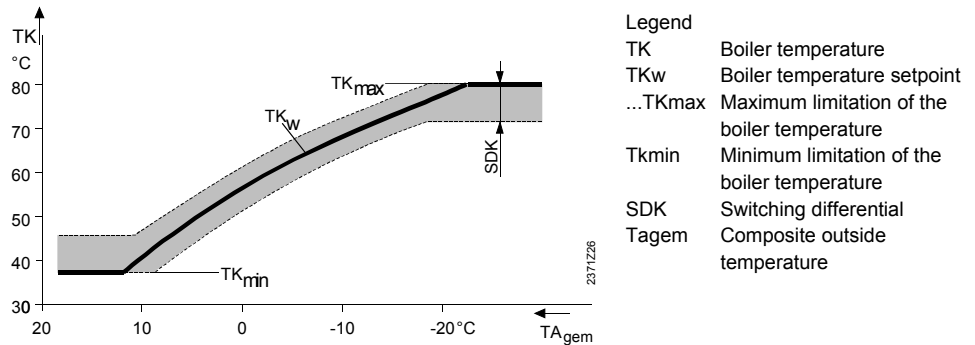
The controlled boiler temperature setpoint can be limited by selecting setpoint minimum and setpoint maximum. These limitations can be regarded as protective functions for the boiler.

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



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

Example when using boiler operating mode "Automatic":

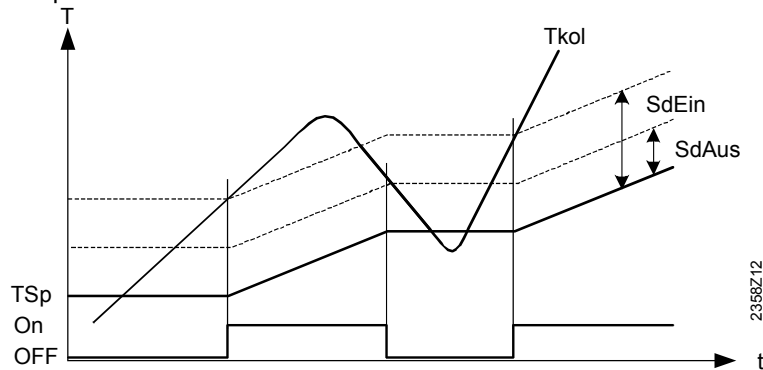


### 5.3.9 Solar

#### Charging controller (dT)

| Line no.    | Operating line                    |
|-------------|-----------------------------------|
| <b>3810</b> | <b>Temp diff ON exchanger 1</b>   |
| <b>3811</b> | <b>Temp diff OFF exchanger 1</b>  |
| <b>3812</b> | <b>Charg temp min exchanger 1</b> |

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



Tkol Collector temperature  
 On / Off Collector pump  
 SdEin Temperature differential ON  
 SdAus Temperature differential OFF

#### Start function

| Line no.    | Operating line                     |
|-------------|------------------------------------|
| <b>3830</b> | <b>Collector start function</b>    |
| <b>3831</b> | <b>Min run time collector pump</b> |

#### Collector start function

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

#### Minimum running time of collector pump

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

#### Frost protection for the collector

| Line no.    | Operating line                    |
|-------------|-----------------------------------|
| <b>3840</b> | <b>Collector frost protection</b> |

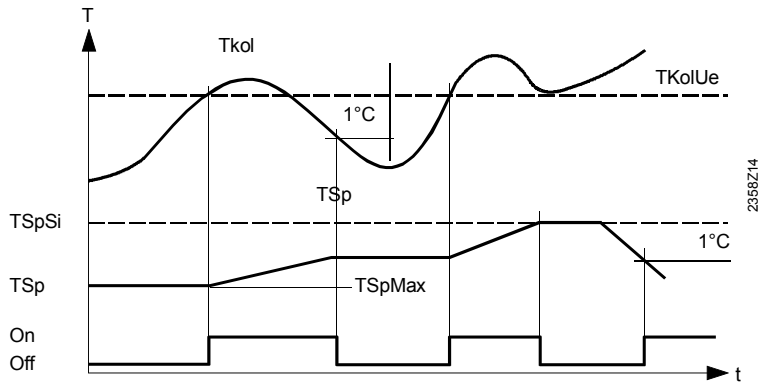
When there is risk of frost at the collector, the collector pump will be activated to prevent the heat carrying medium from freezing.

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

#### Overtemperature protection for the collector

| Line no.    | Operating line                 |
|-------------|--------------------------------|
| <b>3850</b> | <b>Collector overtemp prot</b> |

If there is risk of overtemperature at the collector, storage tank charging is continued to reduce the amount of surplus heat. When the storage tank's safety temperature is reached, charging will be stopped.



- TSpSi Storage tank safety temperature
- TSp Storage tank temperature
- TKolUe Collector temperature for overtemperature protection
- TSpmax Maximum charging temperature
- Tkol Collector temperature
- On / Off Collector pump
- t Temperature
- Time of day

### Evaporation temperature of medium

| Line no.    | Operating line                  |
|-------------|---------------------------------|
| <b>3860</b> | <b>Evaporation heat carrier</b> |

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

### 5.3.10 DHW storage tank

#### Charging control

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

Increase of the flow temperature setpoint

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

Type of charging

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

#### Overtemperature protection

| Line no.    | Operating line                  |
|-------------|---------------------------------|
| <b>5050</b> | <b>Charging temperature max</b> |

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



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

## Recooling

| Line no.    | Operating line  |
|-------------|---|
| <b>5055</b> | <b>Recooling temperature</b>                          |
| <b>5056</b> | <b>Recooling boiler/HC</b>                            |
| <b>5057</b> | <b>Recooling collector</b><br>Off<br>Summer<br>Always |

Recooling boiler/HC

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

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

Recooling collector

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

## Electric immersion heater

| Line no.    | Operating line   |
|-------------|--|
| <b>5060</b> | <b>EI imm heater optg mode</b><br>Substitute<br>Summer<br>Always                   |
| <b>5061</b> | <b>EI immersion heater release</b><br>24h/day<br>DHW release<br>Time program 4/DHW |
| <b>5062</b> | <b>EI immersion heater control</b><br>External thermostat<br>DHW sensor            |

Electric immersion heater operating mode

### Substitute

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

### Summer

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

### Always

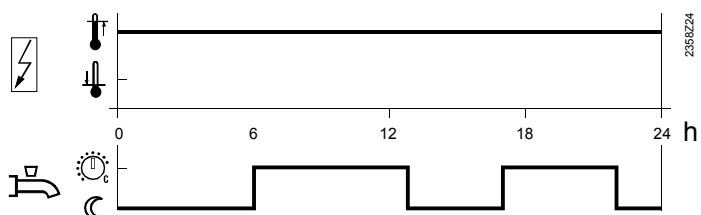
DHW is heated with the electric immersion heater throughout the year. This means that with this application, the boiler is never required for DHW heating.

Release of the electric immersion heater

### 24 h/day

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

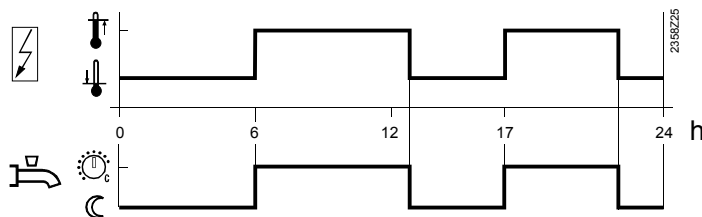
Example:



### Release of DHW

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

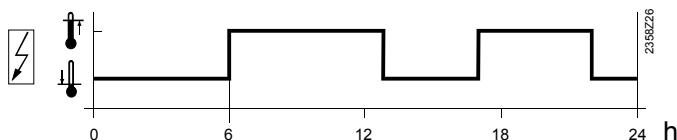
Example:



### Time program 4/DHW

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

Example:



Control of the electric immersion heater

### External control thermostat

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

### DHW sensor

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

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

## 5.3.11 Configuration

### Heating circuits 1 and 2

| Line no.    |             |  |  | Operating line             |
|-------------|-------------|--|--|----------------------------|
| HC1         | HC2         |  |  |                            |
| <b>5700</b> | <b>5710</b> |  |  | <b>Heating circuit 1,2</b> |

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

### DHW sensor B3

| Line no.    | Operating line                               |
|-------------|--|
| <b>5730</b> | <b>DHW sensor B3</b><br>Sensor<br>Thermostat |

### Sensor

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

### Control thermostat

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



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



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

### DHW actuating device Q3

| Line no.    | Operating line   |
|-------------|--|
| <b>5731</b> | <b>DHW actuating device Q3</b><br>None<br>Charging pump<br>Diverting valve |

#### **None**

No DHW charging via Q3.

#### **Charging pump**

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

#### **Diverting valve**

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

### Output relay QX

| Line no.    | Operating line   |
|-------------|--|
| <b>5890</b> | <b>Relay output QX1</b><br>None<br>Circulating pump Q4<br>El imm heater DHW K6<br>Collector pump Q5<br>H1 pump Q15<br>Boiler pump Q1<br>Bypass pump Q12<br>Alarm output K10<br>2nd pump speed HC1 Q21<br>2nd pump speed HC2 Q22<br>2nd pump speed HCP Q23<br>Heating circuit pump HCP Q20<br>H2 pump Q18 |
| <b>5891</b> | <b>Relay output QX2</b><br>None<br>Circulating pump Q4<br>El imm heater DHW K6<br>Collector pump Q5<br>H1 pump Q15<br>Boiler pump Q1<br>Bypass pump Q12<br>Alarm output K10<br>2nd pump speed HC1 Q21<br>2nd pump speed HC2 Q22<br>2nd pump speed HCP Q23<br>Heat circuit pump HCP Q20<br>H2 pump Q18    |

Only with RVS53.183

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

#### **DHW circulating pump Q4**

The connected pump serves as a DHW circulating pump.

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



### DHW electric immersion heater K6

Using the connected electric immersion heater, the DHW can be heated up according to operating page "DHW storage tank", operating line "Electric immersion heater".



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

### Collector pump Q5

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

### Pump H1 Q15

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

### Boiler pump Q1

The connected pump is used for circulating the boiler water.

### Bypass pump Q12

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

### Alarm output K10

The alarm relay signals faults, should they occur.

The relay is energized with a delay of 2 minutes.

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



If the fault cannot immediately be corrected, it is still possible to reset the alarm relay.

This is made on operating page "Faults".

### 2nd pump speed

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

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

### Heating circuit pump HCP Q20

Pump heating circuit P will be activated.

### 65. Time program

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

### Input sensor BX1,2

| Line no.         | Operating line   |
|------------------|--|
| <b>5930,5931</b> | <b>Sensor input BX1,2</b><br>None<br>DHW sensor B31<br>Collector sensor B6<br>Return sensor B7 |

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



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

## Input H1 / H2

| Line no.    | Operating line   |
|-------------|--|
| <b>5950</b> | <b>Function input H1</b><br>Optg mode change HCs+DHW<br>Optg mode changeover HCs<br>Optg mode changeover HC1<br>Optg mode changeover HC2<br>Optg mode changeover HCP<br>Generation lock<br>Error/alarm message<br>Min flow temp setpoint<br>Heat request<br>Pressure measurement |
| <b>5951</b> | <b>Contact type H1</b><br>NC<br>NO   |
| <b>5952</b> | <b>Min flow temp setpoint H1</b>   |
| <b>5954</b> | <b>Heat request 10V H1</b>   |
| <b>5956</b> | <b>Pressure value 3.5V H1</b>  |

| Line no.    | Operating line  |
|-------------|---|
| <b>5960</b> | <b>Function input H2</b><br><br>Optg mode change HCs+DHW<br>Optg mode changeover HCs<br><br>Optg mode changeover HC1<br>Optg mode changeover HC2<br>Optg mode changeover HCP<br>Generation lock<br>Error/alarm message<br>Min flow temp setpoint<br><br>Only with RVS53.183 |
| <b>5961</b> | <b>Contact type H2</b><br><br>NC<br>NO<br><br>Only with RVS53.183   |
| <b>5962</b> | <b>Min flow temp setpoint H2</b><br><br>Only with RVS53.183   |

Function of input H1 / H2

### Changeover of operating mode

66. Heating circuit

The operating modes of the heating circuits change to Protection when the switch connected to terminals H1 / H2 (e.g. a remote telephone switch) closes its contact.

67. DHW

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

### Heat generation lock

Heat generation is locked when a contact connected to terminals H1/H2 closes.

All temperature requests made by the heating circuits and by DHW will be ignored.

Frost protection for the boiler will be maintained.



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

### Error / alarm message

When input H1 closes, a controller-internal error message will be triggered.

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

### Minimum flow temperature setpoint TVHw

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

### Heat request

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

### Pressure measurement

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

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

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

Operating action  
input H1 / H2

### NC contact

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

### NO contact

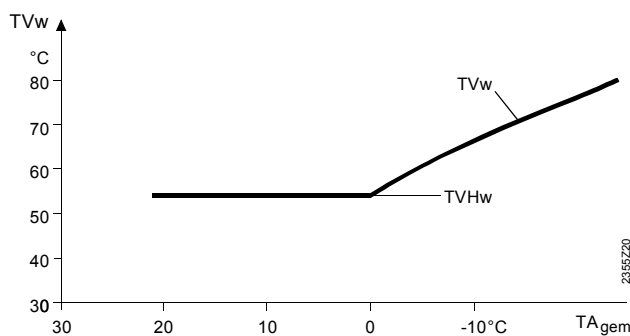
The contact is normally open and must be closed to activate the selected function.

Minimum flow temperature  
setpoint H1 / H2

When contact H1 closes, function "Min flow temp setpoint" set on operating line 5950 will be triggered. The boiler maintains the temperature level set here until contact H1 opens again or until a higher heat request is delivered.



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

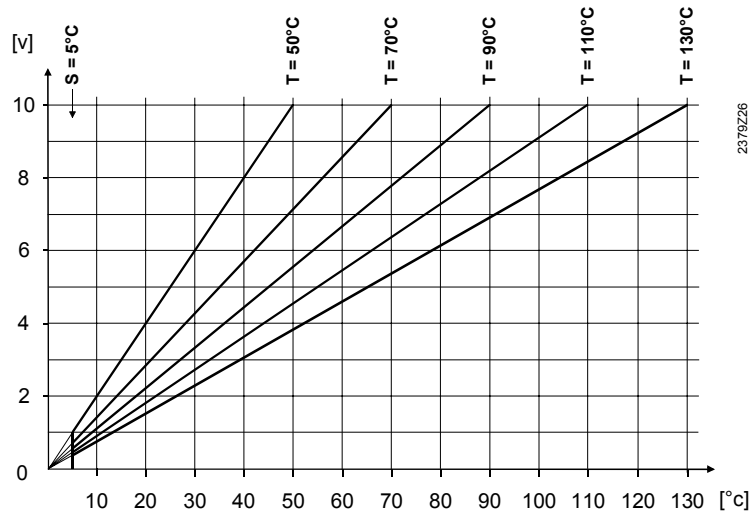


TVHw Minimum flow temperature setpoint  
TVw Flow temperature setpoint

Heat request 10V H1

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

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



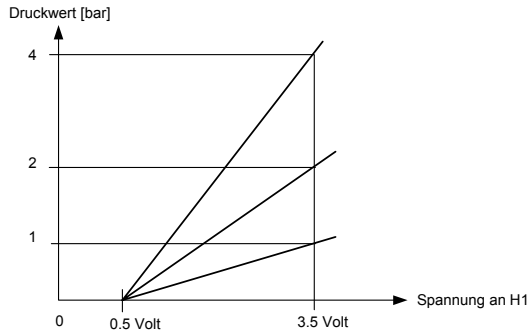
T = maximum value of heat request  
 S = minimum limitation of heat request = 5 °C

### Pressure value 3.5V H1

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

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

Example:



### Sensor readjustments

| Line no.    | Operating line                  |
|-------------|---------------------------------|
| <b>6110</b> | <b>Readjustm outside sensor</b> |

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

### Building and room model

| Line no.    | Operating line                |
|-------------|-------------------------------|
| <b>6110</b> | <b>Time constant building</b> |

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

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

68. Example:

> 20

The room temperature will respond *slower* to outside temperature variations.

10 - 20

This setting can be used for most types of buildings.

< 10

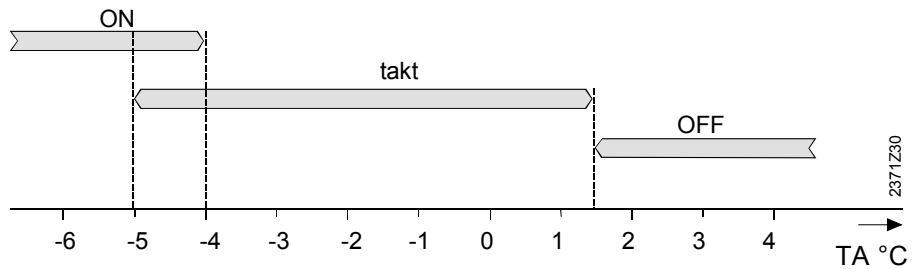
The room temperature will respond *quicker* to outside temperature variations.

## Frost protection for the plant

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

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

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



## Sensor state

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

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

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

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

## Parameter reset

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

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

## Plant diagrams

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

To identify the current plant diagram, the basic unit generates a check number.

The check number is made up of the lined up part diagram numbers. For the meaning of the numbers for the relevant lines, please refer to the following tables:

Check number heat source 1

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

Check number 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 number heating circuit

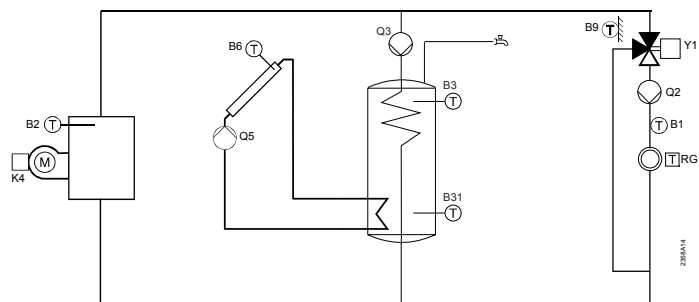
| Heating circuit P |                      | Heating circuit 2 |                                    | Heating circuit 1 |                                    |
|-------------------|----------------------|-------------------|------------------------------------|-------------------|------------------------------------|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

Example

Heat source: Solar with collector sensor and pump, 1-stage burner and boiler pump

Storage tank: Charging pump and solar connection

Heating circuit 1: Heating circuit pump and mixing valve



Displays on the operator unit:


|                              |     |
|------------------------------|-----|
| Check number heat source 1   | 101 |
| Check number storage tank    | 5   |
| Check number heating circuit | 3   |

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

## Device data

| Line no.    | Operating line   |
|-------------|--|
| <b>6220</b> | <b>Software version</b><br>The software version indicated here represents the current version of the basic unit. |

## 5.3.12 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           |
|-------------|--------------------------|
| <b>6710</b> | <b>Reset alarm relay</b> |

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

When using this setting, pending alarms are reset.

Temperature alarms

| Line no.    | Operating line                  |
|-------------|---------------------------------|
| <b>6740</b> | <b>Flow temperature 1 alarm</b> |
| <b>6741</b> | <b>Flow temperature 2 alarm</b> |
| <b>6743</b> | <b>Boiler temperature alarm</b> |

The difference of setpoint and actual temperature is monitored. A control offset triggers an error message.

Error history

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

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

### 5.3.13 Maintenance / service

Maintenance functions

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

Burner hours interval,  
burner start interval

As soon as the selected number of burner hours run or the selected number of burner starts has elapsed, a maintenance alarm will be displayed. Counted for the alarm are the number of hours run and the number of starts of the first burner stage (input E1).

Burner hours run, burner  
starts since maintenance

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

Chimney sweep

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

The burner will be switched on. To achieve continuous burner operation, the only switch-off point used is the boiler temperature's maximum limitation (TKmax). First, all connected loads will be locked, enabling the boiler temperature to reach the setpoint of 64 °C as quickly as possible. When the minimum temperature of 64 °C is attained, the available heating circuits are switched on one by one, using a dummy load, to make sure that the heat generated by the boiler is drawn off so that the burner will remain in operation. For safety reasons, the maximum boiler temperature limitation (TKmax) remains active as long as the chimney sweep function is active.

Simulations

| <i>Line no.</i> | <i>Operating line</i>          |
|-----------------|--------------------------------|
| <b>7140</b>     | <b>Simulation outside temp</b> |

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

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

Manual control


| <i>Line no.</i> | <i>Operating line</i> |
|-----------------|-----------------------|
| <b>7140</b>     | <b>Manual control</b> |

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                    |                                | Output             | State |
|-------------------------|--------------------------------|--------------------|-------|
| Oil / gas boiler        | 1st burner stage               | K4                 | On    |
|                         | Boiler pump                    | Q1                 | On    |
|                         | Bypass pump                    | Q12                | On    |
| Solar collectors<br>DHW | Collector pump                 | Q5                 | Off   |
|                         | Charging pump                  | Q3                 | On    |
|                         | Diverting valve                | Q3                 | Off   |
|                         | Circulating pump               | Q4                 | On    |
| Heating circuits 1..3   | Electric immersion heater      | K6                 | On    |
|                         | Heating circuit pump           | Q2                 | On    |
|                         |                                | Q6                 |       |
|                         |                                | Q20                |       |
|                         | Mixing valve opening / closing | Y1 / Y2<br>Y5 / Y6 | Off   |
|                         | Heating circuit pump 2nd speed | Q21                | On    |
| Q22                     |                                |                    |       |
| Q23                     |                                |                    |       |
| Auxiliary functions     | Pump H1                        | Q15                | On    |
|                         | Pump H2                        | Q18                | On    |
|                         | Alarm output                   | K10                | Off   |

Setpoint adjustment with manual control

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

#### Telephone customer service

| Line no.    | Operating line                    |
|-------------|-----------------------------------|
| <b>7170</b> | <b>Telephone customer service</b> |

Setting of phone number that appears on the info display.

#### 5.3.14 Input / output test

| Line no.           | Operating line |
|--------------------|----------------|
| <b>7700...7881</b> |                |

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

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



Important:

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

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

The display is made with no measured value correction.

#### 5.3.15 State of plant

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



## Messages

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

### 5.3.16 Diagnostics of heat source

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

| <i>Line no.</i>    | <i>Operating line</i> |
|--------------------|-----------------------|
| <b>8610...8699</b> |                       |

### 5.3.17 Diagnostics of consumer

---

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

| <i>Line no.</i>    | <i>Operating line</i> |
|--------------------|-----------------------|
| <b>8700...9099</b> |                       |

## 5.4 List of displays

### 5.4.1 Error code

| Error code | Description of error                                   | Priority |
|------------|--|----------|
| 20         | Boiler temperature 1 sensor error                      | 9        |
| 50         | DHW temperature 1 sensor error                         | 9        |
| 52         | DHW temperature 2 sensor error                         | 9        |
| 109        | Fault boiler temperature supervision                   | 9        |
| 131        | Burner fault   | 9        |
| 10         | Outside temperature sensor error                       | 6        |
| 30         | Flow temperature 1 sensor error                        | 6        |
| 32         | Flow temperature 2 sensor error                        | 6        |
| 40         | Return temperature 1 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        |
| 73         | Collector temperature 1 sensor error                   | 6        |
| 83         | BSB wire short-circuit                                 | 6        |
| 85         | BSB radio communication fault                          | 6        |
| 98         | Extension module 1 fault (common fault status message) | 6        |
| 117        | Upper pressure limit (crossed)                         | 6        |
| 118        | Critical lower pressure limit (crossed)                | 6        |
| 121        | Alarm flow temperature 1 (HC1)                         | 6        |
| 122        | Alarm flow temperature 2 (HC2)                         | 6        |
| 127        | Legionella temperature not reached                     | 6        |
| 146        | Configuration error sensor / controlling element       | 3        |
| 171        | Alarm contact input H1 active                          | 6        |
| 172        | Alarm contact input H2 active                          | 6        |

### 5.4.2 Maintenance code

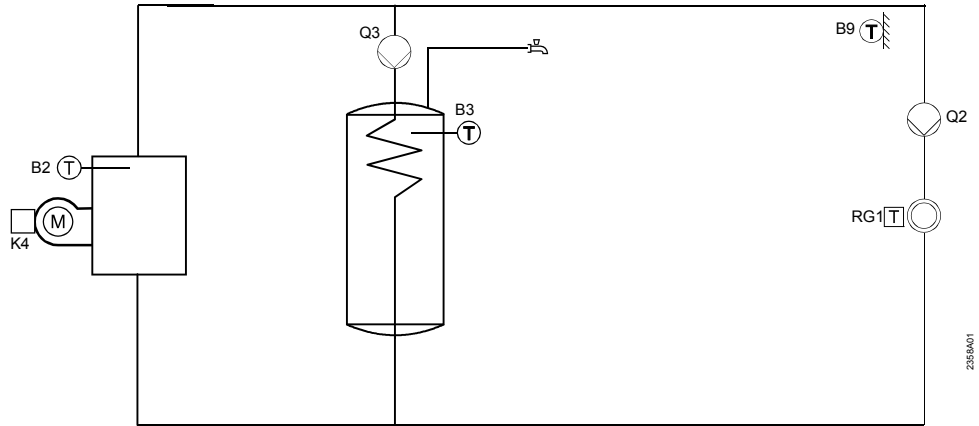
| Maintenance code | Description of maintenance                            | Priority |
|------------------|---|----------|
| 5                | Lower pressure limit                                  | 9        |
| 1                | Burner service (burner hours run)                     | 6        |
| 2                | Burner service (number of burner starts)              | 6        |
| 3                | Burner service (general interval: Months for service) | 6        |
| 10               | Battery change outside sensor                         | 6        |

## 6 Plant diagrams

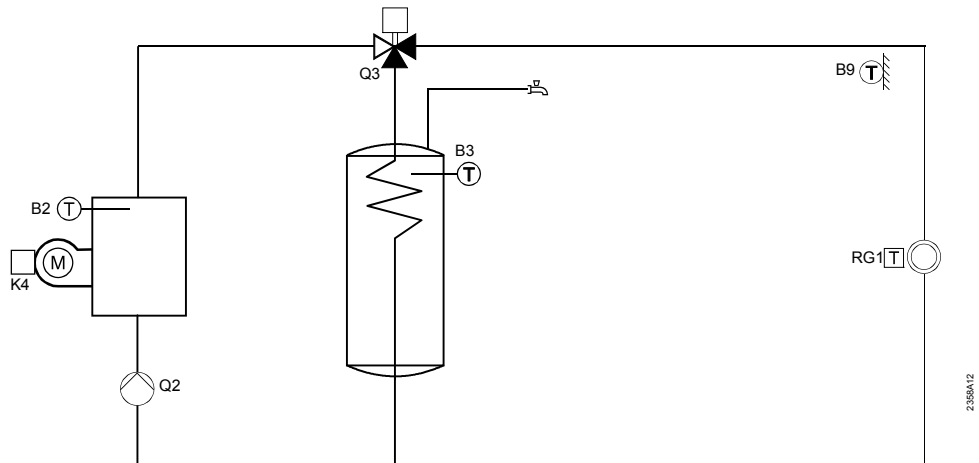
The various applications are shown in the form of basic diagrams and extra functions. The basic diagrams show possible applications that can be implemented without using the multifunctional outputs.

### 6.1 Basic diagram RVS13.12x

#### Standard diagram

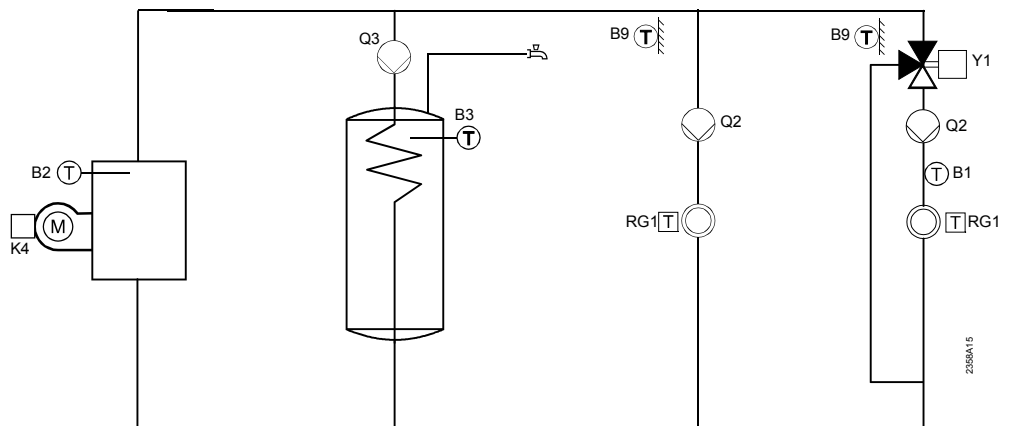


#### DHW heating with diverting valve



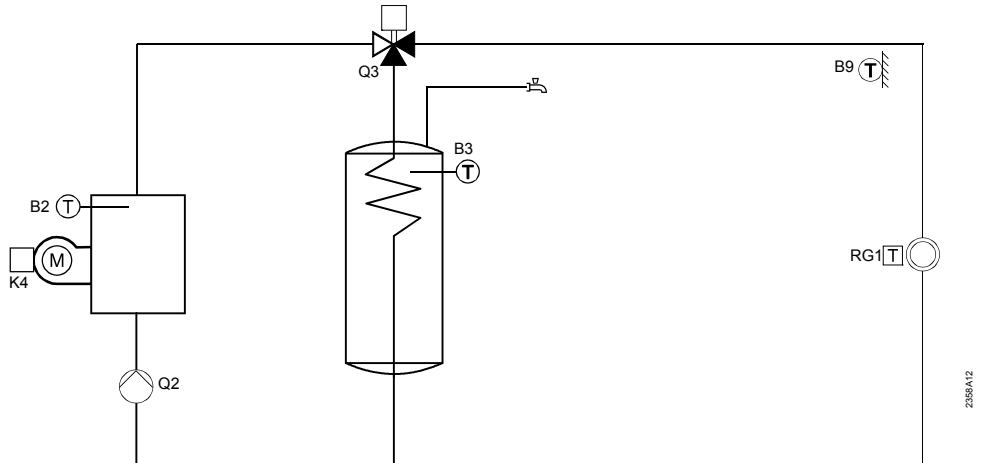
#### 6.1.1 Basic diagram RVS13.12x with AVS75.390

#### Standard diagram



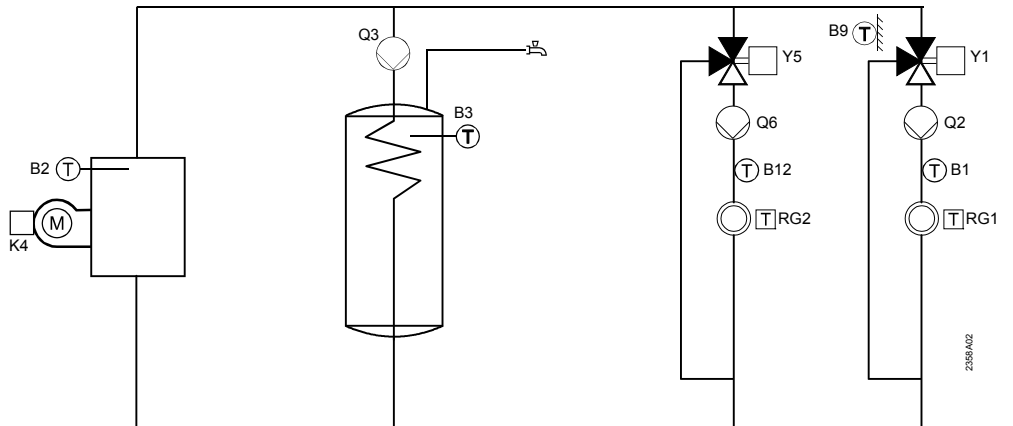
## 6.2 Basic diagram RVS13.14x

Standard diagram  
DHW heating with  
diverting valve



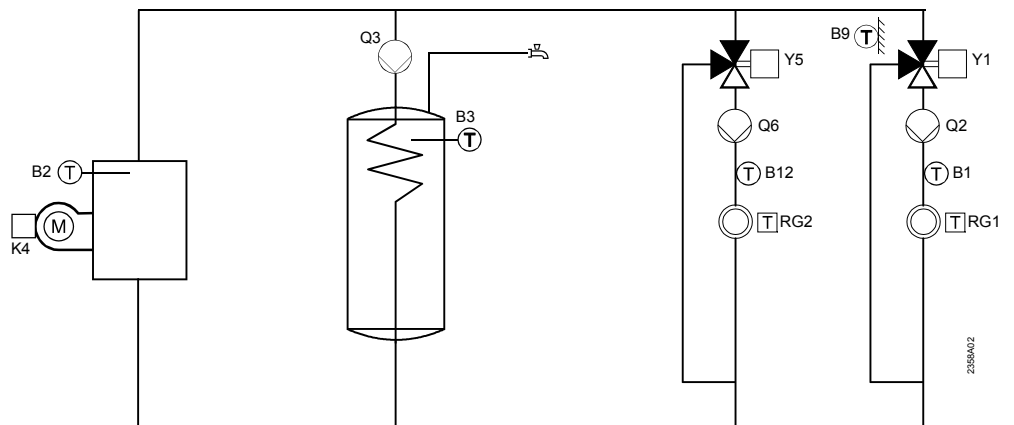
### 6.2.1 Basic diagram RVS13.14x with AVS75.390

Standard diagram



## 6.3 Basic diagram RVS53.18x

Standard diagram

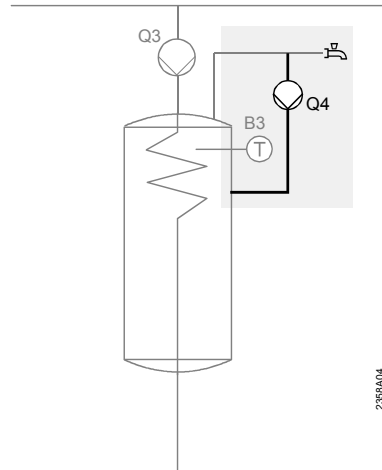


## 6.4 Auxiliary functions

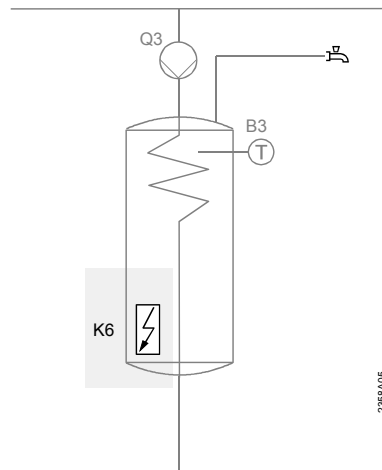
The auxiliary functions can be selected via operating page "Configuration" and complement the basic diagrams of the respective controllers.

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

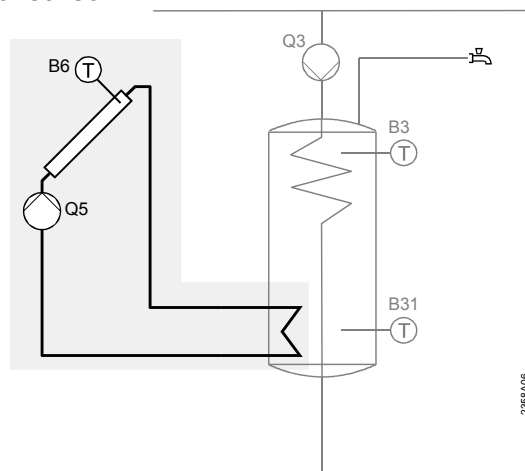
### Circulating pump



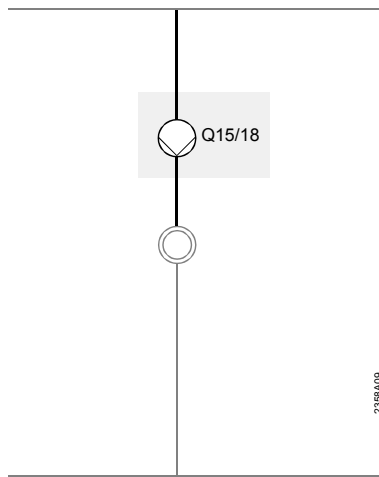
### Electric immersion heater



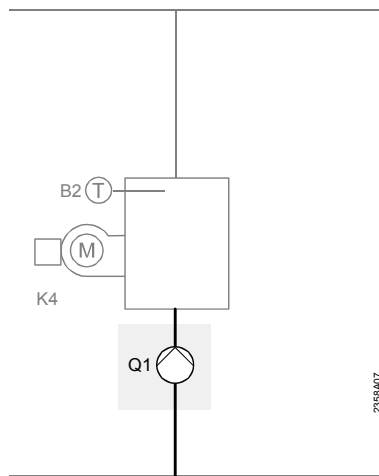
### Collector pump and collector sensor



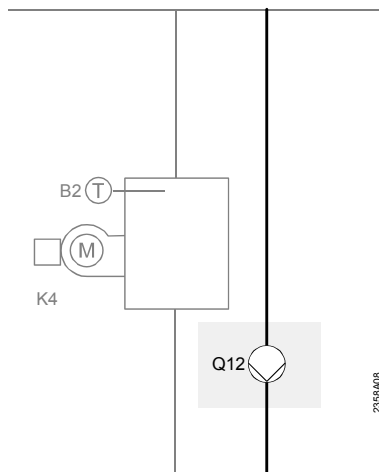
### Pump H1/2



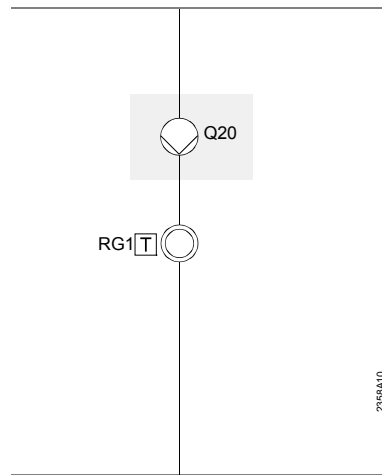
### Boiler pump



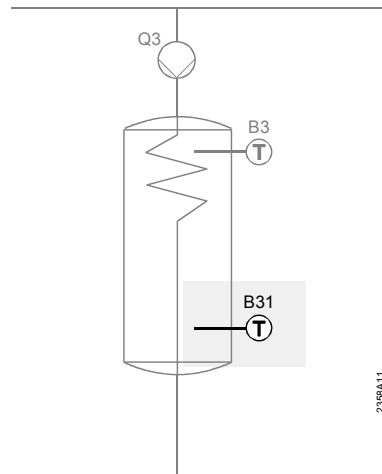
### Bypass pump



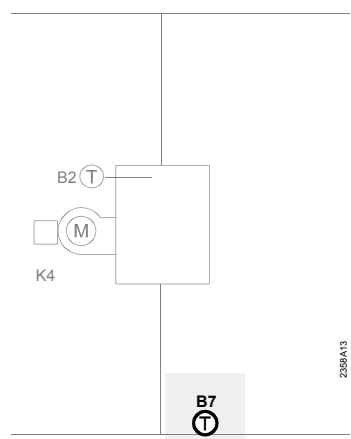
## Heating circuit pump HCP



## 2. DHW sensor



## Return sensor





## Legend

### Mains voltage

| <i>Diagram</i> | <i>Function</i>                          | <i>Terminals</i> |
|----------------|--|------------------|
| K4             | Burner 1st stage                         | T1, T2           |
| Q1             | Boiler pump                              | QX1, QX2         |
| Q2             | 1st heating circuit pump,<br>boiler pump | Q2               |
| Q3             | DHW charging pump / diverting valve      | Q3               |
| Q4             | Circulating pump                         | QX1, QX2         |
| Q5             | Collector pump                           | QX1, QX2         |
| Q6             | 2nd heating circuit pump                 | Q6               |
| Q12            | Bypass pump                              | QX1, QX2         |
| Q15/18         | Pump H1/2                                | QX1, QX2         |
| Q20            | Heating circuit pump HCP                 | QX1, QX2         |
| Y1             | 1st heating circuit mixing valve         | Y1 / Y2          |
| Y5             | 2nd heating circuit mixing valve         | Y5, Y6           |
| K6             | Electric immersion heater                | QX1, QX2         |

### Low-voltage

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

# 7 Technical data

## 7.1 Basic units RVS...

|  |  |  |
|--|--|--|
| <b>Power supply</b>                          | Rated voltage                                | AC 230 V ( $\pm 10\%$ )  |
|  | Rated frequency                              | 50 / 60 Hz   |
|  | Max. power consumption                       | RVS13.123: 7.5 VA<br>RVS13.143: 8 VA<br>RVS53.x83: 10 VA   |
| <b>Wiring of terminals</b>                   | Fusing of supply lines                       | max. 6.3 AT  |
|  | (Power supply and outputs)                   | solid or stranded wire (twisted or with ferrule):<br>1 core: 0.5...2.5 mm <sup>2</sup><br>2 cores 0.5...1.5 mm <sup>2</sup>                    |
| <b>Functional data</b>                       | Software class                               | A  |
| <b>Inputs</b>                                | Mode of operation to EN 60 730               | 1b (automatic operation)   |
|  | Digital inputs H1 and H2                     | safety extra low-voltage for potentialfree low-voltage contacts:<br>voltage with contact open: DC 12 V<br>current with contact closed: DC 3 mA |
|  | Analog input H1                              | protective extra low-voltage operating range: DC (0...10) V<br>internal resistance: > 100 k $\Omega$   |
|  | Mains inputs S3 and 4                        | AC 230 V ( $\pm 10\%$ )<br>internal resistance: > 100 k $\Omega$   |
|  | Sensor input B9                              | NTC1 k (QAC34)   |
|  | Sensor inputs B1, B2, B3, B12, BX1 and BX2   | NTC10 k (QAZ36, QAD36)   |
|  | Perm. sensor cables (copper)                 |  |
|  | – Cross-sectional area:                      | 0.25 0.5 0.75 1.0 1.5 (mm <sup>2</sup> )   |
|  | – Max. length:                               | 20 40 60 80 120 (m)  |
|  | <b>Outputs</b>                               | Relay outputs  |
| Rated current range                          |  | AC 0.02...2 (2) A  |
| Max. switch-on current                       |  | 15 A for $\leq 1$ s  |
| Max. total current (of all relays)           |  | AC 6 A   |
| Rated voltage range                          |  | AC (24...230) V (for potentialfree outputs)  |
| <b>Interfaces</b>                            | BSB  | 2-wire connection, not interchangeable   |
|  | Max. cable length                            |  |
|  | Basic unit – peripheral device               | 200 m  |
|  | Max. total length                            | 400 m (max. perm. cable capacitance) 60 nF)  |
|  | Min. cross-sectional area                    | 0.5 mm <sup>2</sup>  |
| <b>Degree of protection and safety class</b> | Degree of protection of housing to EN 60 529 | IP 00  |
|  | Safety class to EN 60 730                    | low-voltage-carrying parts meet the requirements of safety class II, if correctly installed  |
|  | Degree of contamination to EN 60 730         | normal contamination   |
|  | CE conformity to                             |  |
| <b>Standards, safety, EMC, etc.</b>          | 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   |
| <b>Climatic conditions</b>                   | Storage to IEC721-3-1 class 1K3              | temp. -20...65 °C  |

|               |                                   |  |
|---------------|-----------------------------------|--|
| <b>Weight</b> | Transport to IEC721-3-2 class 2K3 | temp. -25...70 °C  |
|               | Operation to IEC721-3-3 class 3K5 | temp. 0...50 °C (noncondensing)                          |
|               | Weight (excl. packaging)          | RVS13.123: 566 g<br>RVS13.143: 566 g<br>RVS53.183: 776 g |

## 7.2 Extension module AVS75.390

|  |  |  |
|--|--|--|
| <b>Power supply</b>                          | Rated voltage                                | AC 230 V ( $\pm 10\%$ )  |
|  | Rated frequency                              | 50 / 60 Hz   |
|  | Max. power consumption                       | 4 VA   |
|  | Fusing of supply lines                       | max. 6.3 AT  |
| <b>Wiring of terminals</b>                   | (Power supply and outputs)                   | solid or stranded wire (twisted or with ferrule):<br>1 core: 0.5...2.5 mm <sup>2</sup><br>2 cores 0.5...1.5 mm <sup>2</sup>                    |
|  |  |  |
| <b>Functional data</b>                       | Software class                               | A  |
|  | Mode of operation to EN 60 730               | 1b (automatic operation)   |
| <b>Inputs</b>                                | Digital inputs H2                            | safety extra low-voltage for potentialfree low-voltage contacts:<br>voltage with contact open: DC 12 V<br>current with contact closed: DC 3 mA |
|  | Analog input H2                              | protective extra low-voltage operating range: DC (0...10) V<br>internal resistance: > 100 k $\Omega$   |
|  | Mains input L                                | AC 230 V ( $\pm 10\%$ )<br>internal resistance: > 100 k $\Omega$   |
|  | 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 <sup>2</sup>  |
|  | Max. length                                  | 20 40 60 80 120 m  |
| <b>Outputs</b>                               | Relay outputs                                |  |
|  | Rated current range                          | AC 0.02...2 (2) A  |
|  | Max. switch-on current                       | 15 A for $\leq 1$ s  |
|  | Max. total current (of all relays)           | AC 6 A   |
|  | Rated voltage range                          | AC (24...230) V (for potentialfree outputs)  |
| <b>Interfaces</b>                            | BSB  | 2-wire connection, not interchangeable   |
|  | Max. cable length                            |  |
|  | Basic unit – peripheral device               | 200 m  |
|  | Max. total length                            | 400 m (max. perm. cable capacitance) 60 nF)  |
|  | Min. cross-sectional area                    | 0.5 mm <sup>2</sup>  |
| <b>Degree of protection and safety class</b> | Degree of protection of housing to EN 60 529 | IP 00  |
|  | Safety class to EN 60 730                    | low-voltage-carrying parts meet the requirements of safety class II, if correctly installed  |
|  | Degree of contamination to EN 60 730         | normal contamination   |
| <b>Standards, safety, EMC, etc.</b>          | 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                   |  |

|                            |                                   |                                       |
|----------------------------|-----------------------------------|---------------------------------------|
| <b>Climatic conditions</b> | Storage to IEC721-3-1 class 1K3   | temperature -20...65 °C               |
|                            | Transport to IEC721-3-2 class 2K3 | temperature -25...70 °C               |
|                            | Operation to IEC721-3-3 class 3K5 | temperature 0...50 °C (noncondensing) |
| <b>Weight</b>              | Weight (excl. packaging)          | 293 g                                 |

### 7.3 Operator and room unit AVS37... / QAA7x...

|  |  |  |
|--|--|--|
| <b>Power supply</b>                                    | For devices without batteries:                   |  |
|  | Bus power supply                                 | BSB  |
| <b>Room temperature measurement</b> (only for QAA7x..) | For devices with batteries:                      |  |
|  | Batteries  | 3 pcs  |
|  | Type of battery                                  | 1.5 V Alkali size AA (LR06)  |
|  | Battery life                                     | approx. 1.5 years  |
|  | Measuring range:                                 | 0...50 °C  |
| <b>Room temperature measurement</b> (only for QAA7x..) | According to EN 12098:                           |  |
|  | Range 15...25 °C                                 | within tolerance of 0.8 K  |
|  | Range 0..15 °C or 25...50 °C                     | within tolerance of 1.0 K  |
|  | Resolution                                       | 1/10 K   |
| <b>Interfaces</b>                                      | AVS37../QAA75..                                  | BSB-W,<br>2-wire connection, not interchangeable   |
|  | Max. cable length basic unit – peripheral device | QAA75... 200 m<br>AVS37... 3 m   |
|  | QAA78..  | BSB-RF<br>frequency band 868 MHz   |
| <b>Degree of protection and safety class</b>           | Degree of protection of housing to EN 60 529     | IP20 for QAA7...<br>IP40 for AVS37... IP20 (when mounted)<br>normal contamination            |
|  | Safety class to EN 60 730                        | low-voltage-carrying parts meet the requirements of safety class III, if correctly installed |
|  | Degree of contamination to EN 60 730             | normal contamination   |
| <b>Standards, safety, EMC, etc.</b>                    | CE conformity to                                 |  |
|  | EMC directive                                    | 89/336/EEC   |
|  | - Immunity                                       | - EN 61000-6-2   |
|  | - Emissions                                      | - EN 61000-6-3   |
|  | Low-voltage directive                            | 73/23/EEC  |
|  | - Electrical safety                              | - EN 60730-1, EN 50090-2-2   |
| Wireless   | EN 300 220-1 (25-1000 MHz)                       |  |
| <b>Climatic conditions</b>                             | For devices without batteries:                   |  |
|  | Storage to IEC721-3-1 class 1K3                  | temperature -20...65 °C  |
|  | Transport to IEC721-3-2 class 2K3                | temperature -25...70 °C  |
|  | Operation to IEC721-3-3 class 3K5                | temperature 0...50 °C (noncondensing)  |
|  | For devices with batteries:                      |  |
|  | Storage to IEC721-3-1 class 1K3                  | temperature -20...30 °C  |
| Transport to IEC721-3-2 class 2K3                      | temperature -25...70 °C                          |  |
| Operation to IEC721-3-3 class 3K5                      | temperature 0...50 °C (noncondensing)            |  |
| <b>Weight</b>  | Weight (excl. packaging)                         | AVS37.294: 160 g<br>QAA75.61x: 170 g<br>QAA78.610: 312 g                                     |

### 7.4 Power supply AVS16.290

|                     |                   |                  |
|---------------------|-------------------|------------------|
| <b>Power supply</b> | Nominal voltage   | AC 230 V (±10 %) |
|                     | Nominal frequency | 50 Hz            |

|  |  |  |
|--|--|--|
|  | Fuse   | 6,3 AT (5 x 20 mm)   |
|  | Max. power consumption   | 0.4 VA   |
|  | Supply line fusing   | max. 10 A  |
| <b>Functional data</b>                       | Switching capacity STB   | 16 (12) A, AC 230 V (+-10 %), 50Hz   |
| <b>Degree of protection and safety class</b> | Degree of protection of housing to EN 60529                    | IP 40 (when mounted)<br>corresponding to safety class II if adequately mounted |
|  | Safety class to EN 60730                                       | adequately mounted   |
|  | Degree of contamination to EN 60 730                           | normal contamination   |
| <b>Standards, safety</b>                     | CE conformity to<br>low-voltage directive<br>electrical safety | 73/23/EEC<br>EN 60730-1, EN 60730-2-9  |
| <b>Climatic conditions</b>                   | Storage to IEC721-3-1 class 1K3                                | temperature -20...65 °C  |
|  | Transport to IEC721-3-2 class 2K3                              | temperature -25...70 °C  |
|  | Operation to IEC721-3-3 class 3K5                              | temperature 0...50 °C (noncondensing)  |
| <b>Weight</b>                                | Weight (excl. packaging)                                       | 310 g  |

## 7.5 Wireless outside sensor AVS13.399

|  |   |  |
|--|---|--|
| <b>Power supply</b>                          | Batteries                                   | 2 pcs  |
|  | Type of batteries                           | 1.5 V Alkali size AAA (LR03)   |
|  | Battery life                                | approx. 2 years  |
| <b>Interfaces</b>                            | Radio transmitter                           | BSB-RF<br>frequency band 868 MHz   |
| <b>Degree of protection and safety class</b> | Degree of protection of housing to EN 60529 | IP20   |
|  | Safety class to EN 60 730                   | low-voltage-carrying parts meet the requirements of safety class III, if correctly installed |
|  | Degree of contamination to EN 60 730        | normal contamination   |
| <b>Standards, safety, EMC, etc.</b>          | CE conformity to                            |  |
|  | EMC directive                               | 89/336/EEC   |
|  | - Immunity                                  | - EN 61000-6-2   |
|  | - Emissions                                 | - EN 61000-6-3   |
|  | Low-voltage directive                       | 73/23/EEC  |
|  | - Electrical safety                         | - EN 60730-1, EN 50090-2-2   |
|  | Wireless                                    | EN 300 220-1 (25-1000 MHz)   |
| <b>Climatic conditions</b>                   | For devices without batteries:              |  |
|  | Storage to IEC721-3-1 class 1K3             | temperature -20.0.65°C   |
|  | Transport to IEC721-3-2 class 2K3           | temperature -25..70 °C   |
|  | Operation to IEC721-3-3 class 3K5           | temperature 0...50 °C (noncondensing)  |
|  | For devices with batteries:                 |  |
|  | Storage to IEC721-3-1 class 1K3             | temperature -20...30°C   |
| Transport to IEC721-3-2 class 2K3            | temperature -25..70 °C                      |  |
|  | Operation to IEC721-3-3 class 3K5           | temperature 0...50 °C (noncondensing)  |
| <b>Outside temperature acquisition</b>       | Outside sensor                              | QAC34/101  |
|  | Measuring range                             | -50...50 °C  |
|  | Cable length                                | max. 5 m   |
| <b>Weight</b>                                | Weight (excl. packaging)                    | radio transmitter: 160 g<br>outside sensor QAC34: 73 g<br>70 g cable                         |

## 7.6 Radio repeater AVS14.390

|  |  |  |
|--|--|--|
| <b>Power supply</b>                          | Nominal voltage                              | AC 230 V $\pm$ 10 % (primary side AC/AC adapter)   |
|  | Nominal frequency                            | 50 Hz $\pm$ 6 %  |
|  | Max. power consumption                       | 0.5 VA max.  |
| <b>Interfaces</b>                            | Radio transmitter                            | BSB-RF<br>frequency band 868 MHz   |
| <b>Degree of protection and safety class</b> | Degree of protection of housing to EN 60 529 | IP20   |
|  | Safety class to EN 60 730                    | low-voltage-carrying parts meet the requirements of safety class III, if correctly installed |
|  | Degree of contamination to EN 60 730         | normal contamination   |
| <b>Standards, safety, EMC, etc.</b>          | CE conformity to                             |  |
|  | EMC directive                                | 89/336/EEC   |
|  | - Immunity                                   | - EN 61000-6-2   |
|  | - Emissions                                  | - EN 61000-6-3   |
|  | Low-voltage directive                        | 73/23/EEC  |
| <b>Climatic conditions</b>                   | - Electrical safety                          | - EN 60730-1, EN 50090-2-2   |
|  | Wireless                                     | EN 300 220-1 (25-1000 MHz)   |
|  | Storage to IEC721-3-1 class 1K3              | temperature -20...65 °C  |
| <b>Weight</b>                                | Transport to IEC721-3-2 class 2K3            | temperature -25...70 °C  |
|  | Operation to IEC721-3-3 class 3K5            | temperature 0...50 °C (noncondensing)  |
|  | Weight (excl. packaging)                     | radio repeater 112 g<br>power supply 195 g   |

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