For the operator

# Operating instructions


## VRC 470f

Weather compensator with radio data transmission

**GB, IE**

Vaillant

## Table of contents

# 1 Notes on the operating instructions

These operating instructions are intended for the operator of the heating system. No particular prior knowledge is required.

## 1.1 Observing other applicable documents

When operating the VRC 470f controller, always take note of all operating instructions that are supplied with the other components of the heating system.

## 1.2 Document storage

Keep these operating instructions and all other applicable documents safe so that
- they are available whenever required,
- they are kept for the full service life of the appliance,
- they are available to all subsequent operators.

## 1.3 Symbols used

The symbols used in the text are explained below:

Useful instructions and information

➤ Required actions

## 1.4 Identification plate

The identification plate is located on the rear panel of the controller casing.

## 1.5 Applicability of the instructions

These operating instructions apply to appliances with the following article numbers only:

| Type designation | Article number | Country |
|---|---|---|
| VRC 470f | 0020108137 | GB, IE |

**Tab. 1.1 Type overview**

The 10-digit article number can be found in the serial number of the appliance. The article number is found in the second line of the serial number. You can view the serial number under "Menu ➞ Information ➞ Serial number" (➞ **Fig. 4.10**).

## 1.6 CE label

CE The CE label certifies that the VRC 470f complies with the fundamental requirements of the applicable directives.

## 1.7 Glossary

Technical terms are explained in the glossary (➞ **Section 11**) at the end of these instructions.

# 2 Safety

## 2.1 Safety and warning information

➤ When operating the VRC 470f controller, take account of the general safety instructions and the warning notes that appear before all of the actions.

### 2.1.1 Classification of warnings

The warning notes are classified in accordance with the severity of the possible danger using the following danger signs and signal words:

| Danger sign | Signal word | Explanation |
|---|---|---|
|  | **Danger!** | Immediate risk of fatal injury or risk of severe damage to property |
|  | **Danger!** | Risk of death from electric shock |
|  | **Warning!** | Risk of minor personal injury |
|  | **Caution!** | Risk of material or environmental damage |

### 2.1.2 Structure of warnings

Warning signs are identified by an upper and lower separating line and are laid out according to the following basic principle:

**Signal word!**
**Type and source of danger!**
Explanation of the type and source of danger
➤ Measures for averting the danger

## 2.2 Intended use

The VRC 470f controller is a state-of-the-art device manufactured in accordance with recognised safety regulations.
Even so, in the event of inappropriate or non-intended use, damage to the appliance and other property may arise.

The VRC 470f controller controls a Vaillant heating system based on outside temperature and programmed timings. The controller is connected to a Vaillant boiler.
The controller can also regulate the hot water production of a connected domestic hot water cylinder with or without circulation.

You should only remove the controller temporarily from the wall-mounting base, e.g. to adjust the settings. Apart from that, you should always operate it in conjunction with the wall-mounting base.

Any other or additional use is considered to be improper. The manufacturer/supplier is not liable for any resulting damage. The owner alone bears any risk.

**Follow the operating instructions**
Proper use also includes compliance with the operating instructions and all other applicable documents.

## 2.3 Basic safety instructions

Installation of the device can be only carried out by a heating engineer. This heating engineer is also responsible for proper installation and start-up.

**Protecting from Legionella**
The controller is furnished with an anti-Legionella function to protect against infection by germs (Legionella). When the anti-Legionella function is activated, the water in the domestic hot water cylinder is heated to over 60 °C for at least an hour. The heating engineer activates the anti-Legionella function on installation of the controller.
➤ Ask the heating engineer if he has activated the anti-Legionella function.
➤ Ask the heating engineer to explain how the anti-Legionella function works.

**Preventing the risk of scalding**
There is a danger of scalding at the hot water draw-off points when the target temperatures are in excess of 60 °C. Young children and elderly persons can be at risk from scalding at lower temperatures.
- ➤ Select a moderate target temperature.
- ➤ If the anti-Legionella function is activated, discuss the following with the heating engineer:
  - when does the anti-Legionella function start,
  - when will the hot water cool back down to the target temperature,
  - is a mixing valve incorporated in the heating system as protection against scalding,
  - what do you have to do to avoid scalding.

**Preventing a malfunction**
- ➤ Only operate the heating installation when it is in a technically perfect condition.
- ➤ Ensure that any faults and damage that affect safety are rectified immediately.

**Preventing frost damage**
If there is a power cut, or if the room temperature is set too low in individual rooms, sections of the heating system might be damaged by frost.
- ➤ If you are absent during a frosty spell, ensure that the heating system remains in operation and the rooms are warmed adequately.
- ➤ Observe the frost protection instructions (**→ Section 3.2**).

# 3 Description of the appliance

## 3.1 Appliance design

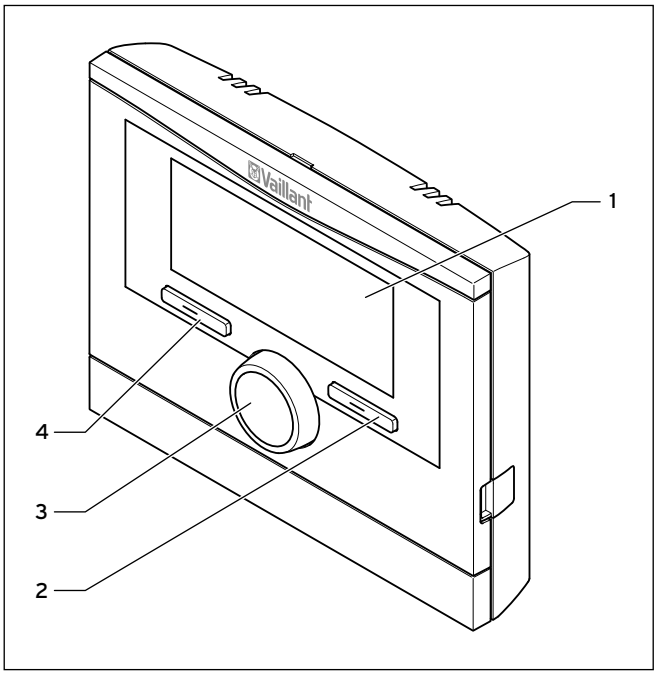


**Fig. 3.1 Front view of VRC 470f radio controller**

1 Display
2 Right function key
3 Control knob (without pushbutton function)
4 Left function key

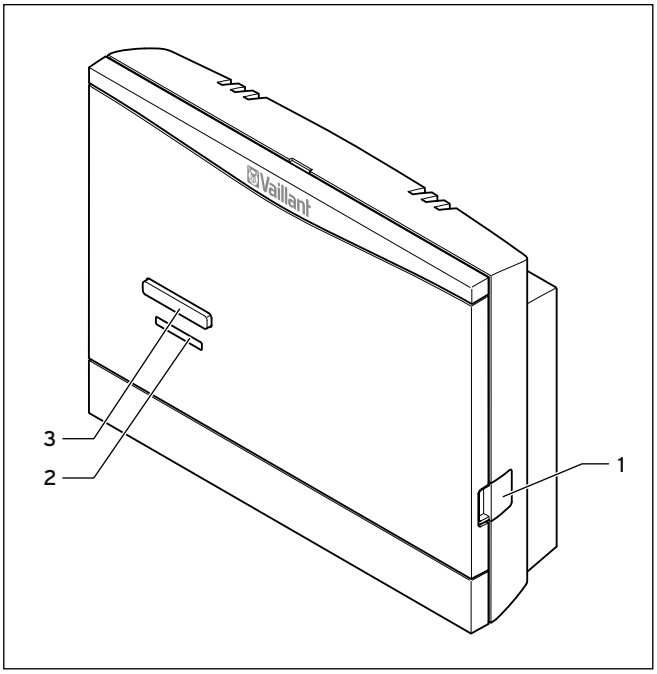


**Fig. 3.2 Front view of radio receiver unit**

1 Diagnostic socket for the heating engineer
2 LED
3 Teach button

## 3.2 Functionality

The VRC 470f controller controls the Vaillant heating system and production of hot water from a connected domestic hot water cylinder.
Your heating engineer will install the controller in a room within the living area of your home. You will then be able to control the heating and hot water systems from that room.

**Heating installation**
You can use the controller to set different desired temperatures for different times of the day and for different days of the week.
The VRC 470f is a weather compensator with a temperature sensor mounted outdoors.
The temperature sensor measures the outside temperature and sends the information by radio signal to the controller. When the outside temperature is low, the controller increases the flow temperature of the Vaillant heating system. When the outside temperature rises, the controller reduces the flow temperature. Thus, the controller reacts to fluctuations in the outside temperature and, via the flow temperature, keeps the room temperature constantly at the set desired temperature.

The frost protection function protects the heating system and dwelling against frost damage.
The frost protection function monitors the outside temperature. If the outside temperature:
- falls below 3 °C, the controller switches the boiler on after a frost protection delay time, and brings the room temperature to 5 °C.
- rises above 4 °C, the controller does not switch the boiler on but monitors the outside temperature.

The heating engineer will set the frost protection delay time at the time of installation.

**Preparation**
With the VRC 470f controller, you can also set the temperature and timings for hot water production. The boiler heats the water in the domestic hot water cylinder to the set temperature. You can set a period during which hot water should be available in the domestic hot water cylinder.
If a circulation pump is installed in the heating system, you can set a period for circulation. During the set period, hot water circulates from the domestic hot water cylinder to the water taps and back to the domestic hot water cylinder. If, for example, you turn on a water tap during this time, hot water will come out of the tap immediately.
Hot water production is not affected by the weather compensated control of the heating system.

**Several heating circuits**
The controller can control two heating circuits:
- two heating circuits independently of each other, e.g. "HEATING 1" in a single occupancy house and "HEATING 2" in a granny annexe in this house.
- two heating circuits interdependent on each other in a dwelling, e.g. "HEATING 1" for radiators and "HEATING 2" for underfloor heating.

## 3.3 Operating levels

The controller has two superordinate operating levels.

**Operating level for the heating engineer**
The operating level for the heating engineer must only be operated with expertise and is therefore protected by a code. This level is used by the heating engineer to adjust the controller to the heating system.

**Operating level for the operator**
The operating level for the operator shows you important information and offers set-up options which do not require any special prior knowledge. Via a menu structure, you can access configurable or read-only values.

### 3.3.1 Menu structure design

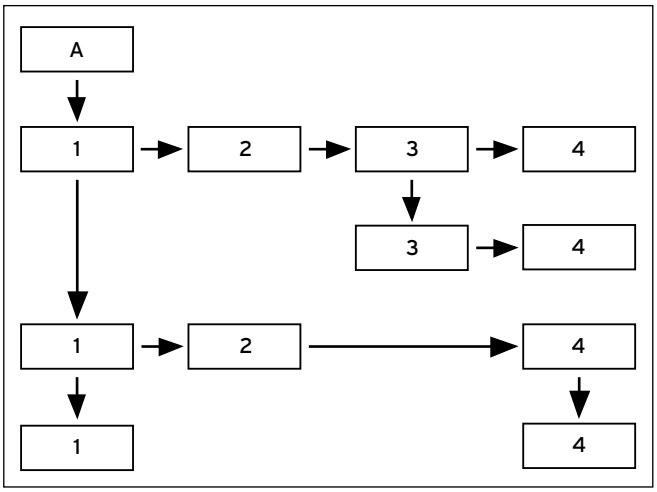


**Fig. 3.3 Menu structure**

| | |
|---|---|
| A | Basic display |
| 1 | Selection level 1 |
| 2 | Selection level 2 |
| 3 | Selection level 3 |
| 4 | Setting level |

The menu structure of the controller is split into four levels. From the basic display, you can access selection level 1. Through up to three selection levels, you can access one level lower or higher in the menu structure. The setting level is accessed from the lowest selection level.

### 3.3.2 Basic display

The controller is battery-powered. To save power and so extend the life of the batteries, the display is normally switched off. If you press one of the function buttons or turn the control knob, the backlighting switches on and the basic display appears. At this point, you have not changed any settings. Only if you press one of the function buttons or turn the control knob when the display is switched on are the settings changed.

The backlighting goes out approx. 10 seconds after the last operation. The display switches off approx. 1 minute after the last operation.

The basic display shows the current settings and values of the heating system. If you make a setting on the controller, the display on the screen switches from the basic display to the display for new settings.
The basic display appears when you:
- press a button or turn the control knob when the display is switched off.
- press the left function key and thus exit selection level 1.

If your heating system has two independent heating circuits, the heating engineer will determine during installation whether or not the basic display shows the values of heating circuit 1 or heating circuit 2.

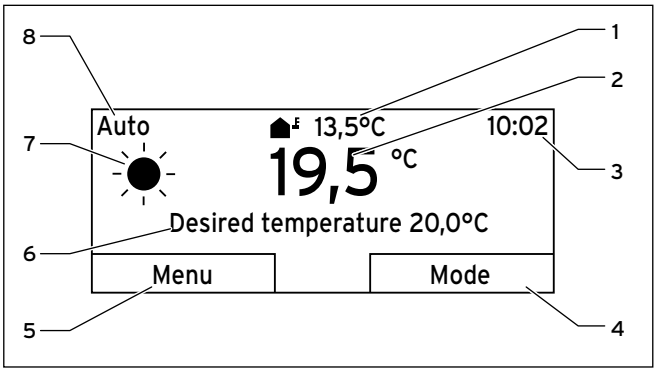


**Fig. 3.4 Basic display**

1 Outside temperature
2 Current room temperature
3 Time
4 Current function of the right function key (Soft key function)
5 Current function of the left function key (Soft key function)
6 Desired temperature (target room temperature)
7 Symbol for heating mode in "Auto" mode
8 Mode set for the heating mode

**Heating mode symbols**
☀ Sun = Heating mode within a set period (Comfort mode)
☾ Moon = Heating mode outside a set period (Night mode)

**Soft key function**
Both function keys have a soft key function.
The current functions of the function keys are displayed in the lower display line.
Depending on the selection level selected in the menu structure, the list entry or the value:
- the current function (**5**) of the left function key may differ.
- the current function (**4**) of the right function key may differ.

If, for example, you press the left function key, the current function of the left function key switches from "Menu" (**→ Fig. 3.4**) to "Back" (**→ Fig. 3.5**).

**Menu**
If you press the left function key "Menu", you switch from the basic display to selection level 1 of the menu structure.

**Mode**
If you press the right function key "Mode", you access the settings under "Mode" directly from the basic display. In this way, you can quickly change the mode of "HEATING 1" or "HEATING 2" (**→ Section 4.3.1**). Whether or not you can change a heating circuit depends on the settings made by the heating engineer during installation.

**Desired temperature**
Depending on the mode, the desired temperature (**6**) may be greyed out on the display. This is the case, for example, in "Summer mode". As heating is not operational in "Summer mode", and therefore the heating circuit is off, there is no desired temperature.

### 3.3.3 Selection levels

Through the selection levels, you navigate to the setting level in which you wish to read or change settings.
The selection levels have four display fields.

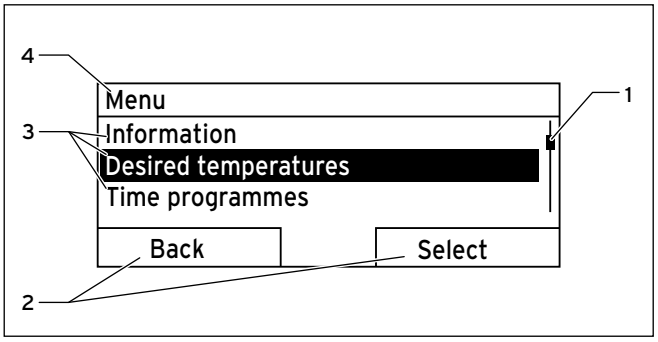


**Fig. 3.5 Display fields in the selection levels**

1 Scroll bar (only appears if there are more list entries than can be shown at once on the display)
2 Current functions of the right and left function keys (soft key functions)
3 List entries of the selection levels
4 Current function or selection level

### 3.3.4 Setting level

In the setting level, you can select the values you wish to read or change.

The controller must first retrieve the data from the radio receiver unit. Normally, the retrieval process takes up to two seconds. During that time, the display shows dashes (--) instead of figures.

The setting level has five display fields.

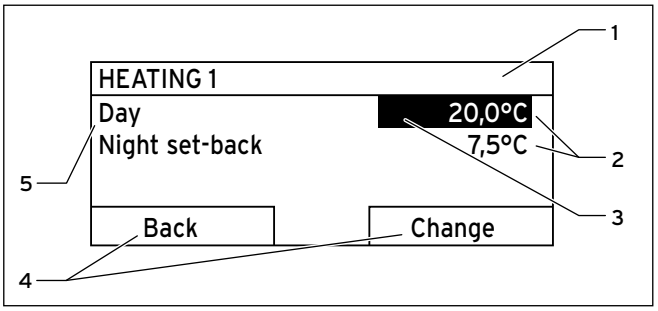


**Fig. 3.6 Display fields in the setting level**

1 Current selection level
2 Values
3 Highlighting (white font on black background) shows the current selection.
4 Current functions of the right and left function keys (soft key functions)
5 Setting level

# 4 Operation

## 4.1 Operating concept

The controller is operated with two function keys and a control knob (→ **Section 3.1**).

Use the function keys to:
- navigate through the selection levels and the setting level in the menu structure (→ **Tab. 4.2**),
- highlight a setting,
- confirm a value,
- activate a mode,
- cancel changing a value.

Use the control knob to:
- navigate through the list entries of a selection level by turning the control knob to the left or right
- highlight a selection level or a setting level,
- change a selected value.

The display shows a highlighted selection level, a setting level or a highlighted value with white font on a black background.

### 4.1.1 Operation in the basic display

From the basic display, you can change the "Desired day temperature" directly for the current day by turning the control knob.

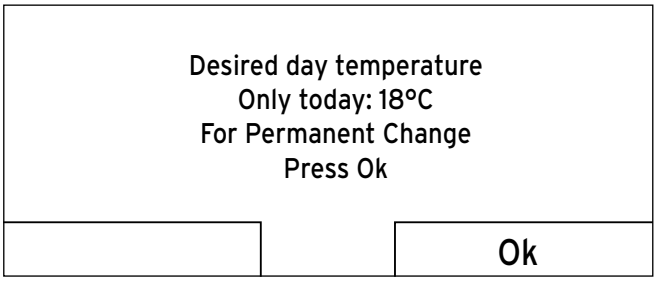


**Fig. 4.1 Request to change the desired temperature**

In the display, a request appears asking if you wish to change the "Desired day temperature" for the current day or on a permanent basis.

**To change the "Desired day temperature" for the current day only:**
➤ Turn the control knob to set the desired temperature.
The display switches back to the basic display after 12 seconds. The set desired temperature applies only until the end of the active period of the current day.

**To change the "Desired day temperature" permanently:**
➤ Turn the control knob to set the desired day temperature.
➤ Press the right function key "OK".
The display switches to the basic display. The new desired day temperature is applied permanently.

### 4.1.2 Operation via function keys

**Example: changing the time**
You wish to change the time.
The display shows the basic display.
If the display does not show the basic display, press the left function key "Back" until the basic display appears again.

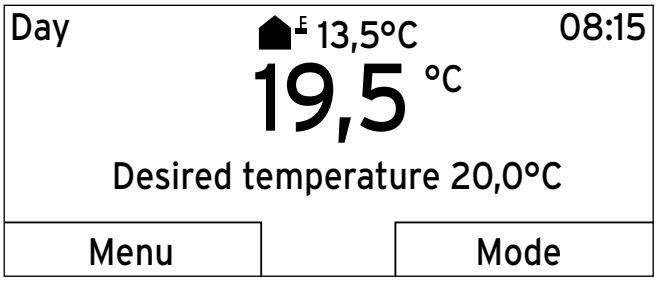


**Fig. 4.2 Basic display**

➤ Press the left function key "Menu".

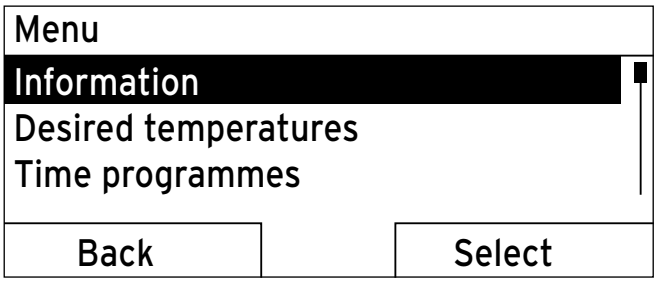


**Fig. 4.3 Selection level 1: "Information"**

The controller is now in selection level 1.
The left function key now has the function "Back" (to the next selection level up), the right function key has the function "Select" (the next selection level down).

➤ Turn the control knob until the "Basic settings" list entry is highlighted.

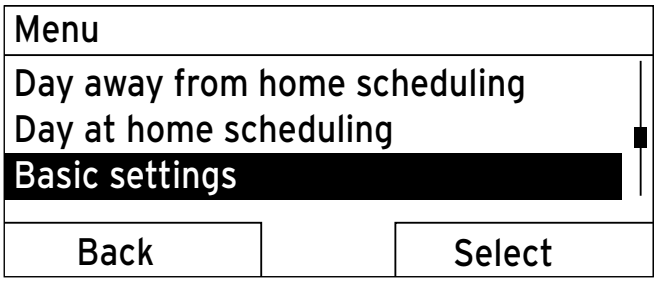


**Fig. 4.4 Selection level 1: "Basic settings"**

➤ Press the right function key "Select".

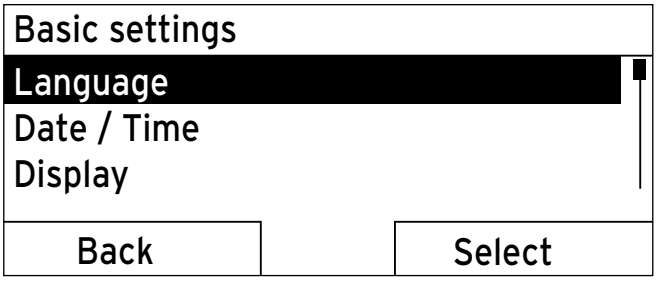


**Fig. 4.5 Selection level 2: "Language"**

The controller is now in selection level 2.

➤ Turn the control knob until the "Date / Time" list entry is highlighted.

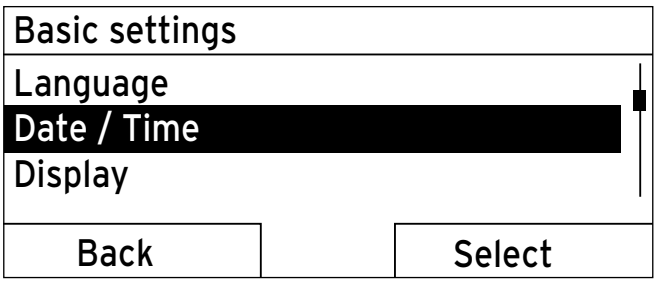


**Fig. 4.6 Selection level 2: "Date / Time"**

➤ Press the right function key "Select".

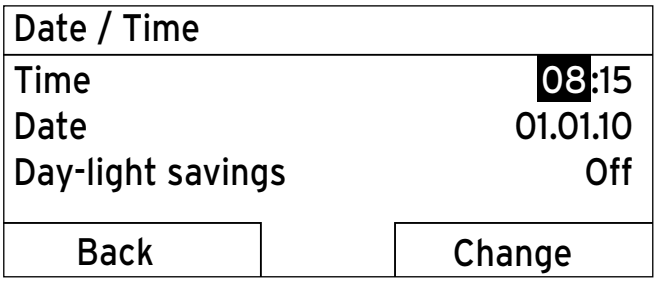


**Fig. 4.7 Setting level: figure for hours is highlighted**

The controller is now in setting level "Time". The value for hours is highlighted.
The left function key now has the function "Back" (to the next selection level up), the right function key has the function "Change" (of the value).

➤ Press the right function key "Change".

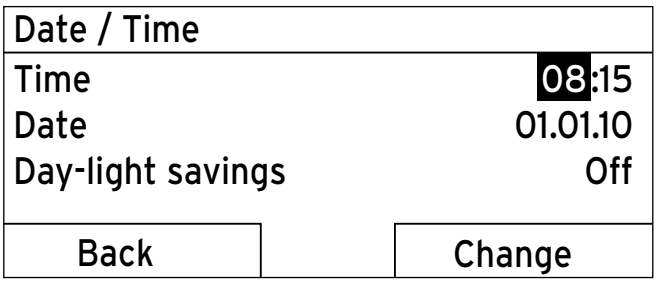


**Fig. 4.8 Setting level: alteration of figure is enabled**

You can change the value by turning the control knob. The left function key now has the function "Cancel" (the change), the right function key has the function "OK" (to confirm the change).

➤ Turn the control knob to change the value.

➤ Press the right function key, "OK", to save the change.

The controller has saved the changed time.

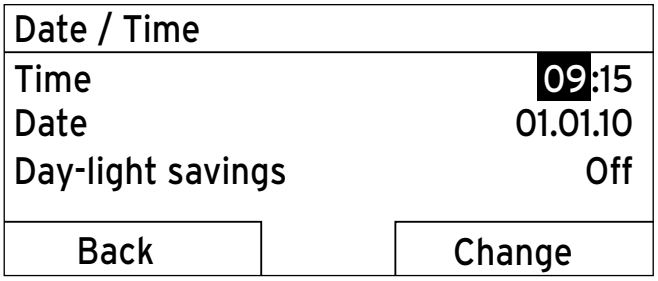


**Fig. 4.9 Setting level: change has been saved**

➤ Press the left function key "Back" several times to switch back to the next selection level up and to access the basic display from selection level 1.

## 4.2 Overview of menu structure

List entry "HEATING 2" is only shown by the controller if there is a second heating circuit. Two consecutive display texts mean that there can be one display text for "HEATING 1" and one display text for "HEATING 2".

Greyed out display texts are only shown by the controller if a corresponding expansion module is connected. Ask the heating engineer which expansion modules are installed.

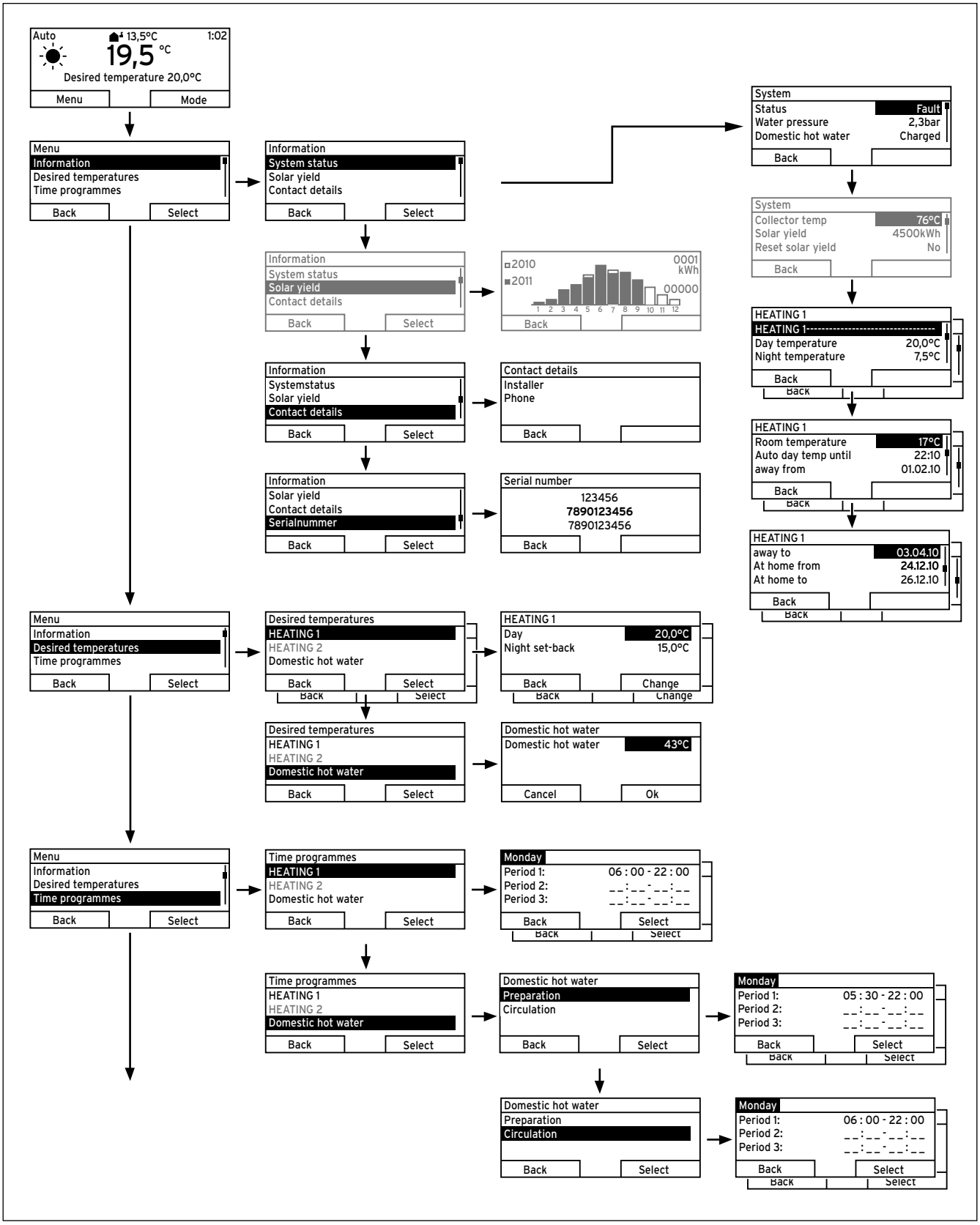


**Fig. 4.10 Overview of menu structure part 1**

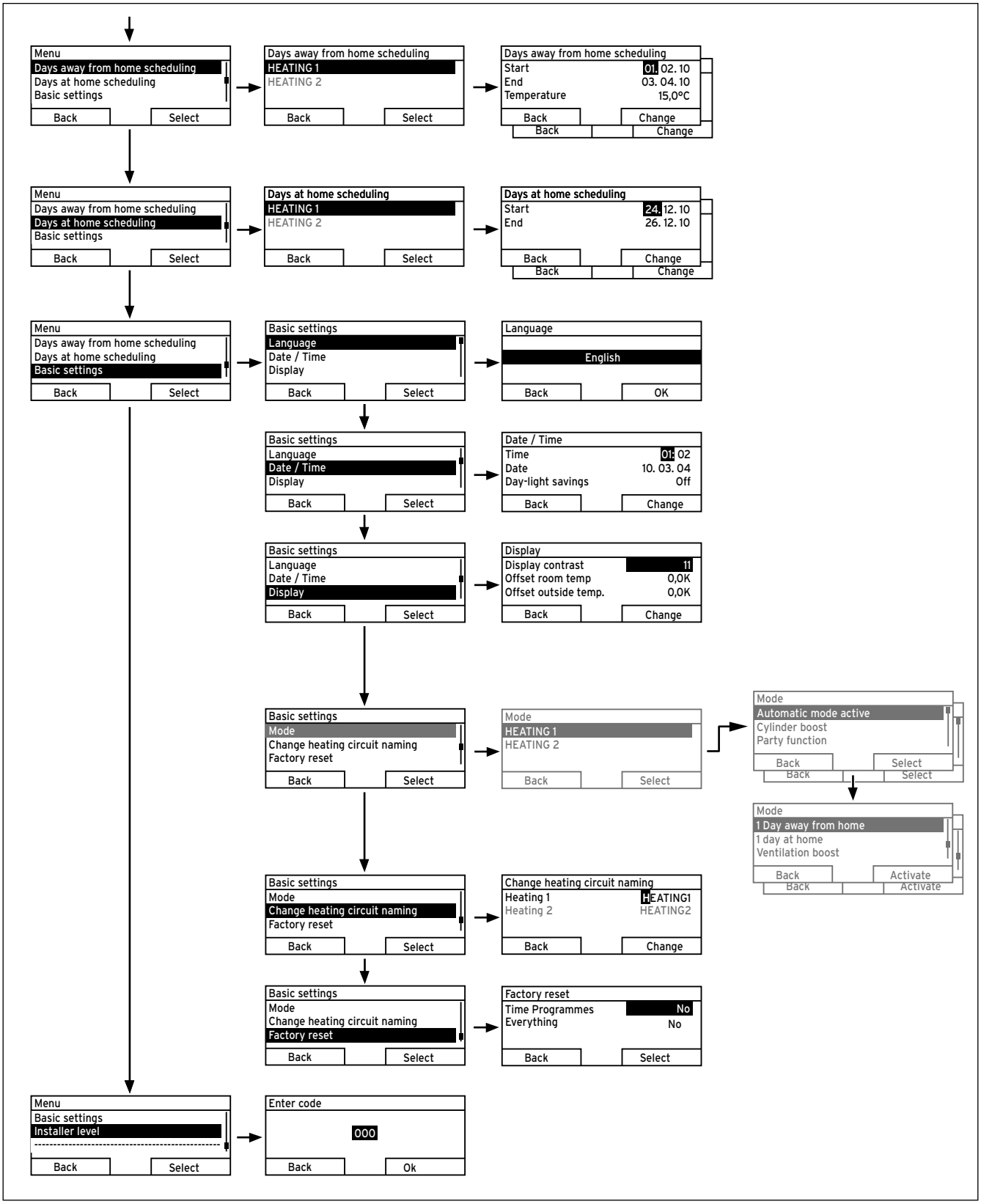


**Fig. 4.11 Overview of the menu structure Part 2**

## 4.3 Overview of setting and read-out options

The tables below provide overviews of the controller's modes and the setting and read-out options.
- If the "Increment/Select" column is blank, these are values that you can read but not adjust.
- If a value cannot be set at the factory, for example because it is currently being measured, the "Factory reset" column will be blank.
- If nothing is entered in a "Selection level 3" column, you will access the setting level directly from selection level 2.

➤ In the last column, "Own setting", enter that value that has been set by you or the heating engineer.

### 4.3.1 Overview of operating modes

The right function key can be used to navigate from the basic display directly to the settings under "Mode".
The currently activated mode is stated in the top left of the basic display.
If you have activated an advanced function, the display indicates the advanced function.

| Mode | Setting | Factory reset | Own setting |
|---|---|---|---|
| Current mode | | | |
| Auto<br>or<br>Summer<br>or<br>Day<br>or<br>Set-back<br>or<br>System OFF | Automatic mode<br><br>Summer mode<br><br>Comfort mode<br><br>Set-back mode<br><br>System OFF | Auto (automatic mode active) | |
| Advanced function | | | |
| Cylinder boost | Active, Not active | Not active | |
| Party function | Active, Not active | Not active | |
| 1 day away from home | Active, Not active | Not active | |
| 1 day at home | Active, Not active | Not active | |
| Ventilation boost | Active, Not active | Not active | |

**Tab. 4.1 Overview of operating modes**

### 4.3.2 Overview of operating levels

| Selection level 1 | Selection level 2 | Selection level 3 | Setting level | Values min. | Values max. | Unit | Increment/ Select | Factory reset | Own setting |
|---|---|---|---|---|---|---|---|---|---|
| Information | System status | | System | | | | | | |
| | | | Status | Current value (→ **Section 6**) | | - | | | |
| | | | Water pressure | Current value | | bar | | | |
| | | | Domestic hot water | Current value | | - | Charged, Charging | | |
| | | | Collector temp [1] | Current value | | °C | | | |
| | | | Solar yield [1] | Current value | | kWh | | | |
| | | | Reset solar yield [1] | Current value | | - | Yes, No | No | |
| | | | HEATING 1 | | | | | | |
| | | | Day temperature | Current value | | °C | 0.5 | 20 | |
| | | | | 5 | 30 | | | | |
| | | | Night temperature | Current value | | °C | 0.5 | 15 | |
| | | | | 5 | 30 | | | | |
| | | | Room temperature [3] | Current value | | °C | | | |
| | | | Auto day temp until | Current value | | h:min | | | |
| | | | away from | Current value | | dd.mm. yy | | | |
| | | | away to | Current value | | dd.mm. yy | | | |
| | | | At home from | Current value | | dd.mm. yy | | | |
| | | | At home to | Current value | | dd.mm. yy | | | |
| | | | HEATING 2 [2] | | | | | | |
| | | | Day temperature | Current value | | °C | 0.5 | | |
| | | | | 5 | 30 | | | | |
| | | | Night temperature | Current value | | °C | 0.5 | | |
| | | | | 5 | 30 | | | | |
| | | | Auto day temp until | Current value | | h:min | | | |
| | | | away from | Current value | | dd.mm. yy | | | |
| | | | away to | Current value | | dd.mm. yy | | | |
| | | | At home from | Current value | | dd.mm. yy | | | |
| | | | At home to | Current value | | dd.mm. yy | | | |
| | Solar yield [1] | | Bar chart | Previous year to current year comparison | | kWh/ month | | | |

**Tab. 4.2 Overview of operating levels**

| Selection level 1 | Selection level 2 | Selection level 3 | Setting level | Values | | Unit | Increment/ Select | Factory reset | Own setting |
|---|---|---|---|---|---|---|---|---|---|
| | | | | min. | max. | | | | |
| Information | Contact details | | Installer<br>Phone | Current values | | | | | |
| | Serialnummer | | Number of the appliance | Permanent value | | | | | |
| Desired temperatures | HEATING1 | | Day/<br>Night set-back | 5 | 30 | °C | 0.5°C | 20<br>15 | |
| | HEATING 2 [2] | | Day/<br>Night set-back | 5 | 30 | °C | 0.5°C | 20<br>15 | |
| | Domestic hot water | | Domestic hot water | 35 [4] | 70 [4] | °C | 1°C | 60 [4] | |
| Time programmes | HEATING1 | | Individual days and blocks | - | - | - | Mon, Tue, Wed, Thu, Fri, Sat, Sun and Mon - Fri, Sat - Sun, Mon - Sun | Mon - Fri: 06:00-22:00 Sat: 07:30-23:30 Sun: 07:30-22:00 and Mon - Fri 06:00-22:00 Sat-Sun 7:30-23:30 Mon-Sun 06:00-22:00 | |
| | | | Time period 1: Start - End Time period 2: Start - End Time period 3: Start - End | 00:00 | 24:00 | h:min | 10 min | | |
| | HEATING 2 [2] | | Individual days and blocks | - | - | - | Mon, Tue, Wed, Thu, Fri, Sat, Sun and Mon - Fri, Sat - Sun, Mon - Sun | Mon - Fri: 06:00-22:00 Sat: 07:30-23:30 Sun: 07:30-22:00 and Mon - Fri 06:00-22:00 Sat-Sun 7:30-23:30 Mon-Sun 06:00-22:00 | |
| | | | Time period 1: Start - End Time period 2: Start - End Time period 3: Start - End | 00:00 | 24:00 | h:min | 10 min | | |
| | Domestic hot water | Preparation | Individual days and blocks | - | - | - | Mon, Tue, Wed, Thu, Fri, Sat, Sun and Mon - Fri, Sat - Sun, Mon - Sun | Mon - Fri: 05:30-22:00 Sat: 07:00-23:30 Sun: 07:00-22:00 and Mon - Fri 05:30-22:00 Sat-Sun 07:00-23:30 Mon-Sun 05:30-22:00 | |
| | | | Time period 1: Start - End Time period 2: Start - End Time period 3: Start - End | 00:00 | 24:00 | h:min | 10 min | | |
| | | Circulation | Individual days and blocks | - | - | - | Mon, Tue, Wed, Thu, Fri, Sat, Sun and Mon - Fri, Sat - Sun, Mon - Sun | Mon - Fri: 06:00-22:00 Sat: 07:30-23:30 Sun: 07:30-22:00 and Mon - Fri 06:00-22:00 Sat-Sun 7:30-23:30 Mon-Sun 06:00-22:00 | |
| | | | Time period 1: Start - End Time period 2: Start - End Time period 3: Start - End | 00:00 | 24:00 | h:min | 10 min | | |

**Tab. 4.2 Overview of operating levels**

| Selection level 1 | Selection level 2 | Selection level 3 | Setting level | Values | | Unit | Increment/ Select | Factory reset | Own setting |
|---|---|---|---|---|---|---|---|---|---|
| | | | | min. | max. | | | | |
| Days away from home scheduling | HEATING 1 | | Start | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | End | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | Temperature | Frost protection or 5 | 30 | °C | 0.5 °C | Frost protection | |
| | HEATING 2 [2)] | | Start | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | End | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | Temperature | Frost protection or 5 | 30 | °C | 0.5 °C | Frost protection | |
| Days at home scheduling | HEATING 1 | | Start | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | End | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | HEATING 2 [2)] | | Start | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| | | | End | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.10 | |
| Basic settings | Language | | – | – | – | – | Languages for selection | German | |
| | Date / Time | | Time | 00:00 | 24:00 | h:min | 10 min | 00:00 | |
| | | | Date | 01.01.00 | 31.12.99 | dd.mm. yy | Day.Month.Year | 01.01.00 | |
| | | | Day-light savings | | | – | Off, Auto | off | |
| | Display | | Display contrast | 01 | 15 | – | 1 | 8 | |
| | | | Offset room temp | -3.0 | 3.0 | K | 0.5 | 0.0 | |
| | | | Offset outside temp. | -3.0 | 3.0 | K | 0.5 | 0.0 | |

**Tab. 4.2 Overview of operating levels**

| Selection level 1 | Selection level 2 | Selection level 3 | Setting level | Values | | Unit | Increment/ Select | Factory reset | Own setting |
|---|---|---|---|---|---|---|---|---|---|
| | | | | min. | max. | | | | |
| Basic settings | Mode [2] | HEATING 1 | Automatic mode active or Summer mode or Comfort mode or Set-back mode or System OFF | – | – | – | Active, Not active | Automatic mode active | |
| | | | Cylinder boost | – | – | – | Active, Not active | Not active | |
| | | | Party function | – | – | – | Active, Not active | Not active | |
| | | | 1 day away from home | – | – | – | Active, Not active | Not active | |
| | | | 1 day at home | – | – | – | Active, Not active | Not active | |
| | | | Ventilation boost | – | – | – | Active, Not active | Not active | |
| | | HEATING 2 | Automatic mode active or Summer mode or Comfort mode or Set-back mode or System OFF | – | – | – | Active, Not active | Automatic mode active | |
| | | | Cylinder boost | – | – | – | Active, Not active | Not active | |
| | | | Party function | – | – | – | Active, Not active | Not active | |
| | | | 1 day away from home | – | – | – | Active, Not active | Not active | |
| | | | 1 day at home | – | – | – | Active, Not active | Not active | |
| | | | Ventilation boost | – | – | – | Active, Not active | Not active | |
| | Change heating circuit naming | | Heating 1 | 1 | 10 | Letter/ number | A to Z, 0 to 9, space | Heating 1 | |
| | | | Heating 2 [2] | 1 | 10 | Letter/ number | A to Z, 0 to 9, space | Heating 2 | |
| | Factory reset | | Time programmes | – | – | – | Yes, No | No | |
| | | | Everything | – | – | – | Yes, No | No | |
| Installer level | | | Enter code | 000 | 999 | – | 1 | 000 | |

**Tab. 4.2 Overview of operating levels**

1) Is only shown if solar module VR 68/2 is connected.
2) Is only shown if mixer module VR 61/2 is connected.
3) Is only shown if remote control unit VR 81/2 is connected.
4) This value depends on the expansion module connected. If no expansion module is connected, the upper limit may be limited by the value for the boiler.

# 5 Description of functions

The controller offers various functions, modes and advanced functions for controlling the heating circuit and hot water production.
- With the functions, you can read information, and set desired temperatures, periods and basic settings.
- With the modes, you select whether or not the heating circuit, hot water production and circulation should be operated in automatic or manual mode.
- With the advanced functions, you can change the active mode for the heating circuit and hot water production in special situations quickly and with time restrictions.

## 5.1 Functions

You can set the functions via the left function key "Menu".
The path details given at the start of each function description indicate how you reach this function in the menu structure.
You can read and set heating circuit 1 and, if relevant, heating circuit 2 independently of one another.

### 5.1.1 Reading information

**Menu → Information**
Select the "Information" list entry in selection level 1 to reach selection level 2 with the list entries "System status", "Solar yield", "Contact details" and "Serial number".

**Reading the system status**
**Menu → Information → System status**
The "System status" option shows you a list of system parameters and their current settings/levels: Status, Water pressure, Domestic hot water and the current settings for "HEATING 1" and if applicable "HEATING 2".
There is also information under "System status":
- regarding the active period ("Auto day temp until"),
- regarding exceptions in the time programmes, which you may have set using the "Days away from home" and "Days at home" functions.

Only the desired temperatures for "Day temperature" and "Night temperature" can be also set directly under "System status". All other values are set in other places in the menu structure, as described in the following sections.

The "Room temperature" list entry is only shown under "System status" if a remote control unit VR 81/2 is connected.

"HEATING 2" is only shown under "System status" if a mixer module VR 61/2 is connected. "HEATING 2" has the same read options and settings as "HEATING 1".

**Reading the list of status messages**
**Menu → Information → System status → Status**
If no service is required and no errors have occurred, the value "OK" is shown next to "Status". If a service is required or an error has occurred, the value "Fault" is shown next to "Status". In this case the right function key has the function "Display". If you press the right function key "Display", the list of status messages is shown in the display.

The "Collector temp", "Solar yield" and "Reset solar yield" list entries are only shown under "System status" if a solar module VR 68/2 is connected.

**Reset solar yield (only with VR 68/2)**
**Menu → Information → System status → Reset solar yield**
If you select the setting "Yes" under function "Reset solar yield" and press the right function key "Ok", you reset the previously totalled solar yield to 0 kWh. After 30 seconds the setting "Yes" automatically returns to "No".

**Display solar statistics (only with VR 68/2)**
**Menu → Information → Solar yield**
The diagram under "Solar yield" shows a comparison of the monthly solar yields of the previous year and of the current year as well as the peak values of the last month.

**Display installer contact details**
**Menu → Information → Contact details**
If the heating engineer entered his company name and telephone number during the installation, you can read this data under "Contact details".

**Reading the serial number and article number**
**Menu → Information → Serialnummer**
"Serialnummer" shows the serial number of the appliance, which the heating engineer may require you to tell him.
The article number is found in the second line of the serial number (**→ Fig. 4.10**).

### 5.1.2 Setting desired temperatures

**Menu → Desired temperatures**
This function is used to set the desired temperatures for the heating circuits "HEATING 1", "HEATING 2", if relevant, and hot water production.

"HEATING 2" is only shown under "Desired temperatures" if a mixer module VR 61/2 is connected. "HEATING 2" has the same read options and settings as "HEATING 1".

**For the heating circuits**
**Menu → Desired temperatures → HEATING 1 and, if relevant, HEATING 2**

**Caution!**
**Risk of damage due to frost!**
If rooms are not adequately heated, this can cause damage to the building and to the heating system.
➤ If you are absent during a frosty spell, ensure that the heating system remains in operation and provides adequate frost protection.

You can set two different desired temperatures for the heating circuits.
- The desired day temperature is the temperature you wish to have in the rooms during the day or when you are at home (Comfort mode).
- The desired night temperature is the temperature that you wish to have in the rooms during the night or when you are away from home (Night mode).

**For hot water production**
**Menu → Desired temperatures → Domestic hot water**
You can only use the controller's functions and setting options for hot water production if a domestic hot water cylinder is connected to the heating system.

**Danger!**
**Risk of being scalded by hot water!**
There is a danger of scalding at the hot water draw-off points if the temperatures are greater than 60 °C. Young children and elderly persons can be at risk at lower temperatures.
➤ Select the temperature so that nobody is at risk.

You can set the desired "Hot water" temperature for the domestic hot water.

### 5.1.3 Setting timer programmes

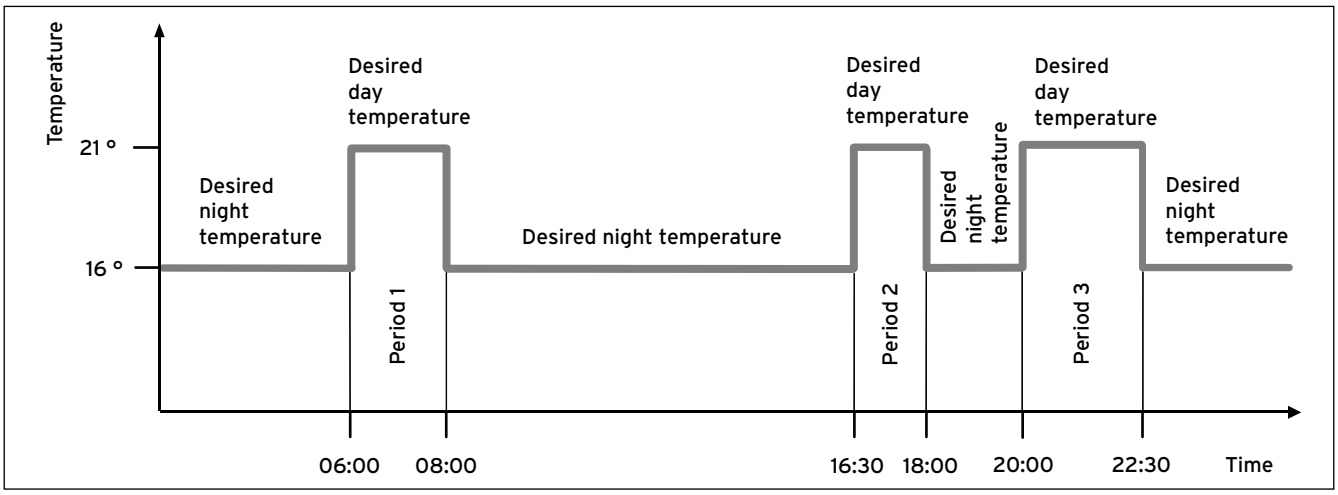


**Fig. 5.1 Example: three time periods in one day**

**Menu → Time programmes**
Select the "Time programmes" function to set the periods for the heating circuit and for hot water production. If you have not set any periods, the controller uses the periods set in the factory settings (**→ Tab. 4.2**).
You can only use the controller's functions and setting options for hot water production if a domestic hot water cylinder is connected to the heating system.
You can only use the controller's functions and setting options for circulation if circulation pipes and a circulation pump are connected to the heating system.
The time programmes are only effective for the heating circuit in "Automatic mode" and are only effective for hot water production in "Automatic mode" and "Summer mode".

"HEATING 2" is only shown under "Time programmes" if a mixer module VR 61/2 is connected. "HEATING 2" has the same read options and settings as "HEATING 1".

**Periods for the heating circuit**
Set the period for the heating circuit so that each period:
- starts approx. 30 minutes before the time at which the rooms should reach the desired "Day" temperature.
- ends approx. 30 minutes before the time at which the rooms should reach the desired "Night" temperature.

The heating engineer can set a pre-heat time and a pre-switch-off time for the heating circuit, so that you can set the period for the desired "Day" and "Night" temperatures exactly to the times at which the room temperature should reach the desired temperature. Ask the heating engineer if he has set a pre-heat time or a pre-switch-off time.

**Periods for hot water production**
Set the periods for hot water production so that each period:
- starts approx. 30 minutes before the time at which the water in the domestic hot water cylinder should have reached the desired "hot water" temperature.
- ends approx. 30 minutes before the time at which you no longer need any hot water.

Set the periods for circulation so that each period:
- starts approx. 30 minutes after the start of a period for hot water production,
- ends approx. 30 minutes before the end of a period for hot water production.

**Periods for days and blocks**
You can set individual days or blocks of days for which the periods should apply:
- Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
- Monday - Friday, Saturday - Sunday,
  Monday - Sunday

For each day and block, you can set up to three periods.

The periods set for a day have priority over the periods set for a block.

**Example: three time periods in one day (→ Fig. 5.1)**
Desired "Day" temperature: 21 °C
Desired "Night" temperature: 16 °C
Time period 1: 06.00 - 08.00
Time period 2: 16.30 - 18.00
Time period 3: 20.00 - 22.30
Within the periods, the controller brings the room temperature to the set desired "Day" temperature (Comfort mode).
Outside the period, the controller brings the room temperature to the set desired "Night" temperature (Night mode).

**Examples of individual days:**
Monday
Time period 1: 06.00 - 07.30

Saturday
Time period 1: 07.30 - 10.00
Time period 2: 12.00 - 23.30

**Examples of blocks:**
Monday - Friday
Time period 1: 06.30 - 08.00
Time period 2: 12.00 - 13.00
Time period 3: 17.00 - 22.00

Saturday - Sunday
Time period 1: 08.00 - 22.00

**Setting time programmes quickly:**
If, for example, you need a different period for just one working day in the week, first set the times for the entire block "Monday - Friday". Then set the different period for the working day.

If you view a block in the display and have defined a different period for a day in this block, then the display indicates the different times in the block with "!!".

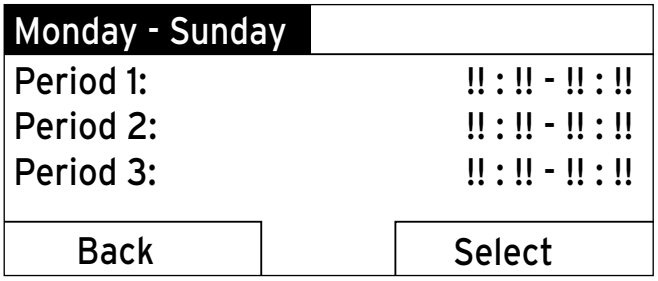


**Fig. 5.2 Identification of different days**

If you press the right function key "Select", then a message appears on the display which informs you about different periods. You do not need to align the times.

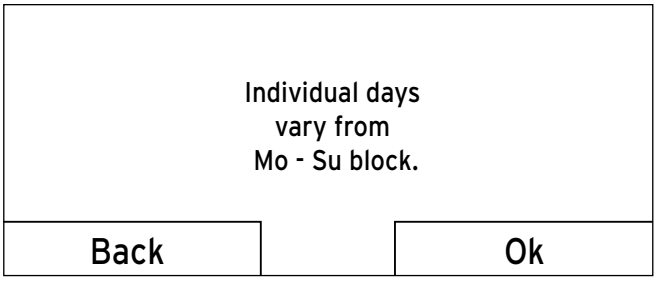


**Fig. 5.3 Exception to the time programme message**

The set times for the block marked with "!!" can be viewed and changed if you press the right function key "Ok" in the display.

**For the heating circuits:**
**Menu → Time programmes → HEATING 1 and, if relevant, HEATING 2**
In each set period, the desired temperature that you set in the "Desired temperatures" function applies.
Within the period, the controller switches to Comfort mode and the heating circuit heats the connected rooms to the desired "Day" temperature.
Outside of that time period, the controller switches to the operating mode that the heating engineer has set: Frost protection, Eco, or Night-time temperature (**→ Section 5.2.1**).

**For hot water production:**
**Menu → Time programmes → Domestic hot water → Preparation**
In each set period, the desired hot water temperature that you set in the "Desired temperatures" function applies.
Within the period, the hot water is available at the temperature set by you. If, during the period, the cylinder temperature is 5 °C lower than the desired hot water temperature, the domestic hot water cylinder is again heated to the desired hot water temperature. At the end of a period, the controller switches the hot water production off, until the start of the next period.

**For circulation:**
**Menu → Time programmes → Domestic hot water → Circulation**
The set periods determine the operating times for circulation. Within the period, circulation is activated. Outside the period, circulation is deactivated.
Coordinate the periods for circulation with the periods for hot water production. If, for example, the period for hot water production starts at 05:00, then the period for circulation should start 30 minutes later at 05:30.

### 5.1.4 Days away from home scheduling

**Menu → Days away from home scheduling → HEATING 1 and, if relevant, HEATING 2**
With this function, you can set a period with a start and end date and a temperature for days during which you are away from home. Thus, you do not need to change periods for which you have set, for example, no reduction of the desired temperature over the course of the day.
Hot water production and circulation are switched off and the frost protection is activated.
While the "Days away from home scheduling" function is activated it has priority over the set operating mode. At the end of the specified period, or if you cancel the function, the heating system returns to the pre-set mode.

"HEATING 2" is only shown under "Days away from home scheduling" if a mixer module VR 61/2 is connected. "HEATING 2" has the same read options and settings as "HEATING 1".

### 5.1.5 Days at home scheduling

**Menu → Days at home scheduling → HEATING 1 and, if relevant, HEATING 2**
With this function, you set the desired "Day" temperature for days which you spend at home. This means you do not need to change the periods which you have already set, for example, with a decrease in the desired temperature during the day.
Within the specified period, the heating system works in "Automatic mode" and uses the day settings for "Sunday", which were set using the "Time programmes" function.
At the end of the specified period, or if you cancel the function, the heating system returns to the pre-set mode.

"HEATING 2" is only shown under "Day at home scheduling" if a mixer module VR 61/2 is connected. "HEATING 2" has the same read options and settings as "HEATING 1".

### 5.1.6 Language selection

**Menu → Basic settings → Language**

During installation, the heating engineer sets the desired language. All functions are displayed in the set language.

If the language of e.g. a service technician differs from the set language, you can change the language using this function.

**Caution!**
**It may not be possible to operate the controller if the wrong language is selected.**
If you select a language that you do not understand, you can no longer read the text in the controller display and can no longer operate the controller.
➤ Only select a language that you understand.

However, if the text in the display should appear in a language that you do not understand, you can set a different language as follows:
➤ Repeatedly press the left function key until the basic display appears.
➤ Press the left function key once again.
➤ Turn the control knob to the left until the second list entry above the dotted line is highlighted.
➤ Press the right function key twice.
➤ Turn the control knob (to the right or left) until you find a language you understand.
➤ Press the right function key.

### 5.1.7 Setting the time

**Menu → Basic settings → Date / Time → Time**
Select this function to set the current time.
All controller functions that contain a time relate to the set time.

### 5.1.8 Setting the date

**Menu → Basic settings → Date / Time → Date**
Select this function to set the current date.
All controller functions that contain a date relate to the set date.

### 5.1.9 Changing over to daylight saving time

**Menu → Basic settings → Date / Time → Day-light savings**
If the external sensor is not fitted with a DCF77 receiver or if no DCF77 signal can be received, you can use this function to set manual switchover to daylight savings time.
- "Auto": the controller changes over to "Day-light savings" automatically.
- "Off": you have to change over to "Day-light savings" manually.

Daylight saving is also referred to as BST (British Summer Time): start = last Sunday in March, end =- last Sunday in October.

### 5.1.10 Setting the display contrast

**Menu → Basic settings → Display → Display contrast**
You can set the display contrast in relation to the brightness of the surroundings, to ensure that the display is clearly legible.

### 5.1.11 Setting the offset room temperature

**Menu → Basic settings → Display → Offset room temp**
A thermometer is integrated in the controller for measuring the room temperature. If you have another thermometer in the same room and compare the values with each other, the temperature values may constantly differ from each other.
**Example**:
One room thermometer constantly shows a temperature that is one degree higher than the current room temperature on the controller display.
With the "Offset room temp." function, you can offset the temperature difference in the controller display by setting a correction value of +1 K (1 K corresponds to 1°C). K (Kelvin) is a unit for the temperature difference.
Inputting a correction value affects the room temperature compensator.

### 5.1.12 Setting the offset outside temperature

**Menu → Basic settings → Display → Offset outside temp.**
The thermometer in the controller's external sensor measures the outside temperature. If you have mounted another thermometer in the outside area and compare the temperature values with each other, the temperature values may constantly differ from each other.
**Example**:
Your weather station constantly shows a temperature that is one degree higher than the current room temperature on the controller display.
With the "Offset outside temp." function, you can offset the temperature difference in the controller display by setting a correction value of -1 K (1 K corresponds to 1°C). K (Kelvin) is a unit for the temperature difference.
Inputting a correction value affects the weather compensator.

### 5.1.13 Changing heating circuit naming

**Menu → Basic settings → Change heating circuit naming**
You can change the factory-set names for the heating circuits "HEATING 1" and, if relevant "HEATING 2" as you wish. The name is limited to 10 characters.

### 5.1.14 Restoring factory settings

**Menu → Basic settings → Factory reset**
You can reset the settings for the "Time programmes" or for "Everything" to the factory settings.

**Time programmes**
**Menu → Basic settings → Factory reset → Time Programmes**

Before you reset the time programmes to the factory settings, make a note of the controller settings (→ **Tab. 4.2**).

With "Time programmes", you will reset all the settings you have made in the "Time programmes" function to the factory settings. All other settings that include times, such as "Date / Time", are not affected.
While the controller is resetting the "Time programmes" settings to the factory settings, "in process" is shown on the display. Then the basic display is displayed.

**Everything**
**Menu → Basic settings→ Factory reset → Everything**

**Caution!**
**Risk of a malfunction!**
The function "Everything" restores all settings to the factory settings, including those set by the heating engineer. It may be that it is no longer possible to operate the heating system after this.
➤ Arrange for the heating engineer to reset all settings to factory settings.

While the controller is resetting the settings to the factory settings, "in process" is shown on the display. Then the installation assistant appears in the display, which only the heating engineer may operate.

### 5.1.15 Installer level

Installer level is reserved for the heating engineer and is therefore protected by an access code.
At this operating level the heating engineer can make the necessary settings.

## 5.2 Operating modes

You can set the modes using the right function key "Mode" and, if relevant, also by means of the left function key "Menu" under "Basic settings".

The "Mode" list entry is only shown under "Basic settings" and, further down, also the "HEATING 1" and "HEATING 2" list entries, if a mixer module VR 61/2 is connected.

Use the right function key "Mode" to set the mode directly. The set mode only applies to the heating circuit that has been pre-set by the heating engineer ("HEATING 1" or "HEATING 2" or "HEATING 1 and HEATING 2"). Only if a mixer module VR 61/2 is connected for a second heating circuit and both heating circuits are activated can you also set the mode via the left function key "Menu". You can then set the modes for "HEATING 1" and "HEATING 2" separately.

The path details given at the start of each mode description indicate how you reach this mode in the menu structure.

### 5.2.1 Operating modes for the heating circuit

**Automatic mode**
**Mode → (current operating mode) → Automatic mode**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → (current mode) → Automatic mode**
Automatic mode controls the heating circuits according to the set desired "Day" temperature, the set periods, the desired "Night" temperature set by the heating engineer and the heating curve.
In the "Time programmes" function, you have set periods for the heating circuits. If you have not set any periods, the controller uses the periods set in the factory settings in automatic mode (**→ Tab. 4.2**).
Within the periods, the controller brings the room temperature to the set desired "Day" temperature (Comfort mode).
Outside the periods, the controller regulates in accordance with the mode set by the heating engineer.

Three modes are possible:
- **ECO** (factory setting)**:** the heating function is switched off and the controller monitors the outside temperature.
  If the outside temperature falls below 3 °C, the controller switches the heating function on after the end of the frost protection delay time and brings the room temperature to the set desired "Night" temperature.
  Even though the heating function is on, the burner is only active as required.
  If the outside temperature rises above 4 °C, the controller switches the heating function off, but continues to monitor the outside temperature.
- **Frost protection:** the heating function is switched off and the frost protection function is active.
- **Night temperature:** the heating function is on and the controller controls the room temperature according to the set "Night" temperature.

When installing your controller, the heating engineer can specify the control functions for the times outside the periods and the heating curve.
➤ Discuss with the heating engineer which settings are optimum for you.

**Summer mode**
**Mode → (current mode) → Summer mode**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → (current mode)**
The heating function is switched off for the selected heating circuit and the frost protection function is active. Hot water production and circulation are regulated by the controller in accordance with the periods set.

**Comfort mode**
**Mode → (current operating mode) → Comfort mode**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → (current mode) → Comfort mode**
The "Comfort mode" controls "HEATING 1" and, if relevant, "HEATING 2" at the set desired "Day" temperatures without taking periods into account.

**Set-back mode**
**Mode → (current mode) → Set-back mode**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → (current mode) → Set-back mode**
The "Set-back mode" controls "HEATING 1" and, if relevant, "HEATING 2" at the set desired "Night" temperatures without taking periods into account.

**System OFF**
**Mode → (current mode) → System OFF**
The heating function is switched off. The frost protection function is activated.

### 5.2.2 Operating modes for hot water production and circulation

The mode for hot water production and circulation depends on the set mode for heating circuits "HEATING 1" and, if relevant, "HEATING 2". No other mode can be set.

If you have assigned different functions, modes or advanced functions to two independent heating circuits, then the controller assigns the mode with the greater heat requirement to hot water production and circulation (→ **Tab. 5.1**).

If the heating system is equipped with one heating circuit, the controller regulates the hot water production and, if relevant, the circulation in accordance with the mode for this heating circuit.
If the heating system is equipped with two heating circuits, the heating engineer can define which heating circuit controls the hot water production and, if relevant, the circulation.

**Automatic mode and Summer mode**
Automatic mode and Summer mode control the hot water production in accordance with the set desired temperature for "hot water" and the set periods. In the "Time programmes" function, you have set periods for hot water production. If you have not set any periods, the controller uses the period set in the factory settings for hot water production (→ **Tab. 4.2**).
Within the period, hot water production is switched on and keeps the hot water in the domestic hot water cylinder at the set temperature. Outside the period, hot water production is deactivated.
Automatic mode and Summer mode control the circulation of hot water in the hot water pipes in accordance with the set periods.
Within the periods, circulation is activated and outside the periods it is deactivated.

**Comfort mode**
Comfort mode controls hot water production in accordance with the set desired temperature for hot water without taking periods into account.
Circulation is activated and the periods for circulation are not observed.

**Set-back mode and System OFF**
Hot water production and circulation are off. The frost protection function is activated.

**With two independent heating circuits:**
If the heating system has two independent heating circuits, the controller always assigns the mode with the greater heat requirement to hot water production and circulation. To find out which mode this is, see the table (→ **Tab. 5.1**).
**Example:**
If you operate Circuit 1 in "Auto" mode and Circuit 2 in "Comfort" mode, the controller assigns "Comfort" mode to hot water production and circulation.

| Heating circuit 2 / Heating circuit 1 | Auto | Comfort | Set-back | Summer | 1 day at home | 1 day away from home | Days at home schedul-ing | Days away from home schedul-ing | Party function |
|---|---|---|---|---|---|---|---|---|---|
| **Auto** | Auto | **Comfort** | Auto | Auto | Auto | Auto | Auto | Auto | Comfort |
| **Comfort** | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort |
| **Set-back** | Auto | Comfort | Off | Auto | Auto | Off | Auto | Off | Comfort |
| **Summer** | Auto | Comfort | Auto | Auto | Auto | Auto | Auto | Auto | Comfort |
| **1 day at home** | Auto | Comfort | Auto | Auto | Auto | Auto | Auto | Auto | Comfort |
| **1 day away from home** | Auto | Comfort | Off | Auto | Auto | Off | Auto | Off | Comfort |
| **Days at home schedul-ing** | Auto | Comfort | Auto | Auto | Auto | Auto | Auto | Auto | Comfort |
| **Days away from home scheduling** | Auto | Comfort | Off | Auto | Auto | Off | Auto | Off | Comfort |
| **Party function** | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort | Comfort |

**Tab. 5.1 Modes for hot water production and circulation with two independent heating circuits**

## 5.3 Advanced functions

Advanced functions can be activated directly from any mode using the right function key "Mode". In this case, the activated advanced function only applies to the heating circuit that has been pre-set by the heating engineer ("HEATING 1" or "HEATING 2" or "HEATING 1 and HEATING 2").
Only if a mixer module VR 61/2 is connected for a second heating circuit and both heating circuits are activated can you also activate an advanced function via the left function key "Menu".
In this case, you can set the advanced function separately for each heating circuit.
You can cancel an advanced function at any time using the left function key "Cancel".

The path details given at the start of each advanced function description indicate how you reach this advanced function in the menu structure.

### 5.3.1 Cylinder boost

**Operating mode → Cylinder boost**
If you have switched off hot water production or required hot water outside a period, then activate the "Cylinder boost" advanced function.
The advanced function heats the water in the domestic hot water cylinder once, until the set desired "hot water" temperature is reached or until you cancel the advanced function.
The heating system will then return to the pre-set mode.

### 5.3.2 Party function

**Mode → Party function**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → Party function**

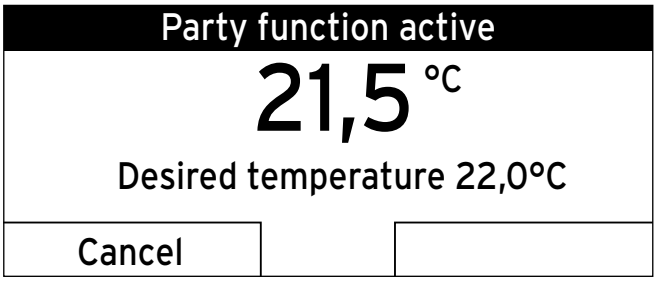


**Fig. 5.4 Example: Party function activated**

If you wish to switch on the heating circuit, the hot water production and circulation temporarily, e.g. during a party, activate the "Party function" advanced function. This means you do not need to change the settings on the heating system for short periods of time.
The advanced function brings the room temperature to the set desired "Day" temperature, in accordance with the set periods.
If the display shows "Party function active", you can set the desired temperature (Day) for the heating circuit with the control knob. The setting applies for as long as the advanced function is active.
The advanced function is deactivated when the next period starts or if you cancel the advanced function first.
The heating system will then return to the pre-set mode.

### 5.3.3 1 Day away from home

**Mode → 1 Day away from home**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → 1 Day away from home**
If you are only away from home for one day, e.g. for a day trip, activate the "1 Day away from home" advanced function. This means you do not need to change the set periods, which you have set with, e.g., an increase in the room temperature during the day.
The advanced function brings the room temperature to the desired "Night" temperature. Hot water production and circulation are switched off and the frost protection is activated.
If the display shows "1 Day away from home active", you can set the desired temperature (Night) for the heating circuit with the control knob.
The advanced function is automatically deactivated after 24:00 hours or if you cancel the advanced function first. The heating system will then return to the pre-set mode.

### 5.3.4 1 day at home

**Mode → 1 day at home**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → 1 day at home**
If you are spending a week day at home, e.g on a public holiday, then activate the "1 day at home" advanced function. The advanced function activates "Automatic mode" for one day with the settings for "Sunday", as set using the "Time programmes" function.
If the display shows "1 day at home active", you can set the desired temperature (Day) for the heating circuit with the control knob.
The advanced function is automatically deactivated after 24:00 hours or if you cancel the advanced function first. The heating system will then return to the pre-set mode.

### 5.3.5 Ventilation boost

**Mode → Ventilation boost**
or where applicable
**Menu → Basic settings → Mode → HEATING 1 and, if relevant, HEATING 2 → Ventilation boost**
If you wish to switch the heating circuit off during ventilation of the living rooms, activate the "Ventilation boost" advanced function. This advanced function switches the heating circuit off for 30 minutes. The frost protection function is activated, and hot water production and circulation remain active.
The advanced function is automatically deactivated after 30 minutes or if you cancel the advanced function first. The heating system will then return to the pre-set mode.

# 6 Service and troubleshooting

## 6.1 Service

If a service is required, the controller displays a service message in the display.

**Caution!**
**Risk of damage to the heating system due to failure to perform maintenance work!**
A service message indicates that the heating system must be serviced by the heating engineer. Failure to take notice of these service messages, could lead to material damage or breakdown of the heating system.

➤ If the controller displays a service message, inform a heating engineer.

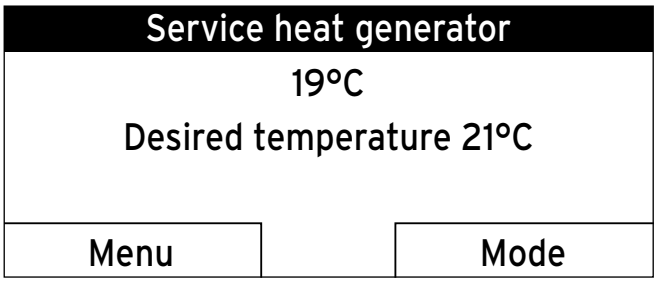


**Fig. 6.1 Example of a service message**

The heating engineer can set a period in the controller for the next service interval for the heating system or boiler. At the end of the service interval the service warning will appear on the fist line of the basic display. The following service messages may appear:
- "Service heat generator"
- "Service" (of the heating system).

## 6.2 Cleaning the controller

➤ Clean the casing of the controller with a damp cloth.
➤ Never use scouring or cleaning agents which could damage the operating elements or the display.

## 6.3 Detecting and rectifying faults

If a fault occurs in the heating system, the controller displays an error message in the display.

**Caution!**
**Risk of damage to the heating system due to failure to perform troubleshooting work!**
An error message indicates that the heating engineer must perform troubleshooting or repair work on the heating system. Failure to take notice of these error messages could lead to material damage or breakdown of the heating system.

➤ If the controller displays the error message "Clean outside temperature sensor/transmitter" or "Replace battery", proceed as described in (➞ **Section 6.3.2**) or (➞ **Section 6.3.3**).
➤ If the controller displays any other error message, inform a heating engineer.

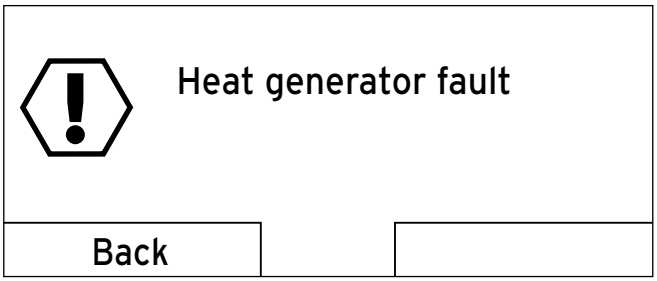


**Fig. 6.2 Example of an error message**

If the controller shows an error message in the display instead of the basic display and you press the left function key "Back", then the basic display appears again. You can also read current error messages under "Menu ➞ Information ➞ System status ➞ Status". As soon as an error message for the heating system appears, the "Status" setting will show "Fault". In this case the right function key has the function "Display".

➤ Press the right function key "Display" to display the list of error messages.

### 6.3.1 Display remains dark

The controller is battery-powered. To save power and so extend the life of the batteries, the display is normally switched off. If you press one of the function buttons or the control knob, the backlighting switches on and the basic display appears. The backlighting goes out approx. 10 seconds after the last operation. The display switches off approx. 1 minute after the last operation.

The display remains dark even though you have pressed one of the function buttons or turned the control knob.

➤ Replace all the batteries in the controller (**→ Section 6.3.3**).

If, after you have fitted new batteries, the screen still remains dark or you are still unable to make any changes using the function keys or control knob, then there is a appliance fault for which the controller has been unable to display an error message.

➤ Inform a heating engineer.

### 6.3.2 Error message "Clean outside temperature sensor/transmitter"

a) The battery voltage on the outside temperature sensor transmitter is too low because the solar cell is dirty.

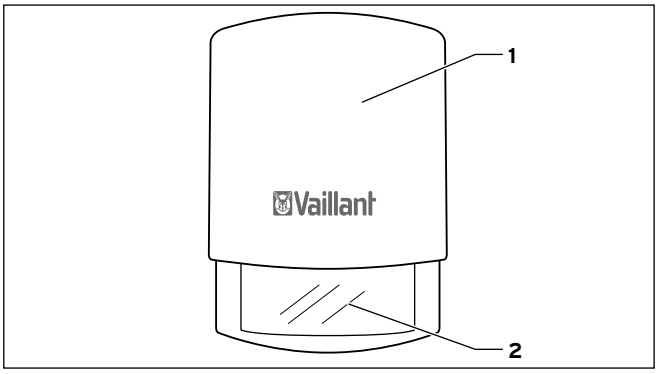


**Fig. 6.3 Cleaning outside temperature sensor/transmitter**

➤ Clean the solar cell (**2**) on the outside temperature sensor/transmitter (**1**) using a damp cloth, or call your heating engineer.

After you have cleaned the solar cell, there is a delay before the error message disappears because the battery first has to be recharged.

b) If the error message continues to be displayed after you have cleaned the solar cell and allowed time for the battery to recharge, radio communication with the outside temperature sensor/transmitter has been lost.

➤ Inform a heating engineer.

If the outside temperature sensor fails, a fallback control mode is activated. An outside temperature of 0 °C is then assumed. That ensures basic operation of the heating system until the fault has been rectified by the heating engineer.

### 6.3.3 Error message "Replace battery"

The controller batteries are almost discharged.
➤ Replace all the batteries in the controller.

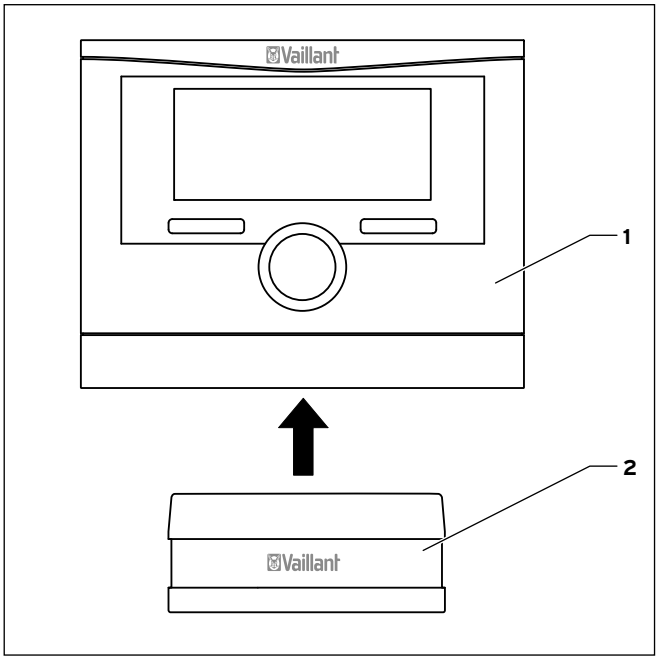


**Fig. 6.4 Removing the VRC 470f**

1 VRC 470f controller
2 Wall-mounting base

Proceed as follows:
➤ Pull the controller (**1**) upwards and off the wall-mounting base (**2**).

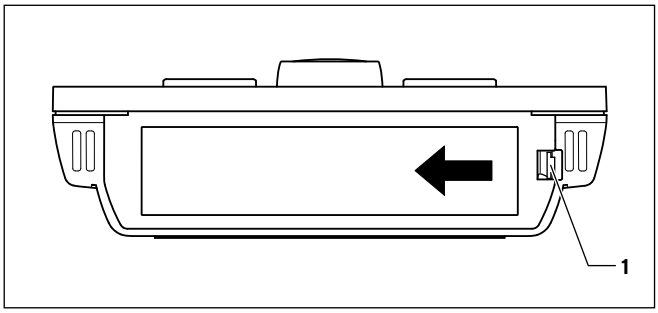


**Fig. 6.5 Opening the battery compartment**

To open the battery compartment on the underneath of the controller:
➤ Lift the cover by releasing the catch (**1**) at the side.
➤ Remove the cover.

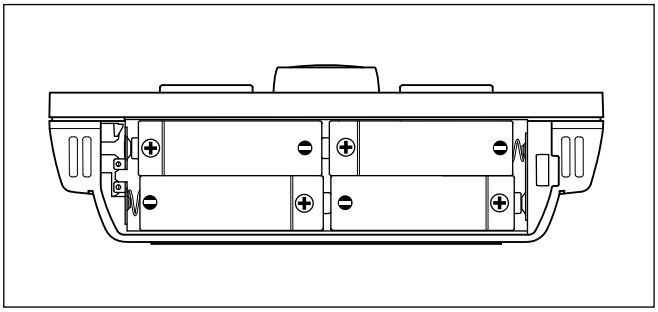

**Fig. 6.6 Layout and polarity of batteries**

➤ Insert four new batteries of the same type in the controller.

Make sure battery poles are the right way round (→ **Fig. 6.6**).
Always replace all the batteries at the same time.
Use only batteries of the type Alkaline AA/ LR6 Battery 1.5 V.
Do not use rechargeable batteries.
Depending on usage, the batteries should last approx. 1 to 1.5 years.

➤ Close the battery compartment.
➤ Hook the controller back onto the wall-mounting base.
➤ Press the controller down onto the wall-mounting base until it audibly clicks into position.
➤ Dispose of the old batteries correctly.

# 7 Energy-saving tips

**Desired "Day" temperature**
Set the desired "Day" temperature only as high as would be necessary for your comfort level. Each extra degree Celsius would mean an increased energy consumption of about 6 %.
Adjust the room temperature according to the purpose of use of the room, using the thermostatic radiator valve. For example, it is not necessary to heat bedrooms or seldom used rooms to 20 °C.

**Desired "Night" temperature**
If you do not need a high room temperature, e.g. during the night or if you are away from home, then reduce the room temperature. To do this, set the desired "Night" temperature in the "Desired temperature" function.
Set the desired "Night" temperature approx. 6 °C lower than the desired "Day" temperature. A temperature of more than 6 °C lower does not bring any further energy saving, because then a greater amount of energy would be required the next time the system had to heat up to the desired "Day" temperature.
In addition, use the "Time programmes" function to define times during which you do not need a high room temperature. The periods for heating are active in "Automatic mode".
If you are absent for longer periods of time, e.g. on holiday, then it is worth lowering the temperature even further. To do this, set the temperature using the "Days away from home scheduling" function.

**Uniform heating**
Often, in a dwelling with central heating, only one room is heated. Through the surrounding surfaces of this room, i.e. walls, doors, windows, roofs, floors, the unheated adjoining rooms are also heated in an unregulated manner, i.e. unwanted heat energy is lost. The capacity of the radiator of this one heated room is obviously not enough for such an operating mode. The result is that the room can no longer be heated adequately and there is an uncomfortable feeling of cold. The same effect arises when doors between heated and unheated / barely heated rooms are left open.
False economy: the heating is running but despite that, the room temperature is not comfortably warm.
If you heat all rooms evenly and according to their use, then you will achieve a comfortable room climate and energy-saving operation.

**Thermostatic radiator valves and room temperature-compensated controller**
Thermostatic radiator valves on the radiators maintain the room temperature exactly once set.
Exception: the thermostatic valves on the radiators in the room in which the controller is fitted must be turned fully on. The radiators are then controlled by the controller and thus maintain the set room temperature.
You can adjust the room temperature to suit your individual requirements and ensure economical operation of your heating system using the thermostatic radiator valves in combination with a room temperature-compensated controller.

**Do not obstruct the controller**
The controller must be able to record the circulating room air unhindered. Do not obstruct the controller with furniture, curtains or other objects.

**Economic hot water production**
Set the "Domestic hot water" desired temperature of your domestic hot water cylinder only to the temperature you actually need, and under no circumstances higher than 60 °C.
You should also use the "Time programmes" function for hot water production in "Automatic mode" or "Summer mode". Set the period so that the water is brought to the desired "hot water" temperature shortly before it is needed, e.g. in the morning after getting up and in the evening after you return home.
If you do not need any hot water for a longer period of time, switch hot water production off.
If you need hot water rarely or outside the set periods, use the function "Cylinder boost".
Use the "Time programmes" function for circulation to save energy. This will ensure that you have hot water available immediately from the tap when you need it. During other times, when the circulation pump is switched off, you wil need to let the water run for slightly longer before hot water comes out of the tap.

**Ventilate correctly**
A ventilation boost with fully opened windows and, where possible, with a draught is essential for the room climate and room temperature. The room air will be replaced by outside air in 5 to 10 minutes during a ventilation boost. The air humidity falls and the room is easier to heat up. You will feel warmed even if the room temperature is the same.
Use the advanced "Ventilation boost" function to control the heating system in an energy-saving manner during the ventilation boost.

# 8 Warranty and customer service

## 8.1 Vaillant warranty

We only grant a Vaillant manufacturers warranty if a suitably qualified engineer has installed the system in accordance with Vaillant instructions. The system owner will be granted a warranty in accordance with theVaillant terms and conditions. All requests for work during the guarantee period must be made to Vaillant Service Solutions (0870 6060 777).

## 8.2 Vaillant Service

To ensure regular servicing, it is strongly recommended that arrangements are made for a Maintenance Agreement. Please contact Vaillant Service Solutions(0870 6060 777) for further details.

# 9 Decommissioning

## 9.1 Replacing the controller

To replace the controller in the heating system with a new one, the heating system needs to be shut down.

➤ These works should be carried out by a heating engineer.

## 9.2 Recycling and disposal

The controller and the associated transport packaging consists largely of recyclable materials.

**Appliance**
Neither the controller or any of its accessories belong in the household waste.

➤ Ensure that old appliances and any existing accessories are disposed of properly.

**Packaging**
Leave the disposal of the transport packaging to the approved qualified servicing company that installed the appliance.

**Batteries**
Used batteries should not be disposed of in the normal household waste.

➤ When disposing of the batteries, make sure you follow the applicable regulations.

# 10 Technical data

| Description | Unit | VRC 470f |
|---|---|---|
| Power supply voltage $U_{max}$ | V | 4 x 1.5 V (AA) |
| Battery life (alkaline) | Years | Approx. 1.5 |
| Protection type | - | IP 20 |
| Protection class | - | III |
| Maximum permissible ambient temperature | °C | 50 |
| Transmission frequency | MHz | 868 |
| Transmission power | mW | < 10 |
| Range: | | |
| Outdoors | m | > 100 |
| Inside building | m | Approx. 25 |
| Height | mm | 115 |
| Width | mm | 147 |
| Depth | mm | 50 |

**Tab. 10.1 Technical data of VRC 470f radio controller**

| Description | Unit | Radio receiver unit |
|---|---|---|
| Power supply voltage $U_{max}$ | V | 24 |
| Current consumption | mA | < 60 |
| Protection type | - | IP 20 |
| Protection class | - | III |
| Maximum permissible ambient temperature | °C | 50 |
| Transmission frequency | MHz | 868 |
| Transmission power | mW | < 10 |
| Range: | | |
| Outdoors | m | > 100 |
| Inside building | m | Approx. 25 |
| Height | mm | 115 |
| Width | mm | 147 |
| Depth | mm | 50 |

**Tab. 10.2 Technical data of radio receiver unit**

The range of radio transmission inside buildings is heavily dependent on the local conditions (e.g. the design and structure of the building). Consequently, an indoor range of 25 m cannot always be guaranteed. Outside of enclosed spaces (outdoors) the range is more than 100 m.

| Description | Unit | Outside temperature sensor/transmitter VR 21 |
|---|---|---|
| Power supply | - | From solar cell with energy store |
| Reserve power supply (with full energy store) | Days | Approx. 20 |
| Protection type | - | IP 44 |
| Protection class | - | III |
| Permissible operating temperature | °C | - 35 ... + 60 |
| Transmission frequency | MHz | 868 |
| Transmission power | mW | < 10 |
| Range: | | |
| Outdoors | m | > 100 |
| Inside building | m | Approx. 25 |
| Height | mm | 110 |
| Width | mm | 76 |
| Depth | mm | 41 |

**Tab. 10.3 Technical data of VR 21 outside temperature sensor/ transmitter**

# 11 Glossary

**Circulation**
A circulation pump heats water in the circuit through the hot water pipes. This means the hot water pipes do not cool so rapidly. If you open a tap, hot water comes out of the tap immediately. You can set a period for circulation in order to save energy.

**DCF77 receiver**
A DCF77 receiver receives a time signal. The time signal sets the time and date automatically. The time and date provide automatic switching between daylight savings time and standard time.

**Error message**
An error message shows you that the heating system has notified a fault to the controller.

**Flow temperature**
The boiler heats water which is pumped through the heating installation. The temperature of this hot water as it leaves the boiler is referred to as the flow temperature.

**Frost protection delay time**
By setting a frost protection delay time (installer level), the activation of the heating control by the frost protection function (outside temperature < 3 °C) is delayed for a specified time (1 to 12 hrs.). The set frost protection delay time also works in the "ECO" setting. The frost protection delay time starts when the outside temperature drops below 3 °C.

**Heating circuit**
A heating circuit is a closed circulation system of pipes and heating devices (e. g. radiators). The heated water from the boiler flows into the heating circuit and returns to the boiler as cooled water.
A heating installation usually has at least one heating circuit. However additional heating circuits can be connected, e.g. to supply several dwellings or additional underfloor heating.

**Heating curve**
A heating curve shows the relationship between the outside temperature and the flow temperature. By selecting a steeper or shallower heating curve, the heating engineer can influence the flow temperature and thus also the room temperature as a function of the outside temperature.

**Heating installation**
The heating installation heats up the dwelling and produces hot water.

**Legionella**
Legionella are water-borne bacteria which can quickly propagate and cause serious lung diseases. Legionella occur wherever heated water provides the optimum conditions for multiplication. Temporarily heating the water to above 60 °C kills off the legionella.

**Operating level for the heating engineer**
This operating level contains all the additional functions that can be changed by the heating engineer; these should not be changed without specialist knowledge. This level is reserved for the heating engineer and is therefore protected by an access code.

**Operating level for the operator**
This operating level contains all the functions available to be changed by the operator.

**Period**
A period is a pre-set, defined period of time during which the boiler, hot water production or the circulation pump is on.

**Pre-heat time**
If the heating engineer has set a pre-heat time, then the controller starts the heating circuit already during the set pre-heat time before the first period of the day, so that the desired "Day" temperature is reached already at the start of the first period.

**Preparation**
The water in the domestic hot water cylinder is heated by the boiler to the selected desired "hot water" temperature. If the temperature in the domestic hot water cylinder falls by specific amount, the water is heated up again to the target "hot water" temperature.

**Pre-switch-off time**
If the heating engineer has set a pre-switch-off time, then the heating system is not unnecessarily heated to the desired "Day" temperature during the set pre-switch-off time before the end of a period.

**Protection class**
Protection class denotes the classification and identification of electrical equipment with reference to the existing safety measures to prevent electric shocks.

**Protection type**
The level of protection indicates the suitability of electrical equipment for various ambient conditions and additionally the protection of people from potential hazards during their use.

**Room temperature**
The room temperature is the temperature actually measured in the dwelling.

**Selection level**
Via a selection level, you access the next level of the menu structure or settings that you can change.

**Set-back temperature**
The set-back temperature is the desired "Night" temperature, to which the controller lowers the room temperature outside the set period (Night mode).

**Solar yield**
The heat energy obtained by a solar system in a defined period (usually one year). This heat energy is used to heat up the domestic hot water cylinder.

**Status message**
A status message appears when you have activated an advanced function. It remains visible for as long as the advanced function is active.

**Target hot water temperature**
The target hot water temperature is the desired "hot water" temperature to which you wish to water in the domestic hot water cylinder.

**Target room temperature**
The target room temperature is the desired "Day" temperature to which you wish to heat the dwelling (Comfort mode).

**Thermostatic radiator valve**
Thermostatic radiator valves are mounted on radiators and control the room temperature to the set value. If the room temperature rises above the pre-set value, the thermostatic radiator valve reduces the heating water flow rate. If the room temperature falls below the pre-set value, the thermostatic radiator valve opens and the heating water flow rate increases and the room temperature rises again.

**Timer programme**
If you operate the heating system in "Auto" mode, then you activate periods during which the controller switches the heating system on and heats the connected rooms to the set desired "Day" temperature (Comfort mode). Outside these periods, the controller switches the heating system to night mode and allows the heated rooms to cool down to the set desired "Night" temperature (Night mode). When the desired "Night" temperature is reached, the controller maintains the room temperature prevents the heated rooms from cooling further until the start of the next period.
With time programmes, you can also control the hot water production and circulation in such a way that hot water is available in the set periods with the set desired "hot water" temperature.

**Weather compensation**
Automatic change to the hot water temperature depending on the outside temperature.
The outside temperature is measured by a separate sensor which is mounted in the open air, and the results are transmitted to the controller. At low outside temperatures the controller provides an increased flow temperature; at higher outside temperatures the flow temperature is reduced.

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## W

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## Supplier

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Telefax 0 21 91/18-28 10 ▮ www.vaillant.de ▮ info@vaillant.de

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