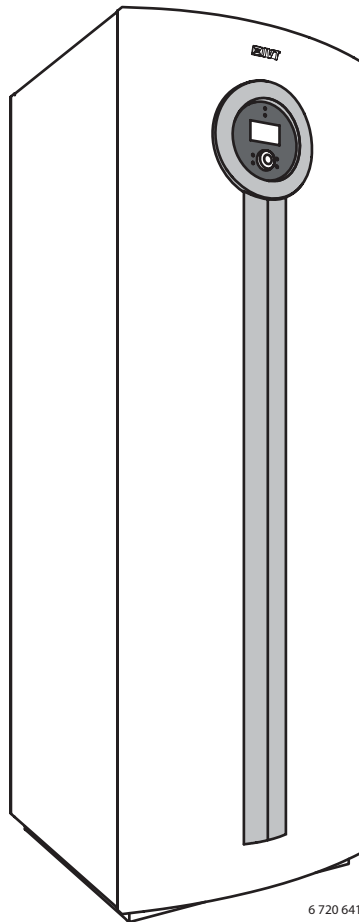


# *Greenline HE*

***C6-C11 E6-E17***



6 720 641 855-01.11

## **User Guide**

Art. no.: 6720643415; Version 2010/03



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# 1 Explanation of symbols and safety information

## 1.1 Explanation of symbols

### Warning symbols



Safety instructions in this document are framed and identified by a warning triangle which is printed on a grey background.



Electrical hazards are identified by a lightning symbol surrounded by a warning triangle.

Signal words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates possible damage to property or equipment, but where there is no risk of injury.
- **CAUTION** indicates possible injury.
- **WARNING** indicates possible severe injury.
- **DANGER** indicates possible risk to life.

### Important information



Notes contain important information in cases where there is no risk of personal injury or material losses and are identified by the symbol shown on the left. They are bordered by horizontal lines above and below the text.

### Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Tab. 1

## 1.2 Safety precautions

### General

- ▶ Read the guide carefully and keep it to hand for future use.

### Installation and commissioning

- ▶ The heat pump may be installed and put into operation only by a qualified installer.

### Risk of damage due to operator error

Operator errors can result in injury and damage to property.

- ▶ Ensure that children never operate this appliance unsupervised or play with it.
- ▶ Ensure that only personnel who can operate this appliance correctly have access to it.

### Service and maintenance

- ▶ Only qualified personnel may carry out repairs. Incorrect repairs can lead to serious risks to the user, and a reduction in savings.
- ▶ Only use original spare parts.
- ▶ Service and maintenance must be carried out annually by an authorised service representative.

## 2 Use

### 2.1 General

Greenline HE is a series of heat pumps that use stored solar energy in order to provide water-based heating and hot water.

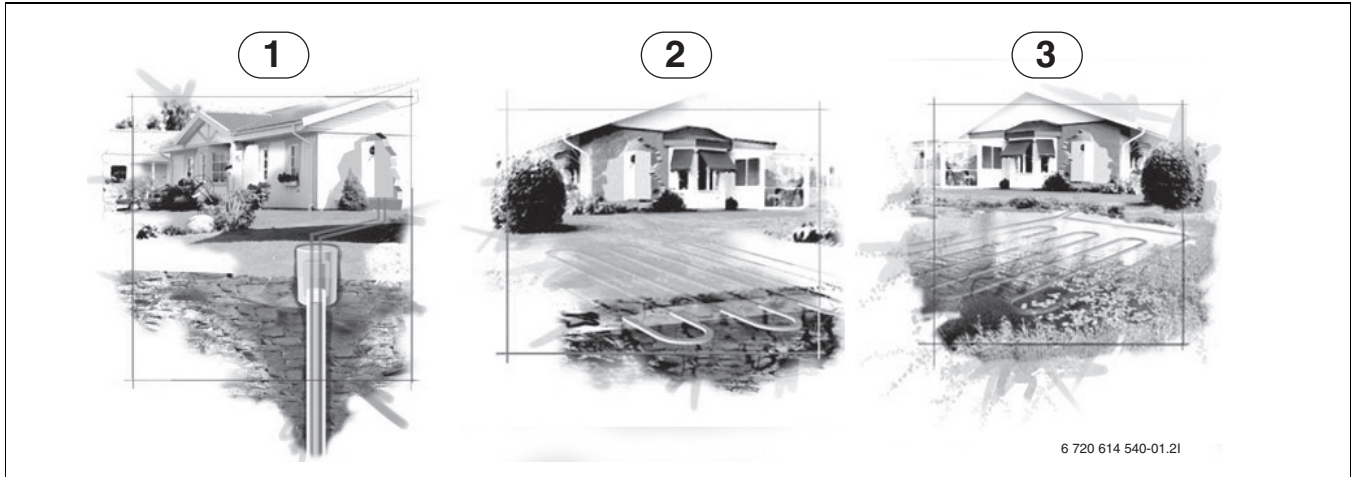


Fig. 1 Stored solar energy

- 1 Bedrock heat
- 2 Ground heat
- 3 Lake water heat

**C6 - C11** are heat pumps with integrated hot water heaters.

**E6 - E17** are heat pumps designed to be supplemented with an external hot water heater.

Once the heat pump has been installed and started, there are a number of points that should be checked regularly. This may concern an alarm triggering or performing basic maintenance actions. If the problem is repeated, you should contact the dealer.

### 2.2 Heat pump function

The heat pump consists of four main parts:

- **Evaporator**  
Evaporates the refrigerant to gas and at the same time transfers the heat from the collector to the refrigerant circuit.
- **Condenser**  
Condenses the gas to fluid again and transfers the heat to the heating system.
- **Expansion valve**  
Lowers the pressure of the refrigerant.
- **Compressor**  
Increases the pressure of the refrigerant.

These four main parts are linked in three circuits. A refrigerant circulates in the heat pump, which in some parts of the circuit is in a liquid state and in other parts in a gas state.

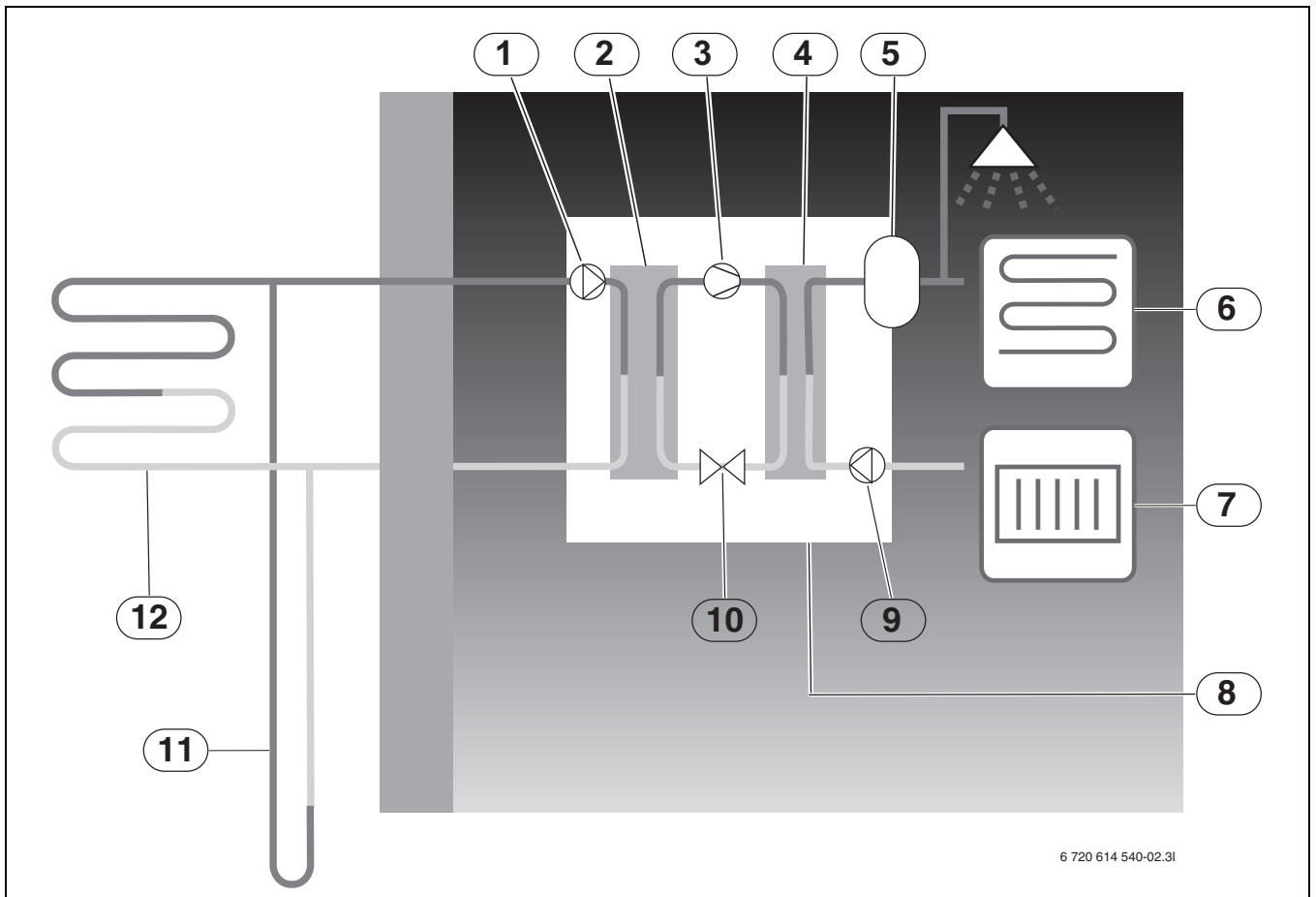


Fig. 2 Operating description

- 1 Heat transfer fluid pump
- 2 Evaporator
- 3 Compressor
- 4 Condenser
- 5 Water heater
- 6 Floor heating
- 7 Radiator
- 8 Heat pump
- 9 Heat carrier pump
- 10 Expansion valve
- 11 Borehole (bedrock heat)
- 12 Geothermal heating coil

- The collector circuit fluid, which is a mixture of water and anti-freeze, circulates in the borehole/geothermal heating coil in a plastic hose. The fluid collects stored solar energy and with the help of the collector circuit pump leads it into the heat pump and to the evaporator. The temperature is then approximately 0 °C.
- In the evaporator, the heat transfer fluid meets the refrigerant. The refrigerant is then in a fluid state and is at approximately -10 °C. When the refrigerant meets the zero degree heat transfer fluid, it starts to boil. A vapour is formed, which is then led into the compressor. The temperature of the vapour is 0 °C.

- The pressure of the refrigerant increases in the compressor and the temperature of the vapour rises to approx. +100 °C. The hot gas is then forced into the condenser.
- In the condenser, the heat is transferred to the house's heating system (radiators and floor heating) and the hot water system. The vapour is cooled and becomes fluid. The pressure in the refrigerant is still high when it is led on to the expansion valve.
- The refrigerant pressure is lowered in the expansion valve. At the same time, the temperature also drops to approximately -10 °C. When the refrigerant passes the evaporator it changes to vapour again.
- The heat transfer fluid is led out from the heat pump to the borehole/geothermal heating coil to collect new stored solar energy. The temperature of the fluid is approx. -3 °C.

### 3 Energy metering

Energy metering in the heat pump is an approximation based on the sum of the nominal emitted output during the relevant metering period. The calculation requires for example that the heat pump is correctly installed, and that the flow and  $\Delta$  temperatures on the hot and cold sides are adjusted as recommended. The value should therefore be regarded as an estimate of the actual emitted output. The margin of error in the calculation is normally put at 5-10%

In addition, the energy output is affected by the outdoor temperature, the settings for the thermostat and room controls and heat pump usage. Ventilation, indoor temperature and hot water demand can play a deciding role.

## 4 Control unit

The control unit controls and monitors the heating and hot water production with the heat pump and additional heat. The monitoring function shuts down the heat pump in the event of operational disturbances so as to prevent damage to critical parts of the pump.

### 4.1 Additional heat

The heat pump can be dimensioned to cover the peak output of the house single-handedly and does not normally need any additional heat then. Although in that case there can be an additional heater installed solely for emergency operation, when the heat pump is stationary.

The heat pump can also be dimensioned to cover the needs of the house to a somewhat lower degree and then will need additional heat for the time of the year when it is coldest. The additional heat also helps in the event of emergency operation, extra hot water and hot water peak.

The additional heat is provided through electric additional heat.

The control unit activates automatically the additional heat, if necessary.

### 4.2 Hot water production

Hot water is heated in the hot water heater and the control unit gives priority to hot water before the heating of heating water according to the settings that are made. The hot water heater is fitted with a sensor that senses the temperature of the hot water.

## 5 Control panel

Settings for the control of the heat pump are made with the control unit's control panel, which also provides information about current status.

### 5.1 Panel overview

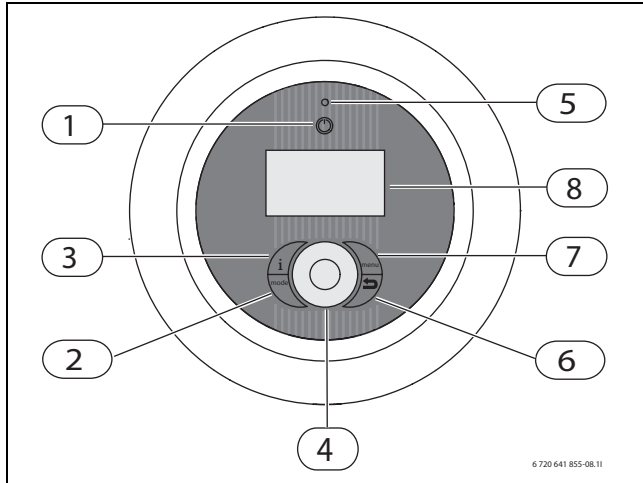


Fig. 3 Control panel

- |   |               |
|---|---------------|
| 1 | On/Off button |
| 2 | Mode button   |
| 3 | Info button   |
| 4 | Menu dial     |
| 5 | Status lamp   |
| 6 | Return button |
| 7 | Menu button   |
| 8 | Menu display  |

### 5.2 Power switch (ON/OFF)

Use the On/Off button to switch the heat pump on and off.

### 5.3 Status lamp

<i>The lamp lights green.</i>	The heat pump is running.
<i>The lamp flashes red.</i>	There is an alarm which has not been acknowledged
<i>The lamp lights red.</i>	The alarm has been acknowledged but the alarm cause remains
<i>Lamp flashes slowly green, menu window not lit.</i>	The heat pump is in stand-by mode <sup>1)</sup> .
<i>The lamp and menu display not lit.</i>	No voltage to control unit.

Tab. 2 Lamp functions


- 1) Stand-by means that the heat pump is running but no heating or hot water demand exists.

### 5.4 Menu display

Use the menu display in order to:

- See information from the heat pump.
- See available menus.
- Change set values.

### 5.5 Menu button and menu dial

Use  to get from *Initial menu* to the menus. Use the menu dial in order to:


- Navigate the menus and get to the setting displays.
  - Turn the dial to see more menus on the same level or change a set value.
  - Press the dial to change to a lower menu level or save a change.

### 5.6 Return button

Use  to:


- Go back to the previous menu level.
- Leave a setting display without changing the set value.

### 5.7 Mode button

Use  to change type of operation.

- Change type of operation.

### 5.8 Info button

Use  to see information from the control unit about operating mode, temperature, program version, etc.



## 6 Menu overview

Room temperature	General (Summer/winter operation, Maximum operating time for heating at hot water demand) Circuit 1 Heating (Heating, Room sensor, Room temperature program) Circuit 2, 3... (optional) (Heating, Room sensor, Room temperature program)
Hot water	Extra hot water (period, Stop temperature) Hot water peak (Day of the week, Interval, time) Hot water program Hot water mode Block heating during hot water demand Maximum operating time for hot water at heating demand
Holiday	Circuit 1 and Hot water Circuit 2, 3... (optional)
Energy measurements	Generated energy Consumption electric additional heat
Timers	Timers that are running are displayed, for example for Extra hot water duration
External control	External input 1, 2 External input circuit 2, 3... (optional)
General	Set date Set time Summer/winter time Display backlight intensity Language
Alarms	Information log Delete information log Alarm log Delete alarm log Alarm indication (Alarm buzzer signal, Alarm indication control unit and Room sensor)
Access level	
Return to factory settings	

Tab. 3 Menu overview

## 7 Menu navigation

### 7.1 Initial menu

*Initial menu* shows different temperatures, time, as well as current operating symbols. The window displays information alternately **Room temperature** (if room sensors exist) and **Flow temperature** for each circuit installed.

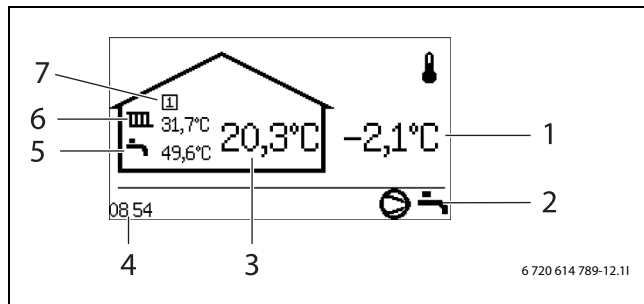


Fig. 4 Initial menu

- 1 Outdoor temperature
- 2 Current operating symbols
- 3 The circuit room temperature
- 4 Current time
- 5 Hot water temperature
- 6 Circuit flow temperature
- 7 Circuit number

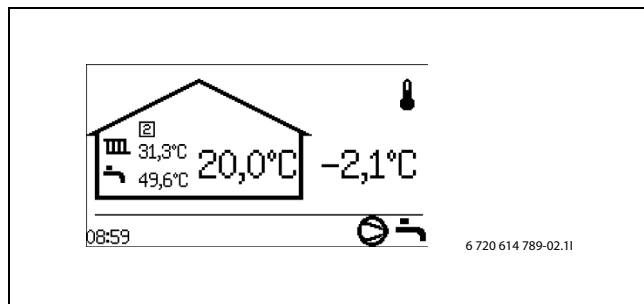




Fig. 5 Initial menu, circuit 2 is displayed

### 7.2 Finding desired function and changing value

*Menu overview* (→ Page 9) shows the main functions that are reached with  and the dial.

- ▶ Press .

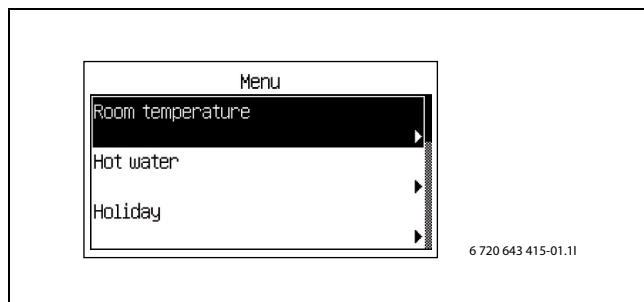


Fig. 6

- ▶ Turn the dial to mark a desired menu bar.

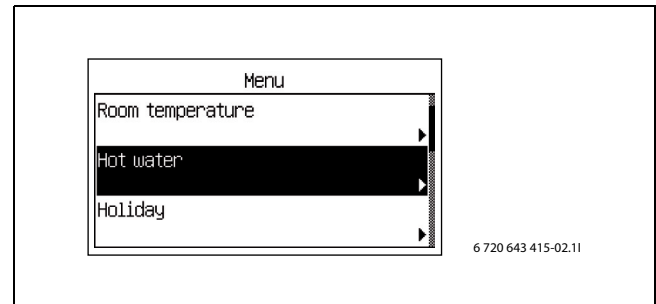


Fig. 7

- ▶ Select the function by pressing the dial. The first three menu functions under *Hot water* are displayed.

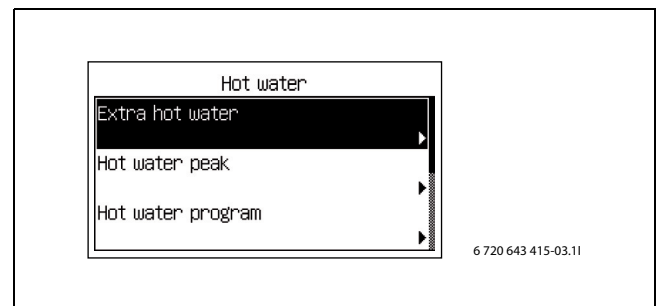


Fig. 8

- ▶ Turn the dial to see other menu lines.

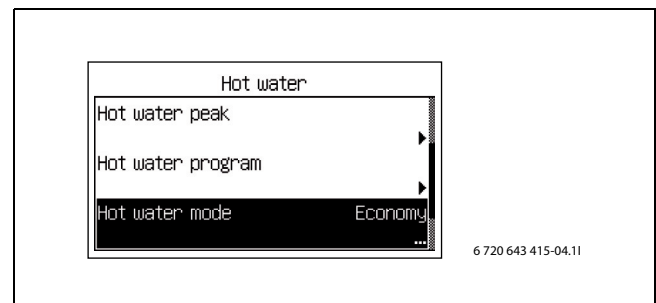


Fig. 9

- ▶ Press the dial to select the function.

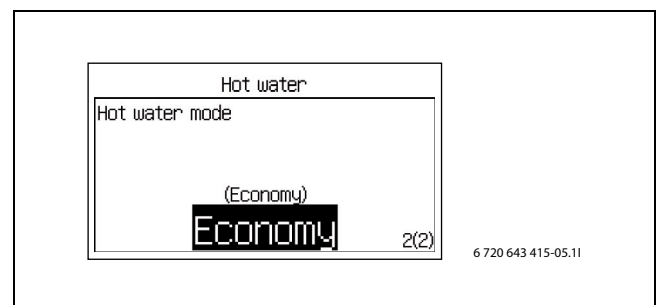


Fig. 10

- ▶ Turn the menu dial to change the set value.

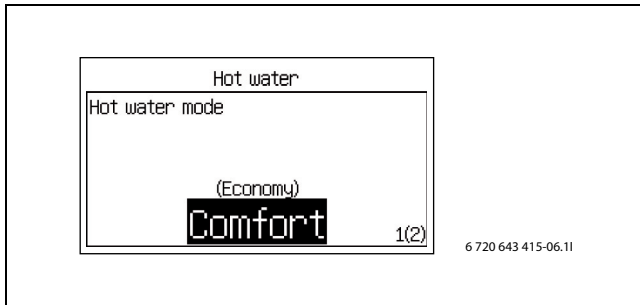



Fig. 11

- ▶ Press the dial to save the value or use  to return without changing.

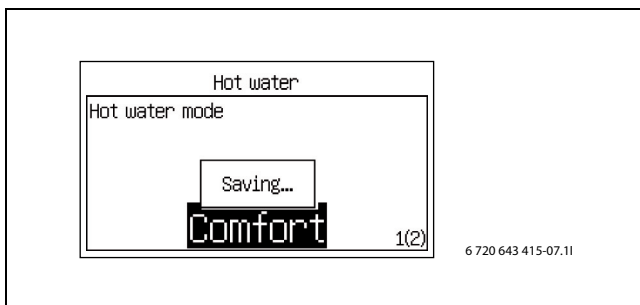


Fig. 12

The control unit automatically returns to the menu after the value has been saved.

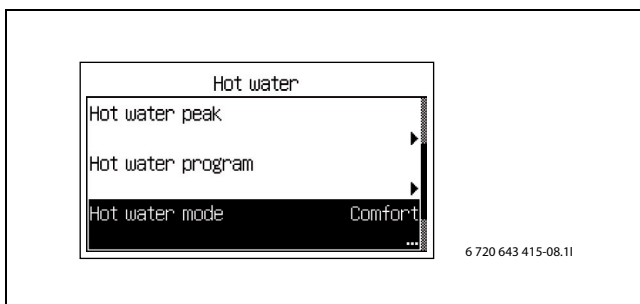


Fig. 13



**Economy** and **Comfort** explained in more detail in the chapter about hot water mode (→ Chapter 10.3).

### 7.3 Help information in the menu display

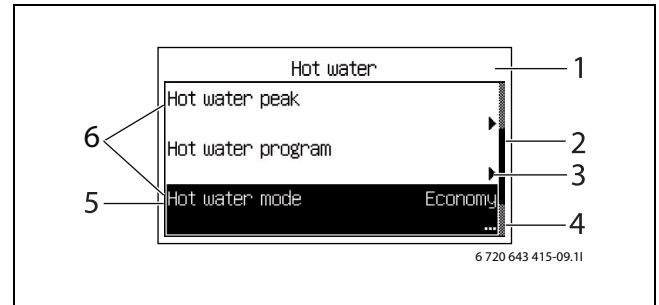


Fig. 14 Help information 1

- 1 The menu level is **Hot water**
- 2 Drop-down list. The marked row shows your position among the functions under **Hot water**.
- 3 The arrow shows that there is new menu on the next level.
- 4 The points show that the next level is a setting window.
- 5 The function is marked.
- 6 Three of the functions under **Hot water**.

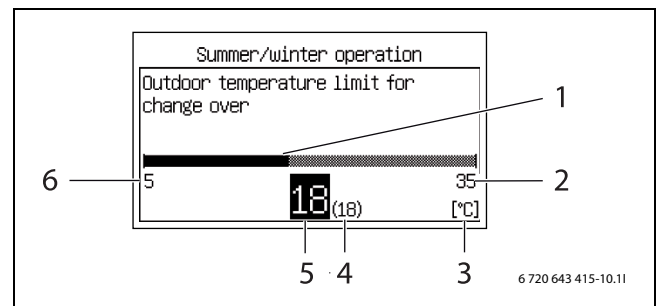


Fig. 15 Help information 2

- 1 Graphic display of the value.
- 2 Highest possible value.
- 3 Unit.
- 4 Previous value.
- 5 New value. (Saved when the menu dial is pressed.)
- 6 Lowest possible value

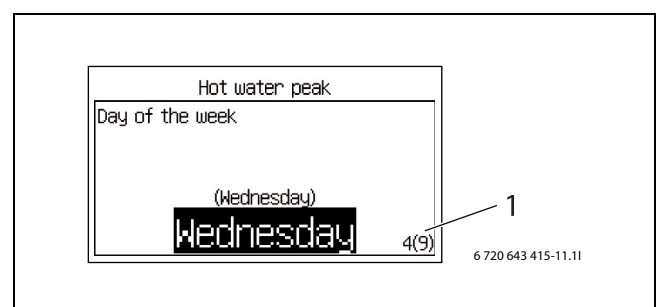


Fig. 16 Help information 3

- 1 Option 4 out of 9 is displayed.

## 8 Information from the heat pump

The heat pump provides information about temperatures, operating modes, possible alarms, etc.

### 8.1 Operating information

The *Initial menu* shows different temperatures and times of day. Different operating symbols show the functions for which there are needs or which are in operation.

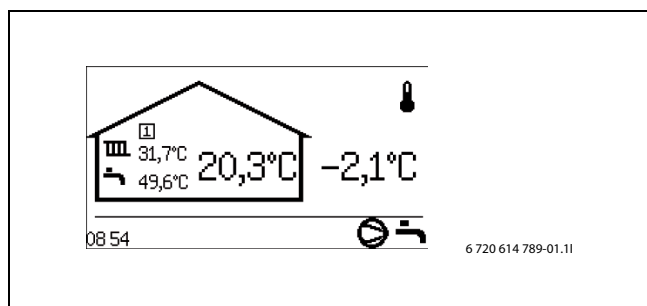







Fig. 17

### 8.2 Info button

- ▶ Press  in the *Initial menu*.  
Detailed information about temperatures, operating mode, etc., is displayed.
- ▶ Turn the dial to see all the information.
- ▶ Press  to return to the initial menu.
- ▶ Press  in a menu display.  
The detailed information is displayed for as long as  is pressed.
- ▶ Release .  
The menu display is displayed.

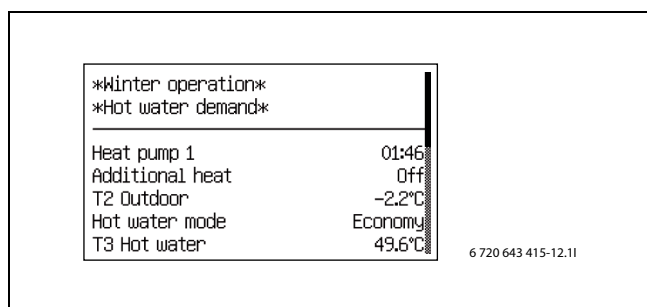


Fig. 18

### 8.3 Operating symbols

Symbols for different functions and components for which there is a need or which are in operation are displayed in the bottom right corner of the *Initial menu*.

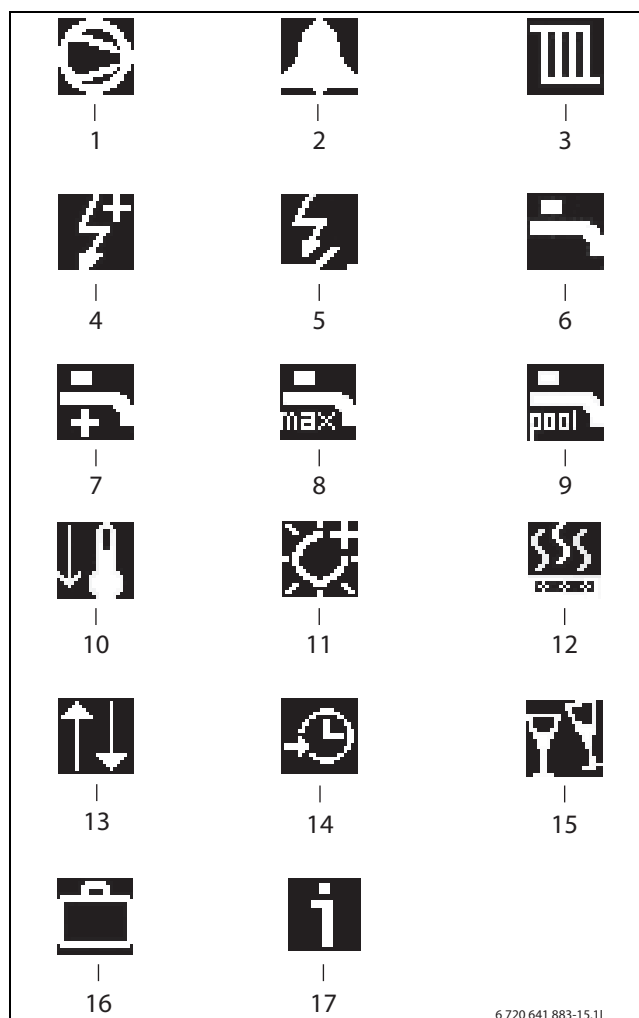


Fig. 19 Operating symbols

- 1 Compressor
- 2 Alarm (compressor, additional heat)
- 3 Heating
- 4 Electric add. heat
- 5 Energy supply cut-off
- 6 Hot water
- 7 Extra hot water
- 8 Hot water peak
- 9 Pool (option)
- 10 Cooling (option)
- 11 Sun (option)
- 12 Screed drying
- 13 External controls
- 14 Program/Time control
- 15 Party mode
- 16 Holiday
- 17 Information log

## 9 Heating, general

### 9.1 Circuits for heating

- **Circuit 1;** the first circuit is included by default in the control unit and is controlled by the installed flow sensor, possibly in combination with an installed room sensor.
- **Circuit 2-4 (mixed);** control of up to 3 additional circuits is optional. Each circuit is then fitted with a mixing valve module, circulation pump, flow sensor and possible room sensors.



Circuits 2 through 4 cannot have a higher flow temperature than circuit 1. This means that underfloor heating on circuit 1 cannot be combined with radiators on another circuit. Room temperature reduction for circuit 1 can affect other circuits in some cases.



The maximum number of circuits is reduced by one circuit for each XB2 based accessory, such as IVT PKS 1000.

### 9.2 Control method for heating

- **Outdoor sensor;** a sensor is fitted on the outside wall of the house. The sensor sends signals to the control unit in the heat pump. Control with an outdoor sensor means that the heat pump automatically regulates the heating in the house depending on the outdoor temperature. The customer determines the temperature of the heating system in relation to the outdoor temperature by setting the heat curve on the control unit.
- **Outdoor sensor and room sensors** (one room sensor per circuit is possible); Control with outdoor sensor supplemented with room sensor(s) means that one (or several) sensors are mounted in a central location inside the house. It is connected to the heat pump and provides the control unit with information about the current room temperature. The signal affects the flow temperature. For example, it falls when the room sensor indicates a higher temperature than the one set. Room sensors are used when factors other than the outdoor temperature influence the indoor temperature of the house. For example, this can be when a stove or fan-assisted radiator is used in the house, or if the house is sensitive to the wind or exposed to direct sunlight.



It is only the room where the room sensor is located that can influence regulation of the temperature for the relevant heating circuit.

### 9.3 Clock setting of heating


- **Program control;** The control unit offers a possibility to define two individual programs for time control of the heating.
- **Holiday;** the control unit has a program for holiday mode, which means that during the selected period the room temperature changes to a lower or higher level. The program also allows switching off hot water production.
- **External control;** the control unit can make settings for external control, which means that the preselected function is performed when the control unit senses an input signal.

### 9.4 Operating modes

- **With electrical additional heat;** the heat pump is dimensioned less than the house peak heating load and electrical additional heat is permitted to cut in at the same time as the heat pump to meet the demand, when the heat pump cannot meet it itself. Alarm mode, Extra hot water and Hot water peak, and if the heat pump is off at low outdoor temperatures, the addition is also activated.

## 10 Settings Customer level

### 10.1 Mode button functions

By pressing , the following functions can be used directly:

- **Party**
- **Holiday**
- **Disable cooling**
- **Extra hot water duration**

#### > Party

Party mode means that a running room program is aborted during the set time in order to avoid a temperature drop.

#### >> Number of hours

Factory setting	0h
Lowest value	0h
Highest value	99h

Tab. 4 Party duration

- ▶ Select the number of hours that party mode should be active for.  
The function starts immediately on all activated circuits.

#### >> Circuit 1

#### >> Circuit x

Factory setting	No
Alternative	No/Yes

Tab. 5 Enable party mode

- ▶ Select **Yes** to enable party mode.  
Party mode can be enabled for each installed circuit.  
The menu is displayed only if more than one circuit is installed.

#### >> Deactivate party mode

Factory setting	No
Alternative	No/Yes

Tab. 6 Deactivate party mode

- ▶ Select **Yes** to disable party mode on all activated circuits.  
The heat pump returns to program mode.  
The menu is displayed only if party mode is active.

#### > Holiday

The same functions are included here as in the **Holiday** menu (→ Chapter 10.4).

#### > Disable cooling

The menu is displayed only if the cooling function is installed and affects all circuits with cooling.

Factory setting	No
Alternative	No/Yes

Tab. 7 Disable cooling



It takes a long time before the cooling mode manages to affect the temperature in the house, therefore wait at least one day after disabling/enabling before making any additional adjustments.

#### > Extra hot water duration

- ▶ For a description of setting **Extra hot water** (→Chapter 10.3).


Factory setting	0h
Lowest value	0h
Highest value	48h

Tab. 8 Extra hot water duration



After a period with blocked hot water production, e.g., holiday, it is recommended to enable the extra hot water function so as to eliminate bacteria and quickly reach the correct hot water temperature.

## 10.2 Room temperature

Press the  button in the standard display to open the main menu. Select **Room temperature** to adjust the heating.

The following options are available under **Room temperature**:

- **General**
- **Circuit 1 Heating**
- **Circuit 2, 3...**



The following applies to **Circuit 2, 3...**requires the accessory IVT Mixing valve module 1000

#### > General

#### >> Summer/winter time

#### >>> Winter operation

Factory setting	Automatic
Alternative	On/Automatic/Off

Tab. 9 Summer/winter operation

If **On** is selected, the heat pump is constantly in winter operation and heat and hot water are always produced. **Off** signifies constant summer operation; only hot water is produced. **Automatic** signifies change-over at the set outdoor temperature.

#### >>> Outdoor temperature limit for change over

Factory setting	18 °C
Lowest value	5 °C
Highest value	35 °C

Tab. 10 Change over temperature

The menu is displayed only if **Automatic** has been selected in **Winter operation**.



In the event of alternation between winter and summer operation and vice versa, there is a certain delay aimed at preventing constant starting and stopping of the compressor when the outdoor temperature oscillates around the temperature limit.

#### >> Maximum operating time for heating at hot water demand

The menu is not displayed if **Block heating during hot water demand** be set to **Yes** (→ Chapter 10.3).

F value	20min
Lowest value	0min
Highest value	120min

Tab. 11 Operating time heating

#### > Circuit 1 Heating

##### >> Heat curve

The heat curve constitutes the basis for the control unit's control of the temperature on the heating water to the circuit and indicates how high it needs to be in relation to the outdoor temperature. The control unit increases the temperature of the heating water when the outdoor temperature drops. The temperature of the heating water out to the circuit, i.e. the flow temperature is measured by sensor T1 for circuit 1 (full name E11.T1) and sensor T1 for circuit 2 (full name E12.T1).

Each circuit is controlled by its own heat curve. The installer sets the type of heating for each circuit, that is **Radiator** or **Underfloor**. The curve for **Underfloor** has

lower values because the floors do not tolerate such high temperatures.

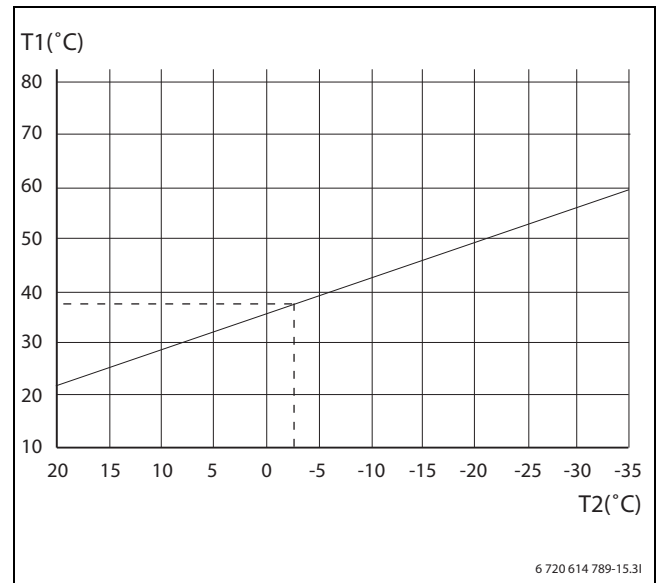


Fig. 20 Radiator

The images display the factory setting curve for radiator circuit. At -2.5 °C the flow set point is 37.4 °C.

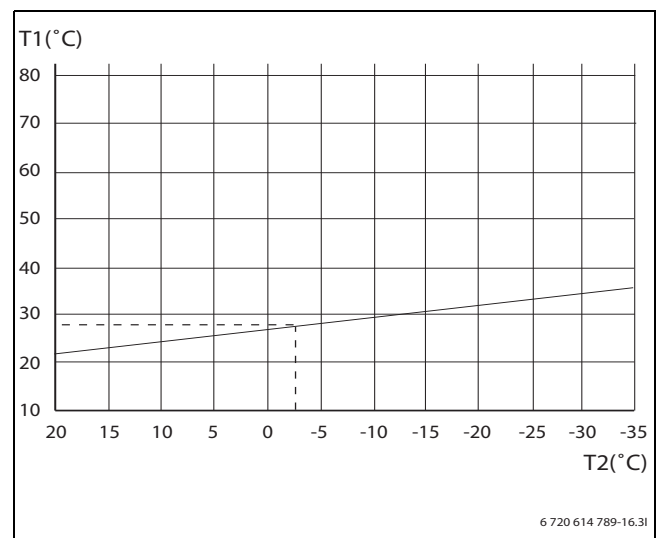


Fig. 21 Underfloor

The images display the factory setting curve for underfloor circuit. At -2.5 °C the flow set point is 27.2 °C.

Heat curve set for each circuit. If the room temperature is perceived to be too high or too low in the circuit, it is preferable to adjust the curve.

The curve can be changed in different ways. The slope of the curve can be changed by offsetting the flow line temperature upwards or downwards in the left-hand (the value at outdoor temperature 20 °C, factory value 22.0 °C) as well as right-hand points (the value at outdoor temperature -35 °C, factory setting 60.0 °C). In addition, the curve can be affected by every 5th outdoor

temperature degree.

The value at 0 °C is displayed above the curve's left-hand part, factory value 35.7 °C.

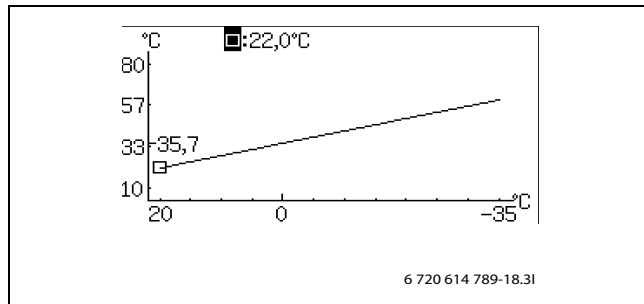


Fig. 22 Setting window Heat curve (radiator)

Change the left point:

- ▶ Press the menu dial when the square is marked. The value is marked.

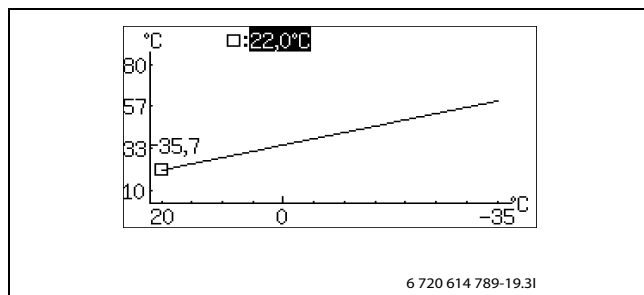



Fig. 23

- ▶ Turn the menu dial to change the value. Press the dial to save or use  to return without saving. In the window, the square is marked again and any changed values are displayed after the square. In addition, the curve is updated according to the new value.

Change the right point:

- ▶ Turn the menu dial when the square is marked. The upper square is changed to outdoor temperature with the corresponding curve value after the colon. The circle marks the relevant curve position.
- ▶ Continue to turn the dial until it shows a square before the colon.
- ▶ Press the dial to mark the value.

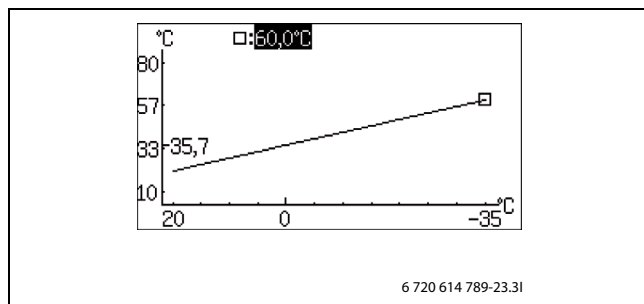



Fig. 24

- ▶ Turn the menu dial to change the value. Press the dial to save or use  to return without saving. In the window, the square is marked again and any changed values are displayed after the square. In addition, the curve is updated according to the new value.

Change a specific value, for example the value at an outdoor temperature of 0 °C:

- ▶ Turn the menu dial when the square is marked until 0 °C is marked (→ Image 25).
- ▶ Press the dial to mark the value.

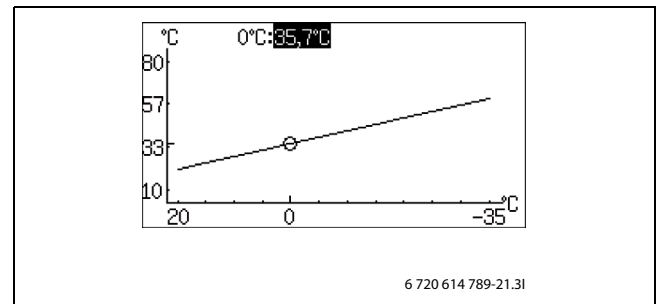


Fig. 25

- ▶ Turn the menu dial to change the value.

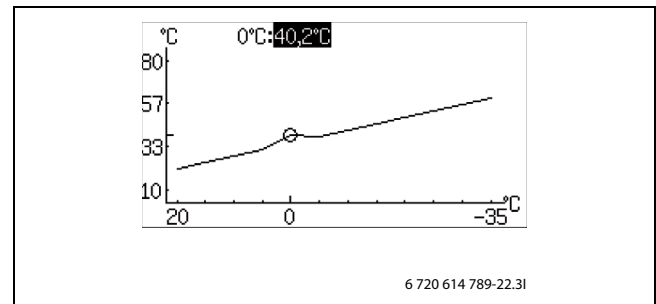




Fig. 26

- ▶ Press the dial to save or use  to return without saving.
- ▶ Use  to leave the curve setting window and return to the menu.



Recommendations:

- ▶ Increase the value of the right point if it feels too cold at low outdoor temperatures.
- ▶ Increase the value of curve at 0 °C if it feels a little cold at outdoor temperatures around 0.
- ▶ Increase or decrease the value of the curve equally at the right and left points to fine adjust the heat (the curve is parallel offset).



## &gt;&gt; Room sensor

## &gt;&gt;&gt; Room temperature influence

Factory setting	3.0
Lowest value	0.0
Highest value	10.0

Tab. 12 Room temperature influence

- ▶ Set how much a 1 K ( °C) difference in room temperature should influence the set point value for the flow temperature.  
Example: at a 2 K ( °C) deviation from the set room temperature, the set point value for the flow temperature is changed by 6 K ( °C) (2 K deviation \* factor 3 = 6 K).

## &gt;&gt;&gt; Knob's operating range

Factory setting	6K
Lowest value	0K
Highest value	6K

Tab. 13 Operating range, room sensor knob

- ▶ Set how many degrees the turn of the knob of the room sensor should represent between + and - .  
6K means that a full turn to + gives approx. +3K and a full turn to - gives approx. -3K.

The room sensor measures the temperature in the room where it is located. The value is compared with the set desired room temperature under the Room temperature program.

The influence of the room sensor is described in (→ Chapter 9.2).

## &gt;&gt; Room temperature program

F value	Optimised operation
Alternative	<ul style="list-style-type: none"> <li>• Optimised operation</li> <li>• Program 1</li> <li>• Program 2</li> </ul>

Tab. 14 Program selection, circuit 1

- ▶ Choose if the circuit should be controlled with a program or not.

**Optimised operation**

This means that the control unit is only controlled by the flow set point value (→ Chapter 10.2.1), without programmed changes during the day. Optimised operation provides the best comfort and energy savings in the vast majority of cases.

**Program 1 and 2**

These selections provide an opportunity to define own programs for time control by adjusting the start and stop times, as well as a normal and an exception temperature.

Program	Day	Start	Stop
Program 1, 2	Mon - Sun	5:30	22:00

Tab. 15 Program 1 and 2

To set the desired time of day:

- ▶ Select **Program 1** or **Program 2**.
- ▶ Go to menu **View/edit active program**.
- ▶ Select day by turning the menu dial.

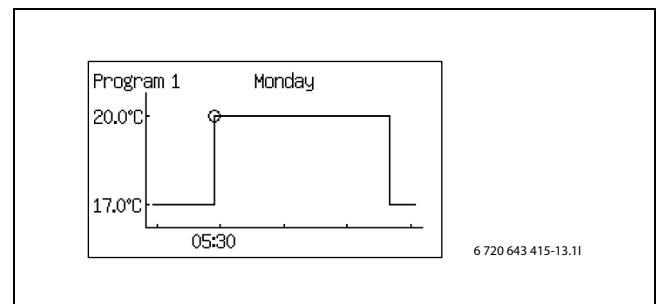


Fig. 27

- ▶ Press the menu dial to mark the value to be changed.

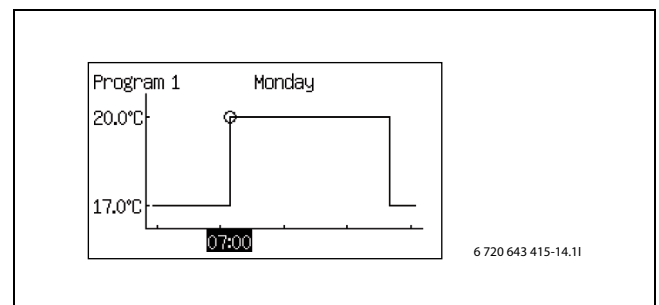



Fig. 28

- ▶ Turn the menu dial until the desired setting has been selected.
- ▶ Then press the menu dial.
- ▶ Turn the menu dial to be able to set additional values in the same way as above.
- ▶ Go back one step with .
- ▶ Select **Saving alternative**:
  - **Return without saving**
  - **Program 1**
  - **Program 2**

The set changes are saved as a selected program or not at all.

- ▶ To adjust the normal temperature, proceed to menu **Room temperature normal**.
- ▶ To adjust the exceptional temperature, proceed to menu **Room temperature exception**.

**Room temperature program when there are room sensors:**

>> **Room temperature program**

>>> **Active program**

If a program is selected, the following (if the menu button is turned) is displayed:

>>> **View/edit active program**

>>> **Room temperature normal**

Factory setting	20.0 °C
Lowest value	10.0 °C
Highest value	35.0 °C

Tab. 16 Room temperature, normal

- ▶ Set the desired set point for the room temperature.

>>> **Room temperature exception**

Factory setting	17.0 °C
Lowest value	10.0 °C
Highest value	30.0 °C

Tab. 17 Room temperature, exception

- ▶ Set the temperature that should apply as exceptional temperature in the program. The menu is displayed only if **Program 1** or **Program 2** has been selected.

>>> **Copy to all heating circuits**

Factory setting	No
Alternative	No/Yes

Tab. 18 All circuits

- ▶ Select **Yes** to have the same control for all installed circuits. The menu is displayed only under **Circuit 1**.

**Room temperature program when there is no room sensor:**

>> **Room temperature program**

>>> **Active program**

>>> **View/edit active program**

The same as when there is a room sensor, see above.

>>> **Room temperature normal**

Factory setting	20.0 °C
Lowest value	10.0 °C
Highest value	35.0 °C

Tab. 19 Room temperature, normal

- ▶ Set the measured value in the room. The indicated value is used by temperature programs to calculate the difference between normal and exceptional temperature.

>>> **Temperature increase/decrease**

Factory setting	=
Alternative	- , - , - , = , + , ++

Tab. 20 Room temperature increase/decrease

- ▶ Use this function to adjust the room temperature so that the normal room temperature (see the previous menu) becomes the desired temperature.
- ▶ Use this function to simply increase or decrease the heat when there are no room sensors.
  - - gives approx. 1 °C lower room temperature.
  - gives approx. 0.5 °C lower room temperature.
  - + gives approx. 0.5 °C higher room temperature.
  - ++ gives approx. 1 °C higher room temperature.

>>> **Room temperature influence**

Setting is carried out in the same way as in the menu

**Room sensor**

(→ Chapter 10.2). The setting is used in the temperature program to calculate how the flow line temperature is affected when exceptional temperature should apply.

>>> **Room temperature exception**

The same as when there is a room sensor, see above.

>>> **Copy to all heating circuits**

The same as when there is a room sensor, see above.



It always takes some time for a change of a heating setting, e.g. an increase or decrease in room temperature, to apply. The same applies in the event of a quick change of the outdoor temperature. This is why you should always wait for at least 24 hours before making a new change.

### > **Circuit 2, 3...**(optional)

Circuit 2, 3... has the same settings options as Circuit 1, (→ Chapter 10.2).



The following applies to **Circuit 2, 3...**requires the accessory IVT Mixing valve module 1000

#### 10.2.1 Set point value

The heating circuit's set point value is the temperature of the flow that the heat pump attempts to maintain. Sometimes, the measured actual value fluctuates a bit upward and downward depending on changes in the outdoor temperature or a large hot water demand.



The set point value specified by the customer/installer is most often the room temperature, which is recalculated by the control unit into a corresponding flow temperature set point value. Under normal conditions, 1 K ( °C) in room temperature corresponds to approx. 3 K ( °C) in flow temperature.

The set point value is normally based on:

- Current curve value (the flow temperature at the current outdoor temperature according to the applicable heat curve).
- Current curve influence through:
  - **Room sensor**
  - **Holiday**
  - **Active program**
  - **External control**

#### Set point value calculation

The set point value for the heating circuit is the current curve value adjusted with active curve influence, if any such exists.

Priority order for curve influence is:

- **External control**
- **Active program**
- **Holiday**
- **Room sensor**

Only one of these can be active. How big the influence should be and when to exercise it is set in the respective function.

#### Fixed set point value

A fixed set point value (not curve-based) applies in the event of:

- External set point value. The set point value is determined according to input signal 0-10V where 1V is 10 °C and 10V is 80 °C (0V triggers an alarm).

#### Set point value limitation

The calculated set point value is always checked against the permitted temperature limits.

The applicable set point value T1 for **Circuit 1** and the measured actual value for T1 are used to activate and deactivate the heat demand.

The following applies to **Circuit 2, 3...**: When the actual value for the mixed circuit's T1 is low in relation to the set point value, more heating water is shunted into the circuit so as to maintain the set point value.

If the flow line temperature has been below the set point value for a certain period of time, there is heat demand and the compressor produces heat before there is a too significant temperature reduction indoors. This happens until the flow line temperature is a couple of degrees higher than the set point value. (Or because **Maximum operating time for heating at hot water demand** has passed.)

Heating demand is not active during summer operation.

### 10.3 Hot water

Under **Hot water**, there are functions to:

- Request **Extra hot water**
- State when **Hot water peak** is to be carried out to eliminate the bacteria
- Set any **Hot water program**
- Select operating mode
- Block heating needs during hot water mode
- Limit hot water mode at heat demand

#### > **Extra hot water**

Additional amount of hot water is produced by temporarily increasing the temperature of the hot water during the set number of hours to the indicated stop temperature.

#### >> **Extra hot water duration**

Factory setting	0h
Lowest value	0h
Highest value	48h

Tab. 21 Extra hot water duration

- ▶ Set the duration of extra hot water production.


>> **Extra hot water stop temperature**

Factory setting	65 °C
Lowest value	50 °C
Highest value	65 °C

Tab. 22 Hot water temperature

- ▶ Set the stop temperature for extra hot water.

The heat pump starts the function directly and uses first the compressor and then the additional heat source for the temperature increase. When the respective number of hours have passed, the heat pump returns to normal hot water mode.



**DANGER:** Risk of burn injuries.

- ▶ Use a mixing valve when the hot water temperature exceeds 60 °C.

> **Hot water peak**

**Hot water peak** means a temporary increase in the hot water temperature to approx. 65 °C for thermal elimination of bacteria.

For the hot water temperature increase, the compressor is used first; the additional heat source then continues alone.

>> **Day of the week**

Factory setting	Wednesday
Area	None, Day, All

Tab. 23 Weekday

- ▶ Set the day on which the hot water peak should take place. **None** means that the function is disabled. **All** means that a hot water peak takes place every day. If hot water peak is deactivated comfort mode must be selected in the menu **Hot water mode**.

>> **Interval in weeks**

Factory setting	1
Lowest value	1
Highest value	4

Tab. 24 Week interval


- ▶ Set how often a hot water peak should take place.
  - 1 means a hot water peak every week.
  - 2 means that a hot water peak takes place in all even weeks of the year, i.e. in week 2, 4, 6, etc.
  - 3 means week 3, 6, 9, etc.
  - 4 means week 4, 8, 12, etc.

>> **Start time**

Factory setting	3:00
Lowest value	0:00
Highest value	23:00

Tab. 25 Start time

- ▶ Set the time of the hot water peak.



**WARNING:** Risk of burn injuries.

At hot water temperatures greater than 60 °C, there is a risk of burn injuries.

- ▶ Exercise caution when tapping hot water immediately after a hot water peak.

> **Hot water program**

**Program 1** and **Program 2** enables you to block hot water production during the set time.

>> **Active program**

Factory setting	Always hot water
Alternative	<ul style="list-style-type: none"> <li>• Always hot water</li> <li>• Program 1</li> <li>• Program 2</li> </ul>

Tab. 26 Hot water program

>> **View/edit active program**

The menu is displayed only if **Program 1** or **Program 2** has been selected. Programs are changed in the same way as for **Room temperature program** (→Chapter 10.2).

> **Hot water mode**

F value	Economy
Alternative	Economy/Comfort

Tab. 27 Hot water mode

- ▶ Select hot water mode.
  - Economy** means that the hot water is permitted to cool slightly before hot water production starts compared to **Comfort**. Heating stops at a slightly lower temperature.
  - ▶ Change to **Comfort** if more or hotter hot water is desired. This setting must be used if electric add. heat is missing or if the hot water circulation is used, when the temperature in the hot water circulation is otherwise too low.

The factory settings for on and off temperature are approx. 8 K lower in Economy mode compared to

Comfort mode. These values can be adjusted by the installer.

#### > **Block heating during hot water demand**

F value	No
Alternative	Yes/No

Tab. 28 Block the heat

- ▶ Select **Yes** if the hot water demand must always be satisfied before the heat demand.
- ▶ Select **No** if hot water production should be interrupted after a certain time in event of a heat demand.
- ▶ In **No** also set the duration that hot water production may occur for during the heat demand.

#### > **Maximum operating time for hot water at heating demand**

F value	30 min
Lowest value	5 min
Highest value	60 min

Tab. 29 Operating time hot water

## 10.4 Holiday

During holidays (absence), the heating can, for example, be kept at a lower or higher level and hot water production can be switched off. *Start* and *Stop date*, *Room temperature* and *Block hot water production* is only displayed if the holiday function is activated.

#### > **Circuit 1 and hot water**

##### >> **Activate holiday function**

Factory setting	No
Alternative	No/Yes

Tab. 30 Holiday function

##### >> **Start date**

##### >> **Stop date**

- ▶ Set start and stop date for the desired period. Format yyyy-mm-dd.  
The period starts and ends at 00:00. Both the start and end date are included in the period.
- ▶ Terminate the period prematurely by indicating **No** in the menu **Activate holiday function**.

##### >> **Room temperature**

- ▶ Set the room temperature that should apply to the circuit during the period.

Factory setting	17 °C
Lowest value	10 °C
Highest value	35 °C

Tab. 31 Room temperature, holiday

##### >> **Copy to all heating circuits**

Factory setting	No
Alternative	Yes/No

Tab. 32 Copy circuits

##### >> **Block hot water production**

Factory setting	No
Alternative	Yes/No

Tab. 33 Block hot water

#### > **Circuit 2, 3...**

##### >> **Activate holiday function**

##### >> **Start date**

##### >> **Stop date**

##### >> **Room temperature**

- ▶ Set the values in the same way as for **Circuit 1 and hot water**.

## 10.5 Energy measurements

#### > **Generated energy**

This displays **Generated energy** in kWh divided into **Heating** and **Hot water**.

#### > **Consumption electric additional heat**

This displays **Consumption electric additional heat** in kWh divided into **Heating** and **Hot water**.

## 10.6 Timers

Timers are used by the control unit to count down the different time dependent functions such as **Extra hot water duration**. At customer level the following timers can be observed (only timers that are counting are displayed):

Timer	F value
Extra hot water	0h
Alarm mode delay	1h
Party	0h
Operating time for heating at hot water demand	20min
Hot water, operating time at heating demand	30min
Heat pump x timers	
> Compressor start delay	10min
Additional heat timers	
> Additional heat start delay	60min
> Delay mixing valve control after additional heat start	20min

Tab. 34 Timers

## 10.7 External controls

When an external input is connected, the control unit performs functions which are set to **Yes** or is separated from 0 (**Room temperature**). When the external input is no longer connected, the control unit returns to normal mode. Only installed functions are displayed.

### > External input 1, 2

#### >> Block compressor

#### >> Block heating

#### >> Room temperature

#### >> Block hot water production

### > External input circuit 2, 3...(optional)

#### >> Block heating

#### >> Room temperature

#### Room temperature:

Factory setting	No (0.0 °C)
Lowest value	10.0 °C
Highest value	35.0 °C

Tab. 35 Room temperature

- ▶ Set the room temperature that should apply in the event of enabled external control.
- ▶ Value > 0 °C enables the function.

Other functions:

F value	No
Alternative	Yes/No

Tab. 36 Functions

## 10.8 General

Among other things, settings for date and time are available here.

### > Set date

Factory setting	
Format	yyyy-mm-dd

Tab. 37 Date

### > Set time

Factory setting	
Format	hh:mm:ss

Tab. 38 Time

- ▶ Check and change, if necessary, date and time. These are used by the control unit to manage the different clock settings, e.g., holiday and room temperature program.

### > Summer/winter time

Factory setting	Automatic
Alternative	Manual/Automatic

Tab. 39 Summer/winter time.

- ▶ Select if there should be automatic change over between summer and winter time or not (times according to EU standard).

### > Display backlight intensity

Factory setting	100%
Lowest value	20%
Highest value	100%

Tab. 40 Display backlight intensity

- ▶ If necessary, change the background light of the control panel.

### > Language

- ▶ Change language, if desired.

## 10.9 Alarm

The different alarms that can occur are described in (→Chapter 11).

Under **Alarms** there is:

- **Information log**
- **Delete information log**
- **Alarm log**
- **Delete alarm log**
- **Alarm indication**

### > Information log

The information log displays information from the heat pump. The control panel output mode displays the symbol for information log when the active information is available.

### > Delete information log

The information log is deleted here.

### > Alarm log

The alarm log shows the alarms and warnings that have occurred. Alarm category (→ Chapter 11.5) is displayed in the top left corner of the display. If the alarm is active, the alarm symbol (→Chapter 8.3) is displayed both in the alarm log and the initial menu of the control panel.

### > Delete alarm log

The alarm log is deleted here.

### > Alarm indication

Under **Alarm indication** settings for alarm buzzer and status lamp are made here.

### >> Alarm buzzer signal

#### >>> Interval

Factory setting	2s
Lowest value	2s
Highest value	3600s (60min)

Tab. 41 Interval

- ▶ Set the length of the alarm interval.  
The alarm buzzer sounds for one second and is silent during the rest of the interval. The setting applies to all alarm buzzers.

#### >>> Blocking time

Factory setting	Off
Start time	0:00 - 23:45
Stop time	0:00 - 23:45

Tab. 42 Blocking time

- ▶ Set the times between which alarms buzzers should not be allowed to produce an acoustic signal.

#### >> Alarm indication control unit

##### >>> Block alarm buzzer

Factory setting	No
Alternative	No/Yes

Tab. 43 Block alarm buzzer

The setting applies only to the control unit's alarm buzzer.

#### >> Alarm indication room sensor

##### >>> Block alarm buzzer

Factory setting	Yes
Alternative	No/Yes

Tab. 44 Block alarm buzzer

The setting applies only to circuit 1.

The setting applies to **Circuit 1** and to a CANbus-connected room sensor.

Factory setting	Yes
Alternative	No/Yes

Tab. 45 Block status lamp

The setting applies to all room sensors.

## 10.10 Access level

Access level is **Customer** as standard: This level gives you access to all functions that the user requires. The installer also has access to the additional functions required at installation.

## 10.11 Return to factory settings

- ▶ Select **Return to factory settings** and **Yes** to reset all customer settings to the factory settings. Settings made by the installer are not affected.

Factory setting	No
Alternative	Yes/No

Tab. 46 Return to factory settings

## 11 Alarm

### 11.1 Control unit and room sensor alarm lamp

The status lamp on the control unit is used to show ON/OFF status for the heat pump but also to show possible alarms. The status lamp is therefore also called alarm lamp. If there are room sensors, it/they provides the same information as the lamp on the heat pump.

In the event of an alarm the alarm lamp flashes red (control unit) until the warning cause has disappeared. The alarm lamp is not used for warning alarms. The room sensor alarm lamp can be blocked.

Behaviour	Function
<i>The lamp lights green continuously.</i>	The heat pump is running.
<i>The lamp flashes red</i>	There is an alarm which has not been acknowledged
<i>The lamp lights red continuously.</i>	The alarm has been acknowledged but the alarm cause remains
<i>Lamp flashes green slowly</i>	The heat pump is in stand-by mode <sup>1)</sup>

Tab. 47 Alarm lamp control unit

1) Stand-by means that the heat pump is running but no heating or hot water demand exists.


The alarm lamp of the CANbus sensor shows the same information as the alarm lamp of the control unit.

Other room sensors flash with low-frequency red light in the event of alarms; the lamp is otherwise off.

### 11.2 Alarm buzzer at alarm

When there is an alarm, the alarm buzzer on the heat pump and the CANbus-connected room sensor sounds for a second per set alarm interval. The alarm buzzer can be blocked for a certain part of the day or completely. In the event of a warning alarm, the alarm buzzer does not sound.

### 11.3 Acknowledgement of alarms

Acknowledgement means that you have to press  to make the alarm window disappear. What happens after acknowledgement is described in the respective alarm description.

In most cases, warnings do not have to be acknowledged. The alarm window disappears by itself

once the warning cause has disappeared. It is, however, possible to acknowledge the warning.

### 11.4 Alarm timer, alarm mode

In the event of an alarm that stops the compressor the control unit starts a timer at 1h. If the fault does not recur additional heat may start when the timer has counted down.



### 11.5 Alarm categories

The alarms are divided into different categories depending on the type and seriousness of the fault. Alarm category is displayed in the alarm window and alarm log.

**Categories A-H are alarms, categories I-J are warnings/information, categories K-M are warnings, category Z is information.**

Meaning	A	B	C	D	E	F	G	h	In	J	K	L	M	Z
Stops the compressor	X	X	X	X	X				X	X				
Stops additional heat						X	X				X			
Alarm lamp, alarm buzzer is activated	X	X	X	X	X	X	X	X						
Alarm delay	5s	3s	15 min	1 min	5s	1s	1s	1s	5s	5s	2s	5s	0s	0s
Requires acknowledgement to restart	X	X	X	X		X								
Can be restarted before acknowledgement					X		X	X	X	X	X		X	
Menu display must be acknowledged	X	X	X	X	X	X	X	X				X	X	
Placed in the information log									X	X				X

Tab. 48 Alarm categories

- In** Temporary stop of compressor. The information may recur a number of times during a certain time period; if there are more during the period, a category A alarm is sounded.
- J** Temporary stop of compressor. The information may recur a number of times during a certain time period; if there are more during the period, a category A alarm is sounded.
- M** Used for board connection problems.

### 11.6 Alarm window

When an alarm/warning occurs, the display shows information about what has happened. At the same time, information is saved in the alarm log. The alarm symbol is displayed in the initial menu of the control panel (→ Chapter 8.3).

**Example of an alarm:**

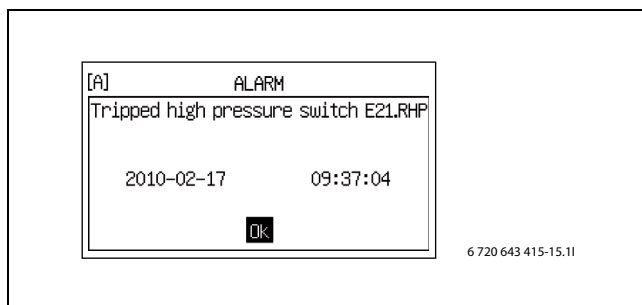


Fig. 29

### 11.7 Alarm functions

The different alarms that can occur are presented here, the alarm text is indicated in the heading.

Most alarm texts contain a designation of the part of the heat pump that has caused the alarm. Always indicate the whole alarm information when you are in contact with the service/dealer.

E21 refers to top heat pump 1, E22 refers to bottom heat pump 2.

E11 refers to circuit 1, E12 circuit 2, E13 circuit, 3, etc.

Txx refers to different temperature sensors.

#### 11.7.1 High hot gas temperature E2x.T6

**Function:** Compressor stops. Activated when the temperature from the compressor becomes too high. The alarm can occur in individual cases under extreme service conditions.

**Alarm timer starts:** Yes.

**Reset condition:** The hot gas temperature drops to the permitted temperature.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

#### 11.7.2 Tripped low pressure switch E2x.RLP

**Function:** Compressor stops. Activated when the pressure in the refrigerant circuit of the heat pump becomes too low.

**Alarm timer starts:** Yes.

**Reset condition:** The pressure goes back to the permitted level.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Check that the air ways to and from the heat pump are not obstructed.
- ▶ Contact the dealer if the alarm remains after acknowledgement.

#### 11.7.3 Tripped high pressure switch E2x.RHP

**Function:** Compressor stops. Activated when the pressure in the refrigerant circuit becomes too high.

**Alarm timer starts:** Yes.

**Reset condition:** The pressure goes back to the permitted level.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains after acknowledgement.

#### 11.7.4 Low pressure collector circuit

**Function:** Compressor stops. Activated when the pressure in the collector circuit becomes too low.

**Alarm timer starts:** Yes.

**Reset condition:** The pressure goes back to the permitted level.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains after acknowledgement.

#### 11.7.5 Low temperature collector circuit in E2x.T10

**Function:** Alarm is given if the collector circuit temperature is too low and if warning of this has been given several times.

**Alarm timer starts:** Yes.

**Reset condition:** The collector circuit temperature exceeds the lowest permitted temperature.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains after acknowledgement.

**11.7.6 Low temperature collector circuit out E2x.T11**

**Function:** Alarm is given if the collector circuit temperature is too low and if warning of this has been given several times.

**Alarm timer starts:** Yes.

**Reset condition:** The temperature of the refrigerant exceeds the lowest permitted temperature.

**Category:** A.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains after acknowledgement.

**11.7.7 Motor cut-out 1 E2x.F11, Compressor**

**Function:** Activated when the compressor's motor cut-out has tripped because of high current or lost current phase resulting in undue strain on the compressor.

**Alarm timer starts:** Yes.

**Reset condition:** Motor cut-out reset.

**Category:** B.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Check the heating system fuses, and main fuses.
- ▶ Contact the dealer if the alarm remains after acknowledgement.

**11.7.8 Motor cut-out 2 E2x.F12, Collector circuit pump**

**Function:** Compressor stops. Activated when the collector circuit pump motor cut-out has tripped. The heat transfer fluid (coll.) pump stops and the heat pump also stops to protect the other components.

**Alarm timer starts:** Yes.

**Reset condition:** Motor cut-out reset.

**Category:** B.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Check heating system fuses.
- ▶ Contact the dealer if the alarm remains after acknowledgement.

**11.7.9 Phase error E2x.B1**

**Function:** Compressor stops. Activated when one of the phases in the voltage supply is missing or when there is a phase sequence error. A voltage difference > 15% between the phases also results in an alarm.

**Alarm timer starts:** Yes.

**Reset condition:** The error has been remedied and the phase guard is under voltage.

In the event of a voltage difference: The difference between phases has been reduced to < 15 %.

**Category:** E.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Check the heating system fuses, and main fuses.
- ▶ Contact the dealer if the alarm remains after acknowledgement.

**11.7.10 Failure on sensor E2x.T6 hot gas**

**Function:** The compressor stops because the hot gas cut-out cannot be guaranteed. Activated when the sensor's value indicates a temperature lower than -50 °C.

**Alarm timer starts:** Yes.

**Reset condition:** The value of the sensor indicates > -50 °C.

**Category:** E.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.11 Short circuit on sensor E2x.T6 hot gas**

**Function:** The compressor stops because the hot gas cut-out cannot be guaranteed. Activated when the sensor's resistance value indicates a temperature higher than 150 °C.

**Alarm timer starts:** Yes.

**Reset condition:** The value of the sensor indicates < 150 °C.

**Category:** E.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.12 High flow temperature E1x.T1

**Function:** Compressor stops. Activated when the temperature in the heating circuit becomes too high in relation to the settings that are made.

**Alarm timer starts:** Yes.

**Reset condition:** The sensor's value falls below the temperature for beginning of the heating demand.

**Category:** E.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Lower the heating on the circuit.
- ▶ Check that the thermostat valves are open.
- ▶ Contact the dealer if the alarm recurs often.

### 11.7.13 Faulty electric heater E21.E2

**Function:** The electric heater is turned off. Activated by triggered overheat protection on the electric add. heat, high flow temperature or too high temperature in the electric add. heat.

**Reset condition:** Overheat protection reset or the temperature has fallen.

**Category:** F.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Reset the overheat protection if it has tripped.
- ▶ Contact the dealer if the alarm remains after acknowledgement.

### 11.7.14 Overheat protection tripped hot water electric heater

**Function:** The electric heater is turned off. If alarm output from the electric heater has been connected to the control unit, the alarm is given when an error occurs.

**Reset condition:** The error in the electric heater has been overcome and no alarm signal.

**Category:** F.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer if the alarm remains after acknowledgement.

### 11.7.15 Failure on sensor E31.T32 anti-freeze cooling

**Function:** The mixing valve in the collector circuit is closed. Activated when the sensor's value indicates a temperature lower than -10 °C. The sensor is used in certain cooling applications and is placed in the collector circuit for cooling to prevent the heat exchanger from freezing.

**Reset condition:** The value of the sensor indicates > -10 °C.

**Category:** G.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.16 Short circuit on sensor E31.T32 anti-freeze cooling

**Function:** The mixing valve in the collector circuit is closed. Activated when the sensor's value indicates a temperature higher than 30 °C. The sensor is used in the collector circuit for cooling in order to prevent the heat exchanger from freezing.

**Reset condition:** The value of the sensor indicates < 30 °C.

**Category:** G.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.17 Error dew point sensor E1x.TM

**Function:** Cooling on current mixing valve is aborted. Activated when the signal from the sensor deviates from its normal operating range. The alarm may appear after a power failure but the alarm cause normally disappears automatically and the only thing that has to be done is to acknowledge the alarm.

**Reset condition:** The sensor's signals return to the normal operating range.

**Category:** G.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.18 Faulty protective anode E41.F31**

**Function:** Does not affect the compressor or additional heat. The alarm is activated when the anode in the hot water heater is broken or does not work.

**Reset condition:** The anode should be taken care of so as to prevent corrosion in the hot water heater.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer.

**11.7.19 Failure on sensor E11.T1 flow**

**Function:** The system switches over to control based on sensor T8. The alarm is activated when the sensor's value indicates a temperature lower than 0 °C.

**Reset condition:** The value of the sensor indicates >0 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.20 Short circuit on sensor E11.T1 flow**

**Function:** The system switches over to control based on sensor T8. The alarm is activated when the sensor's value indicates a temperature higher than 110 °C.

**Reset condition:** The value of the sensor indicates < 110 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.21 Failure on sensor E12.T1, E13.T1... flow**

**Function:** The mixing valve for the circuit is closed completely. The alarm is activated when the sensor's value indicates a temperature lower than 0 °C.

**Reset condition:** The value of the sensor indicates >0 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.22 Short circuit on sensor E12.T1, E13.T1... flow**

**Function:** The mixing valve for the circuit is closed completely. The alarm is activated when the sensor's value indicates a temperature higher than 110 °C.

**Reset condition:** The value of the sensor indicates < 110 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.23 Failure on sensor T2 outdoor**

**Function:** In the event of a failure on T2, the outdoor temperature is set to 0 °C so that the heat pump can continue to produce heat. The alarm is activated when the sensor's value indicates a temperature lower than -50 °C.

**Reset condition:** The value of the sensor indicates > -50 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.24 Short circuit on sensor T2 outdoor

**Function:** In the event of a short circuit on T2, the outdoor temperature is set to 0 °C so that the heat pump can continue to produce heat. The alarm is activated when the sensor's value indicates a temperature higher than +70 °C.

**Reset condition:** The value of the sensor indicates < 70 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.25 Failure on sensor T3 hot water

**Function:** The hot water production is terminated. The alarm is activated when the sensor's value indicates a temperature lower than 0 °C.

**Reset condition:** The value of the sensor indicates >0 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.26 Short circuit on sensor T3 hot water

**Function:** The hot water production is terminated. The alarm is activated when the sensor's value indicates a temperature higher than +110 °C.

**Reset condition:** The value of the sensor indicates < 110 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.27 Failure on sensor E1x.TT.T5 room

**Function:** The room temperature influence is set to 0, which means that the room sensor cannot affect the heating system any longer. The alarm is activated when the sensor's value indicates a temperature lower than -1 °C.

**Reset condition:** The value of the sensor indicates > -1 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.28 Short circuit on sensor E1x.TT.T5 room

**Function:** The room temperature influence is set to 0, which means that the room sensor cannot affect the heating system any longer. The alarm is activated when the sensor's value indicates a temperature higher than +70 °C.

**Reset condition:** The value of the sensor indicates < 70 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.29 Failure on sensor E31.TT.T5 room

**Function:** The alarm is activated when the sensor's value indicates a temperature lower than -1 °C. In the event of a failure on sensor T5, the room temperature influence is set to 0.

**Reset condition:** The value of the sensor indicates > -1 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

**11.7.30 Short circuit on sensor E31.TT.T5 room**

**Function:** The alarm is activated when the sensor's value indicates a temperature higher than +70 °C. In the event of a short circuit on sensor T5, the room temperature influence is set to 0.

**Reset condition:** The value of the sensor indicates < 70 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

**11.7.31 Failure on sensor E2x.T8 heat transfer fluid out**

**Function:** Activated when the sensor's value indicates a temperature lower than 0 °C.

**Reset condition:** The value of the sensor indicates >0 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.32 Short circuit on sensor E2x.T8 heat transfer fluid out**

**Function:** Activated when the sensor's value indicates a temperature higher than 110 °C.

**Reset condition:** The value of the sensor indicates < 110 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.33 Failure on sensor E2x.T9 heat transfer fluid in**

**Function:** Activated when the sensor's value indicates a temperature lower than 0 °C.

**Reset condition:** The value of the sensor indicates >0 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.34 Short circuit on sensor E2x.T9 heat transfer fluid in**

**Function:** Activated when the sensor's value indicates a temperature higher than 110 °C.

**Reset condition:** The value of the sensor indicates < 110 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.35 Failure on sensor E2x.T10**

**Function:** Activated when the sensor's resistance value indicates a temperature lower than -20 °C.

**Reset condition:** The value of the sensor indicates > -20 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

**11.7.36 Short circuit on sensor E2x.T10**

**Function:** Activated when the sensor's value indicates a temperature higher than 40 °C.

**Reset condition:** The value of the sensor indicates < 40 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.37 Failure on sensor E2x.T11

**Function:** Activated when the sensor's value indicates a temperature lower than -50 °C.

**Reset condition:** The value of the sensor indicates > -50 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

### 11.7.38 Short circuit on sensor E2x.T11

**Function:** Activated when the sensor's value indicates a temperature higher than 40 °C. The temperature display window shows a short circuit.

**Reset condition:** The value of the sensor indicates < 40 °C.

**Category:** H.

**Alarm lamp/buzzer:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the alarm remains active for more than three hours or recurs often.

## 11.8 Warnings

### 11.8.1 Electric additional heat shut down due to high temperature E2x.T8

**Function:** The electric heater is turned off. The warning is activated in additional heat mode if the outgoing temperature of the heat transfer fluid exceeds the maximum value.

**Reset condition:** The warning is deactivated when the temperature falls.

**Category:** K.

**Alarm lamp:** Yes.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer if the warning recurs often.

### 11.8.2 High temperature difference heat transfer fluid E2x

**Function:** The warning is activated when the temperature difference between heat transfer fluid out and heat transfer fluid in becomes too big.

**Reset condition:** The warning is deactivated on acknowledgement of the warning display.

**Category:** L.

**Alarm lamp/buzzer:** No.

**Restart:** The warning does not close anything but is registered in the alarm log.

- ▶ Check and clean the particle filter, if required.
- ▶ Contact the dealer if the warning remains after acknowledgement.

### 11.8.3 High temperature difference collector circuit E2x

**Function:** The warning is activated when the temperature difference between collector circuit out and collector circuit in becomes too big.

**Reset condition:** The warning is deactivated on acknowledgement of the warning display.

**Category:** L.

**Alarm lamp/buzzer:** No.

**Restart:** The warning does not close anything but is registered in the alarm log.

- ▶ Check and clean the particle filter, if required.
- ▶ Contact the dealer if the warning remains after acknowledgement.

### 11.8.4 The heat pump is now working in anti-freeze mode

**Function:** Activated when the temperature in one of the circuits becomes too low.

**Reset condition:** The temperature in the circuit is increased.

**Category:** L.

**Alarm lamp/buzzer:** No.

**Restart:** Automatic once the alarm cause has disappeared.

- ▶ Contact the dealer.



### 11.8.5 Screed drying set point value for heating not reached

**Function:** Activated when the set point value for a drying step has not been reached.

**Reset condition:** The warning is deactivated on acknowledgement of the warning display.

**Category:** L.

**Alarm lamp:** Yes.

**Restart:** The warning does not shut down anything, the drying program continues with the following step.

- ▶ Contact the dealer in the event of warning being repeated.

### 11.8.6 Check connection to I/O board x

**Function:** Depends on the board.

**Reset condition:** Communication with the board is re-established.

**Category:** M.

**Alarm lamp/buzzer:** No.

**Restart:** Acknowledgement is required.

- ▶ Contact the dealer.

### 11.9 Information log

The information log displays information from the heat pump.

#### 11.9.1 High flow temperature E2x.T8

**Function:** The information is given if the temperature of the heating medium is too high. The information can appear temporarily when high room and hot water temperatures are set.

**Reset condition:** The information is deactivated when the temperature falls to the permitted level.

**Category:** I.

#### 11.9.2 Temporary heat pump stop E21.RLP

**Function:** Activated when the pressure in the refrigerant circuit of the heat pump becomes too low. If the information appears several times during a certain time period, the information transforms into a category A alarm (→ Chapter 11.7.2).

**Reset condition:** The pressure goes back to the permitted level.

**Category:** I.

#### 11.9.3 Temporary heat pump stop E21.RHP

**Function:** Activated when the pressure in the refrigerant circuit becomes too high. If the information appears several times during a certain time period, the information transforms into a category A alarm (→ Chapter 11.7.3).

**Reset condition:** The pressure goes back to the permitted level.

**Category:** I.

#### 11.9.4 Low temperature collector circuit in E2x.T10

**Function:** The information is given if the temperature of the refrigerant to the heat pump is too low. If the information appears several times during a certain time period, the information transforms into a category A alarm (→ Chapter 11.7.5).

**Reset condition:** The temperature of the collector circuit exceeds the lowest permitted temperature.

**Category:** J that can be transformed into A.

#### 11.9.5 Low temperature collector circuit out E2x.T11

**Function:** The information is given if the temperature of the refrigerant from the heat pump is too low. If the information appears several times during a certain time period, the information transforms into a category A alarm (→ Chapter 11.7.6).

**Reset condition:** The temperature of the collector circuit exceeds the lowest permitted temperature.

**Category:** J that can be transformed into A.

#### 11.9.6 Hot water peak failure, new try within 24 hours

**Function:** The hot water has not come up at the right temperature. The hot water peak is repeated at the same time on the next day.

**Reset condition:** The correct hot water peak temperature is reached.

**Category:** Z.

#### 11.9.7 Temporary heat pump stop due to working area limits

**Function:** The compressor stops until the hot gas temperature falls below the set limit. The warning can occur when the heat pump works close to the lowest permitted outdoor temperature.

**Reset condition:** The hot gas temperature is within the range of the compressor.

**Category:** Z.

#### 11.9.8 Temporary hot water stop due to working area limits

**Function:** Ongoing hot water operation is aborted and replaced with heating operation. The warning can occur when the heat pump works close to the lowest permitted outdoor temperature.

**Reset condition:** The hot gas temperature is within the range of the compressor.

**Category:** Z.

#### 11.9.9 Additional heat is now working at its highest temperature

**Function:** The additional heat begins to be stepped down. The information is activated in additional heat mode if the outgoing temperature (T1 or T8) approaches the set maximum value. The information is blocked during hot water peaks or extra hot water.

**Reset condition:** The information is deactivated when the temperature falls.

**Category:** Z.

## 12 Energy savings

### **Inspection and maintenance**

To achieve as low energy consumption as possible for a longer period of time, we recommend that you sign an agreement with an authorised installer concerning annual inspection and on-demand maintenance.

### **Thermostat valves**

The thermostat valves on radiators and floor coils can have a negative effect on the heating system by slowing the flow and, by doing so, the heat pump must compensate with a higher temperature. If thermostat valves are installed, they should be fully opened, except in bedrooms or other areas where a lower temperature is required. In these rooms they can be somewhat closed.

### **Floor heating**

Do not set a flow temperature that is higher than the highest value recommended by the floor manufacturer.

### **Airing**

Do not leave the windows ajar when you air. This makes heat leave the room all the time, while the air in the room does not become especially better. Instead, open the windows fully for a short time.

Close the thermostat valves when you air.

### **Additional electric heat**

Different settings (e.g. extra hot water) lead to the activation of an additional electric heat source and thereby to higher energy consumption.

Always select a temperature setting for hot water and heating that is as low as possible.



**HEAT PUMPS**

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