# S THERM+
## by sinclair

# SPLIT
# AIR TO WATER HEAT PUMPS

## SHP-140IRC+SHP-140ERC
## SHP-180IRC+SHP-180ERC

# SiNCLaiR
## HEAT PUMPS

# 1. Heat Pump Control

*Heat pump control circuits are located under the plastic cover in the upper part of the indoor unit cabinet. A galvanized metal sheet carries a printed circuit board with control electronics, a DIN35 mounting rail with electromechanical contactor for heat pump compressor, an electromechanical contactor for auxiliary heater, and a block for smooth start of heat pump compressor motor. There are also auxiliary relays with 230V/10A closing contacts for switching an evaporator fan motor and a circulation pump motor. Moreover, there are terminals for power supply 3x400V/50Hz, for signals from outdoor blocks of the heat pump, and terminals for control signals and power supply for these blocks. To set up and control the heat pump performance, the control board is equipped with a simple control panel with a display and a dial knob located on the plastic cover of the indoor unit heat pump. Location of the control circuits inside the heat pump indoor unit is shown in Fig.1.*
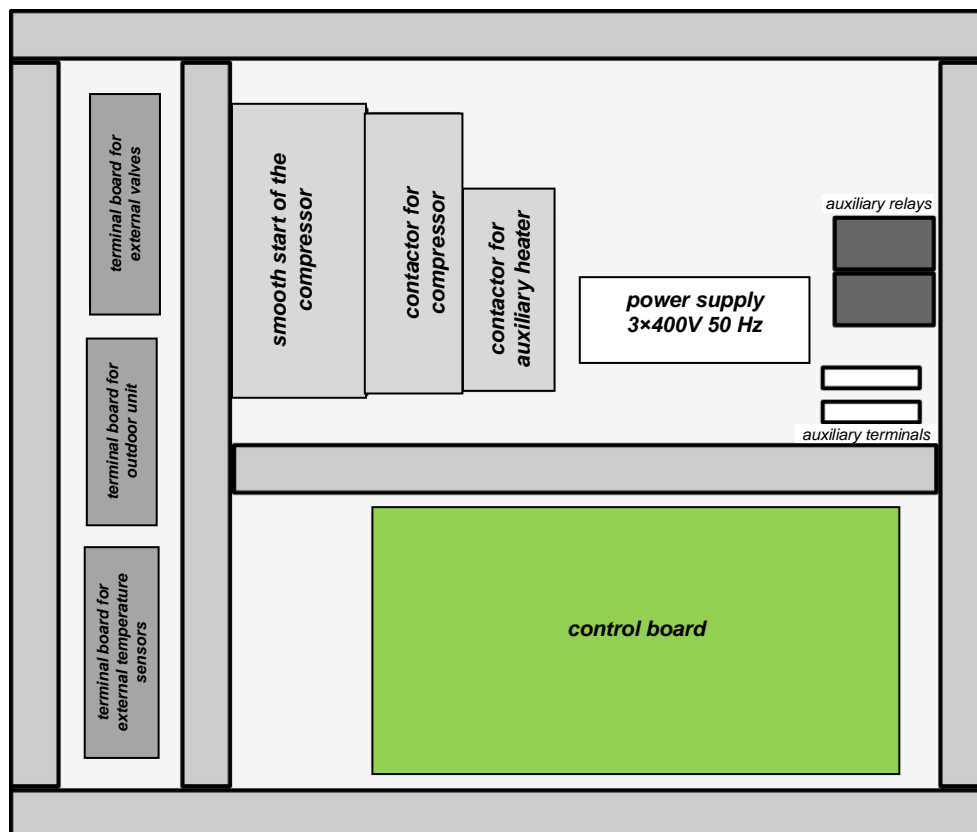


*Fig. 1. Location of the control circuits inside the heat pump indoor unit*

## 1.1. Heat Pump Control Board

*The heat pump control board is designed to control the heating of the water in one or two heating circuits, heating of the domestic hot water, heating of the pool water and to control the solar heating system. This board is equipped with the necessary number of inputs for sensors used to measure temperature and pressure and to indicate the exceeding of the permitted values. To control the compressor and auxiliary heater contactor, heat exchanger fan, circulation pumps, and mixing and switching valves of the heating circuits, the control board contains 18 relays that can switch voltage 230V with a maximum current of 2A. In addition, the board can control three stepper motors of electronically controlled expansion valves and it has four voltage outputs 0-10V to regulate the speed of evaporator fan and circulation pump. Part of the control board is a switched-mode power supply for powering the board and the other circuits of the heat pump. The power supply contains control circuits to check the mains voltage and correct phase sequence, and to distinguish between low or high price tariff for the supplied electricity. The board can communicate with a superior system via RS485 serial interface. On request it can be equipped with a LAN module for remote management and control via Ethernet and can also be extended by a GSM module for communication via a cellular network. Dimensions of the control board are 267 x 125mm; along both longer sides are terminals for connecting input/output wires. Outputs dedicated to switching mains voltage 230V, power input terminals 3x400V/50Hz for powering the board and a terminal for a price tariff signal from an electricity meter are located on one side of the control board; signal inputs/outputs are on the other side of the board. The connection with the external heat pump circuits is made through three separate terminal blocks, which are also located under the top cover of the heat pump; no wires are connected to the control board when mounting the heat pump at the user site.*
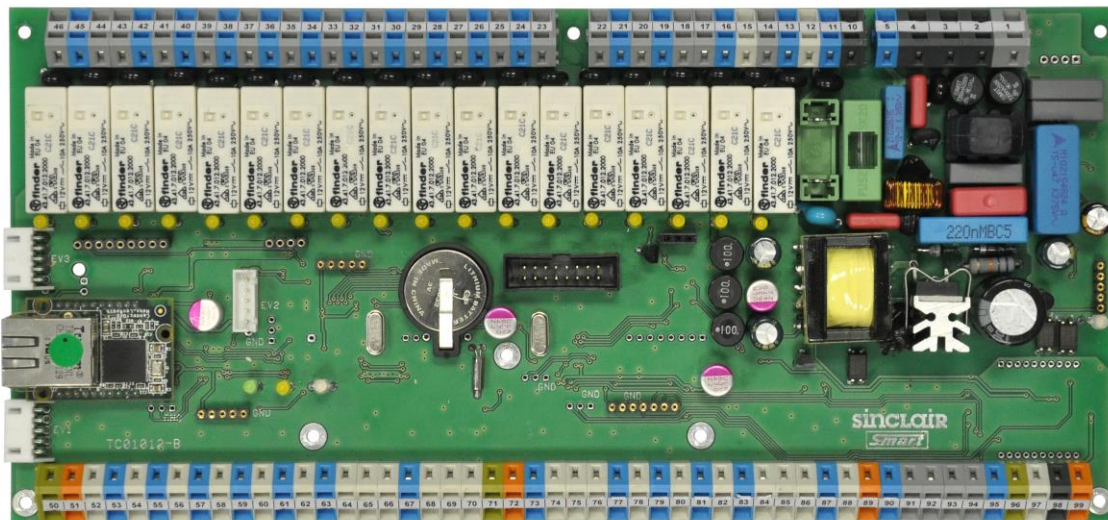


*Fig. 2. Heat pump control board*

## 1.2. Heat Pump Control Panel

*The control board is equipped with a simple control panel located on the plastic cover of the heat pump indoor unit. The control panel contains a backlit alphanumeric display with 2 x 20 characters; to select menu items and to set them up a bi-directional dial knob with confirmation button in its centre is used. The control panel is mounted on a support plate of stainless steel coated with a cover plate. The connection between the control panel and the heat pump control board is established via a flat cable.*
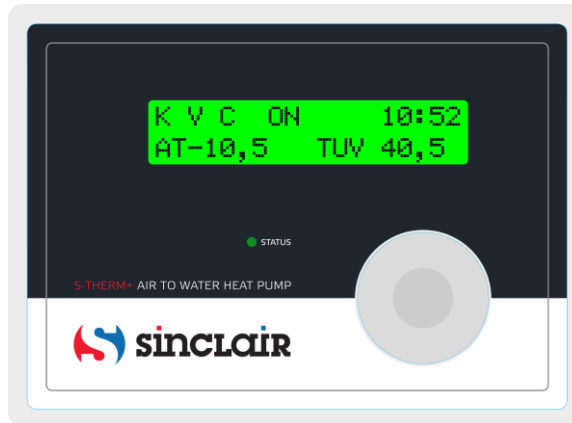


*Fig. 3. Heat pump control panel*

*After turning on, the heat pump performs a self-test and a initial message is displayed on the control panel display and a red LED lights during this test. If you have already set the real time clock and the heat pump is not in an error state, the initial message is followed by displaying the status of the main parts of the heat pump and the current time on the top line of the display and the selected temperatures on the bottom line of the display. This is the default state, i.e. the display in the standby mode before any intervention of the operator.*

```
  C F P  OFF     10:52
  AT  -2.4   CT  - 6.8
```

*The display can show two lines, each of 20 characters. The first row that shows the heat pump status and the current time in hours and minutes is so called **display status line**. In the case above, the compressor (character **C**), the fan (character **F**) and the pump (character **P**) are off (the symbol **OFF**). The bottom line shows the selected temperatures in °C. In the case above, it is the ambient temperature **AT** and the heat pump evaporator temperature **CT**. The line shows two temperatures; it is possible to display up to 16 temperatures. Using the dial knob you can shift the displayed lines in both directions and sequentially check all the measured temperatures. Displaying up to 16 temperatures and their placement in the individual lines of the display is given by heat pump display settings, which can by configured by user. Besides that, the last five lines show the heat pump operating parameters; their are displayed in a fixed format and designed to check the heat pump performance.*

*If the real time clock has not been set yet or in case of backup battery failure after the power is turned off, the error message is displayed after the heat pump is turned on and the cursor blinking on the "Hour" position indicates the sequence for setting the clock.*

```
  Clock error - set
  12:00:00
```

*Use the dial knob to set the hours; turn it to the right to increase the value or turn it to the left to decrease the value. After setting the hours, press shortly the confirmation button to set the minutes. After setting the minutes in a similar way, press shortly the confirmation button to set the seconds. Check whether the set time is correct and press the confirmation button for a longer time to exit the time setting mode. The display will show*

```
┌─────────────────────────────────┐
│   Save ?           Y/N          │
│   hh:mm:ss                      │
└─────────────────────────────────┘
```

*and the cursor is blinking on the **Y (YES)** position. Press the confirmation button to save the time. The confirmation message*

```
┌─────────────────────────────────┐
│   Time settings                 │
│   Saved OK                      │
└─────────────────────────────────┘
```

*will be briefly displayed and then the display will show*

```
┌─────────────────────────────────┐
│   Date settings                 │
│   01/01/00                      │
└─────────────────────────────────┘
```

*Set the date (DD/MM/YY) in a similar way as the time setting. Press the confirmation button for a longer time to exit the date setting mode. The display will show*

```
┌─────────────────────────────────┐
│   Save ?           Y/N          │
│   dd/mm/yy                      │
└─────────────────────────────────┘
```

*Press the confirmation button to save the date. The confirmation message*

```
┌─────────────────────────────────┐
│   Date settings                 │
│   Saved OK                      │
└─────────────────────────────────┘
```

*will be briefly displayed and then the display will return to the **default state** with the status line displayed.*

# 2. Heat Pump Main Menu

*After initial tests, the display will enter the default state with the status line displayed. From this default state you can enter the main menu by pressing the confirmation button in the centre of the dial knob. If the display is not in the default state, you must first use the dial knob in order to restore the default state, and then you can enter the main menu by pressing the confirmation button. Select the menu items by turning the dial knob and confirm the selected item by pressing the confirmation button. This takes you to the next level of the menu (submenu). You can proceed in the similar way to enter the other embedded levels. To exit the menu after setting the desired parameters or to exit the menu without making any changes, each menu contains* **Return** *item to leave the menu. When you select and confirm* **Return** *item, you will move one level back to the previous level. You can repeat this to return to the default state.*

**To quickly return to the default state, you don't need to go back level by level as described above. Just hold down the confirmation button for about 3 seconds.**

*When the default state of the heat pump is displayed*

```
 C F P  OFF      10:52
 AT  -2.4   CT  - 6.8
```

*press the confirmation button to enter the Main menu.*

```
    Menu
    Heating
```

**When an error is detected, after entering the menu the red LED lights up** *on the display and the menu contains only items* **Comfort**, **Setup**, **HP Error** *and* **Return**. *If the heat pump is not in an error state, following menu items are accessible:*

|   |   |   |
|---|---|---|
| **Heating** | – | *This menu allows to turn on/off the heat pump in the Heating mode or the Emergency heating mode.* |
| **Cooling** | – | *This menu allows to turn on/off the heat pump in the Cooling mode.* |
| **Defrost** | – | *This menu allows to manually start the heat pump evaporator defrosting.* |
| **Comfort** | – | *This menu allows quick adjustment of the temperature in the heated space in comparison to the temperature set by the selected heating mode.* |
| **Setup** | – | *This menu allows to set all the necessary parameters for the heat pump operation.* |
| **Return** | – | *Exits the parameters settings or heat pump management and returns to the previous level of the menu.* |

*The value being set is increased by turning the dial knob to the right and decreased by turning the dial knob to the left. If the line contains only one numerical parameter, after setting the desired value and pressing the confirmation button the prompt* **Save ?  Y/N** *appears and after confirmation the message* **Saved OK** *briefly appears. If the line contains several parameters, such as hours, minutes and seconds, cursor is blinking on the position of the parameter being set. To set up the next parameter, press shortly the confirmation button. Each short press will move the cursor one parameter to the right; if the last parameter was selected, cursor will move again to the first parameter. This allows to correct wrong values. After setting and checking all parameters on the line, press the confirmation button for a longer time to save all values. Prompt* **Save ?  Y/N** *appears and after confirmation, the message* **Saved OK** *briefly appears. Menus for parameters setting are divided into several levels according to their influence on the heat pump performance. Common settings can be freely accessible or can be protected by an optional user password. Settings with a decisive influence on the heat pump performance, where the improper setup would cause a malfunction, are located on the service level of the menu and they can be changed only after entering a password. The use of password is compulsory on the service level and this password can not be changed. The most important settings are located on the manufacturing level that is only accessible to the heat pump manufacturer.*

### *Heat Pump Service Settings*

| Basic menu | 1st level | 2nd level | 3rd level | 4th level | Page of Manual |
|---|---|---|---|---|---|
| Heating | | | | | *page 8* |
| Cooling | | | | | *page 10* |
| Defrost | | | | | *page 10* |
| Comfort | | | | | *page 11* |
| Setup *(user password)* | Parameter settings | Heating settings | DHW min reserve [%] | | *page 15* |
| | | | Temp. corr. program | Current register | *page 16* |
| | | | | Daily | *page 17* |
| | | | | Weekly | *page 21* |
| | | | | By Date | *page 24* |
| | | | | Return | |
| | | | Equitherm curve | Equitherm point 1A-2D | *page 26* |
| | | | | Return | |
| | | | Runtime priorities | | *page 27* |
| | | | Heating mode | Equitherm control | *page 28* |
| | | | | Eqt.ctrl + Ref.room | |
| | | | | Reference temp. | |
| | | | | Emergency mode | |
| | | | | Return | |
| | | | Return | | |
| | | Temperature settings | DHW start temp. | | *page 29* |
| | | | DHW stop temp. | | *page 30* |
| | | | HeW start temp. | | |
| | | | HeW stop temp. | | *page 31* |
| | | | Cooling start temp. | | |
| | | | Cooling stop temp. | | *page 32* |
| | | | Pool start temp. | | |
| | | | Pool stop temp. | | *page 33* |
| | | | Solar start delta | | |
| | | | Solar stop delta | | *page 34* |
| | | | Return | | |
| | | Tariff settings | DHW tariff stop | | *page 35* |
| | | | DHW tariff start | | *page 36* |
| | | | HeW tariff stop | | |
| | | | HeW tariff start | | *page 37* |
| | | | Pool tariff stop | | *page 38* |
| | | | Pool tariff stop | | |
| | | | Return | | |
| | | Bivalence settings | Bivalence start temp | | *page 39* |
| | | | Bivalence stop temp | | *page 40* |
| | | | Bivalence delay | | |
| | | | Return | | |
| | | Return | | | |

| Setup | Terminal settings | Time settings | | *page 42* |
|---|---|---|---|---|
| (user password) | | Display settings | Backlight set | *page 43* |
| | | | Contrast set | *page 44* |
| | | | Idle time | |
| | | | Return | |
| | | Display mapping | Display mapping 0 - F | *page 45* |
| | | | Return | |
| | | Language selection | | *page 47* |
| | | Return | | |
| | Info | Mains voltage | | *page 48* |
| | | Current tariff times | | *page 49* |
| | | HW/SW configuration | | *page 50* |
| | | HP Errors list | | *page 51* |
| | | Pump statistics | Compr. Starts count | *page 54* |
| | | | 4WV switches count | *page 55* |
| | | | Compr total time | |
| | | | Reverz. total time | |
| | | | Bivalence total time | |
| | | | Emergency total time | |
| | | | Total heat produced | |
| | | | Total power consumed | |
| | | | Heat from dd/mm/yy | |
| | | | Consum.from dd/mm/yy | |
| | | | Reset From register | |
| | | | Return | |
| | | Return | | |
| | Connection settings | LAN/WAN settings | Assigned IP address | *page 57* |
| | | | Preset IP address | |
| | | | Network mask | |
| | | | Gateway | |
| | | | DNS | |
| | | | FTPS | |
| | | | PING address | |
| | | | MAC address | |
| | | | Return | |
| | | GSM settings | Phone numbers | *page 58* |
| | | | GSM switch-off delay | *page 59* |
| | | | Return | |
| | | Return | | |
| | User password | On/Off | | *page 60* |
| | | Return | | |
| | Return | | | |
| Return | | | | |

# 3. Heating

**Heating** *menu is designed to start or stop the heating mode of the heat pump. This menu contains no adjustments and is accessible only when the heat pump is not in an error state. If an error is detected when entering the main menu, only the* **Setup** *and* **Comfort** *options are accessible and the message* **HP error***, the number of errors and the error specification are displayed in the main menu. See the Error list on page 61 for details. In case of a compressor failure, an evaporator failure, a refrigerant leakage or other failure of the heat pump, it is possible to provide an emergency heating and domestic hot water heating using an auxiliary electric heater (bivalent source). To run in the emergency mode, the auxiliary electric heater, the circulation pump and the heat exchanger must be operational. To switch the heat pump into the emergency mode, it is necessary to change the* **Emergency mode** *settings from* **NO** *to* **YES** *in the* **Heating settings** *menu (see chapter 7.1.1. on page 28). With Emergency mode set to YES,* **Heating** *option is accessible in the main menu even when error is detected, and you can run the heat pump in the Emergency mode.*

## 3.1. Heating in Normal Mode

*According to your settings, the heat pump can heat the domestic hot water, the heating water for one or two heating circuits and the water in the pool. The heating control method depends on the heating mode - heating can be controlled according to the outdoor temperature (equitherm control, weather-compensated control), according to the temperature in the reference room or in the Emergency mode. The heating mode can by set in the menu* **Heating settings***. Please see the chapter 7.1.1. on page 33 for description of the different heating modes.* **When the equitherm control is selected***, the required heating water temperature in heating circuits is determined by equitherm curves according to the outdoor temperature. The control electronics sets the heating water temperature according to the outdoor temperature to ensure a desired thermal comfort and to avoid unnecessary overheating of the building. The shape of the equitherm curves depends on the heating system and the thermal insulating properties of the building. For this reason, you may need to adjust the preset equitherm curves during the first heating season. The equitherm control controls the heating water temperature, therefore* **the time and manual temperature corrections regulate the heating water temperature***.* **When the control according to the temperature in the reference room is selected***, the equitherm controls is also partly used to ensure the adequate response of the heating to the outdoor temperature, but the goal is to achieve the required air temperature in the selected reference room. Therefore, in this case,* **the time and manual temperature corrections adjust the air temperature** *in this room. When the status line is displayed, press the confirmation button to enter the main menu. The bottom line displays* **Heating** *menu which allows you to start the heat pump.*

```
Menu
Heating
```

*After opening this menu,* **Heating** *moves to the top line of the display and if the pump is switched off, the display shows:*

```
Heating
Start
```

*After confirming the* **Start** *option, the control board performs a check of the parameters and then starts the heat pump.*

```
C/F/P/ TE1 E D0 10:52
AT= - 2.4   CT= - 6.8
```

*The top line of the display shows the status line. Individual symbols for the compressor (**C**), the evaporator fan (**F**) and the circulation pump (**P**) are followed by symbols (dashes) which rotate in clockwise direction when the related parts run normally. At the high tariff of the supplied electricity, the characters C, F and P are uppercase letters, while at the low tariff they are lowercase letters. The following indication* **TE1** *determines the actually heated circuit (this can be TE1, TE2, DHW or POOL), the character* **E** *means the Equitherm control (**R** means the Reference room) and* **D0** *means the active Daily temperature correction according to the register 0 (W0 to W3 are Weekly temperature corrections according to the registers 0 to 3). While waiting for the start of the temperature correction by date, symbols for appropriate heating time correction (D0 to D3 or T0 to T3) and symbol* **DA** *indicating the*

*correction by date are alternately displayed in a time interval of about one second. The bottom line of the display shows the selected pair of temperatures; you can shift the displayed parameters in both directions using the dial knob. The position of the temperatures on the display lines can be set in the Display mapping menu. The Heating menu can be left without starting up the heat pump. In this case, select the **Return** option on the display bottom line and press the confirmation key.*

```
Heating
Return
```

*If the **Heating** menu is opened when the heat pump is running, the display shows the option to stop the pump.*

```
Heating
Stop
```

*After confirming the **Stop** option, the heat pump stops according to the pre-programmed algorithms and the display returns to the default state. During the stopping of the pump, only the **Setup** and **Comfort** menus are accessible; no heat pump function can be set until the complete stop of the unit.*

## 3.2. Emergency Heating

*If the **Emergency mode** setting have been changed from **NO** to **YES** according to chapter 7.1.1. on page 28, Heating menu allows to start heat pump in the Emergency mode. In the default state, press the confirmation button to enter the main menu. The bottom line displays **Heating** menu that allows you to run the heat pump In the Emergency mode, the **Cooling** and **Defrost** menus are not accessible.*

```
Menu
Heating
```

*After opening this menu, **Heating** moves to the top line of the display and if the pump is switched off, the display shows:*

```
Heating
Start
```

*After confirming the **Start** option, the control board performs a check of the parameters and then starts the heat pump in the emergency mode.*

```
E/F/P/ TE1 E D0 10:52
AT= - 2.4   CT= - 6.8
```

*The top line of the display shows the status line. Individual symbols for the emergency mode (**E**), the fan (**F**) and the circulation pump (**P**) are followed by symbols (dashes) which rotate in clockwise direction when the related parts run normally. The following indication **TE1** determines the heated circuit, the character **E** means the Equitherm control and **D0** means the active Daily temperature correction according to the register 0. The bottom line of the display shows the selected pair of temperatures; you can shift the displayed parameters in both directions using the dial knob. The position of the temperatures on the display lines can be set in the Display mapping menu. The Heating menu can be left without starting up the heat pump.*

```
Heating
Return
```

*If the menu **Heating** is opened when the heat pump is running, the display shows the option to stop the pump.*

```
Heating
Stop
```

*After confirming the **Stop** option, the heat pump stops according to the pre-programmed algorithms and the display returns to the default state. During the stopping of the pump, only the **Setup** and **Comfort** menus are accessible; no heat pump function can be set until the complete stop of the unit.*

# 4. Cooling

*Cooling menu is designed to start or stop the cooling mode of the heat pump. According to your settings, the heat pump can heat the domestic hot water and the water in the pool, and cools the water in the HeW tank. The cooled heating water can be used in the summer to cool down the living spaces. The **Cooling** menu contains no adjustments and is accessible only when the heat pump is not in an error state. If an error is detected when entering the main menu, only the **Setup** and **Comfort** options are accessible and the message **HP error**, the number of errors and the error specification are displayed in the main menu. See the Error list on page 61 for details. When the status line is displayed, press the confirmation button to enter the main menu. If there is no error state, use the dial knob to select the **Cool** option on the bottom line.*

```
Menu
Cooling
```

*After opening this menu, **Cooling** moves to the top line of the display and if the pump is switched off, the display shows:*

```
Cooling
Start
```

*After confirming the **Start** option, the control board performs a check of the parameters and then starts the heat pump in the cooling mode.*

```
C\F/P/ Cool     10:52
AT= - 2.4   CT= - 6.8
```

*The top line of the display shows the status line. Individual symbols for the compressor (character **C**), the evaporator fan (character **F**) and the circulation pump (character **P**) are followed by rotating symbols (dashes). In the cooling mode, the dash associated with the compressor rotates counterclockwise, and the other dashes rotate in clockwise direction. Indication **Cool** is displayed only until the compressor starts up, then it is replaced by symbol of the cooled circuit, accompanied by a star or symbol for heating the DHW or pool. The bottom line of the display shows the selected pair of temperatures; you can shift the displayed parameters in both directions using the dial knob. The position of the temperatures on the display lines can be set in the Display mapping menu.*

```
Cooling
Return
```

*If the **Cooling** menu is opened when the heat pump is running in the cooling mode, the display shows the option to stop the pump.*

```
Cooling
Stop
```

*After confirming the **Stop** option, the heat pump stops according to the pre-programmed algorithms and the display returns to the default state. During the stopping of the pump, only the **Setup** and **Comfort** menus are accessible; no heat pump function can be set until the complete stop of the unit.*

# 5. Manual Defrosting of the Heat Pump Evaporator

*Due to the low temperature of the expanding refrigerant in the evaporator, a frost is gradually build up on the evaporator fin when the heat pump operates at low ambient temperatures. This causes the deterioration of the heat transfer between the surface of the evaporator and the ambient air. The control electronics of the heat pump continuously evaluates this situation and, if necessary, starts the automatic defrosting of the evaporator. During the defrosting, the four-way valve is switched to deliver the hot refrigerant from the compressor outlet to the evaporator and the frost is melting rapidly. If necessary, use the Defrost menu to manually defrost the evaporator, even if the conditions for automatic defrosting are not met. The Defrost menu contains no adjustments and is accessible only when the heat pump is not in an error state. If an error is detected when entering the main menu, only*

*the **Setup** and **Comfort** options are accessible and the message **HP error**, the number of errors and the error specification are displayed in the main menu. See the Error list on page 61 for details. When the status line is displayed, press the confirmation button to enter the main menu. If there is no error state, use the dial knob to select **Defrost** option on the bottom line.*

```
Menu
Defrost
```

*After opening this menu, **Defrost** moves to the top line of the display, and according to the heat pump operation, the display shows:*

```
Defrost
Start
```

*After confirming the **Start** option, the control board performs a check and then starts the defrosting of the heat pump evaporator.*

```
C/F/P/ TE1 E D0 10:52
AT= - 2.4   CT= - 6.8
```

*Individual symbols for the compressor (character **C**), the evaporator fan (character **F**) and the circulation pump (character **P**) are followed by rotating symbols (dashes). In the defrosting mode, the dash associated with the compressor rotates counterclockwise, and the other dashes rotate in clockwise direction. The defrosting of the heat pump evaporator is terminated automatically when the conditions for its termination are met or you can terminate it manually. During the defrosting operation, when the **Defrosting** menu is opened, the display shows*

```
Defrost
Stop
```

*After confirming the **Stop** option, the heat pump stops according to the pre-programmed algorithms and the display returns to the default state. During the stopping of the pump, only the **Setup** and **Comfort** menus are accessible; no heat pump function can be set until the complete stop of the unit.*

```
C F P  OFF     10:52
AT  -2.4   CT  - 6.8
```

*To exit the **Defrost** menu without making any defrosting operation use the **Return** option.*

# 6. Comfort

*This menu is designed for a quick correction of the temperature in the heated building without changing the heat pump settings. Depending on the selected mode of the operation, you can adjust the heating water temperature in the equiterm control mode or you can adjust directly the required air temperature in the reference room in the reference room mode.*

## 6.1. Quick Temperature Adjustment in the Equitherm Control Mode

*In the equitherm control mode, the heated water temperature depends on the outdoor temperature. In addition, the heated water temperature is adjusted by daily and weekly temperature corrections. The set parameters, especially during the first heating season, may not be suitable and should be adapted to the building characteristics and user requirements. The **Comfort** menu allows you to shift heated water temperature compared to equiterm curves with possible time corrections in one or two heating circuits. After confirming the set shift, the corrected equiterm curve is adjusted accordingly. This shift of the corrected equiterm curve is valid until it is reseted in the Comfort menu or until reaching such date and time when the shift of the corrected equiterm curves set in the Comfort menu is cancelled. The dependence between the change of the water temperature and the air temperature in the building will depend on the characteristics of the building and the outdoor temperature. At low outdoor temperatures it will be necessary to set a greater shift of the heating water temperature in order to achieve the same shift of the internal temperature. After verifying the set correction of the heating water temperature it is possible to adjust the equiterm curves. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Comfort** option.*

```
Menu
Comfort
```

After opening this menu, **Comfort** moves to the top line of the display and the bottom line shows the heating water temperature shifts compared to the equitherm temperatures of the heating circuits.

```
Comfort
EQ1: x.x   EQ2: x.x
```

*Use the dial knob to set the temperature shift in the range from* **−9,9** *to* **+ 9,9** $°C$ *in both circuits; the setting of the second circle can be accessed by short press of the confirmation button. Confirm the settings by long press of the confirmation button. The display shows*

```
Save ?          Y/N
EQ1: x.x   EQ2: x.x
```

*and the cursor is blinking on the* **Y (YES)** *position. Press the confirmation button to save the settings. The confirmation message*

```
Comfort
Saved OK
```

*is displayed for 2 seconds and then the display returns one level back in the menu.*

## 6.2. Quick Temperature Adjustment in the Reference Room Mode

*When the heating temperature is controlled according to the reference room temperature, the temperature corrections directly regulate the air temperature in the reference room. This means that in the heating mode according to the temperature in the reference room you can't use the same time-temperature correction as in the heating mode with equithermal control, where corrections of the temperature adjust the heating water temperature. It is necessary to prepare two sets of the temperature correction in the individual registers; one for equitherm regulation and one for regulation according to the reference room temperature. These registers sets are switched automatically when the heating mode is changed. The* **Comfort** *menu in the reference room mode looks like*

```
Comfort
Ref.T correc.:  x.x
```

*Use the dial knobe to set the shift of air temperature in the reference room in the range from* **−4,9** *to* **+4.9**$°C$*. Confirm the settings by long press of the confirmation button. The display shows*

```
Save ?          Y/N
Ref.T correc.:  x.x
```

*and the cursor is blinking on the* **Y (YES)** *position. Press the confirmation button to save the settings. The confirmation message* **Saved OK** *briefly appears and then the display returns one level back in the menu. By shifting the temperature in the* **Comfort** *menu, the required temperature in the reference room is adjusted by the set value. This shift of the temperature is valid until it is reseted in the* **Comfort** *menu or until reaching such date and time when the shift of the air temperature if the reference room set in the* **Comfort** *menu is cancelled.*

# *7. Heat Pump Setting*

*This menu is designed to set the parameters required for the proper operation of the heat pump. Procedure to open this menu depends on whether the user password is enabled or not. By default, the user password is disabled; user can enable using the password and set it. If the user password is disabled, you can directly open the **Setup** menu; if the password is enabled, you must enter the password first and confirm it. If you forget the password, you can disable its use by turning off the heat pump and then turning it on again while holding the confirmation button. You need to hold the confirmation button all the time while initialization of the heat pump is being performed, i.e. until the display enters the default state. The result is the same as when the user passwords is disabled in the **User password** menu in the heat pump setup.*

```
Menu
Setup
```

*When the password is enabled, after pressing the confirmation button, **Setting** moves to the top line of the display and the bottom line displays the prompt to enter the password*

```
Setup
Password:    ******
```

*Use the dial knob to set the first character of your password and shortly press the confirmation button to set the next character.  Set the next character in a similar way and repeat this to set the whole password. Press the confirmation button for a longer time to save the password. If an incorrect password is entered, the display shows*

```
Setup
Incorrect input!
```

*and then the display returns one level back in the menu. If the correct password is entered, the Setup menu and its first option appear.*

```
Setup
Parameter settings
```

*Use the dial knob to select the desired setting on the bottom line of the display and press the confirmation button to enter its menu.*

| | | |
|---|---|---|
| **Parameter settings** | – | *Setting the parameters needed for the operation of the heat pump.* |
| **Terminal settings** | – | *Setting the time and parameters for the heat pump display.* |
| **Info** | – | *Displaying information about settings and operation of the heat pump.* |
| **Connection settings** | – | *Setting the parameters for connecting the heat pump to LAN / WLAN networks; when using the GSM module, it is also possible to connect to the GSM network.* |
| **User password** | – | *Enabling/disabling the user password and setting the user password* |
| **Service settings** | – | *The service settings of the heat pump; protected by the service password.* |
| **Return** | – | *End of the heat pump setting and exit from the menu.* |

## 7.1. Parameter Settings

*This menu allows to set the parameters needed for the operation of the heat pump. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
   Setup
```

*After opening this menu, **Setup** moves to the top line of the display and  the bottom line shows the **Parameter settings**.*

```
Setup
   Parameter settings
```

*After opening this menu, **Parameter settings** moves to the top line of the display and the display shows:*

```
Parameter settings
   Heating settings
```

*Using the dial knob and the confirmation button you can select and open following options for setting parameters of the heat pump.*

| | | |
|---|---|---|
| `Heating settings` | – | *Setting the priorities and the control modes for the heat pump heating.* |
| `Temperature settings` | – | *Setting the temperature parameters of the heat pump* |
| `Tariff settings` | – | *Setting the operation of the heat pump according to tariff of the electricity.* |
| `Bivalence settings` | – | *Setting the conditions for the use of auxiliary heating during the heat pump operation.* |
| `Return` | – | *Exits the heat pump parameters setting* |

### 7.1.1. Heating Settings

*This menu allows to set the parameters for the heating operation of the heat pump. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
   Setup
```

*After opening this menu, **Setup** moves to the top line of the display and the bottom line shows the **Parameter settings**.*

```
Setup
   Parameter settings
```

*After opening this menu, **Parameter settings** moves to the top line of the display and the display shows **Heating settings** in the bottom line.*

```
Parameter settings
   Heating settings
```

*After opening this menu, **Heating settings** moves to the top line of the display and the display shows:*

```
Heating settings
   DHW min reserve [%]
```

*Using the dial knob and the confirmation button you can select and open following options for setting the heating operation.*

| `DHW min reserve [%]` | – | *Setting the minimum amount of the domestic hot water DHW in % that should be in the tank at the end of each heating cycle.* |
| `Temp. corr. program` | – | *This menu allows you to adjust the temperature shifts depending on the time of the day, on the day of the week or on the date.* |
| `Equitherm curve` | – | *Setting the equitherm curve for one or two heat pump heating circuits.* |
| `Runtime priorities` | – | *Setting the priorities for the heat pump operation.* |
| `Heating mode` | – | *This menu allows you to set the temperature control mode for the heat pump.* |
| `Return` | – | *Exits the heat pump parameters setting.* |

## Setting the DHW Reserve at the End of the Heating Cycle of the Heating Pump

*This parameter allows to set the minimum amount of the domestic hot water DHW in % that should be in the tank at the end of each heating cycle. The value **0**% corresponds to the **DHW** start temperature at which the heating pump starts the heating and the value **100**% corresponds to the **DHW** stop temperature at which the heating pump stops the heating. At the end of the heating cycle, if the temperature of the **DHW** in the tank is lower than the preset value, the pump doesn't stop and it switches to **DHW** heating mode and heats the domestic hot water to the preset stop temperature, i.e. to **100**%. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. After opening this menu, its first option is displayed.*

```
Heating settings
DHW min reserve [%]
```

*After opening this menu, the display shows*

```
DHW min reserve [%]
        xx
```

*where **xx** indicates the value in % **to maintain the required DHW temperature**. Use the dial knob to set the value in the range from **0** to **99**. Press the confirmation button to confirm the set value and a prompt appears.*

```
Save ?          Y/N
        xx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Heating settings
DHW min reserve [%]
```

*Use the dial knob to select and set the other parameters of the heating, or you can select and confirm the **Return** option repeatedly to exit the heat pump settings and return to the default state.*

## Temperature Correction of the Heating Operation

*This menu allows you to adjust the temperature shifts in the building depending on the time of the day, on the day of the week or on the date. According to the stored corrections and the selected control mode, the control electronics adjusts the temperature of the water in the heating circuits if the equitherm control mode is used or it adjusts the air temperature in the reference room if the reference room mode is used. This allows to reduce the temperature for example during the night time, in case of absence of people in the building (leaving for work, vacation, etc.). To save the daily and weekly correction, up to 4 temperature correction registers can be used. Each register can contain up to 8 daily and 56 weekly corrections. To select the current correction register, the **Current register** option is provided; all corrections made will be stored in the selected register.*

***The temperature corrections of the heating water temperature used in the equitherm control mode and the temperature corrections of the air temperature used in the heating control mode according to the reference room are stored separately in two sets of registers, which are***

**switched automatically when the heating mode is changed.** *When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, the display shows*

```
Temp. corr. program
Current register
```

*Use the dial knob to select the desired mode of the temperature corrections of the heat pump.*

| | | |
|---|---|---|
| **Current register** | – | *Selection of one of four temperature correction registers; each can hold up to 8 daily and 56 weekly temperature corrections* |
| **Daily** | – | *Setting the corrections of the heating water temperature applied to the temperature determined by the control algorithms with 24-hour interval* |
| **Weekly** | – | *Setting the corrections of the heating water temperature applied to the temperature determined by the control algorithms with weekly interval* |
| **By Date** | – | *Setting the date and time from which the time corrections prepared in the selected registry will be applied.* |
| **Return** | – | *Exits the temperature corrections setting* |

## Selecting the Current Temperature Correction Register

*This option is designed to select the current temperature corrections register; corrections made will be stored in this register. Each register can contain up to 8 daily and 56 weekly corrections. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, the display shows*

```
Temp. corr. program
Current register
```

*After opening this menu,* **Current register** *moves to the top line of the display, and the display shows the number of the current temperature correction register:*

```
Current register
        x
```

*On the position of the character* **x** *you can select register number* **0** *-* **3***. Confirm the set value and a prompt appears.*

```
Save ?          Y/N
        x
```

*Press the confirmation button to save the settings. The confirmation message* **Saved OK** *briefly appears and then the display returns one level back.*

```
Temp. corr. program
Current register
```

*Using the dial knob you can proceed with setting up another temperature corrections.*

## *Daily Heating Temperature Corrections*

*This menu allows to set up to 8 daily corrections of the heating water temperature in one or two heating circuits for the equitherm control mode, or up to 8 daily corrections of the air temperature in the reference room for the reference room temperature control mode. All set corrections are entered into the pre-selected current temperature correction register.* **The temperature corrections of the heating water temperature used in the equitherm control mode and the temperature corrections of the air temperature used in the heating control mode according to the reference room are stored separately in two sets of registers, which are switched automatically when the heating mode is changed. This means that all the operations described here will be carried out only in one set of registers corresponding to the currently used control mode!**

*When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for daily temperature correction programming.*

```
Temp. corr. program
Daily
```

*After opening this menu,* **Daily** *moves to the top line of the display, and the bottom line shows the first option for daily temperature corrections:*

```
Daily
View
```

*Using the dial knob you can select the following options for daily temperature corrections:*

| | | |
|---|---|---|
| **View** | – | *This option allows to view and edit the daily temperature corrections stored in the current selected register.* |
| **Delete all** | – | *This option allows to delete all the daily temperature corrections stored in the current selected register.* |
| **Activate** | – | *This option allows to activate (use) the set daily temperature corrections to control the heating operation.* |
| **Return** | – | *Exits the daily temperature corrections setting.* |

### *Viewing and Editing the Daily Temperature Corrections*

*This option allows to view and edit the daily temperature corrections stored in the current selected register. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for daily temperature correction programming.*

```
Temp. corr. program
Daily
```

*After opening this menu, the display shows:*

```
Daily
View
```

*After opening this menu, if the equitherm control mode is selected for the heating, the display shows:*

```
View       EQ1  EQ2
00  --:--  -.-  -.-
```

*In the heating mode according to the temperature in the reference room, only one value of the temperature shift **dT** is diplayed instead of two temperatures **EQ1** and **EQ2**. If there is no correction made, **00** appears in place of the correction serial number and the data about the beginning and the value of the correction for the first and second heating circuit are also empty. Press shortly the confirmation button to edit the first time correction; the display changes from **View** to **Edit**. If the daily correction register is empty, you can use the dial knob to select **Return** instead of **Edit**, confirm it and exit the editing of the first correction.*

```
Edit       EQ1  EQ2
00  --:--  -.-  -.-
```

*Press the confirmation button to confirm the **Edit** option; cursor is blinking on the position of the first correction starting hour. Use the dial knob to to set the desired hour, press shortly the confirmation button, use the dial button to set the minutes and press shortly the confirmation button. In the equitherm heating mode, you can set the heated water temperature correction in the first heating circuit. Use the dial knob to set the correction in the range of **– 9,9ºC to + 9,9ºC**. Press shortly the confirmation button to set the heated water temperature correction in the second heating circuit. In the heating mode according to the temperature in the reference room, you can set correction **dT** in the range of **– 4,9ºC to + 4,9ºC**. Example: The first made correction for the equitherm control mode*

```
Edit       EQ1  EQ2
00  05:30 -2.0 -4.0
```

*can be stored to the current register by a long press of the confirmation button.*

```
Edit
Append
```

*Press the confirmation button. The message **Saved OK** briefly appears and then the display returns one level back.*

```
Daily
View
```

*The current register now contains the first daily correction with number 01. In this example, this means that from 05:30 the heating water temperature EQ1 in the first heating circuit TE1 is decreased by 2.0 º C and heating water temperature EQ2 in the second heating circuit TE2 is decreased by 4.0 º C. To make another daily correction, press the confirmation button. The display shows the option to view the new correction with the set time and the temperature shifts from the previous correction. The example applies again for the equitherm control; if the heating control according to the temperature in the reference room is selected, only one temperature shift value **dT** appears instead of two temperatures **EQ1** and **EQ2**.*

```
View       EQ1  EQ2
01  05:30  -2.0 -4.0
```

*Press the confirmation button; the display changes from **View** to **Edit**.*

```
Edit       EQ1  EQ2
01  05:30  -2.0 -4.0
```

*If the current register contains any correction, you can use the dial knob to also select the **Delete** option in addition to the **Edit** and **Return** options. The **Delete** option is used to deleted the displayed correction. After confirming the **Edit** option, cursor is blinking on the position of the correction starting hour. You can set and save the new correction in the same way as the previous correction.*

*For example, you can modify the original first correction*

```
Edit          EQ1  EQ2
01   09:00   -5.0 -7.0
```

*and press the confirmation button for a longer time to add the correction number 02 to the current register.*

```
Edit
Append
```

*You can continue in this way until creating the maximal number of the corrections. If the daily corrections are made, you can open the **View** menu and use the dial knob to select and view the individual correction. You can **Edit** or **Delete** the selected correction or you can use the **Return** option to exit the selected item without making any changes. To edit the selected correction, press shortly the confirmation button to enter the edit mode and modify the correction. Press the confirmation button for a longer time. Now you must use the dial knob to switch from the **Append** to **Save** option, and press the confirmation button to rewrite the selected correction.*

```
Edit
Save
```

*If you would confirm the **Append** option, the adjusted correction would by added as a new correction to the current register and the the edited correction that you wanted to change would remain unchanged. After confirmation, the message **Saved OK** briefly appears and then the display returns one level back.*

### Deleting All Daily Corrections from the Current Registry

*This option allows to delete all the daily temperature corrections stored in the current selected register. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for daily temperature correction programming.*

```
Temp. corr. program
Daily
```

*Use the dial knob to select the option for deleting all the daily corrections.*

```
Daily
Delete all
```

*After confirmation, the prompt appears.*

```
Save ?          Y/N
Delete all
```

*The cursor is blinking on the **Y (YES)** position. Press the confirmation button. The message **Saved OK** briefly appears and then the display returns one level back.*

### Activation of Daily Temperature Corrections

*This option allows to activate (enable) the set daily temperature corrections to control the heating operation. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for daily temperature correction programming.*

```
Temp. corr. program
Daily
```

*Open this menu and use the dial knob to select the option for activating the daily temperature corrections that are saved it the current register according to the selected heating control mode.*

```
Daily
Activate
```

*After confirmation, the prompt appears.*

```
Activate
        No
```

*The cursor is blinking on the **NO** position. Use the dial knob to change the option to **YES** and confirm with the confirmation button. The message **Saved OK** briefly appears and then the display returns one level back.*

```
Daily
Activate
```

*If the equitherm heating control is selected, the activated daily temperature correction are added according to their start times to the required temperatures of the heating water. If the heating control according to the temperature in the reference room is selected, the activated daily temperature correction are added to the required air temperatures in the reference room.*

### Deactivation of Daily Temperature Corrections

*To deactivate the daily temperature corrections, it is necessary to select the option for activation of the temperature corrections as described in the previous section, and then confirm the default option.*

```
Activate
        No
```

*After confirming the **NO** option, the daily temperature corrections are deactivated and heating will be controlled according to the selected control mode without using the daily temperature correction.*

## Weekly Heating Temperature Corrections

*This menu allows you to set up to 56 time corrections of water temperature in one or two heating circuits against the temperature determined by the control algorithms within one week. All set corrections are entered into the pre-selected current temperature correction register. **The temperature corrections of the heating water temperature used in the equitherm control mode and the temperature corrections of the air temperature used in the heating control mode according to the reference room are stored separately in two sets of registers, which are switched automatically when the heating mode is changed. This means that all the operations described here will be carried out only in one set of registers corresponding to the currently used control mode!***

*When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for weekly temperature correction programming.*

```
Temp. corr. program
Weekly
```

*After opening this menu, **Weekly** moves to the top line of the display, and the bottom line shows the first option for daily temperature corrections:*

```
Weekly
View
```

*Using the dial knob you can select the following options for weekly temperature corrections:*

| | | |
|---|---|---|
| **View** | – | *This option allows to view and edit the weekly temperature corrections stored in the currently selected register.* |
| **Delete all** | – | *This option allows to delete all the weekly temperature corrections stored in the currently selected register.* |
| **Activate** | – | *This option allows to activate (use) the set weekly temperature corrections to control the heating operation.* |
| **Return** | – | *Exits the temperature corrections setting.* |

### Viewing and Editing the Weekly Heating Temperature Corrections

*For viewing, activating and deleting the weekly temperature correction, the same rules apply as for the daily correction that are described on pages 17-20; both menus have the same structure and their format depends on the heating mode. When you open the **View** menu, you can use the **Edit** option to create the first correction and then use the **Append** option to save it to the current register or you can use the **Return** option to exit editing without saving any changes. If the current register contains any corrections, menu **View** offers also the **Delete** option in addition to the **Edit** and **Return** options. The **Delete** option allows you to delete the selected weekly correction.*

*After selecting the menu for weekly temperature corrections, the display shows*

```
Weekly
View
```

*After opening this menu, if the equitherm control mode is selected and the current register is empty, the display shows:*

```
View      EQ1  EQ2
00Mo --:--  -.-  -.-
```

*In the heating mode according to the temperature in the reference room, only one value of the temperature shift **dT** is diplayed instead of two temperatures **EQ1** and **EQ2**. Number **00** means that no weekly correction is stored in the current register. Press the confirmation button to edit the first weekly temperature correction.*

```
Edit          EQ1   EQ2
00Mo --:--  -.-   -.-
```

*Press the confirmation button to select the day when the first correction should begin. Use the dial knob to select the required day. Press the confirmation button and use the same procedure to set hours and minutes when the first correction should begin. In the equitherm heating mode, you can set the heated water temperature correction in the first heating circuit. Use the dial knob to set the correction in the range of **– 9,9ºC to + 9,9ºC**. Press the confirmation button and you can set the heated water temperature correction in the second heating circuit. In the heating mode according to the temperature in the reference room, you can set correction **dT** in the range of **– 4,9ºC to + 4,9ºC**. Example: The first made correction for the equitherm control mode*

```
Edit          EQ1   EQ2
00Mo 06:00 -2.0 -4.0
```

*can be stored by a long press of the confirmation button and then by using the **Append** option.*

```
Edit
Append
```

*After re-opening the menu for viewing the weekly corrections, you can **Edit** another weekly corrections and **Append** them to the current register in the similar way up to total number of 56. When you open the **View** menu, if there are several weekly corrections stored in the actual registry, you can use the dial knob to select the desired correction, confirm it by the confirmation button and **Edit** or **Delete** it. Like in the case of daily corrections, the edited correction is saved under a new number using the **Add** option; when using the **Save** option, the edited correction is saved under the same number and overwrites the original correction.*

### Deleting All Weekly Corrections from the Current Registry

*This option allows to delete all the weekly temperature corrections stored in the currently selected register. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for weekly temperature correction programming.*

```
Temp. corr. program
Weekly
```

*Use the dial knob to select the option for deleting all the weekly corrections.*

```
Weekly
Delete all
```

*After confirmation, the prompt appears.*

```
Save ?          Y/N
Delete all
```

*The cursor is blinking on the **Y (YES)** position. Press the confirmation button. The message **Saved OK** briefly appears and then the display returns one level back.*

### Activation of Weekly Temperature Corrections

*This option allows to activate (enable) the set weekly temperature corrections to control the heating operation. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction programming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for weekly temperature correction programming.*

```
Temp. corr. program
Weekly
```

*Open this menu and use the dial knob to select the option for activating the weekly temperature corrections that are saved it the current register according to the selected heating control mode.*

```
Weekly
Activate
```

*After confirmation, the prompt appears.*

```
Activate
        No
```

*The cursor is blinking on the* **NO** *position. Use the dial knob to change the option to* **YES** *and confirm with the confirmation button. The message* **Saved OK** *briefly appears and then the display returns one level back.*

```
Weekly
Activate
```

*If the equitherm heating control is selected, the activated weekly temperature correction are added according to their start times to the required temperatures of the heating water. If the heating control according to the temperature in the reference room is selected, the activated weekly temperature corrections are added to the required air temperatures in the reference room.*

### Deactivation of Weekly Temperature Corrections

*To deactivate the weekly temperature corrections, it is necessary to select the option for activation of the temperature corrections as described in the previous section, and then confirm the default option.*

```
Activate
        No
```

*After confirming the* **NO** *option, the weekly temperature correction are deactivated and heating will be controlled according to the selected control mode without using the daily temperature correction.*

## Heating Temperature Correction by Date

*This menu allows you to set the date and time from which the preset daily or weekly corrections will be used. This allows, for example, to set lower heating before leaving for vacation, and use the correction by date to set the time to restore the selected heating program before returning from vacation. While setting up the correction by date, you must also enter the register number and the type of program to control heating from the specified date.* **The temperature corrections of the heating water temperature used in the equitherm control mode and the temperature corrections of the air temperature used in the heating control mode according to the reference room are stored separately in two sets of registers, which are switched automatically when the heating mode is changed. This means that all the operations described here will be carried out only in one set of registers corresponding to the currently used control mode!**

*When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the* **Heating settings** *menu. Use the dial knob to select the option for temperature correction prgramming.*

```
Heating settings
Temp. corr. program
```

*After opening this menu, use the dial knob to select the option for temperature correction by date.*

```
Temp. corr. program
By Date
```

*After opening this menu,* **By Date** *moves to the top line of the display, and the bottom line shows the first option for temperature corrections by date:*

```
By Date
View
```

*Using the dial knob you can select following options for temperature corrections by date:*

| | | |
|---|---|---|
| **View** | – | *This option allows to view and edit the temperature corrections by date.* |
| **Delete all** | – | *This option allows to delete the temperature corrections by date. It is available only when any temperature correction by date exists.* |
| **Activate** | – | *This option allows to enable (use) the set temperature corrections by date to control the heating operation.* |
| **Return** | – | *Exits the temperature corrections setting* |

### Viewing and Editing of Temperature Correction by Date

*This menu allows you to view and edit the date, time, number of the register that contains the temperature corrections and the type of the correction (daily or weekly) to be used from the specified date and time. You must select the register to be used and save the required daily or weekly corrections to this register in advance. After selecting the option for temperature corrections by date, the display shows*

```
By Date
View
```

*After opening this menu, if there is not any set correction, the display will show*

```
yy/mm/dd hh:mm date
--/--/-- --:-- Da Rx
```

*After pressing the confirmation button you can use dial knob and confirmation button to select and set the year, month, day, hour and minute, when the temperature correction by date should begin. Subsequently, specify the type of the correction (daily or weekly) and number of the register (at the position of the character* **x***) that contains the preset corrections.*

*For example, enter*

```
yy/mm/dd hh:mm date
13/02/10 08:00 Da R1
```

*Press the confirmation button for a longer time. The display shows:*

```
By Date
Save
```

*After confirmation, the prompt appears.*

```
Save ?          Y/N
Save
```

*After confirmation, the message **Saved OK** briefly appears and then the display returns one level back. If you open the stored correction, you can use the dial knob to select the **View**, **Delete**, **Activate** or **Return** option.  When you select the **Delete** option*

```
By Date
Delete
```

*you can delete the stored temperature correction by date. After confirmation of the prompt*

```
Save ?          Y/N
Delete
```

*the temperature correction by date is deleted.*

### Activation of Temperature Correction by Date

*This option allows to activate (enable) the set daily temperature corrections by date to control the heating operation. After confirming the **Activate** option*

```
By Date
Activate
```

*a prompt with the default option **NO** appears. Use the dial knob to select the **YES** option a confirm it.*

```
Activate
        Yes
```

*Heat pump continues to operate, and after the set time is reached, the temperature is corrected by the set correction. If the heat pump is in the standby state when the correction by date starts, the heat pump is switched to the **Heating** mode, the used heating mode is the same as it was in the time of activating the temperature correction by date, and the heat pump starts to heat according to the specified program.*

### Deactivation of Temperature Correction by Date

*To disable the temperature correction by date, select the **Activate** option in the menu for temperature correction by date.*

```
Activate
        No
```

*After confirming the NO option, the temperature correction by date is disabled and heating is controlled without using temperature correction.*

## Setting the Equitherm Curve for Heat Pump Heating Control

*To achieve the maximum thermal comfort in heated rooms, the heat pump adjusts the heating water temperature depending on the outdoor temperature. To express the dependence of the heating water temperature on the outdoor temperature, equitherm (heating) curve is used. You can set the heating curve for one or two heating circuits. Each curve is made up of four points that can be adjusted over a wide range to achieve the required thermal comfort. Each point is specified by the outdoor air temperature **Tai** and the associated heating water temperature **Twa**. This means that the outdoor temperature is always assigned to the heating water temperature. For each value of the outdoor temperatures, corresponding temperature of heating water is calculated using the four specified points of the equitherm curve and the linear approximation. Shape of the curve is shown in Figure 4.*
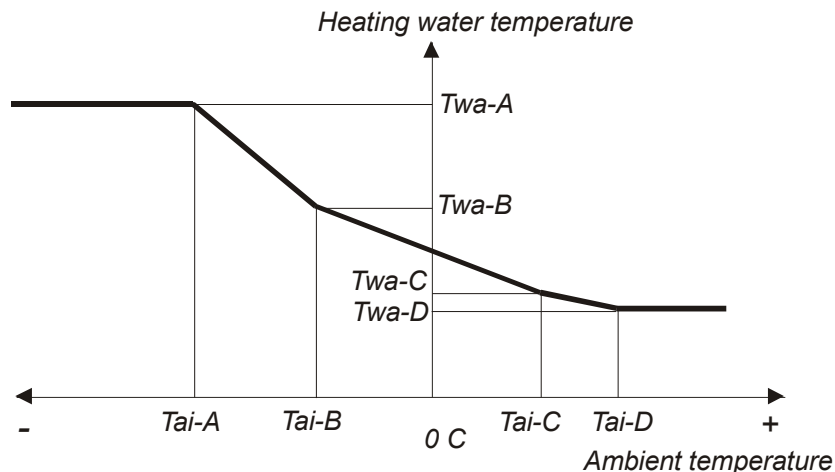


*Fig. 4. Equitherm curve*

*When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for setting the equitherm curve.*

```
Heating settings
Equitherm curve
```

*After confirmation, the display offers setting of the point A of the 1st equitherm curve.*

```
Equitherm curve 1
Equitherm point   A
```

*The cursor is blinking on the position of point **A**. Press the confirmation button. Setting of the point A of the 1st equitherm curve appears.*

```
 Equitherm point 1/A
Tai= XXX.X Twa= XX.X
```

*The cursor is blinking on the air temperature **Tai**. Use the dial knob to set the air temperature for the first point. The points are arranged in a fixed order. The point with the lowest temperature is the first; the temperature of the next points is gradually increased up to the positive values. After setting the air temperature for the fist point, press shortly the confirmation button to set the water temperature for the first point. Set the temperature in a similar way and press the confirmation button for a longer time to exit setup of the first point of the equitherm curve.  You can set air temperature in the range of – 30,0ºC to + 30,0ºC, water temperature in the range of 5ºC to + 60ºC. The display shows:*

```
Save ?           Y/N
Tai= XXX.X Twa= XX.X
```

*Save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Equitherm curve 1
Equitherm point   A
```

*Use the dial knob and the confirmation button to set the other points of the first and then the second equitherm curve. After setting all the points of both curves, use the **Return** option to leave the menu for setting the equitherm curve. The display returns one level back.*

```
Heating settings
Equitherm curve
```

*Use the dial knob and the confirmation button to select and set the other heating parameters, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting Priorities for Heating Circuits

*This menu allows to set heating priorities of each heating circuit. Selection of heating circuits and their order on the display is specified by the service settings according to the heat pump configuration. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the option for setting priorities of the heat pump operation.*

```
Heating settings
Runtime priorities
```

*After opening this menu, the display shows the heating circuits according to the heat pump configuration. For example, when using one or two heating circuits, the domestic hot water heating and the pool water heating, the display shows:*

```
Runtime priorities
TE1=x, DHW=x, Pool=x
```

*Character **x** represents the numbers 0-3 that specify the priority of each heating circuit. Use the dial knob to set the priority of the first heating circuit, press shortly the confirmation button to set the priority of the second circuit and, in the similar way, set priority of the third circuit.*

| | | |
|---|---|---|
| **0** | – | *Off, circuit is not heated* |
| **1** | – | *The lowest priority for heating the circuit* |
| **2** | – | *The middle priority for heating the circuit* |
| **3** | – | *The highest priority for heating the circuit* |

*After setting the required priorities, press the confirmation button for a longer time to save the set priorities.*

```
Save ?           Y/N
TE1=x, DHW=x, Pool=x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Heating settings
Runtime priorities
```

*Use the dial knob and the confirmation button to select and set the other parameters of heating, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Heat Pump Heating Mode

*This menu allows you to set the temperature control mode for the heat pump. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.1. on page 14 to open the **Heating settings** menu. Use the dial knob to select the desired option.*

```
Heating settings
Heating mode
```

*After opening this menu, the display shows*

```
Heating mode
Equitherm control
```

*In this menu, you can use the dial knob and the confirmation button to select and save the desired heat pump control mode.*

| | | |
|---|---|---|
| `Equitherm control` | – | *Heating is controlled using the equitherm control; the Heating settings menu allows to set the equitherm curves for two heating circuits* |
| `Eqt.ctrl + Ref.room` | – | *Heating is controlled using the equitherm control that is corrected according to temperature in the reference room.* |
| `Reference temp.` | – | *Setting the desired temperature in the reference room; allowed range is from **+15.0** to **+30.0 º C.*** |
| `Emergency mode` | – | *Activation of the emergency mode; when selected, the heat pump will heat in emergency mode* |
| `Return` | – | *Exits the heating mode setting* |

*After confirmation of the selected mode, the prompt appears.*

```
Equitherm control
       No
```

*You can use the dial knob to switch from **No** to **Yes** for the selected mode. After confirmation, the prompt appears.*

```
Save ?          Y/N
         No
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Heating mode
Equitherm control
```

*Use the same procedure when selecting the **Eqt.ctrl + Ref.room** or **Emergency mode**. Emergency mode has an **AUTO** option besides the **YES / NO** options; AUTO option allows the heat pump to automatically switch to the emergency mode when an error occurs during operation. Use the dial knob and the confirmation button to select and set other parameters of the heating, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state*

### 7.1.2. Setting the Temperature Parameters of the Heat Pump

*This menu allows to set the temperature constants for the heat pump control. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
Setup
```

*After opening this menu, the display shows:*

```
Setup
Parameter settings
```

*After opening this menu, use the dial knob to select the **Temperature settings** option:*

```
Parameter settings
Temperature settings
```

*After opening this menu, **Temperature settings** moves to the top line of the display and the display shows:*

```
Temperature settings
DHW start temp.
```

*Using the dial knob and the confirmation button you can select and open the following options.*

| | | |
|---|---|---|
| **DHW start temp.** | – | *Setting the lower limit of the domestic hot water temperature (in the DHW tank) at which the heat pump starts to heat DHW.* |
| **DHW stop temp.** | – | *Setting the upper limit of the domestic hot water temperature (in the DHW tank) at which the heat pump stops to heat DHW.* |
| **HeW start temp. HeW** | – | *Setting the lower limit of the heating water temperature (in the HeW tank) at which the heat pump starts to heat HeW.* |
| **HeW stop temp.** | – | *Setting the upper limit of the heating water temperature (in the HeW tank) at which the heat pump stops to heat HeW.* |
| **Cooling start temp.** | – | *Setting the heating water temperature at which the heat pump starts to cool HeW.* |
| **Cooling stop temp.** | – | *Setting the heating water temperature at which the heat pump stops to cool HeW.* |
| **Pool start temp.** | – | *Setting the pool water temperature at which the heat pump starts to heat pool water.* |
| **Pool stop temp.** | – | *Setting the pool water temperature at which the heat pump stops to heat pool water.* |
| **Solar start delta** | – | *Setting the difference between the temperature of the solar heating system and the temperature of the water in the tank at which the solar heating system starts to heat the water in the tank.* |
| **Solar stop delta** | – | *Setting the difference between the temperature of the solar heating system and the temperature of the water in the tank at which the solar heating system stops to heat the water in the tank.* |
| **Return** | – | *Exits the temperature constants setting* |

## Setting the Start Temperature for Heating the DHW

*This menu allows to set the minimum temperature of the domestic hot water in the DHW tank. When the temperature drops below the set value, the control board evaluates the situation and if there are no restrictions, the heat pump starts to heat DHW. The pump start may be delayed, for example, if the time since the last pump running is too short, when the limit states are reached or at the high tariff of the supplied electricity (if this condition is activated). In such cases the pump starts when all the relevant conditions are met. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, its first option is displayed.*

```
Temperature settings
DHW start temp.
```

*After opening this menu, the display shows*

```
DHW start temp.
      xx
```

*Use the dial knob to set the required temperature in range from **0** to **65** °**C**. After confirmation, the prompt appears.*

```
Save ?          Y/N
        xx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
DHW start temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Stop Temperature for Heating the DHW

*This menu allows to set the maximum temperature of the domestic hot water in the DHW tank. When the temperature reaches the set value, heating is stopped and if there is no other reason to run the heat pump, it is turned off. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **DHW stop temp.** option.*

```
Temperature settings
DHW stop temp.
```

*After opening this menu, the display shows*

```
DHW stop temp.
        xx
```

*Use the dial knob to set the required temperature in the range from **0** to **65** °C. After confirmation, the prompt appears.*

```
Save ?          Y/N
        xx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
HeW stop temp. DHW
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Start Temperature for Heating the HeW

*This menu allows to set the minimum temperature of the heating water in the HeW tank. When the temperature drops below the set value, the heat pump starts to heat HeW. If the equithermal control requires a higher temperature than the preset start temperature, the heat pump will maintain this higher HeW tank temperature regardless of the start temperature for heating HeW. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **HeW start temp.** option.*

```
Temperature settings
HeW start temp. HeW
```

*After opening this menu, the display shows*

```
HeW start temp. HeW
        xx
```

*Use the dial knob to set the required temperature in the range from **0** to **65** °C. After confirmation, the prompt appears.*

```
Save ?          Y/N
        xx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back. Use the dial knob to set the other temperatures or select and confirm the **Return** option to exit this menu.*

## Setting the Stop Temperature for Heating the HeW

*This menu allows to set the maximum temperature of the heating water in the HeW tank. If the higher temperature than the set stop temperature is not required when using the equithermal control mode, the heat pump stops heating. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **HeW stop temp.** option.*

```
Temperature settings
HeW stop temp. HeW
```

*After opening this menu, display shows*

```
HeW stop temp. HeW
        xx
```

*Use the dial knob to set the required temperature in the range from **0** to **65** °**C**. After confirmation, the prompt appears.*

```
Save ?         Y/N
        xx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
HeW stop temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Start Temperature for Cooling the HeW

*This menu allows to set the maximum temperature of the heating water in the cooling mode. When the temperature is above the set value, the heat pump starts to cool HeW. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **Cooling start temp.** option.*

```
Temperature settings
Cooling start temp.
```

*After opening this menu, display shows*

```
Cooling start temp.
       xx.x
```

*Use the dial knob to set the required temperature in the range from **+5.0** °**C** to **+35.0** °**C**. After confirmation, the prompt appears.*

```
Save ?         Y/N
       xx.x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
Cooling start temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Stop Temperature for Cooling the HeW

*This menu allows to set the minimum temperature of the heating water in the cooling mode. When the temperature is below the set value, the heat pump stops to cool HeW. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **Cooling stop temp.** option.*

```
Temperature settings
Cooling stop temp.
```

*After opening this menu, display shows*

```
Cooling stop temp.
     xx.x
```

*Use the dial knob to set the required temperature in the range from **+5.0** °**C** to **+35.0** °**C**. After confirmation, the prompt appears.*

```
Save ?          Y/N
     xx.x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
Cooling stop temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Setting the Start Temperature for Heating the Pool

*This menu allows to set the minimum temperature of the water in the pool.  When the temperature drops below the set value, the heat pump starts to heat. The pump start may be delayed, for example if the time since the last pump running is too short, when the limit states are reached or at the high tariff of the supplied electricity (if this condition is activated). When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **Pool start temp.** option.*

```
Temperature settings
Pool start temp.
```

*After opening this menu, display shows*

```
Pool start temp.
     xx.x
```

*Use the dial knob to set the required temperature in the range from **+5.0** °**C** to **+35.0** °**C**. After confirmation, the prompt appears.*

```
Save ?          Y/N
     xx.x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Temperature settings
Pool start temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## *Setting the Stop Temperature for Heating the Pool*

*This menu allows to set the maximum temperature of the water in the pool. When the temperature reaches the set value, heating is stopped and if there is no other reason to run the heat pump (DHW heating, HeW heating, evaporator defrosting), it is turned off. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **Pool stop temp.** option.*

```
     Temperature settings
      Pool stop temp.
```

*After opening this menu, display shows*

```
     Pool stop temp.
           xx.x
```

*Use the dial knob to set the required temperature in the range from **+5.0 °C** to **+35.0 °C**. After confirmation, the prompt appears.*

```
    Save ?          Y/N
            xx.x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
     Temperature settings
      Pool stop temp.
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## *Setting the Temperature Difference for Connecting Solar Heating System to HP*

*This menu allows to set the required difference between temperature of the media in the solar heating system and the temperature of the water in the tank to use the solar heating system for heating water in the heat pump tank. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the **Temperature settings** menu. After opening this menu, use the dial knob to select the **Solar start delta** option.*

```
     Temperature settings
      Solar start delta
```

*After opening this menu, display shows*

```
     Solar start delta
           xx.x
```

*Use the dial knob to set the required temperature difference in the range from **0 °C** to **+25.0 °C**; the typical value is about +10.0°C. After confirmation, the prompt appears.*

```
    Save ?          Y/N
            xx.x
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
     Temperature settings
      Solar start delta
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

### Setting the Temperature Difference for Disconnecting Solar Heating System from HP

*This menu allows to set the required difference between temperature of the media in the solar heating system and the temperature of the water in the tank to stop using the solar heating system for heating water in the heat pump tank. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.2. on page 28 to open the* **Temperature settings** *menu. After opening this menu, use the dial knob to select the* **Solar stop delta** *option.*

```
Temperature settings
Solar stop delta
```

*After opening this menu, display shows*

```
Solar stop delta
        xx.x
```

*Use the dial knob to set the required temperature difference in the range from* **0°C** *to* **+25.0°C***; the typical value is about +5.0°C. After confirmation, the prompt appears.*

```
Save ?          Y/N
        xx.x
```

*Press the confirmation button to save the settings. The confirmation message* **Saved OK** *briefly appears and then the display returns one level back.*

```
Temperature settings
Solar stop delta
```

*Use the dial knob and the confirmation button to select and set the other temperatures, or you can select and confirm the* **Return** *option repeatedly to exit the settings and return to the default state.*

### 7.1.3. Setting Heat Pump Tariffs

*This menu allows to set the effect of low and high tariffs for electricity on the heat pump operation. For example, at higher outdoor temperatures you can use electricity to heating the DHW, HeW and water in the pool at the low tariff only, or when the outdoor temperature is below the set limit, the heat pump can operate regardless of the current tariff. Temperature limits for tariffs can be set individually for each heating circuit. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the* **Setup** *option on the bottom line.*

```
Menu
Setup
```

*After opening this menu,* **Setup** *moves to the top line of the display and  the bottom line shows the* **Parameter settings***.*

```
Setup
Parameter settings
```

*After opening this menu,* **Parameter settings** *moves to the top line of the display. Use the dial knob to select the* **Tariff settings** *option on the bottom line.*

```
Parameter settings
Tariff settings
```

*After opening this menu,* **Tariff settings** *moves to the top line of the display and the display shows:*

```
Tariff settings
DHW tariff stop
```

*Using the dial knob and the confirmation button you can select and open the following options
to set the effect of the tariffs on the heat pump operation:*

| | | |
|---|---|---|
| **DHW tariff stop** | – | *Disables the effect of high tariff for electricity on heating the domestic hot water.* |
| **DHW tariff start** | – | *Enables the effect of high tariff for electricity on heating the domestic hot water.* |
| **HeW tariff stop** | – | *Disables the effect of high tariff for electricity on heating the heating water* |
| **HeW tariff start** | – | *Enables the effect of high tariff for electricity on heating the heating water* |
| **Pool tariff stop** | – | *Disables the effect of high tariff for electricity on heating the pool.* |
| **Pool tariff start** | – | *Enables the effect of high tariff for electricity on heating the pool.* |
| **Return** | – | *Exits setting the effect of the tariff on the heat pump operation.* |

## Disabling the Effect of the Tariff on Heating the DHW by HP

*This menu allows to set the outdoor temperature limit below which the heat pump heats the domestic
hot water regardless of the high tariff for electricity. If the ambient temperature is higher than the set
limit, the DHW is heated only at the low tariff. If the ambient temperature drops below the set limit,
the DHW is heated as necessary, regardless of the current tariff. When the ambient temperature
increases, effect of the tariff is enabled only when the outside temperature exceeds the limit that
enables the effect of the tariff (see the next chapter). The temperature limit that enables the effect of
the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff
(hysteresis). To permanently disable the effect of the tariff, you must set both the enabling and
disabling temperature limits for heating DHW according to the tariff to the maximum possible value, i.e.
to +30°C.*



*Fig. 5. Diagram of the disabling/enabling the effect of the tariff*

*When the status line is displayed, press the confirmation button to enter the main menu and use
the procedure described in chapter 7.1.3. on page 34 to open the* **Tariff settings** *menu. After opening
this menu, its first option is displayed.*

```
Tariff settings
DHW tariff stop
```

*After opening this menu, display shows*

```
DHW tariff stop
      xx.x
```

*Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.*

```
┌─────────────────────────────┐
│   Save ?           Y/N       │
│           xx.x               │
└─────────────────────────────┘
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
┌─────────────────────────────┐
│     Tariff settings          │
│     DHW tariff stop          │
└─────────────────────────────┘
```

*Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Enabling the Effect of the Tariff on Heating the DHW by HP

*This menu allows to set the outdoor temperature limit under which the heat pump heats the domestic hot water according to the current tariff for electricity. If the outdoor temperature drops below the limit that disables the effect of the tariff on heating the DHW (see the previous chapter), the heat pump heats the domestic hot water regardless of the tariff. If the outdoor temperature is higher than the set limit that enables the effect of the tariff, the DHW is heated only at the low tariff. The temperature limit that e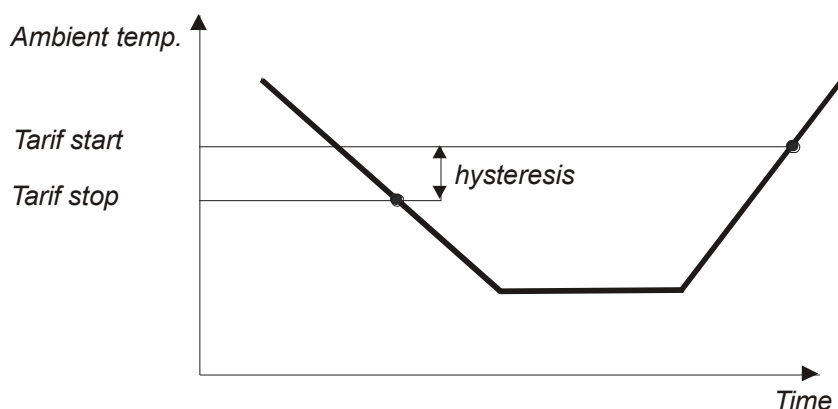nables the effect of the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.3. on page 34 to open the **Tariff settings** menu. After opening this menu, use the dial knob to select the **DHW tariff start** option.*

```
┌─────────────────────────────┐
│     Tariff settings          │
│     DHW tariff start         │
└─────────────────────────────┘
```

*After opening this menu, display shows*

```
┌─────────────────────────────┐
│   DHW tariff start           │
│           xx.x               │
└─────────────────────────────┘
```

*Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.*

```
┌─────────────────────────────┐
│   Save ?           Y/N       │
│           xx.x               │
└─────────────────────────────┘
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
┌─────────────────────────────┐
│     Tariff settings          │
│     DHW tariff start         │
└─────────────────────────────┘
```

*Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Disabling the Effect of the Tariff on Heating the HeW by HP

*This menu allows to set the outdoor temperature limit below which the heat pump heats the heating water regardless of the high tariff for electricity. If the outdoor temperature is higher than the set limit, the HeW is heated only at the low tariff. If the outdoor temperature drops below the set limit, the HeW is heated regardless of the current tariff. When the outdoor temperature increases, effect of the tariff is enabled only when the outside temperature exceeds the limit that enables the effect of the tariff (see the next chapter). The temperature limit that enables the effect of the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff (hysteresis). When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.3. on page 34 to open the **Tariff settings** menu.*

After opening this menu, use the dial knob to select the **HeW tariff stop** option.

```
┌─────────────────────────────┐
│    Tariff settings          │
│    HeW tariff stop          │
└─────────────────────────────┘
```

After opening this menu, display shows

```
┌─────────────────────────────┐
│    HeW tariff stop          │
│          xx.x               │
└─────────────────────────────┘
```

Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.

```
┌─────────────────────────────┐
│    Save ?           Y/N     │
│          xx.x               │
└─────────────────────────────┘
```

Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.

```
┌─────────────────────────────┐
│    Tariff settings          │
│    HeW tariff stop          │
└─────────────────────────────┘
```

Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.

## Enabling the Effect of the Tariff on Heating the HeW by HP

*This menu allows to set the outdoor temperature limit under which the heat pump heats the heating water according to the current tariff for electricity. If the outdoor temperature drops below the limit that disables the effect of the tariff on heating the HeW (see the previous chapter), the heat pump heats the domestic hot water regardless of the tariff. If the outdoor temperature is higher than the set limit that enables the effect of the tariff, the HeW is heated only at the low tariff. The temperature limit that enables the effect of the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff (hysteresis). When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.3. on page 34 to open the **Tariff settings** menu. After opening this menu, use the dial knob to select the **HeW tariff start** option.*

```
┌─────────────────────────────┐
│    NTariff settings         │
│    HeW tariff start         │
└─────────────────────────────┘
```

After opening this menu, display shows

```
┌─────────────────────────────┐
│    HeW tariff start         │
│          xx.x               │
└─────────────────────────────┘
```

Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.

```
┌─────────────────────────────┐
│    Save ?           Y/N     │
│          xx.x               │
└─────────────────────────────┘
```

Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.

```
┌─────────────────────────────┐
│    Tariff settings          │
│    HeW tariff start         │
└─────────────────────────────┘
```

Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.

## Disabling the Effect of the Tariff on Heating the Pool by HP

*This menu allows to set the outdoor temperature limit below which the heat pump heats the pool water regardless of the high tariff for electricity. If the outdoor temperature is higher than the set limit, the pool water is heated only at the low tariff. If the outdoor temperature drops below the set limit, the pool water is heated as necessary, regardless of the current tariff. When the outdoor temperature increases, effect of the tariff is enabled only when the outside temperature exceeds the limit that enables the effect of the tariff (see the next chapter). The temperature limit that enables the effect of the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff (hysteresis). When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.3. on page 34 to open the* **Tariff settings** *menu. After opening this menu, use the dial knob to select the option* **Pool tariff stop***.*

```
    Tariff settings
    Pool tariff stop
```

*After opening this menu, display shows*

```
    Pool tariff stop
            xx.x
```

*Use the dial knob to set the required temperature in the range from* **-30.0°C** *to* **+30.0°C***. After confirmation, the prompt appears.*

```
    Save ?          Y/N
            xx.x
```

*Press the confirmation button to save the settings. The confirmation message* **Saved OK** *briefly appears and then the display returns one level back.*

```
    Tariff settings
    Pool tariff stop
```

*Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the* **Return** *option repeatedly to exit the settings and return to the default state.*

## Enabling the Effect of the Tariff on Heating the Pool by HP

*This menu allows to set the outdoor temperature limit under which the heat pump heats the pool water according to the current tariff for electricity. If the outdoor temperature drops below the limit that disables the effect of the tariff on heating the pool water (see the previous chapter), the heat pump heats the pool water regardless of the tariff. If the outdoor temperature is higher than the set limit that enables the effect of the tariff, the pool water is heated only at the low tariff. The temperature limit that enables the effect of the tariff must be set about 2°C higher than the temperature limit that disables the effect of the tariff (hysteresis). When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.3. on page 34 to open the* **Tariff settings** *menu. After opening this menu, use the dial knob to select the* **Pool tariff start** *option.*

```
    Tariff settings
    Pool tariff start
```

*After opening this menu, display shows*

```
    Pool tariff start
            xx.x
```

*Use the dial knob to set the required temperature in the range from* **-30.0°C** *to* **+30.0°C***. After confirmation, the prompt appears.*

```
    Save ?          Y/N
            xx.x
```

*Press the confirmation button to save the settings. The confirmation message* **Saved OK** *briefly appears and then the display returns one level back.*

```
    Tariff settings
    Pool tariff start
```

*Use the dial knob and the confirmation button to select and set the other tariffs, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## 7.1.4. Bivalence Settings

*One part of the heat pump is an auxiliary electric heater with input power of 3kW, which may be used to heat the water in case that the heat pump power is not sufficient to ensure the required temperature of the domestic hot water or heating water. This auxiliary electric heater will be used also in case of compressor or evaporator failure to provide heating in the Emergency mode. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display and the bottom line shows the **Parameter settings**.*

```
Setup
Parameter settings
```

*After opening this menu, **Parameter settings** moves to the top line of the display. Use the dial knob to select the **Bivalence settings** option on the bottom line.*

```
Parameter settings
Bivalence settings
```

*After opening this menu, **Bivalence settings** moves to the top line of the display and the display shows:*

```
Bivalence settings
Bivalence start temp
```

*Using the dial knob and the confirmation button you can select and open the following options of the bivalence settins.*

| | | |
|---|---|---|
| **Bivalence start temp** | – | *Setting the outdoor temperature below which the auxiliary heater can be used to heat the water.* |
| **Bivalence stop temp** | – | *Setting the outdoor temperature under which the auxiliary heater can't be used to heat the water.* |
| **Bivalence delay** | – | *Setting the time interval after which the auxiliary heater will be used, if the heat pump power is not sufficient.* |
| **Return** | – | *Exits the bivalence setting* |

### Enabling the Auxiliary Heating of the Water

*This menu allows to set the outdoor temperature below which the auxiliary heater can be used to heat the water. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.4. on page 39 to open the **Bivalence settings** menu. After opening this menu, its first option is displayed.*

```
Bivalence settings
Bivalence start temp
```

*After opening this menu, display shows*

```
┌─────────────────────────────┐
│    Bivalence start temp     │
│           xx.x              │
└─────────────────────────────┘
```

*Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.*

```
┌─────────────────────────────┐
│    Save ?          Y/N      │
│           xx.xN             │
└─────────────────────────────┘
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
┌─────────────────────────────┐
│     Bivalence settings      │
│     Bivalence start temp    │
└─────────────────────────────┘
```

*Use the dial knob and the confirmation button to select and set the other bivalence settings, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Disabling the Auxiliary Heating of the Water

*This menu allows to set the outdoor temperature under which the auxiliary heater can't be used to heat the water. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.4. on page 39 to open the **Tariff settings** menu. After opening this menu, use the dial knob to select the **Bivalence stop temp** option.*

```
┌─────────────────────────────┐
│     Bivalence settings      │
│     Bivalence stop temp     │
└─────────────────────────────┘
```

*After opening this menu, display shows*

```
┌─────────────────────────────┐
│    Bivalence stop temp      │
│           xx.x              │
└─────────────────────────────┘
```

*Use the dial knob to set the required temperature in the range from **-30.0°C** to **+30.0°C**. After confirmation, the prompt appears.*

```
┌─────────────────────────────┐
│    Save ?          Y/N      │
│           xx.x              │
└─────────────────────────────┘
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
┌─────────────────────────────┐
│     Bivalence settings      │
│     Bivalence stop temp     │
└─────────────────────────────┘
```

*Use the dial knob and the confirmation button to select and set the other bivalence settings, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## Delayed Start of the Auxiliary Heater (Bivalence Delay)

*This menu allows to set the maximum runtime of the compressor to achieve the required temperature of the water in the tank without using the auxiliary electric heater. If the heat pump is unable to achieve the required temperature of the water in the tank within the set time at low outdoor temperatures, auxiliary electric heater is switched on and heats the water until the required temperature is reached. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.1.4. on page 39 to open the **Tariff settings** menu.*

*After opening this menu, use the dial knob to select the **Bivalence delay** option.*

```
┌─────────────────────────────────────┐
│       Bivalence settings            │
│       Bivalence delay               │
└─────────────────────────────────────┘
```

*After opening this menu, display shows*

```
┌─────────────────────────────────────┐
│       Bivalence delay               │
│              xxx                    │
└─────────────────────────────────────┘
```

*Use the dial knob to set the required time in the range from **0** to **250 minutes**. Press the confirmation button to confirm the set value and a prompt appears.*

```
┌─────────────────────────────────────┐
│       Save ?           Y/N          │
│              xxx                    │
└─────────────────────────────────────┘
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
┌─────────────────────────────────────┐
│       Bivalence settings            │
│       Bivalence delay               │
└─────────────────────────────────────┘
```

*Use the dial knob and the confirmation button to select and set the other bivalence settings, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## 7.2. Terminal Settings

*This menu allows to set the real time clock, display settings, display mapping, and language version of the heat pump program. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
┌─────────────────────────────────────┐
│       Menu                          │
│       Setup                         │
└─────────────────────────────────────┘
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Terminal settings** option on the bottom line.*

```
┌─────────────────────────────────────┐
│       Setup                         │
│       Terminal settings             │
└─────────────────────────────────────┘
```

*After opening this menu, **Terminal settings** moves to the top line of the display and the display shows:*

```
┌─────────────────────────────────────┐
│       Terminal settings             │
│       Time settings                 │
└─────────────────────────────────────┘
```

*Using the dial knob and the confirmation button you can select and open the following options for setting the heat pump terminal.*

| | | |
|---|---|---|
| `Time settings` | – | *Setting the hours, day, month and year of the heat pump clock in the format hh: mm: ss and dd: mm: yy* |
| `Display settings` | – | *Setting the backlight, contrast and time interval to restore the default display, if no operator action is taken.* |
| `Display mapping` | – | *Setting the content and order of the displayed parameters.* |
| `Language selection` | – | *Setting the language version of the heat pump control program.* |
| `Return` | – | *Exits the heating pump terminal setting* |

### 7.2.1. Setting the Real Time Clock

*This menu allows to set the time and date of the heat pump clock. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Terminal settings** option on the bottom line.*

```
Setup
Terminal settings
```

*After opening this menu, **Terminal settings** moves to the top line of the display and the display shows:*

```
Terminal settings
Time settings
```

*After confirmation, the prompt appears.*

```
Time settings
12:00:00
```

*Blinking cursor on the "Hour" position indicates the sequence for setting the clock. Use the dial knob to set the hours and press shortly the confirmation button to set the minutes. Set the minutes and press shortly the confirmation button to set the seconds. Check whether the set time is correct and press the confirmation button for a longer time to exit the time setting mode. The display will show*

```
Save ?          Y/N
hh:mm:ss
```

*and the cursor is blinking on the **Y (YES)** position. Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Date settings
01/01/00
```

*Use the similar procedure to set the required day, month and year. Press the confirmation button for a longer time to exit the date setting mode. The display will show*

```
Save ?          Y/N
dd/mm/yy
```

*Press the confirmation button to save the date. The confirmation message*

```
Date settings
Saved OK
```

*and then the display returns one level back in the menu.*

```
Terminal settings
Time settings
```

*Use the dial knob and the confirmation button to select and set the other terminal settings, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## 7.2.2. Display settings

*This menu allows to set the backlight, contrast and time interval to restore the default display, if no operator action is taken. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the* **Setup** *option.*

```
┌─────────────────────────────┐
│    Menu                     │
│    Setup                    │
└─────────────────────────────┘
```

*After opening this menu,* **Setup** *moves to the top line of the display. Use the dial knob to select the* **Terminal settins** *option on the bottom line.*

```
┌─────────────────────────────┐
│    Setup                    │
│    Terminal settings        │
└─────────────────────────────┘
```

*After opening this menu,* **Terminal settings** *moves to the top line of the display. Use the dial knob to select the* **Display settings** *option on the bottom line.*

```
┌─────────────────────────────┐
│    Terminal settings        │
│    Display settings         │
└─────────────────────────────┘
```

*After opening this menu,* **Display settings** *moves to the top line of the display and the display shows:*

```
┌─────────────────────────────┐
│    Display settings         │
│    Backlight set            │
└─────────────────────────────┘
```

*Using the dial knob and the confirmation button you can select and open the following options for setting the heat pump display.*

| | | |
|---|---|---|
| **Backlight set** | – | *Setting the backlight of the heat pump display.* |
| **Contrast set** | – | *Setting the contrast of the heat pump display.* |
| **Idle time** | – | *Setting the time interval to restore the default display, if no operator action is taken.* |
| **Return** | – | *Exits the display settings* |

## Setting the Backlight of the Heat Pump Display

*This menu allows to adjust the level of the backlight. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.2.2. on page 43 to open the* **Display settings** *menu. After opening this menu, its first option is displayed.*

```
┌─────────────────────────────┐
│    Terminal settings        │
│    Backlight set            │
└─────────────────────────────┘
```

*After opening this menu, the display shows:*

```
┌─────────────────────────────┐
│    Backlight set            │
│    ■■■■■■■                   │
└─────────────────────────────┘
```

*The number of characters ■ (1 to 16) indicates the set intensity of the display backlight. Use the dial knob to set the intensity and press shortly the confirmation button to save it. Display returns one level back.*

```
┌─────────────────────────────┐
│    Terminal settings        │
│    Backlight set            │
└─────────────────────────────┘
```

*Use the dial knob to select and set the other parameters of the display settings, or you can select and confirm the* **Return** *option repeatedly to exit the heat pump settings and return to the default state.*

## Setting the Contrast of the Heat Pump Display

*This menu allows to adjust the contrast of the heat pump display. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.2.2. on page 43 to open the **Display settings** menu. After opening this menu, use the dial knob to select the **Contrast set** option on the bottom line.*

```
Terminal settings
Contrast set
```

*After opening this menu, the display shows:*

```
Contrast set
■■■■■■■■■■■
```

*The number of characters ■ (1 to 16) indicates the set contrast of the display. Use the dial knob to set the contrast and press shortly the confirmation button to save it. Display returns one level back.*

```
Terminal settings
Contrast set
```

*Use the dial knob to select and set the other parameters of the display settings, or you can select and confirm the **Return** option repeatedly to exit the heat pump settings and return to the default state.*

## Setting the Idle Time to Restore the Default Display

*This menu allows to set the time interval to restore the default display, if no operator action is taken. If the operator performs no action during the set time interval, display returns to the default state. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.2.2. on page 43 to open the **Display settings** menu. After opening this menu, use the dial knob to select the **Idle time** option on the bottom line.*

```
Terminal settings
Idle time
```

*After opening this menu, the display shows*

```
Idle time
      xxx
```

*Use the dial knob to set the required time in the range from **0** to **250 seconds**.*

```
Save ?         Y/N
      xxx
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Terminal settings
Idle time
```

*Use the dial knob to select and set the other parameters of the display settings, or you can select and confirm the **Return** option repeatedly to exit the heat pump settings and return to the default state.*

### 7.2.3. Setting the Display Mapping

*This menu allows to set the order of the temperatures to be displayed on the first 16 positions, i.e. on 8 lines of the display. These temperatures are followed by 10 operation parameters which are displayed in the fixed order. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the* **Setup** *option.*

```
Menu
Setup
```

*After opening this menu,* **Setup** *moves to the top line of the display. Use the dial knob to select the* **Terminal settins** *option on the bottom line.*

```
Setup
Terminal settings
```

*After opening this menu,* **Terminal settings** *moves to the top line of the display. Use the dial knob to select the* **Display mapping** *option on the bottom line.*

```
Terminal settings
Display mapping
```

*After opening this menu, the display shows:*

```
Display mapping
Mapping set.  0 / Tx1
```

*The cursor is blinking on the number that indicates the position to display the temperature. After pressing the confirmation button, the cursor moves to the label (acronym) of the temperature to be displayed on the position* **0***. Use the dial knob to select the required temperature, for example the ambient (outdoor) temperature* **AT***.*

```
Display mapping
Mapping set.  0 / AT
```

*Confirm the selected temperature and a prompt appears.*

```
Save ?          Y/N
Mapping set.  0 / AT
```

*Press the confirmation button to save the settings. The confirmation message appears.*

```
Display mapping
Saved OK
```

*Display returns one level back in the menu.*

```
Display mapping
Mapping set.  0 / Tx1
```

*Use the dial knob to select the next positions* **1** *to* **9** *and* **A** *to* **F***, and assign them the required temperatures using the similar procedure. After setting all the displayed temperatures, leave the menu using the* **Return** *option. Display returns one level back in the menu.*

```
Terminal settings
Display mapping
```

*You can select and confirm the **Return** option repeatedly to exit the heat pump settings and return to the default state.*
*The bottom line of the display now shows the temperatures assigned to the positions **0** and **1**. You can use the dial knob to display the another temperatures on the selected positions. List of the temperatures that can be displayed on positions **0** to **F** is shown in the following table.*

| | | |
|------|---|---|
| `AT`  | - | *Ambient (outdoor) temperature* |
| `CT`  | - | *Condenser (evaporator) temperature* |
| `CCT` | - | *Compressor cover temperature* |
| `SUT` | - | *Suction temperature of the compressor, measured at the evaporator outlet* |
| `AR1` | - | *Reserve* |
| `IT`  | - | *Inlet temperature - water temperature at the heat pump inlet* |
| `OT`  | - | *Outlet temperature - water temperature at the heat pump outlet* |
| `DHW` | - | *Domestic hot water temperature* |
| `HeW` | - | *Heating water temperature* |
| `REF` | - | *Reference room temperature* |
| `EQ1` | - | *Output water temperature in the circuit TE1 (radiators)* |
| `EQ2` | - | *Output water temperature in the circuit TE2 (underfloor heating)* |
| `POL` | - | *Pool temperature* |
| `SOL` | - | *Solar heating system temperature* |
| `ET`  | - | *Compresor outlet temperature* |
| `EOT` | - | *EVI exchanger outlet temperature* |

*Besides these temperatures, the last five lines display 10 operation parameters; their order is fixed and can't be changed.*

| | | |
|------|---|---|
| `PQ1` | - | *Required output water temperature in the circuit TE1 (radiators)* |
| `PQ2` | - | *Required output water temperature in the circuit TE2 (underfloor heating)* |
| `P07` | - | *Compressor suction pressure* |
| `T07` | - | *Evaporation temperature at the compressor inlet* |
| `P18` | - | *EVI compressor suction pressure at the inlet* |
| `T18` | - | *Evaporation temperature at the EVI compressor inlet* |
| `EkW` | - | *Input power of the heat pump* |
| `TkW` | - | *Heat power of the heat pump (in kW)* |
| `Q/m` | - | *Water flow through the heat pump (in litres/sec)* |
| `COP` | - | *Coefficient of performance of the heat pump* |

### 7.2.4. Setting the Language Version of the Heat Pump Control Program.

*This menu is designed to select the language version of the heat pump control program and **is accessible only when the heat pump is in the stop state**. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Terminal settings** option on the bottom line.*

```
Setup
Terminal settings
```

*After opening this menu, **Terminal setup** moves to the top line of the display. Use the dial knob to select the **Language selection** option on the bottom line.*

```
Terminal settings
Language selection
```

*After opening this menu, the set language version is displayed.*

```
Language selection
English
```

*Use the dial knob to select the required language version and press the confirmation button to save it.*

```
Save ?          Y/N
English
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the processor reads the data corresponding to the set language version from the external memory. This process can take a few seconds. After loading the data, the heat pump automatically restarts. The initial test is performed and then display enters the default state showing the state line in the selected language. Language version can only be selected from the predefined language pack which is programmed in the heat pump. This pack can contain up to five language versions. After loading the selected language version, the test of its integrity is performed, and when an error is detected, the first language version from the language pack is automatically restored.*

## 7.3. Information about the Configuration and Operation of HP

*This menu allows to view the configuration and operation of the heat pump. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the* **Setup** *option.*

```
Menu
  Setup
```

*After opening this menu,* **Setup** *moves to the top line of the display. Use the dial knob to select the* **Info** *option on the bottom line.*

```
Setup
  Info
```

*After opening this menu, the display shows*

```
Info
  Mains voltage
```

*Using the dial knob and the confirmation button you can select and open the following options.*

| | | |
|---|---|---|
| **Mains voltage** | – | *This menu allows to view the voltage of each phase, the mains status and the current tariff.* |
| **Current tariff times** | – | *This menu allows to view the duration of the high tariff for electricity* |
| **HW/SW configuration** | – | *This menu allows to view the circuit configuration, version of the control program and serial number of the heat pump.* |
| **HP Errors list** | – | *This menu allows to view the list of the heat pump operation errors.* |
| **Pump statistics** | – | *This menu allows to view the basic statistical data about the heat pump operation.* |
| **Return** | – | *Exits the Info menu.* |

### 7.3.1. Mains Voltage

*This menu allows to view the voltage of each phase, the phase sequence and the current tariff. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the* **Setup** *option.*

```
Menu
  Setup
```

*After opening this menu,* **Setup** *moves to the top line of the display. Use the dial knob to select the* **Info** *option on the bottom line.*

```
Setup
  Info
```

*After opening this menu,* **Info** *moves to the top line of the display and the display shows:*

```
Info
  Mains voltage
```

*After opening this menu, the display shows*

```
Mains voltage
  01 235.5 236.8 234,4
```

*where* **01** *is the two-digit information about the mains status, followed by the voltage of each phase in volts. The sequence of voltages corresponds to the sequence of the power terminals on the board. From left to right are shown the voltages of the phases* **R**, **S** *and* **T***, connected to the terminals* **4**, **3** *and* **2** *of the heat pump control board.*

## Mains Status

*The mains status consists of two hexadecimal characters. If all the phases have the nominal voltage and are connected in the correct sequence, the first character is **0** and the second character is **0** at the low tariff or **1** at the high tariff. If the first character other than **0**, there is some voltage out of tolerance or incorrect phase sequence. To decode the status, it is needed to convert the hexadecimal number into the binary format, where **0** = OK or the low tariff and **1** = incorrect voltage, phase sequence or a high tariff.*

| Status on the display (hexadecimal) | **0** | | | | **1** | | | |
|---|---|---|---|---|---|---|---|---|
| Status in the binary format | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bit weights in the binary format | 8 | 4 | 2 | 1 | 8 | 4 | 2 | 1 |
| Significance of each bit | ↑U | ↓U | ↑U | ↓U | ↑U | ↓U | pha se seq. | tariff |
| Phase (terminal no.) | T (2) | | S (3) | | R (4) | | - | |

*↑ **U** means that the voltage of the corresponding phase is higher than the allowed tolerances tolerance;i ↓ **U** means that the voltage of the corresponding phase is lower or zero. Example: status 41 means the missing phase **T***

| Status on the display (hexadecimal) | **4** | | | | **1** | | | |
|---|---|---|---|---|---|---|---|---|
| Status in the binary format | 0 | **_1_** | 0 | 0 | 0 | 0 | 0 | 1 |
| Bit weights in the binary format | 8 | 4 | 2 | 1 | 8 | 4 | 2 | 1 |
| Significance of each bit | ↑U | ↓**_U_** | ↑U | ↓U | ↑U | ↓U | pha se seq. | tariff |
| Phase (terminal no.) | T (2) | | S (3) | | R (4) | | - | |

*Press shortly the confirmation button to leave the **Mains voltage** menu. Display returns one level back. Use the dial knob and the confirmation button to select and set the other options of the **Info** menu, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

## 7.3.2. High Tariff Duration

*This menu allows to view the duration of the high tariff for electricity Their number and distribution during the day depends on the supplier of electricity and the agreed rate. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
   Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Info** option.*

```
Setup
   Info
```

*After opening this menu, **Info** moves to the top line of the display. Use the dial knob to select the **Current tariff times** option.*

```
Info
   Current tariff times
```

*After opening this menu, you can view start times and durations up to four last time intervals with the high tariff. An example when three recorded intervals with high tariff are displayed:*

```
hh:mm/ddd  hh:mm/ddd
hh:mm/ddd  --:--/---
```

*where **hh:mm** is the time of the beginning of the high tariff (in hours and minutes) and **ddd** is the duration of the time interval (in minutes). Press shortly the confirmation button to leave the menu.*

### 7.3.3. Configuration and Program Version of the Heat Pump

*This menu allows to view the installed expansion modules, program versions of each processor on the control board and serial number of the control board. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Info** option.*

```
Setup
Info
```

*After opening this menu, **Info** moves to the top line of the display. Use the dial knob to select the **HW/SW configuration** option.*

```
Info
HW/SW configuration
```

*After opening this menu, **HW/SW configuration** moves to the top line of the display and the display shows:*

```
HW/SW configuration
HW configuration
```

*Using the dial knob and the confirmation button you can select and view the following HW + SW information about the heat pump.*

| | | |
|---|---|---|
| **HW configuration** | – | *Displaying the installed expansion modules of the heat pump.* |
| **SW version** | – | *Displaying the program versions of each processor on the control board* |
| **Serial number** | – | *Displaying the six-digit serial number of the heat pump control board* |
| **Return** | – | *Exits the HW/SW configuration menu.* |

### Displaying the Installed Expansion Modules of the Heat Pump.

*This menu allows to display the extending LAN and GSM modules, which are installed on the heat pump control board. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.3.3. on page 50 to open the **HW/SW configuration** menu. After opening this menu, its first option is displayed.*

```
HW/SW configuration
HW configuration
```

*After opening this menu, the display shows the **LAN** a **GSM** labels, which are followed by **Y** (**YES**), if the corresponding module is installed and functioning properly, or **N** (**NO**), if the module is not installed or is not functioning properly. Example: the control board with only LAN module installed*

```
HW configuration
LAN :  Y  GSM :  N
```

*Press shortly the confirmation button to return one level back. Use the dial knob and the confirmation button to select and set the other information about the heat pump configuration, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

### Displaying the Control Board Program Versions

*This menu allows to display the program versions of each processor on the control board When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.3.3. on page 50 to open the **HW/SW configuration** menu. After opening this menu, use the dial knob to select the option for displaying the program versions.*

```
HW/SW configuration
SW version
```

*After opening this menu, the display bottom line shows four version numbers.*

```
SW version
a.aa b.bb c.cc d.dd
```

*Press shortly the confirmation button to return one level back. Use the dial knob and the confirmation button to select and set the other information about the heat pump configuration, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

### Displaying the Serial Number of the Heat Pump Control Board

*This menu allows to display the serial number of the heat pump control board. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.3.3. on page 50 to open the **HW/SW configuration** menu. After opening this menu, use the dial knob to select the option for displaying the serial number.*

```
HW/SW configuration
Serial number
```

*After opening this menu, the display bottom line shows six-digit serial number of the heat pump control board.*

```
Serial number
   123456
```

*Press shortly the confirmation button to return one level back. Use the dial knob and the confirmation button to select and set the other information about the heat pump configuration, or you can select and confirm the **Return** option repeatedly to exit the settings and return to the default state.*

### 7.3.4. List of the Heat Pump Errors

*This menu is designed to display errors that occurred during the heat pump operation. When an error occurs, the heat pump stops and after 5 minutes it automatically tries to restores the previous operation mode. If the error persists, the heat pump repeats this two more times with increasing intervals 10 and 15 minutes.  If even the third attempt to restore the operation fails, the pump stops and waits for operator intervention. When the status line is displayed, press the confirmation button to enter the main menu. If an error is detected after entering the main menu, an error message is displayed together with up to five errors and their specifications. See the Error list on page 61 for details. If the heat pump is in an error state, only **Setup** and **Comfor** menus are accessible.*

```
Menu
HP error         PW
```

*Use the dial knob to select the **Setup** option.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Info** option on the bottom line.*

```
Setup
Info
```

*After opening this menu, **Info** moves to the top line of the display. Use the dial knob to select the **HP Errors list** option on the bottom line.*

```
Info
HP Errors list
```

*After opening this menu, the display shows*

```
HP Errors list
New errors
```

*Using the dial knob and the confirmation button you can select and view the following options to display the error lists.*

| | | |
|---|---|---|
| **New errors** | – | *Displays the last 96 errors of the heat pump operation, which have occurred since the last reset of the register of new errors.* |
| **All errors** | – | *Displays the last 96 errors of the heat pump operation, which have occurred since the commissioning of the heat pump.* |
| **Return** | – | *Exits the displaying of the heat pump errors* |

## Viewing the List of New Errors

*Use the procedure described in the beginning of this chapter on page 51 to open the menu for displaying the new errors. If no error has occurred, the display shows:*

```
New errors
No errors
```

*If an error was detected, the display shows:*

```
New errors
yy/mm/dd hh:mm    xx
```

*The bottom line contains (from left to right) the date and time when the error was detected and its sequential number representing its position in memory (0 to 95). Cursor is blinking on sequential number. You can use the dial knob to select another sequential number. After confirmation of the selected number, the bottom line shows the numeric code and abbreviation of the error. Example: If the position **0** contains the error that was caused by the mains failure, the display may show:*

```
New errors
xx xx xx xx    PW    0
```

*Where **xx xx xx xx** is the numeric error code a **PW** is the abbreviation for power supply. **The list of displayed errors is given in the appendix on page 61 in this manual.** By short press of the confirmation button you can switch between displaying the error specifications and displaying the time when the error was detected. Blinking cursor remains on position of the sequential number. After reviewing the specification and time of the error, you can select and view another recorded error (if any exists). It is possible to display up to 96 last errors. If more errors have occurred, the oldest ones are overwritten by the new ones. Press the confirmation button for a longer time to exit the error viewing mode; the display shows the prompt to delete the list of new errors.*

```
New errors
Delete new errors
```

*You can confirm the proposed option to delete the list of new errors, or you can use the dial knob to select **Return** option and confirm it to leave the menu without deleting the list of new errors. If you confirm the **Delete new errors** option, errors are deleted and the confirmation message **Saved OK** briefly appears. The display returns to the **HP Errors list** menu.*

```
HP Errors list
New errors
```

## Viewing the List of All Errors

*Use the procedure described in the beginning of this chapter on page 51 to open the menu for displaying all errors.*

```
HP Errors list
All errors
```

*If no error has occurred, the display shows:*

```
All errors
No errors
```

*If an error was detected during the heat pump runtime, the display shows:*

```
All errors
yy/mm/dd hh:mm      xx
```

*The bottom line contains (from left to right) the date and time when the error was detected and its sequential number representing its position in memory (0 to 95). Cursor is blinking on sequential number. You can use the dial knob to select another sequential number. After confirmation of the selected number, the bottom line shows the numeric code and abbreviation of the error. Example: If the position **0** contains the error that was caused by the mains failure, the display may show:*

```
All errors
xx xx xx xx    PW    0
```

*Where **xx xx xx xx** is the numeric error code a **PW** is the abbreviation for power –supply. **The list of displayed errors is given in the appendix on page 61 in this manual.** By short press of the confirmation button you can switch between displaying the error specifications and displaying the time when the error was detected. Blinking cursor remains on position of the sequential number. After reviewing the specification and time of the error, you can select and view another recorded error (if any exists). It is possible to display up to 96 errors. If more errors have occurred, the oldest ones are overwritten by the new ones. Press the confirmation button for a longer time to exit the error viewing mode. The display returns to the **HP Errors list** menu.*

```
HP Errors list
All errors
```

*In contrast to viewing the list of new errors, you cant delete the list of all errors new. Recorded errors remain saved until all 64 memory positions are filled. If more errors have occurred, the oldest ones are overwritten by the new ones. Use the **Return** option to exit the **HP Errors list** menu. The display returns one level back. You can select and confirm the **Return** option repeatedly to exit the settings and return to the default state. To return to the default state from any level of the menu, you can also press and hold the confirmation button until the display returns to the default state.*

## 7.3.5. Statistics of the Heat Pump Operation

*This menu allows to view the basic statistical data about the heat pump operation. When the status line is displayed, press the confirmation button to enter the main menu and use the dial knob to select the **Setup** option.*

```
Menu
  Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Info** option on the bottom line.*

```
Setup
  Info
```

*After opening this menu, **Info** moves to the top line of the display. Use the dial knob to select the **Pump statistics** option on the bottom line.*

```
Info
  Pump statistics
```

*After opening this menu, **Pump statistics** moves to the top line of the display and the display shows:*

```
Pump statistics
  Compr total time
```

*Using the dial knob and the confirmation button you can select and view the following statistics of the heat pump operation.*

| | | |
|---|---|---|
| **Compr total time** | – | *Displays the total time of compressor operation (in hours).* |
| **Defrost total time** | – | *Displays the total time of evaporator defrosting (in hours).* |
| **Bivalence total time** | – | *Displays the total time of heat pump operation with auxiliary heater switched on (in hours).* |
| **Emergency total time** | – | *Displays the total time of operation in Emergency mode (in hours).* |
| **Compr. starts count** | – | *Displays the total number of compressor starts.* |
| **4WV switches count** | – | *Displays the total number of 4-way valve switching.* |
| **Total heat produced** | – | *Displays the total heat produced by the heat pump (in gigajoules [GJ])* |
| **Total power consumed** | – | *Displays the total electricity consumed by the heat pump (in kW)* |
| **Heat from dd/mm/yy** | – | *Displays the heat produced by the heat pump (in gigajoules [GJ]) since the last reset of registers* |
| **Consum.from dd/mm/yy** | – | *Displays the electricity consumed by the heat pump (in kW) since the last reset of registers* |
| **Reset From register** | – | *Resets the registers of heat produced and electricity consumed in the time interval after their the last reset* |
| **Return** | – | *Exits the heat pump statistics menu.* |

### Compressor total time

*This menu allows to view the total running time (in hours) of the compressor since the heat pump was made.*

### Defrosting total time

*This menu allows to view the total time (in hours) of defrosting the evaporator since the heat pump was made.*

### Bivalence total time

*This menu allows to view the total running time (in hours) when the auxiliary heater was used together with the heat pump compressor.*

### Emergency total time

*This menu allows to view the total running time (in hours) in Emergency mode since the heat pump was made.*

### Compressor starts count

*This menu allows to view the total number of compressor starts since the heat pump was made*

### 4-way valve switches count

*This menu allows to view the total number of 4-way valve switchings since the heat pump was made.*

### Total heat produced

*This menu allows to view the total heat (in gigajoules [GJ]) produced by the heat pump since the heat pump was made.*

### Total power consumed

*This menu allows to view the total electricity (in kW) consumed by the heat pump since the heat pump was made.*

### Heat produced since the last reset of registers

*This menu allows to view the heat (in gigajoules [GJ]) produced by the heat pump since the last reset of registers*

### Electricity consumed since the last reset of registers

*This menu allows to view the electricity (in kW) consumed by the heat pump since the last reset of registers*

### Resetting the temporary registers of produced heat and consumed electricity

*This menu allows to resets the registers of heat produced and electricity consumed in the time interval after their the last reset  When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.3.5. on page 54 to open the **Pump statistics** menu. After opening this menu, use the dial knob to select the **Reset From register** option.*

```
┌────────────────────────────┐
│    Pump statistics         │
│    Reset From register     │
└────────────────────────────┘
```

*After confirmation, the prompt appears:*

```
┌────────────────────────────┐
│    Reset From register     │
│    Save ?   Y/N            │
└────────────────────────────┘
```

*After confirming, the temporary registers of produced heat and consumed electricity are cleared and display returns one level back.*

## 7.4. Settings the Connection to LAN / WLAN and GSM Network

*This menu allows you to set parameters for connecting the heat pump to the LAN/WLAN and GSM network. When the status line is displayed, press the confirmation button to enter the main menu. Use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Connection settings** option on the bottom line.*

```
Setup
Connection settings
```

*After opening this menu, **Connection settings** moves to the top line of the display and the display shows:*

```
Connection settings
LAN/WAN settings
```

*Use the dial knob to select the required option on the bottom line*

| | | |
|---|---|---|
| **LAN/WAN settings** | – | *This menu allows to set parameters for connecting the heat pump to the LAN/WLAN network.* |
| **GSM settings** | – | *This menu allows to set parameters for connecting the heat pump to the GSM network; it is available only when the GSM module is installed.* |
| **Return** | – | *Exits this menu.* |

## 7.4.1. Settings the Connection of the Heat Pump to LAN / WLAN

*This menu allows you to set parameters for connecting the heat pump to the LAN/WLAN and GSM network. When the status line is displayed, press the confirmation button to enter the main menu. Use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Connection settings** option on the bottom line.*

```
Setup
Connection settings
```

*After opening this menu, **Connection settings** moves to the top line of the display and the display shows:*

```
Connection settings
LAN/WAN settings
```

*After opening this menu, if the LAN module is installed and functioning properly, **LAN/WAN settings** moves to the top line of the display and the display shows:*

```
LAN/WAN settings
Assigned IP address
```

*If the module is not installed or is not functioning properly, the **LAN/WAN settings** menu can not be opened.*

*After opening the **LAN/WAN settings** menu, you can use the dial knob and the confirmation button to select and edit required parameters to connect the heat pump to LAN/WAN network.*
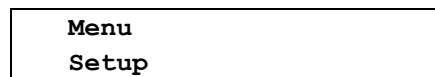
| | | |
|---|---|---|
| `Assigned IP address` | – | *Displays the assigned IP address of the heat pump.* |
| `Preset IP address` | – | *Setting the method for allocating IP address of the heat pump. If dynamic allocation of IP address is used, the IP is assigned by DHCP server ; if the static IP address is set, this item is used to enter the static IP address.* |
| `Network mask` | – | *If dynamic allocation is used, the Network mask is assigned by DHCP server ; if the static IP address is set, this item is used to enter the Network mask.* |
| `Gateway` | – | *If dynamic allocation is used, the Gateway address is assigned by DHCP server ; if the static IP address is set, this item is used to enter the Gateway address.* |
| `DNS` | – | *If dynamic allocation is used, the DNS address is assigned by DHCP server ; if the static IP address is set, this item is used to enter DNS address.* |
| `FTPS` | – | *Setting the address to which the data about the heat pump operation will be transferred. This is needs to remote access to the heat pump.* |
| `PING address` | – | *Setting the IP address to verify the connection of the heat pump to Internet network.* |
| `MAC address` | – | *Displays the MAC address of the heat pump.* |
| `Return` | – | *Exits connection settings* |

*With dynamic assignment of IP address, subnet mask, gateway, and DNS server, you must use the dial knob to select the **Preset IP address** option, confirm it and use dial knob to adjust the zero address. After setting up the first part of the IP address to zero, shortly press the confirmation button to set the next part of the IP address. Set all parts of the IP addresses in a similar way and the press the confirmation button for a longer time to save the zero IP address to memory. After confirming the query **Save ?**, the address is saved and and the display returns one level back. If the zero IP address is set, the heat pump IP address, subnet mask, gateway, and DNS address is assigned automatically by DHCP server (dynamic address allocation). In the opposite case, i.e. when the non-zero IP address is set, it is necessary to set subnet mask, gateway and DNS address manually (static address allocation).*

*If the **FTPS address** is set to **non-zero value**, it is possible to control the heat pump only using the remote access through the Internet; it isn't possible to control heat pump from the local network (from the local WEB server). It is possible only when the **FTPS address** is set to **zero**.*

## 7.4.2. Settings the Connection of the Heat Pump to GSM network

*This menu allows you to set parameters for connecting the heat pump to the GSM network. When the status line is displayed, press the confirmation button to enter the main menu. Use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **Connection settings** option on the bottom line.*

```
Setup
Connection settings
```
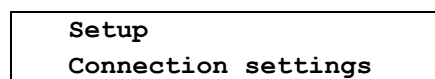
*After opening this menu, **Connection settings** moves to the top line of the display. Use the dial knob to select the **GSM settings** option on the bottom line.*

```
Connection settings
GSM settings
```
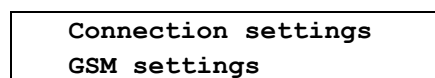
*After opening this menu, if the GSM module is installed and functioning properly, **GSM settings** moves to the top line of the display and the display shows:*

```
      GSM settings
      Phone numbers
```

*If the GSM module is not installed or is not functioning properly, the **GSM settings** menu can not be opened.*

*After opening the **GSM settings** menu, you can use the dial knob and the confirmation button to select and edit required parameters to connect the heat pump to GSM network.*

| | | |
|---|---|---|
| **Phone numbers** | – | *Setting and editing phone numbers stored in the GSM module memory.* |
| **GSM switch-off delay** | – | *Setting the time delay between power failure and switching off the GSM module* |
| **Return** | – | *Exits connection settings* |

## Setting and editing the phone numbers in the GSM module

*GSM module memory can store up to 16 phone numbers at which the heat pump will send SMS message on the request or in case of power failure. From these so-called authorized numbers you can also switch the heat pump on/off, or request the information about its status. Phone numbers must be stored in international format without the **+** sign and **00** before the country dial. Each number must consist of 12 digits. Phone numbers are stored in memory at positions **0** through **F**. If a phone number with the country dial code have less than 12 digits, you must add zeros before the country dial code. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.4.2. on page 57 to open the **GSM settings** menu. After opening this menu, its first option is displayed.*

```
      GSM settings
      Phone numbers
```

*After opening this menu, **Phone numbers** moves to the top line of the display and if no phone number is stored in memory, the display shows:*

```
      Phone numbers
      0. ------------
```

*where on the first position from left is the position number to save the phone number, followed by 12-digit phone number in international format without the **+** sign and **00** before the country dial ode. If there are some phone numbers already stored in certain positions, you can use the dial knob to select the required position to store the phone number and confirm it. The first option of the menu appears.*

```
      Edit
      0. ------------
```

*You can use the dial knob to choose the required operation with the phone number in the selected position. You can create new number, edit or delete the existing number, or leave selected position using the **Return** option. After confirming the previous option, cursor is blinking on the first position of the phone number. You can use the dial knob to set the first digit of the phone number in the international format. Confirm the set digit by short press of the confirmation button. Use the similar way to set all digits of the phone number. Check the phone number and press the confirmation button for a longer time to save it. Example: Phone number **123456789** with the Czech prefix **+420** at position number **0**.*

```
      Save ?         Y/N
      0. 420123456789
```

*Press the confirmation button to save the settings. The confirmation message briefly appears*

```
Saved OK
0. 420123456789
```

*and then the display returns to **Phone numbers** settings.*

```
GSM settings
Phone numbers
```

*After re-opening this menu, the stored number is displayed on the position 0. Use can use the dial knob to select another position to enter the new phone number or delete the existing one. You can store up to 16 phone number to GSM module memory.*

## Setting the Delayed Switching Off the GSM module at Power Failure

*GSM module supply is backed up by a Li-Pol battery. In case of power failure, the GSM module is waiting for power restore, and until the set delay time is over, GSM module sends SMS messages about power failure to the selected phone numbers and disconnects from the backup battery. After the power is restored, GSM module is connected and logged to the network. When heat pump stops for another reason than the power outage, for example, repeated exceeding the limit parameters, SMS messages are sent to the selected phone numbers immediately after stopping the pump and GSM module remains connected to the network. When the status line is displayed, press the confirmation button to enter the main menu and use the procedure described in chapter 7.4.2. on page 57 to open the **GSM settings** menu. After opening this menu, use the dial knob to select the **GSM switch-off delay** option.*

```
GSM settings
GSM switch-off delay
```

*After opening this menu, the display shows*

```
GSM switch-off delay
        xxx
```

*Use the dial knob to set the delay in the range from **0** to **250** minutes. Press the confirmation button to save the set value.*

```
Save ?          Y/N
        xxx
```

*Press the confirmation button to save the settings. A confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
GSM settings
GSM switch-off delay
```

*Use the dial knob to select and set the other parameters for connection to the GSM network, or you can select and confirm the **Return** option repeatedly to exit the heat pump settings and return to the default state.*

## 7.5. Setting the User Password

*The parameter settings are divided into three levels according to their influence on the heat pump performance. The most important settings are located on the highest (manufacturing) level. This level is only accessible to the heat pump manufacturer. The important settings that adjust the heat pump performance according to the particular user conditions and their improper setup would cause a malfunction, are located on the service level and protected by the service password. The service password can not be changed and its use is mandatory. It is available to authorized service and installation . Other settings are accessible to the user of the heat pump and can also be protected against tampering by optional user password. Menu **User Password** allows to enable/disable the password and change it. When the status line is displayed, press the confirmation button to enter the main menu. Use the dial knob to select the **Setup** option on the bottom line.*

```
Menu
Setup
```

*After opening this menu, **Setup** moves to the top line of the display. Use the dial knob to select the **User Password** option on the bottom line.*

```
Setup
User password
```

*After opening this menu, **User password** moves to the top line of the display, and depending on the use of password, the display shows **Password: On** or **Password: Off**.*

```
User password
Password:   On
```

*After confirmation:*

```
User password
Password:   ******
```

*Cursor is blinking on the position of the first character. Use the dial knob to set the first character of your password and shortly press the confirmation button to set the next character. Set the next character in a similar way and repeat this to set all six characters of the password After setting the last character, press the confirmation button for a longer time to save the password. The prompt appears:*

```
User password
Save ?  Y/N
```

*Press the confirmation button to save the settings. The confirmation message **Saved OK** briefly appears and then the display returns one level back.*

```
Setup
User password
```

*Use the dial knob to set the other settings or select and confirm the **Return** option to exit this menu. If the user password is enabled, it is required each time you access the **Setup** menu of the heat pump. If you forget the password, you can disable its use by turning off the heat pump and then turning it on again while holding the confirmation button. You need to hold the confirmation button all the time while initialization of the heat pump is being performed, i.e. until the display enters the default state.*

# 8. Summary of heat pump errors

*When the status bar is displayed pressing of the button shows the main menu. If heat pump error is detected when entering the main menu, an error message will display codes up to five errors. Meaning of detected errors is shown in the following table.*

| Code | Description | Possibly causes | Repair method |
|------|-------------|-----------------|---------------|
| HP | *High condensing pressure at compressor outlet* | *Excessive speed of running pump for heating the water to high temperature* | *Service intervention is needed. If the error is repeating when the water is heated to a high temperature then reduce the speed of running pump* |
| LP | *Too low evaporating pressure at the compressor inlet* | *Sensor failure, EEV failure or evaporator fan failure* | *Service intervention is needed.* |
| FR | *Protective thermal compressor relay activated* | *Long-term increasing of compressor input, activated relay will remain disconnected until operator intervention* | *Service intervention is needed.* |
| IT | *Too low temperature of inlet water of heat pump* | *Sensor failure, incorrect limits for heating (or cooling) of the water* | *Service intervention is needed, correct temp. limit for heating (or cooling) of the water. The pump due to frost protection can not operate with water at a temperature below 7°C* |
| OT | *Outlet water temperature out of limits, it is too low or too high* | *Sensor failure, incorrect limits for heating (or cooling) of the water* | *Service intervention is needed, correct temperature limit for heating of the water. The pump due to frost protection can not operate with water at a temperature below 7°C, and can not heats the water to a temp. higher than 65°C* |
| FL | *Heat pump water flow too low* | *Low or no water flow* | *Check that the water circuit is bled, the closures are opened and the pump speed is set to a reasonable value that can depend on the specific implementation of plumbing* |
| ET | *Too high temperature at the compressor outlet* | *Sensor failure, EEV failure at EVI heat exchanger or EEV incorrect setting* | *Check the ET sensor. If the error occurs repeatedly when heating of the water to higher temperatures, check the EEV at EVI heat exchanger and setting of its control parameters.* |
| PW | *Failure of three-phase power* | *Voltage out of tolerance, interrupted connection of phase, incorrect phase order* | *Service intervention is needed* |
| FE | *Incorrect checksum for the current language selection* | *It is checked when powering heat pump, error occurs when a data breach in the working memory* | *When this error is detected, first stored language version is automatically loaded from the non-volatile memory to the working memory, and this is always English* |
| FF | *Incorrect list of languagesin a non-volatile memory* | *It is checked when changing the language version, the error occurs when the data error in non-volatile memory* | *Service intervention is needed, uploading of a new set of languages from an external computer via RS485 serial interface will be necessary* |
| FC | *Wrong language selected* | *It is checked when changing the language version, the error occurs when the data error in non-volatile memory* | *Service intervention is needed, uploading of a new set of languages from an external PC via serial interface will be necessary* |

| **FD** | *Unsuccessful change of language version* | *Error when transferring the selected language version from the non-volatile memory to the working memory* | *Error will be corrected automatically reloading the selected language version from the non-volatile memory to the working memory or reselecting language version using the rotary selector or re-switching on of the mains input of the heat pump* |
|---|---|---|---|

## *Errors of the temperature sensors*

| Code | Description | Possible cause | Repairing |
|---|---|---|---|
| T0 | *OT* failure | *Broken or shorted wires to the water temperature sensor at the heat pump outlet* | *Service intervention is needed* |
| T1 | *ET* failure | *Broken or shorted wires to the temperature sensor at the compressor outlet* | *Service intervention is needed* |
| T2 | *SUT* failure | *Broken or shorted wires to the temperature sensor of the compressor suction* | *Service intervention is needed* |
| T3 | *ET* and *SUT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| T4 | *AT* failure | *Broken or shorted wires to the ambient (outdoor) temperature sensor* | *Service intervention is needed* |
| T5 | *ET* and *AT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| T6 | *SUT* and *AT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| T7 | *ET*, *SUT* and *AT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| T8 | *CT* failure | *Broken or shorted wires to the temperature sensor of the heat pump condenser* | *Service intervention is needed* |
| T9 | *ET* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TA | *SUT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TB | *ET*, *SUT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TC | *AT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TD | *ET*, *AT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TE | *SUT*, *AT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |
| TF | *ET*, *SUT*, *AT* and *CT* failure | *Broken or shorted wires to these temperature sensors* | *Service intervention is needed* |

*An error is indicated, when the temperature measured by these temperature sensors is lower than −50°C, or when the temperature measured at the compressor outlet **ET** is higher than **+135°C**, or when the temperature measured at the heat pump outlet **OT**, compressor suction **SUT**, heat pump evaporator **CT** or ambient (outdoor) temperature **AT** is higher than **+90°C**.*

*When any of the temperature sensors of the heat pump is shorted, the display of the heat pump or the connected PC shows the temperature of **+150°C**; when the temperature sensor is broken, the displayed temperature is **-60°C**.*
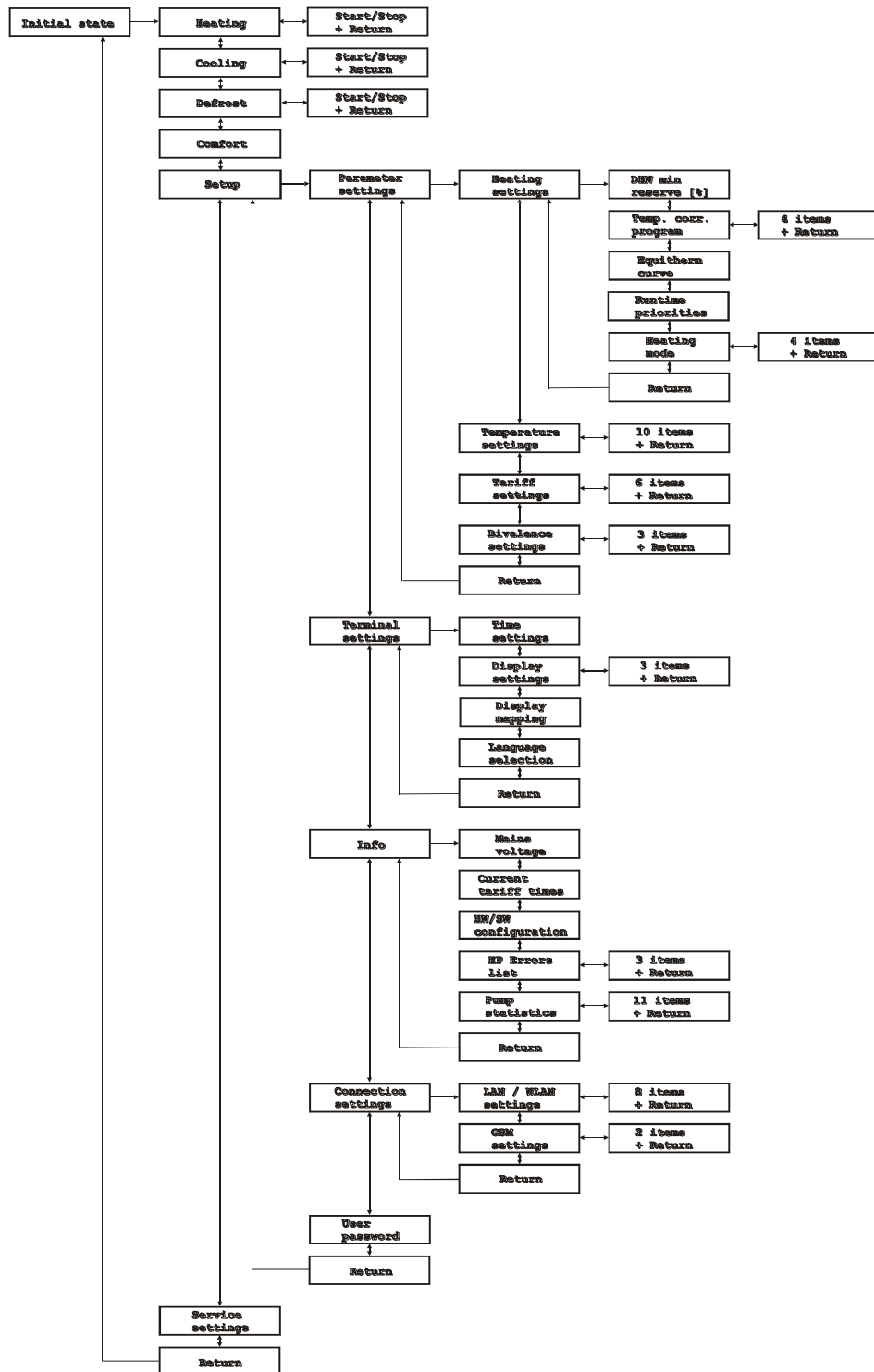
*Fig. 6. Heat pump menu*

# *9.  Contents*

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