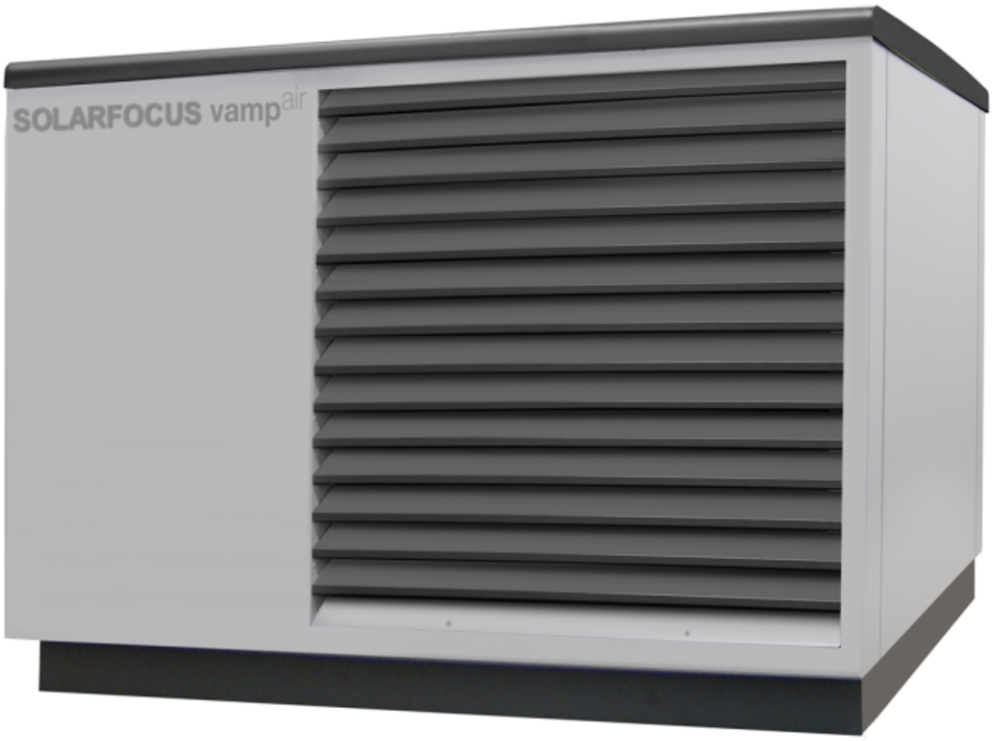
SOLARFOCUS




+ Plug & Heat
+ Low-Noise Technology
+ Inverter Technology

# Air source heat pump **vamp**air

## Operation manual for the system operator

Read carefully before operating.

DR-0086-EN / v25-202205

## Content

# 1 About this manual

**Language**

The language of the original manual is German. Versions of this manual in all other languages are translations of the original.

**Storage**

Keep the manual for the entire service life of the product and ready to hand. The manual must be passed on to the new owner when the product is dismantled/reused. If the manual is lost or destroyed, request a new copy from the manufacturer.

**Instructions and warnings**

The instructions used in this manual are highlighted with symbols and signal words. The signal word indicates the level and nature of the danger.

Indicates information for correct handling of the product.

**CAUTION** - Material damage is possible if these instructions are not complied with.

**DANGER** - Failure to comply with this instruction poses a danger to people.

## 1.1 Limitation of liability

SOLARFOCUS GmbH accepts no liability for injury or material damage resulting from:

- Failure to observe the instructions in this manual.
- Use of the product for any purpose other than for its intended use.
- Deployment of unqualified personnel.
- Use of non-approved spare parts.
- Technical modification of the product by the system operator.

**Warranty, guarantee**

See terms and conditions of the SOLARFOCUS GmbH. and conditions in chapter *heat pump maintenance contract*

**Manufacturer**

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# 2 Safety information

**Installation and commissioning**

- Heat pump may only be installed and put into operation by certified qualified personnel (SOLARFOCUS service technician or SOLARFOCUS service partner).
- Install heat pump outdoors only.
- Never disconnect the heat pump from the power supply (except electrical work). Otherwise risk of frost damage.

**Maintenance and repair**

- Have repairs done by qualified personnel only. Improper repairs can lead to risks for the user and inefficient operating conditions.
- Use original spare parts only.

**Handling of refrigerant R410A**

- The heat pump uses refrigerant R410A. Work on the cooling circuit may be performed only by a qualified refrigerant electrician.
- Wear suitable gloves and goggles when working with refrigerant.

**What to do in case of escaping refrigerant**

- Escaping refrigerant[1] can cause frostbite if it touches the exit point. If refrigerant escapes do not touch any components of the heat pump.

  [1] Recognizable by oily residue, which is left when exiting.
- Avoid skin or eye contact with the refrigerant. In case of skin or eye contact with the refrigerant, a doctor should be consulted.
- Switch off heat pump, Contact qualified personnel.

# 3 Warranty, guarantee, liability

Guarantee claims are valid as part of a heat pump maintenance agreement.

## 3.1 Technical requirements for warranty and guarantee claims

The following technical requirements must be observed as a precondition for a warranty and guarantee claim.

**Regular maintenance**

- Have the heat pump serviced annually by qualified personnel.

**Specifications for the heating system's fill-up/-make-up water**

- **Check pH value: this must be in the range of 8.2 to 9.5**
- Avoiding scale buildup (=limescale on heat exchanger surfaces):
  - Take the water hardness into account
  - Soften the fill-up water, or better: desalinate it.
- Avoiding water-side corrosion (is triggered by the oxygen in the water):
  - Correct system planning, correct dimensioning, take material combinations into account.
  - Repair leaks immediately.
  - Expansion tank (prevents air suction when the system cools down): Correctly set the pressure, check it regularly.
  - Existing underfloor heating: Take care with old, diffusion-open plastic pipes (separate the system).

## 3.2 Conditions for claims

For warranty and guarantee claims observe the following points:

- The warranty begins at the time at the time of handover (delivery note, commissioning log).
- The warranty period is calculated from the date of initial commissioning (according to the control's operating hour counter).
- The warranty periods are based on the relevant regulations.
- We must be notified promptly and accurately of any damage incurred, so that the cause can be clarified.
- If the system has defects despite correct installation (in compliance with the technical documentation), we grant a warranty provided that the system has been examined by the plant customer service (commissioning log).
- The guarantee applies to technical, construction-related faults and faults in the manufacture of the system that prevent correct and problem-free usage.
- We are not liable for parts that were not produced by SOLARFOCUS. However, we are prepared to transfer our existing claims against the producer (relating to this defect) to the buyer.
- In fulfilling the warranty/guarantee services, we shall cover only the assembly time and the materials used, but not any travel or accommodation costs necessary for the fitters/engineers or any return transport costs.
- SOLARFOCUS GmbH assumes no liability for any consequential costs of damages.

- The repair and/or warranty replacement shall be carried out on site or in the SOLARFOCUS factory at our discretion.
- The company SOLARFOCUSwill determine whether such work requires a repair or whether the parts are to be replaced free of charge.

## 3.3 Claims rendered void

The warranty and guarantee claims are rendered void if one of the following points applies:

- Non-compliance with the technical requirements > 4
- Damage during transport.
- Wilful damage.
- Damage due to force majeure (water, fire, etc.).
- Non-observance of information in the planning, installation and operation manual.
- Insufficient energy or water, fault in the hydraulics.
- Incorrect operation, failure to perform maintenance and cleaning as prescribed.
- Commissioning and maintenance carried out by non-certified companies.
- Undocumented commissioning (no commissioning log) and/or maintenance (maintenance log).
- It is almost impossible to produce flawless painted parts; for this reason, slight defects that do not adversely affect proper use shall not be deemed as grounds for complaint.
- No claims can be accepted under the warranty if unauthorised intervention (or action that has not been explicitly approved by us the manufacturer) has been carried out. In addition, the goods must be paid for within the specified payment timeframe.

## 3.4 Limitation of liability

SOLARFOCUS GmbH accepts no liability for injury or material damage resulting from:

- Failure to observe the instructions in this manual.
- Use of the product for any purpose other than for its intended use.
- Deployment of unqualified personnel.
- Use of non-approved spare parts.
- Technical modification of the product by the system operator.

# 4 Product information

## 4.1 Proper use

The air source heat pump **vamp**$^{air}$ may only be installed in closed hot water heating systems and serves for building heating and domestic hot water heating.

## 4.2 Product description

The air source heat pump **vamp**$^{air}$ is a compact air source heat pump for outdoor installation. As standard, it has a cooling function which extracts heat from the heating surfaces in the living area (underfloor heating, wall heating) and cools it by reversing the circulation.

**vamp**$^{air}$ works with inverter technology and Enhanced Vaporized Injection > 7. The defrosting of the evaporator is done by circulation reversal.

**Rear side (intake grille)**

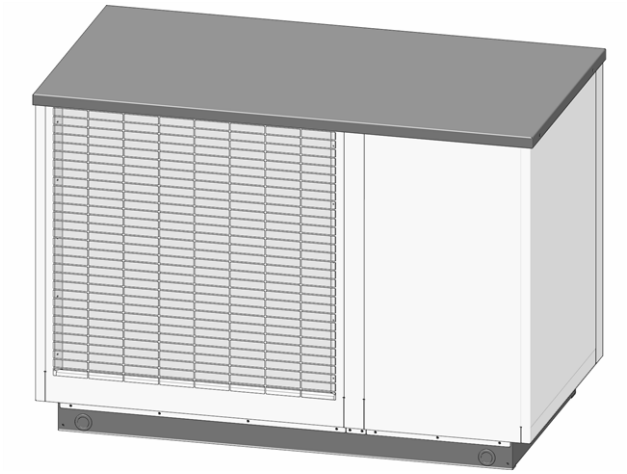


Abb. 2-1

**Front side (soundproofing slats)**

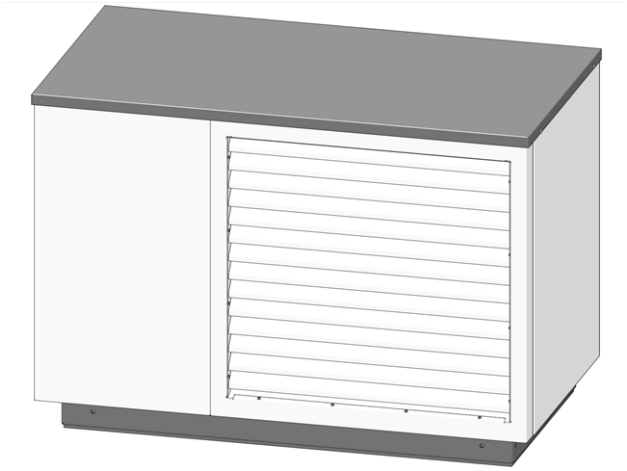


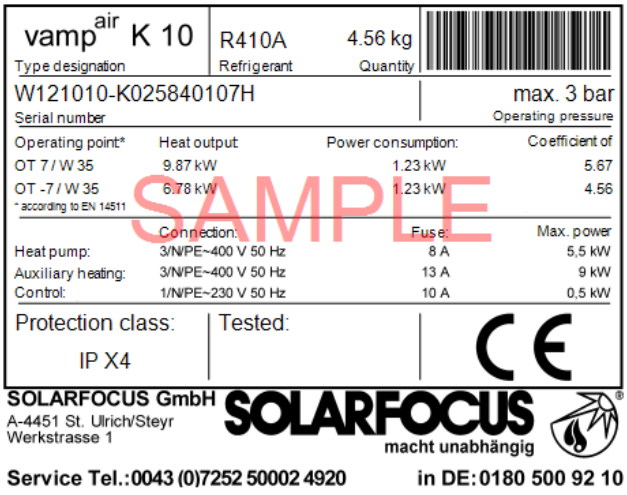
Abb. 2-20: View K 08, K 10

## 4.3 Spare parts

For repairs use only original spare parts or parts approved by the manufacturer (e.g. standard parts).

The manufacturer cannot accept any liability for damage caused by spare parts not authorised by the manufacturer.

## 4.4 Type plate




The type plate is attached to the cover *1* (remove cover *2* ).

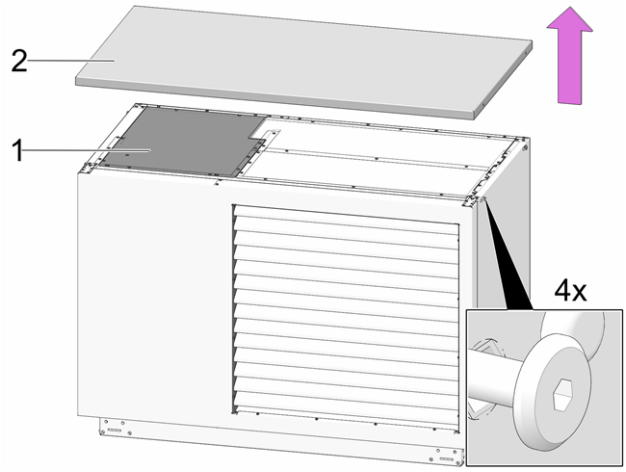



Abb. 2-3: Type plate position

## 4.5 CE declaration of conformity

This product complies with European directives and complementary international requirements. Conformity is verified with the CE marking, the declaration of conformity is with the manufacturer.

## 4.6 Safety devices

**Overtemperature reset (OTR)**

The overtemperature reset (OTR) is a safety device that prevents overheating of the electric heating element > 8 (optional accessory).

Functioning: The OTR stops the heating element at a temperature of ~85°C.

► Resetting the overtemperature reset (after tripping) > 34

**Safety valve (to protect against excess pressure in the system)**

The safety valve *1* is a safety device for protecting against overpressure in the water circuit of the heating system.

Functioning: The valve opens when the system pressure exceeds 3 bar. Water/steam are discharged into an open drain via a blow-off line, which avoids consequential damage to the heating system components. The safety valve is closed during normal operation.

The safety valve is not included and must be installed by the customer.

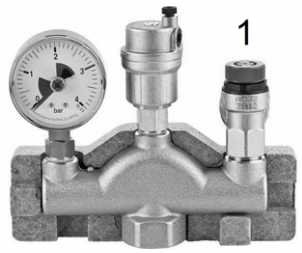



Abb. 2-4_Safety valve integrated into safety group.

## 4.7 Functional components

### vamp$^{air}$ K 08 and K 10

The fan *2* sucks the ambient air (outside air) through the evaporator *3* and blows it out through the soundproofing slats *1*.

The condensate formed during defrosting of the evaporator is discharged through the outlet *8*.

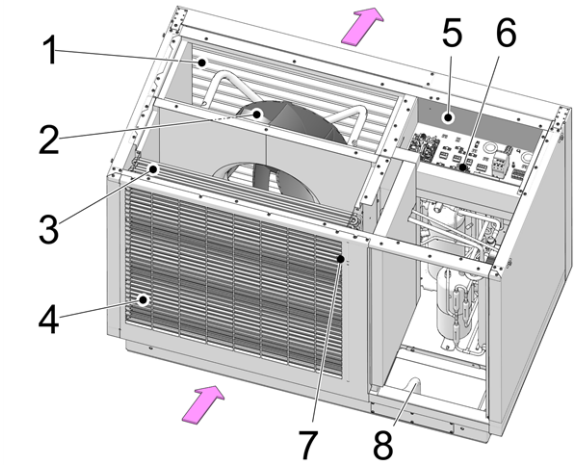



Abb. 2-5

1 Soundproofing slats
2 Fan
3 Evaporators
4 Intake grille
5 Terminal area (electrical connection terminals)
6 Overtemperature reset (OTR) [1]
7 Outside temperature sensor
8 Condensate drain

[1] Only when using electric heating element (optional accessory)

## 4.8 Principle of operation

The function of a heat pump is similar to that of a refrigerator from a technical standpoint, but reversed. The refrigerator extracts heat from the food to be cooled and releases it to the room air.

The heat pump **vamp**$^{air}$ withdraws heat from the outside air and delivers it to the heating system.

Four processes are decisive in the cooling circuit of the heat pump:

### Evaporation

The evaporator *2* takes the circulating refrigerant energy from air and changes its state from liquid to gaseous.

### Compression

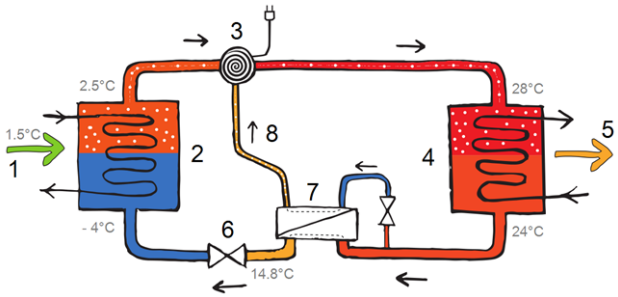
In an electrically driven scroll compressor *3*, the gaseous refrigerant is heated by compression.

### Liquefaction (condensation)

The absorbed thermal energy is delivered to the heating system. The gaseous refrigerant is cooled in the condenser (plate heat exchanger) and liquefied again *4*.

### Expansion

The pressure of the liquid refrigerant is reduced, resulting in partial evaporation. The result is a mixture of liquid and gaseous refrigerant (= wet steam). The refrigerant cools down.




1 Energy from outside air
2 Evaporators
3 Scroll compressor
4 Condenser
5 Discharge of heating heat
6 Expansion valve
7 Economizer-heat exchanger (for Enhanced Vaporized Injection)
8 Enhanced Vaporized Injection


## 4.9 Innovative technologies

### Inverter technology

The scroll compressor not only works in on/off mode, but is operated with output control (modulating, according to the current power requirement).

Advantage:

- Precise power adjustment.
- Increased efficiency through reduced pulsing.
- Quieter operation on average due to reduced speed in the partial load range.
- Reduction of the power of secondary drives (fan, primary circuit pump).

**Enhanced Vaporized Injection**

In the scroll compressor, wet steam is injected from the economizer heat exchanger for cooling.

Enhanced Vaporized Injection increases efficiency, while the power requirement is reduced at the same time. Thus higher flow temperatures and higher heating output (especially at low outside temperatures) are possible. The compression temperature decreases, increasing the life expectancy of the compressor.

## 4.10 Smart Grid Ready

The SG-Ready label is a label for heat pumps, the controller of which meet the conditions for inclusion in a future, intelligent power grid *(smart grid* = SG).

Purpose of this function: Load balancing in the electricity networks of the energy supply companies (ESCs).

The technique: The energy supply company sends signals to the heat pump control (by means of a so-called ripple control receiver) and can thus influence the operating mode of the heat pump within a defined range.

This means:

- At peak loads, the heat pump can be switched off.
- Surplus electricity can be converted into thermal energy and stored in the DHW tank or the heating circuit (e.g. screed of the underfloor heating system).

**Electricity supplier lock**

The ESC may switch off the heat pump for a maximum of 2 hours (depending on the tariff, up to 3 times a day) and grants the consumer a reduced rate in return.

**Smart Grid**

The ESC cannot switch off the heat pump temporarily only when needed, but there are four defined operating modes in the heat pump control, which the ESC may trigger depending on the power grid load condition:

Operating state 1 - shut down

- The heat pump is switched off by the ESC (for a maximum of 2 hours, equivalent to the current ESC lock).

Operating state 2 - normal operation

- The control operates in accordance with the required temperatures set by the system operator with regard to room heating and DHW tank charging.

Operating state 3 - start-up recommendation

- The DHW tank is charged to its required temperature (if the required temperature has not yet been reached).
- The heating circuit is activated [1]. The required flow temperature is increased by an adjustable value (can be defined for each heating circuit).

[1] if possible due to the settings, e.g. ambient switch off temperature is not reached, ....

Operating state 4 - startup command

- In this operating state it is possible to set whether only the compressor or the compressor and the electric heating element are activated.
- The DHW tank is charged (within the release times) by an adjustable value above the required temperature.
- The inside setpoint temperature is increased by an adjustable value (can be defined for each heating circuit).

The screens with the corresponding setting parameters are located in the *Service Menu* | *Smart Grid* button. To enter the service menu of the control, a qualified personnel code must be entered.

## 4.11 Accessories

**Electric heating element**

- Optional accessories, Art. 25200
- Depending on the type of connection, the electric heating element achieves an output of 3, 6 or 9 kW.
- Installation on flow (primary circuit).
- An overtemperature reset (OTR) and contactor are pre-installed in the heat pump as standard.
- Further information Please refer to the installation manual of the heat pump.

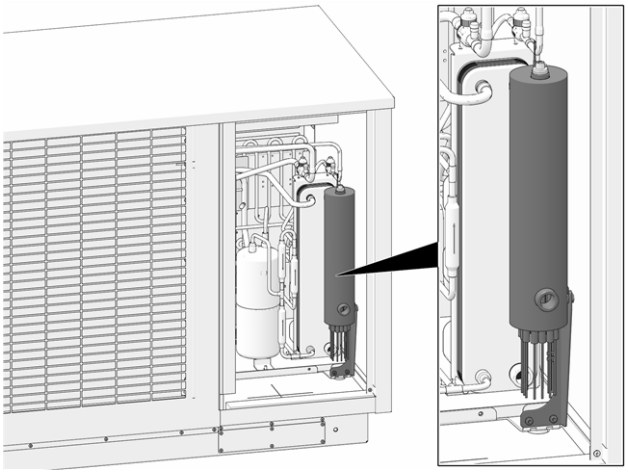


Abb. 2-6: Electric heating element mounted

**Lifting aid**

- Optional accessories, Art. 25300
- To carry, lift and move the heat pump
- 4-piece

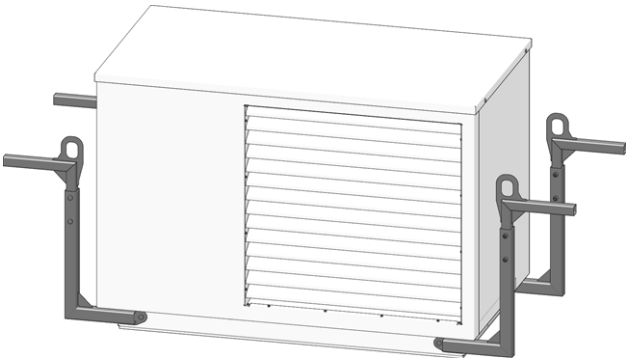


Abb. 2-7

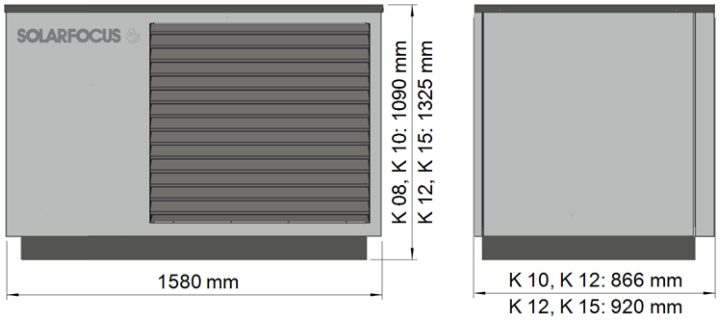
## 4.12 Technical specifications

| vamp$^{air}$ | | K 08 | K 10 | K 12 | K 15 |
|---|---|---|---|---|---|
| Recommended building heating load [1] | [kW] | 5.7 | 7.8 | 9.4 | 15 |
| SCOP, moderate climate W35/W55 (EN 14825) | | 4.2/3.4 | 4.73/3.8 | 4.4/3.4 | 4.95/3.85 |
| ηs seasonal room heating energy efficiency, moderate climate 35 / 55°C | [%] | 165/133 | 186/149 | 173/133 | 195/151 |
| **Energy data** | | | | | |
| Energy efficiency class, moderate climate W35/W55 | | A++ / A++ | A++ / A++ | A++ / A++ | A++ / A++ |
| Energy efficiency class incl. control, moderate climate W35/W55 | | A++ / A++ | A+++ / A+++ | A++ / A++ | A+++ / A+++ |
| **Heat output** | | | | | |
| Max. heat output for OT -7/W35 | [kW] | 5.7 | 7.5 | 10.0 | 14.7 |
| Max. heat output for OT -10/W35 | [kW] | 5.3 | 7.0 | 9.4 | 13.7 |
| Heat output for OT10/W35 | [kW] | 4.57 | 6.09 | 6.46 | 11.56 |
| Heat output for OT7/W35 (EN 14511) @5K | [kW] | 4.29 | 6.19 | 6.06 | 11.98 |
| Heat output for OT2/W35 | [kW] | 3.94 | 5.47 | 7.31 | 9.46 |
| Heat output for OT -7/W35 | [kW] | 5.68 | 5.83 | 10.08 | 11.26 |
| Heat output for OT7/W55 | [kW] | 4.41 | 6.36 | 6.0 | 11.58 |
| **Cooling capacity** | | | | | |
| Max. cooling capacity OT35/W18 | [kW] | 5 | 6 | 10 | 15 |
| Max. cooling capacity OT35/W7 [2] | [kW] | 4 | 5 | 8 | 13 |
| **Power consumption** | | | | | |
| Fan power consumption max. | [W] | 35 | 81 | 60 | 170 |
| Power consumption for OT10/W35 | [kW] | 0.86 | 1.13 | 1.2 | 2.1 |
| Power consumption for OT7/W35 (EN 14511) | [kW] | 0.88 | 1.24 | 1.2 | 2.4 |
| Power consumption for OT2/W35 | [kW] | 0.95 | 1.25 | 1.7 | 2.1 |
| Power consumption for OT -7/W35 | [kW] | 1.8 | 1.66 | 3.15 | 3.29 |
| Power consumption for OT7/W55 | [kW] | 1.4 | 1.92 | 1.8 | 3.41 |
| **Coefficients of Performance** | | | | | |
| Coefficient of Performance COP at OT10/W35 | | 5.3 | 5.4 | 5.4 | 5.5 |
| COP coefficient of performance at OT7/W35 (EN 14511) | | 4.83 | 4.97 | 5.0 | 5.0 |
| Coefficient of Performance COP at OT2/W35 | | 4.15 | 4.37 | 4.2 | 4.49 |
| COP Coefficient of Performance at OT -7/W35 | | 3.16 | 3.51 | 3.2 | 3.42 |
| COP Coefficient of Performance at OT7/W55 | | 3.17 | 3.32 | 3.3 | 3.4 |
| **Sound data** | | | | | |
| Sound power level (EN 12102) | [dB(A)] | 45 | 50 | 48 | 55.7 |
| Sound pressure level at 5 m distance, in free field Silent Mode | [dB(A)] | 18 | 21.7 | 22 | 22 |
| Sound pressure level at 3 m distance, set up in the open Silent Mode | [dB(A)] | 25.5 | 29.2 | 29.5 | 29.5 |
| Sound pressure level at 5 m distance, set up in the open Silent Mode | [dB(A)] | 21 | 24.7 | 25 | 25 |
| Sound pressure level at 4 m distance, set up against a wall Silent Mode | [dB(A)] | 26 | 29.7 | 30 | 30 |
| Sound power level max. (day/silent) | [dB(A)/ dB(A)] | 46 / 43 | 54 / 47 | 50 / 47 | 63 / 47 |
| **Cooling circuit** | | | | | |
| Refrigerant | | | | | |
| Refrigerant fill level | [kg] | R410A | R410A | R410A | R410A |

| **vamp**$^{air}$ | | **K 08** | **K 10** | **K 12** | **K 15** |
|---|---|---|---|---|---|
| GWP (according to EN 378), kg CO2 equivalent per kg | [kg/kg] | 4.78 | 4.78 | 6.7 | 6.7 |
| CO2 equivalent | [t] | 9.98 | 9.98 | 13.99 | 13.99 |
| Condenser material | | 1.4401/Cu | | | |
| **Operating limits** | | | | | |
| Operating limit outside air min. | [°C] | -22 | | | |
| Operating limit outside air max. | [°C] | 35°C | | | |
| Operating limit heat-side air min. | [°C] | 26°C | | | |
| Operating limit heat-side air max. | [°C] | 65°C | | | |
| Operating limit outside air at W60 | [°C] | -22°C | | | |
| Operating limit outside air at W65 | [°C] | -5 | | | |
| Water hardness | [°dH] | 4 – 8.5 | | | |
| pH value | | 7.5 – 9 | | | |
| Conductivity | [µS/cm] | 10 – 500 | | | |
| Free chlorine | [mg/l] | < 0.5 | | | |
| **Electrical data** | | | | | |
| Protection type (IP) | | IP X4 | | | |
| - 1-phase version (K 08.1, K 10.1, K 12.1, K 15.1) | | | | | |
| Number of compressors | | 1 | | - | |
| Compressor connection | | ~230 V, 50 Hz, 5,5 kW | | - | |
| Control connection | [A] | ~230 V 50 Hz | | - | |
| Compressor fuse | [A] | 25 | | - | |
| Control fuse | [A] | 10 | | - | |
| Starting current | [A] | 15 | | - | |
| - 3-phase version (K 08.3, K 10.3, K 12.3, K 15.3) | | | | | |
| Number of compressors | | 1 | | | |
| Compressor connection | | ~400 V, 50 Hz; 5,5 kW | | ~400 V, 50 Hz; 8 kW | |
| Control connection | | ~230 V, 50 Hz | | | |
| Auxiliary heating power consumption max. | [kW] | 3 / 6 / 9 | | | |
| Auxiliary heating connection | | ~400 V, 50 Hz | | | |
| Compressor fuse | [A] | 13 | | 16 | |
| Control fuse | [A] | 10 | | 10 | |
| Auxiliary heating fuse | [A] | 13 | | 13 | |
| Starting current | [A] | 6.5 | | 8 | |
| **Dimensions** | | | | | |
| Height | [mm] | 1090 | | 1325 | |
| Width | [mm] | 1580 | | 1580 | |
| Depth | [mm] | 870 | | 920 | |
| Weight<br>Weight (including packaging) | [kg] | 348<br>373 | | 401<br>426 | |
| **Connections** | | | | | |
| Connection for heating flow/return | ["] | G 5/4" OT | | | |
| **Flow rates** | | | | | |
| Air flow rate | [m³/h] | 1300 | 2900 | 2000 | 4400 |
| Min. heating volume flow rate | [l/h] | 520 | 520 | 800 | 800 |
| Min. heating volume flow rate for defrosting and commissioning[3] | [l/h] | 1560 | 1560 | 2500 | 2500 |
| Heating volume flow rate, at OT7/W35 and 5 K | [l/h] | 1080 | 1080 | 2080 | 2080 |

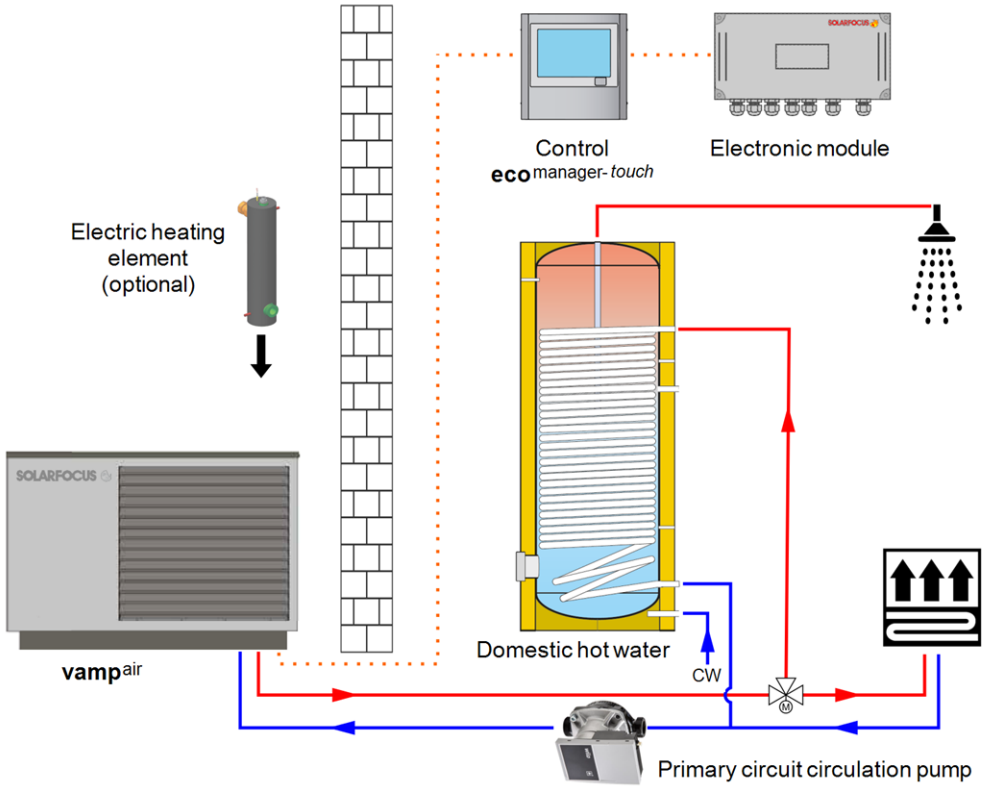
[1] At standard outside temperature -14°C, heating limit temperature 15°C, flow 35°C/return 28°C, taking into account 5% share of peak load heat generator (without domestic hot water)
[2] With expansion set *low-temperature cooling*
[3] If this volume flow is not achieved via the heat pump's plate heat exchanger (=heating volume flow), commissioning is not possible.

## 4.13 Dimensions




## 4.14 System Overview

### vamp$^{air}$ with heating circuit and DHW tank



# 5 Use and operation

### Touch display for operation

When the display is supplied with power, the **eco**manager-*touch* control starts. The control is started up to show the main screen.

Operate the touch display with your fingers, do not use any hard or pointed objects.

If no inputs are made for 5 minutes (factory setting), the display will switch to standby mode.

Tapping the display again restarts the display with the main screen.

#### Buffer battery in operating element

A replaceable buffer batter (CR2032) ensures that data (time, settings) are retained in the operating element when the power supply is switched off.

## 5.1 Main screen of the control

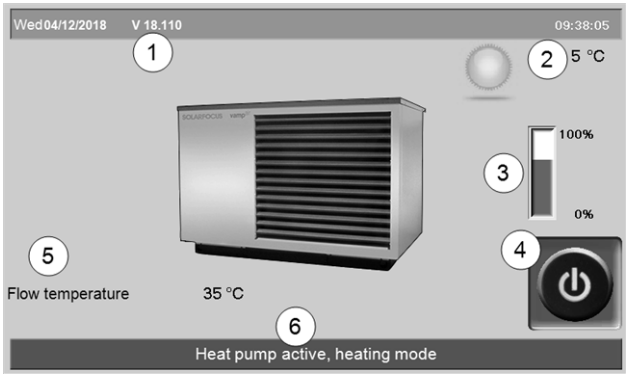
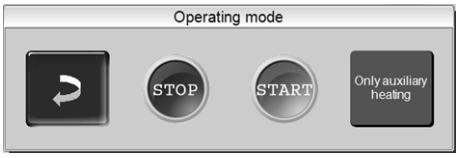



Abb. 2-8: Main screen

1 Software version for control
2 Outside temperature
3 Power (speed of the compressor)
4 Operating mode
5 Flow temperature of the heat pump
6 Status line

Tapping the main screen changes to the *Selection menu*> 13

## 5.2 Operating mode




### STOP

Heat pump and electric heating element are switched off. No heating requirements of the connected devices are fulfilled.

Frost protection function is guaranteed. If the outside temperature falls below +2°C (factory setting), the primary circuit circulation pump and, if necessary, the compressor (or electric heating element) are switched on.

### START

After pressing the START button, the heat pump is ready for operation, and is able to fulfil heating requests from the connected devices. The heat pump goes into standby status as soon as a heating request is fulfilled, or the time release *> 5.4.3 Blocking times for electric heating element/heat pump* > 14 is no longer available.

### electric heating element only

The heat pump is switched off. Heating requests are met by the electric heating element. Usage: For exceptional situations, e.g. in case of a compressor operating fault.

#### Automatic defrost

At temperatures below 5°C, the water contained in the outside air settles on the evaporator of the heat pump in the form of frost and ice.

The defrost is automatically triggered by the control at regular intervals by heat is supplied to the evaporator by circulatory reversal.

## 5.3 Selection menu

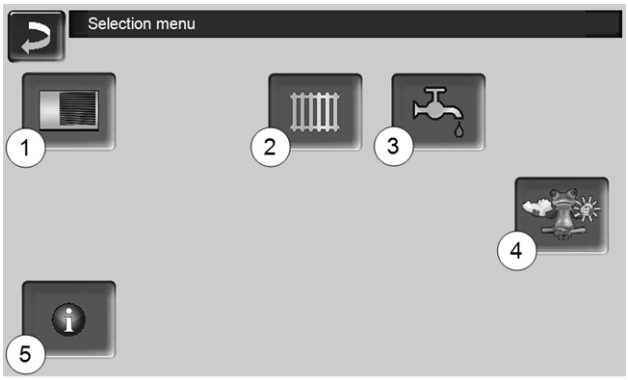



Abb. 2-9: Selection menu

1 Customer menu > 14
2 Heating circuit > 18
3 Domestic hot water heating > 23
4 Weatherman function (optional)> 31
5 Information

## 5.4 Customer menu

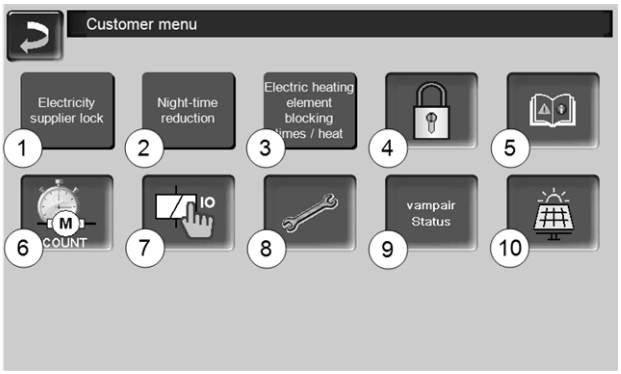



Abb. 2-10

1 Electricity supplier lock > 14
2 Night-time reduction > 14
3 Blocking times for electric heating element/heat pump > 14
4 User lock > 15
5 Message log [1]: Recording of alarm and notification messages > 15
6 Operating hour counter > 15
7 Manual operation > 16
8 Qualified personnel menu > 16
9 **vamp**$^{air}$ Status
10 Photovoltaics (optional)

[1] Button is only visible if a message is active.

### 5.4.1 Electricity supplier lock

Some electricity supply companies (ESCs) are granting discounted electricity rates for heat pumps. For this they reserve the right to interrupt the delivery of electricity at certain times.

Two ways for the controller to recognise these scheduled power cuts as being proper (and thus not interpreted as an operating fault):

- By the electrical ESC-lock signal (in case of doubt ask your electrician)
- By recording on the *ESC lock* screen

If the ESC's electrical lock signal is not available, enter the blocking times announced by the ESC in this screen:

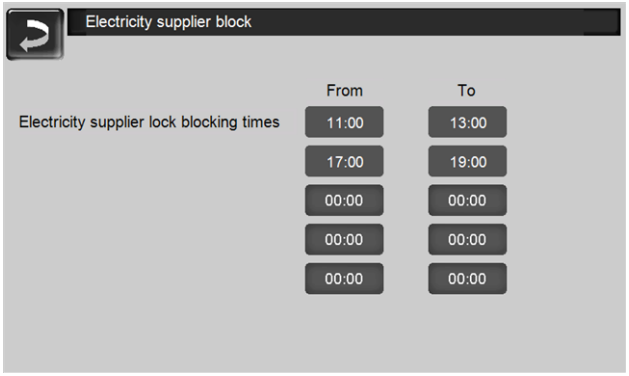



Abb. 2-11

**!** **CAUTION** Before activating the blocking times, the screed drying must be completed. Failure to do so may damage the screed.

### 5.4.2 Night-time reduction

This function is used for possible noise reduction during the night-time hours. This is done by limiting the fan *1* and/or compressor speed *2*.

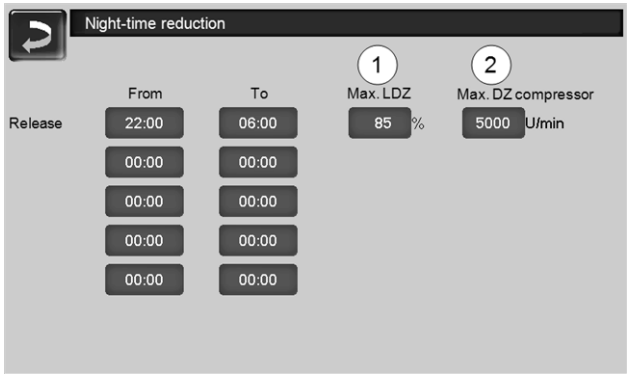



Abb. 2-12

Please note that the power restriction of the heat pump may increase the consumption during auxiliary heating (e.g. electric heating element).

**!** **CAUTION** - Attention: Before activating the reduction, the screed drying must be completed.

### 5.4.3 Blocking times for electric heating element/heat pump

Function: The electric heating element and/or the heat pump can be locked in desired time ranges (e.g. to give priority to other energy source such as solar system, log wood boiler, ...).

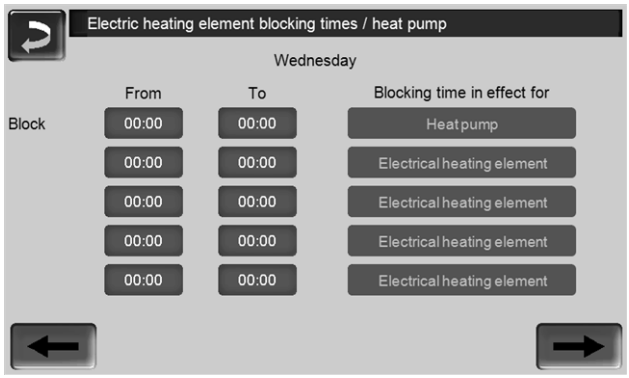



Abb. 2-13

**Blocking time in effect for:**

- Electric heating element
- Heat pump
- Electric heating element and heat pump

### 5.4.4 User lock


Abb. 2-14

The function serves as protection against unauthorised modification of the control parameters. When the user lock is active, the parameters of the individual screens are displayed but cannot be changed. The active user lock is indicated by the padlock icon *1* on the screens.

***User lock* screen**

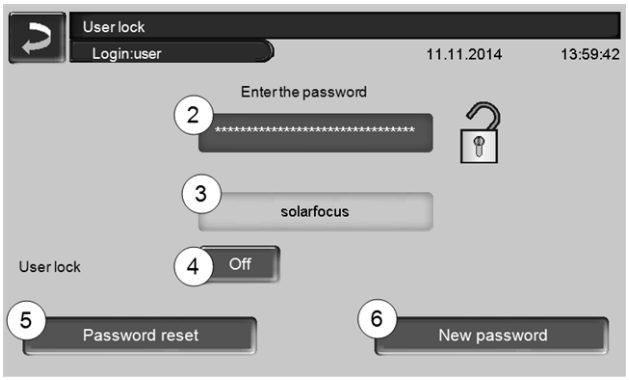



Abb. 2-15

***Enter the password* *2***
To define a new password (maximum 20 characters).

***Password* *3***
The currently valid password is displayed.

***User lock* *4***
*Off*: The user lock is switched off.
*On*: Switches on the user lock function. If the display is not touched for one minute, the user lock is active in the screens.

***Password reset* *5***
The current password is reset to the value *solarfocus*.

***Adopt as new password* *6***
Enter a new password in the input field and press the button. Note on screen keyboard: Confirm input with the button.

### 5.4.5 Message log


Abb. 2-16

The messages displayed on the control are recorded here, with the time that it began and ended. The message with the highest priority is highlighted in red, acknowledged messages are highlighted in green.

Press the *2* button to quit messages. Button *1* opens the power failure log.

Possible messages > 33

### 5.4.6 Operating hour counter

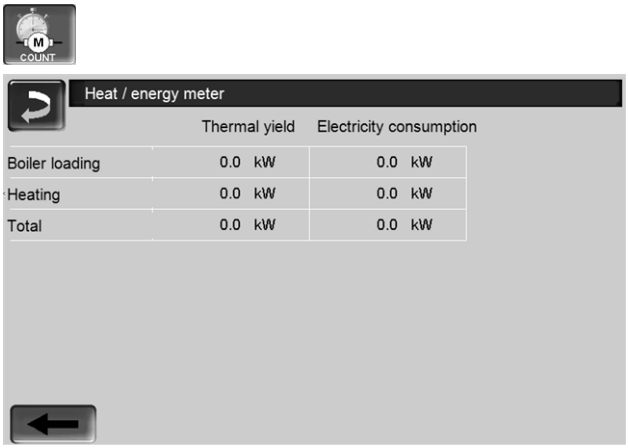



Abb. 2-17

## 5.4.7 Manual operation

Function: Test (correct wiring, function) of the individual components possible, such as electric heating element, primary circuit pump, fan.

Use this screen only for commissioning and service work by qualified personnel.

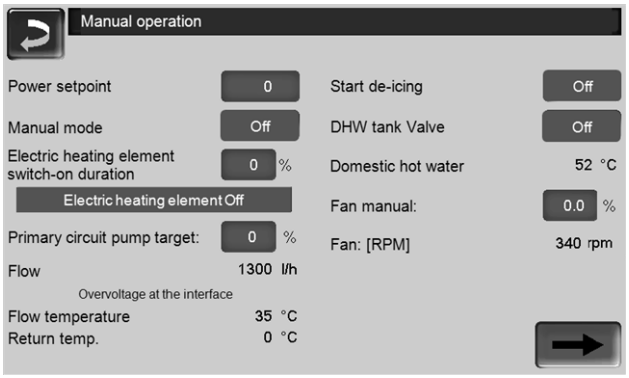



Abb. 2-18

## 5.4.8 Qualified personnel menu

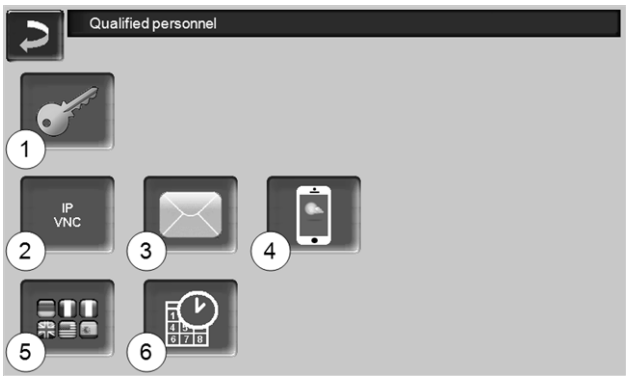



Abb. 2-19

1 Service menu > 16
2 IP-VNC (IP address of the control) > 16
3 Sending emails > 16
4 mySOLARFOCUS app > 28
5 Language selection > 17
6 Date and time > 18

### 5.4.8.1 Service menu

In the *Service menu* there are technical (factory predefined) settings. These can only be accessed by qualified personnel (code input required).

### 5.4.8.2 IP-VNC

The IP address must be must be entered in order to operate the control via the internet.

The following control functions require internet accessibility.

- Remote access to the control > 30
- mySOLARFOCUS app > 28
- Weatherman function > 31
- Sending emails > 16
- Photovoltaic self-consumption optimisation (see manual DR-9960)

#### Hardware

A cable connection is required on site for connecting the control to the router. Use the Ethernet socket (type RJ45) on the rear of the control panel (Touch display).

#### *IP configuration* screen


► To access the *IP-VNC* icon, select the following in the control
  - *Selection menu* screen
  - *Customer menu* screen
  - Qualified personnel button 

► Enter the data for your router. Recommended process:
  - Select *DHCP ON*.
    ↳ The IP address is determined automatically.
  - Select the *DHCP OFF + Adopt* button.

- The IP address must be unique in each Ethernet network and is dependent on the other network components (PC, modem/router, etc.).
- Recommendation: Set a fixed IP address (=*DHCP OFF*), i.e. the control has a constant IP address.

### 5.4.8.3 Sending emails

Function: The **eco**manager-*touch* control automatically sends status emails and alarm e-mails (to stored addresses) if required.

*Status email*: An automatic email (e.g. sent daily) provides information on the current heat pump status.

*Alarm email*: a message is sent when a fault occurs.

Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

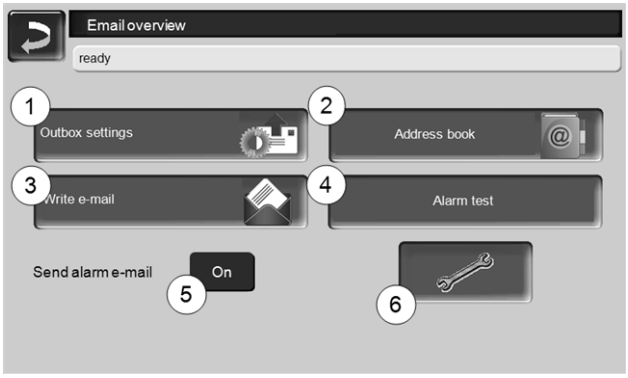



Abb. 2-20

***Outgoing mail server** 1*

Enter the access data for the e-mail server you use.


Abb. 2-21

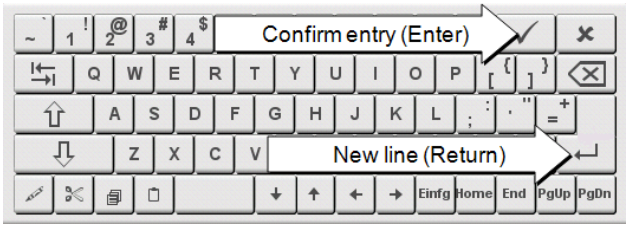
*Use SSL*: Select if the e-mail server uses a TLS/SSL encryption protocol.

***Address book** 2*

A maximum of 10 contacts can be added. If there are several addresses for a contact, these should be comma-separated.

***Write e-mail** 3*

Used to manually send emails. The recipient's address can be selected from the address book using *To* and *CC* or manually entered in the recipient line.




***Alarm test** 4*

Used to test the email settings. Pressing the button sends an email to the recipient *status email.*

***Send alarm email** 5*

Activates/deactivates the automatic sending of alarm emails. The sending of status emails is not affected by this.

***Alarm configuration** 6*

Settings for the alarm emails to be sent automatically.

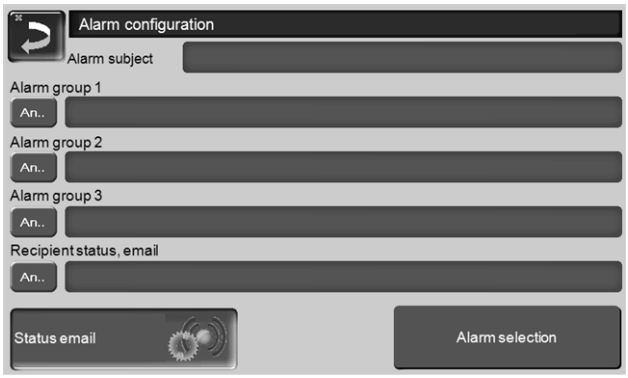



Abb. 2-22

*Alarm subject*: is used for all alarm emails and status emails, therefore it should be as meaningful as possible (e.g. system type / name of system operator; 40 characters available).

*Alarm groups*: For prioritisation of the alarm messages (e.g. *Alarm group 1* receives all messages, *Alarm group 2* receives only operationally-relevant messages, such as information on faults).

*Status email*: Set the time at which the status email is sent. The automatically generated content of the status email is:

- Current status of the heating system
- Fault present, and which

*Alarm selection*: This is where you define which alarm group is notified of which event.

### 5.4.8.4 mySOLARFOCUS app

Pressing the button displays the screen with information relating to online registration for the *mySOLARFOCUS app* (serial number, PIN, status, etc.) > Abb. 2-41, > 28

Detailed information about using the *mySOLARFOCUS app* > 28

### 5.4.8.5 Language selection


Abb. 2-23

### 5.4.8.6 Date and time

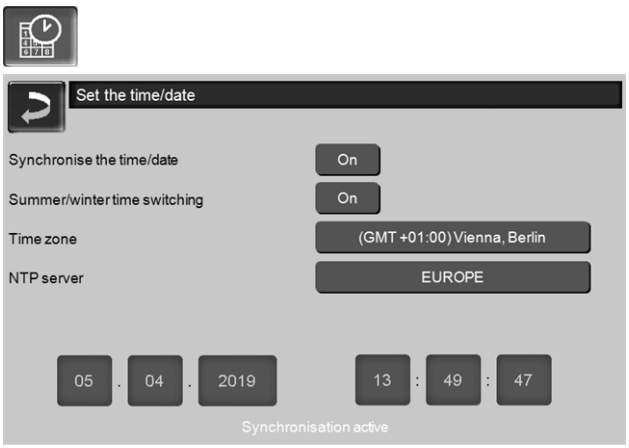



Abb. 2-24

Switchover from summer/winter time takes place automatically when the *Switchover Summer-Winter* *1* parameter has the value *Europe*. Switchover takes place on the last Sunday of the months of March and October. If *America* is set, the clock is changed to summer time on the first Sunday in April.

# 6 Heating circuit

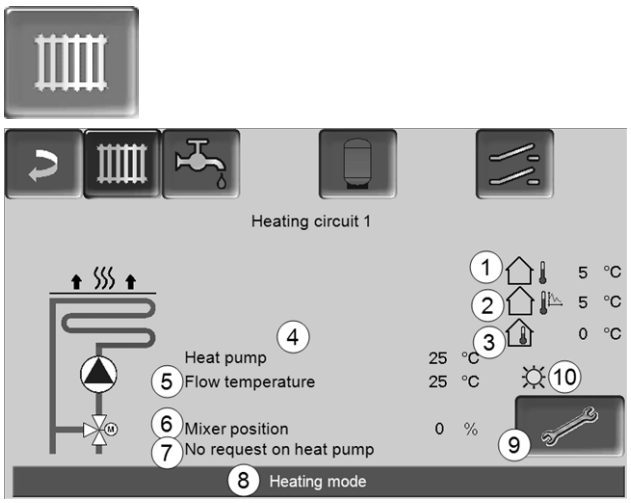



Abb. 2-25

1 Outside temperature
2 Average outside temperature
3 Room temperature (optional)
4 Temperature of the energy source (e.g.buffer tank)
5 Flow temperature of the heating circuit
6 Position of the heating circuit mixing valve
0 % - the mixer is closed, the heating circuit is supplied from the heating circuit return.100% - the mixer is open, the heating circuit is supplied from the flow.
7 Info line: Heating request (Yes/No) to the energy source
8 Status line of the heating circuit
9 Heating circuit settings > 19
10 Display of the heating circuit operating mode set on the optional room temperature controller (Art. no. 6160)

## 6.1 Heating circuit settings

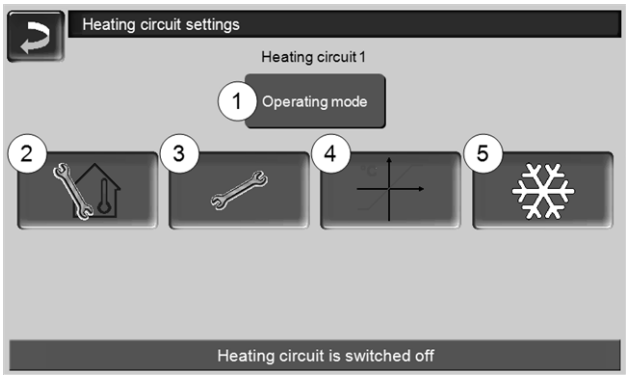



Abb. 2-26

1 Heating circuit operating mode > 19
2 Room settings
(Button is only visible when the *Room effect* parameter is set to *On* or *Sliding*; this can be found in the *Qualified personnel system parameters)*
3 General settings > 20
4 Heating curve > 20
5 Cooling mode > 22

### 6.1.1 Heating circuit operating mode

In the case of heat pumps, the heating circuit should only be operated in **pure heating mode without reduced mode**.

This ensures a steady power request to the heat pump, which can thus be operated at the optimum operating point and at the lowest noise emissions.

In contrast, alternating heating and reduced mode results in larger power requests when changing on the heat pump. To compensate for the power deficit, it may result in the electric heating element being switched on and/or subsequently to increased noise demand.

**Heating mode** 

The heating circuit pump is activated. A shutdown occurs whenever

- the *ambient switch off temperature for heating mode* is reached.
- a room temperature sensor is used and where *inside setpoint temperature for heating mode* has been reached.

The heating circuit is supplied with the *calculated required flow temperature* > Abb. 2-27.

**Reduced mode** 

Heating circuit pump is activated. A shutdown occurs whenever

- the *ambient switch off temperature for reduced mode* is reached.
- a room temperature sensor is used and where *inside setpoint temperature for reduced mode* has been reached.

The heating circuit is supplied with the reduced temperature, i.e. *calculated required flow temperature* minus *reduction*; > Abb. 2-27

**Time switch** 

In this operating mode, the timed switch-over between *Heating mode* and *Reduced mode* is defined. You can enter the times for heating mode *Daily* or *By block*.

Usage example: *Heating mode* should be active during the day, but be changed to *Reduced mode* at night.

**Switch off heating circuit** 

The heating circuit pump and heating circuit mixing valve are switched off. The anti-freeze function for the heating circuit is enabled (i.e. the heating circuit pump is switched on whenever the outside temperature drops below the *anti-freeze temperature*).

**Holiday mode** 

Holiday mode deactivates the active operating mode for the entered duration.

 activates the frost protection mode for the heating circuit for the duration of the holiday.

 activates the reduced mode for the heating circuit for the duration of the holiday.

 This icon indicates activated holiday mode in the *Heating circuit* screen.

## 6.1.2 General settings

***Ambient switch off temperature***

If the outside temperature exceeds the value set here, the heating circuit pump is switched off and the heating circuit mixing valve closes.

Ambient switch off temperature for heating mode: 18°C

Ambient switch off temperature for reduced mode: 5°C

This means: the heating circuit is normally automatically switched off during the summer month due to the outdoor temperature.
You can also switch the heating circuit off manually (=operating mode: Switch off heating circuit).

***Anti-freeze temperature***

If the outside temperature drops below the value set here, the heating circuit pump is switched on.

***Buffer difference***

The heat pump starts when the *tank temperature top* falls below the *required flow temperature* minus the *buffer difference*.

Example:
- Current required flow temperature = 50°C
- Buffer difference = 5°C

The heat pump starts as soon as the *tank temperature top* < 45°C.

A negative buffer difference value is added, i.e. the heat pump is switched on sooner.

Example:
- Current required flow temperature = 50°C
- Buffer difference = - 5°C

The heat pump starts as soon as the *tank temperature top* < 55°C.

***Outside temperature delay***

The delay set here is used to determine an average value for the outside temperature (= Average outside temperature).

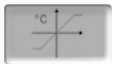
The heating circuit pump switches on if the Average and the Current outside temperature fall below the ambient switch off temperature (within the heating period), or below the reduced mode ambient switch off temperature (outside the heating period).

The heating circuit pump switches off again as soon as the current outside temperature rises above the value of the ambient switch off temperature.

***Heating circuit name***

The heating circuit can be given an individual name.

## 6.1.3 Heating curve



The heating circuit flow temperature is controlled by the heating circuit operating mode > 6.1.1 and by the outside temperature. The heating curve represents the relationship between these two temperatures. I.e. the control uses the outside temperature to calculate the temperature (=*calculated required flow temperature*) with which the heating circuit is supplied.

In *heating mode* the heating curve for heating mode ***4*** (red) is used.

In *reduced mode* the heating curve for reduced mode ***5*** (= heating curve for heating mode minus *reduction*) is used.

The heating curve must be adapted to suit each building and its heating system.

**2-point heating curve**

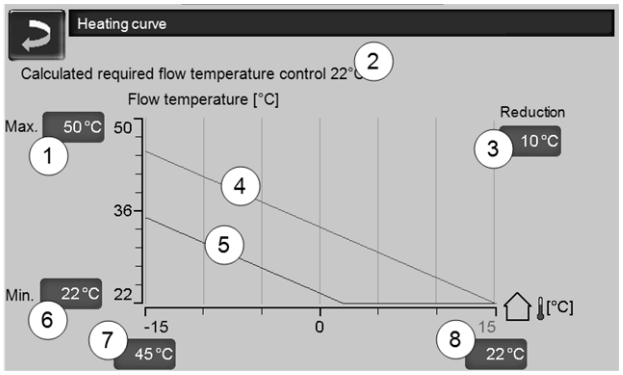



Abb. 2-27

1 Maximum heating circuit flow temperature[1]
2 Calculated required flow temperature
3 Reduction (the value by which the reduced temperature is lower than the heating temperature)
4 Heating curve for heating mode (shown in red)
5 Heating curve for reduced mode (blue)
6 Minimum heating circuit flow temperature[1]
7 Flow temperature at outside temperature -15°C
8 Flow temperature at outside temperature +15°C

**1)** **CAUTION** - This temperature is system-specific and must be agreed with the heating engineer. Only to be set by qualified personnel.

The desired heating circuit required flow temperature in heating mode is set for an outside temperature of -15°C *7* and +15°C *8*. Between these outside temperatures, the required flow temperature is calculated from the characteristics of the heating curve (interpolated).

**Example for calculation of required flow temperature** (see the following illustration):
Flow temperature at outside temperature of -15°C = 45°C
Flow temperature at outside temperature of +15°C = 22°C
Current outside temperature = -5°C

In the heating circuit operating mode *Heating mode,* the following applies:
> The calculated required flow temperature (**Pos.9**) is 37.4°C
> The heating circuit is supplied with 37.4°C.

In the heating circuit operating mode *Reduced mode,* the following applies:
Reduction = 10°C
> The calculated required flow temperature (**Pos.10**) is 27.0°C
> The heating circuit is supplied with 27.0°C.

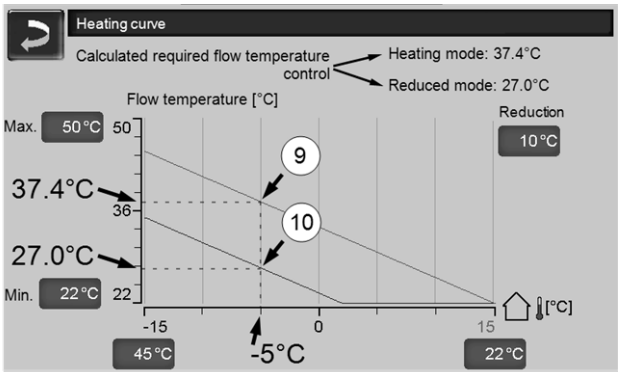



Abb. 2-28

### Adjustment of the 2-point heating curve (in *heating mode*)

Note the currently set temperatures before you change the values.

A change in heating curve cannot be felt immediately. Instead, this depends largely on the kind of heat distribution system (e.g. underfloor heating) and the building standard (brick, lightweight construction etc.). It is advisable to adjust the heating curve in small increments (+/- 2°C) with corresponding pauses (1 to 2 days). Depending on the current outside temperature, different adjustments need to be made.

| Current outside temperature | Perceived room temperature | Recommended adjustment of heating curve |
|---|---|---|
| -15°C to -5°C | too cold | Increase temperature value at *7* |
| | too hot | Reduce temperature value at *7* |
| -5°C to +5°C | too cold | Increase temperature value at *7* and *8* |
| | too hot | Reduce temperature value at *7* and *8* |
| +5°C to +15°C | too cold | Increase temperature value at *8* |
| | too hot | Reduce temperature value at *8* |

### 3-point heating curve

Function must be activated by qualified personnel.

Depending on the standard of building and insulation, it is advisable to change over from the 2-point to a 3-point heating curve. In contrast to the 2-point heating curve, it is possible to stipulate a third temperature *11*, i.e. the heating curve can include a sharp deflection or bend.

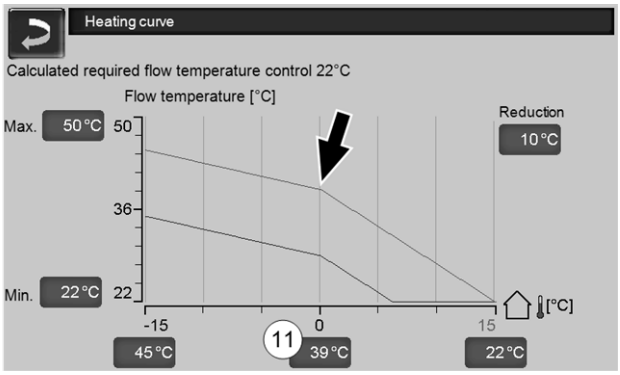



Abb. 2-29

### Adjustment of the 3-point heating curve (in *heating mode*)

Note the currently set temperatures before you change the values.

| Current outside temperature | Perceived room temperature | Recommended adjustment of heating curve |
|---|---|---|
| -15°C to -5°C | too cold | Increase temperature value at *7* |
| | too hot | Reduce temperature value at *7* |
| -5°C to +5°C | too cold | Increase temperature value at *11* |
| | too hot | Reduce temperature value at *11* |

| Current outside temperature | Perceived room temperature | Recommended adjustment of heating curve |
|---|---|---|
| +5°C to +15°C | too cold | Increase temperature value at *8* |
| | too hot | Reduce temperature value at *8* |

### 6.1.4 Cooling mode

The heat pump **vamp**$^{air}$ can be used for room cooling. That is, by reversing the heat pump cycle, not warm, but cooled water is fed into the heating system. This flows through the "heating surfaces" (underfloor heating, wall heating, ..., do not use radiators, too small transfer surface) and can thus lower the room temperature.

> **!** **CAUTION** - Risk of condensation on the heating surfaces, when the dew point temperature is not reached. In order to prevent this, the use of room sensors with integrated humidity sensor (e.g. Art. No. 26610) is strongly recommended.

**Requirements for cooling mode with the heat pump vamp$^{air}$**

- The parameter *Room effect*[1] must be set to the value *On* .
- The heat pump switches to cooling mode when no heat is needed for a heating circuit or DHW tank, and at least one heating circuit makes a cooling request.
- Temperature specifications must be fulfilled: see *inside setpoint temperature*, *ambient switch off temperature*

[1] is on the *Heating circuit system parameters* screen, only visible for qualified personnel.

***Cooling mode* screen**

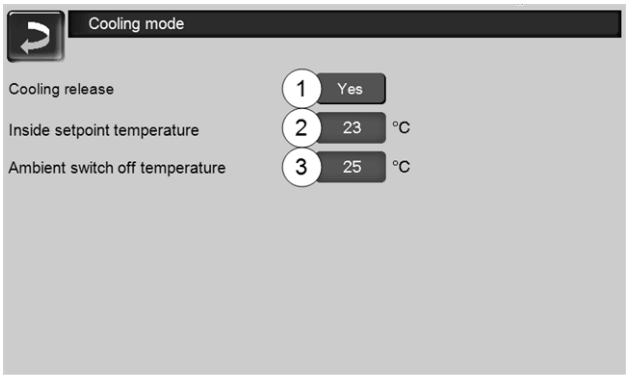



Abb. 2-30

***Cooling release* 1**

*Yes* releases the cooling function for the respective heating circuit.

***Inside setpoint temperature* 2**

If the actual room temperature falls below the value set here, the heating circuit will make a cooling request.

***Ambient switch off temperature* 3**

If the outside temperature drops below the value set here, the cooling function switches off.

**Release times for cooling operation**

For the cooling mode, times can be set within which cooling is permitted (requirements must be met: reaching the required temperatures, ...).

see *Heating circuit operating mode* > 19, *time switch*

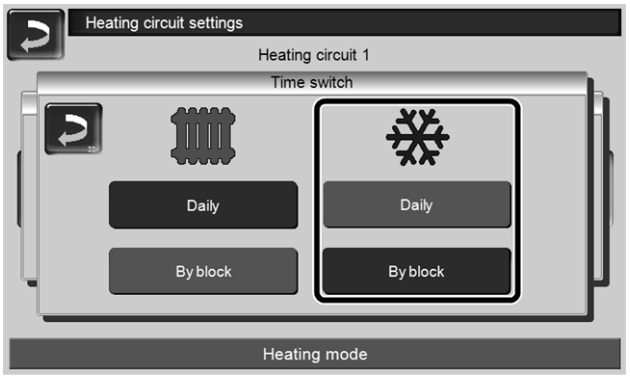



Abb. 2-31

# 7 DHW heating

DHW can be heated up in two ways:

- With a *DHW tank* > 23
  (the energy source of the DHW tank is the heat pump or a buffer tank[1])
- With a *fresh water module* > 24
  (The energy source of the fresh water module is a buffer tank[1])

[1]DHW area in the buffer tank

Warm water rises and collects in the uppermost area ofthe buffer tank (= thermal stratification). The DHW tank or the fresh water module draws the required energy for DHW heating from this uppermost area. Therefore, this (held at an adjustable temperature level) area in the buffer tank is also referred to as the *DHW area*.

## 7.1 Domestic hot water tank

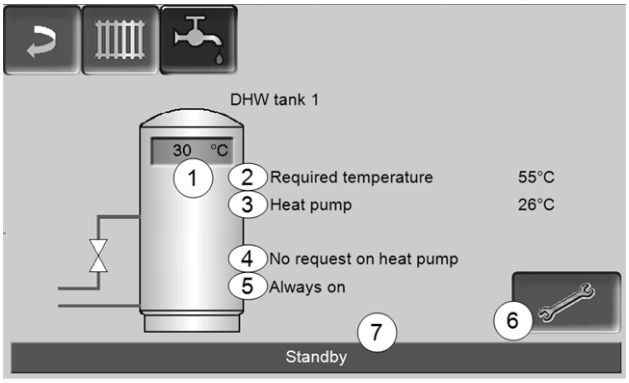



Abb. 2-32

1 DHW tank temperature
2 Required DHW tank temperature
3 Temperature of the energy source (e.g. heat pump, buffer tank)
4 Info line: Charging requirement (Yes/No) to the energy source.
5 DHW tank operating mode > 24
6 DHW tank settings > 23
7 DHW tank status line

### 7.1.1 DHW tank settings

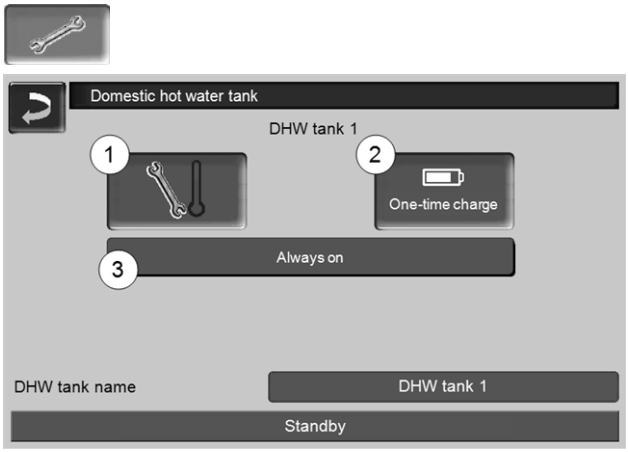



Abb. 2-33

1 Temperatures and hystereses *1*
2 One-time charge *2*
3 DHW tank operating mode *3*

#### Temperatures and hystereses *1*

***Required temperature / hysteresis***

The DHW tank (or the domestic hot water area in the buffer tank) is charged when required until the set *Required temperature 1* is reached. A new charge starts when the DHW tank temperature falls to the value *Required temperature 1* less *Hysteresis*.

Example
- Required temperature 1 = 55°C
- Hysteresis = 10°C

The DHW tank charge starts when the DHW temperature falls to 45°C (requirement: The temperature of the energy source is 5°C above 45°C).

#### One-time charge *2*

Is used to perform one-off re-heating of the DHW tank (e.g. if no release times are defined or the operating mode *Always Off* is set). By pressing the button, the DHW tank is recharged as soon as a charging request is made by the DHW tank.

### DHW tank operating mode *3*

*Always off*: The DHW tank charge pump is switched off permanently.

Exception for frost protection mode: The DHW tank charging pump is activated if

- the outside temperature is <2°C, and
- the DHW tank temperature falls to <10°C.

*Always on*: The DHW tank charge pump is switched on permanently. The pump is controlled taking the parameters *Required temperature 1, Minimal temperature* and *Hysteresis* into account.

Time switches (*Monday-Sunday, daily*, etc.): different time ranges can be set, in which the DHW tank charge pump is switched to *ON*.

The operating mode *Monday - Sunday* is not available if you are using the *mySOLARFOCUS app* > 28.

## 7.2 Fresh water module - FWM (optional)

A fresh water module heats domestic hot water in circulation operation. The circulation pump of the fresh water module starts if a DHW extraction point (also called a *tapping point* e.g. shower or bath) is opened. The energy for heating up domestic hot water is taken from the upper area (called the *DHW area*) of the buffer tank.

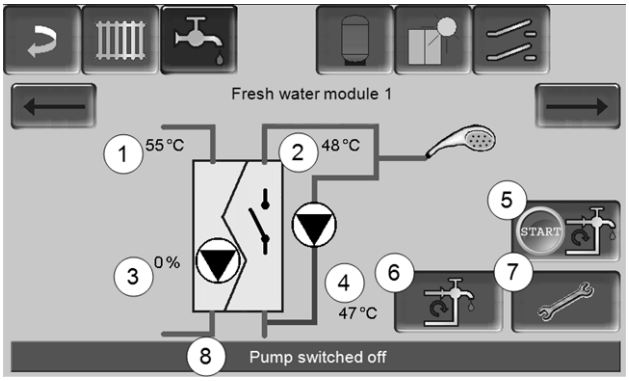



Abb. 2-34

1 Buffer tank temperature
2 Required DHW temperature
3 Speed of the fresh water module pump
4 Recirculation temperature [1](only visible if a recirculation sensor is connected)
5 Start recirculation pump [1](serves for immediate start of the recirculation pump)
6 Circulation pump settings [1] > 25
7 Fresh water module settings > 24
8 Fresh water module status line

[1] The recirculation control is an optional additional function.

### Fresh water module settings *7*

***Pump control***

*Always off*: The fresh water module pump is permanently switched off; no domestic hot water is heated up.

*Always on*: (= manual mode); the fresh water module pump is always switched on.

*Automatic* (= default setting), the fresh water module pump starts when a flow is detected in the pipework by an electronic sensor (e.g. the tap is opened at a connected device).

***Required DHW temperature***

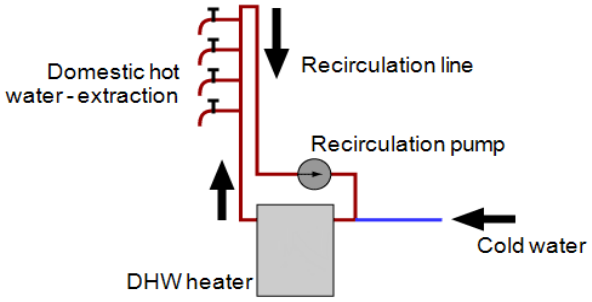
This parameter is only active for the release type *Automatic*. The fresh water module regulates the temperature at which the connected hot water devices receive water to this temperature.

# 8 Recirculation control

(optional additional function)

A recirculation line means that domestic hot water can be quickly available at the extraction points (also called tapping points, e.g. basin, shower, bath, etc.), even with long supply pipes.

Recirculation control is possible with a fresh water module or for a DHW tank.




***Recirculation* screen**

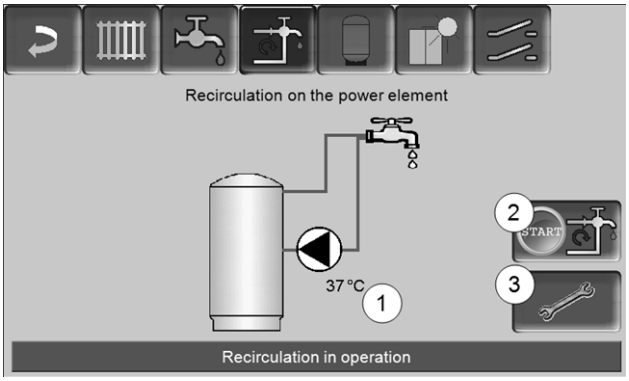



Abb. 2-35

1 Recirculation temperature (only visible if a recirculation sensor is connected).
2 Start recirculation pump (serves for immediate start of the recirculation pump).
3 Circulation settings

## 8.1 Circulation settings

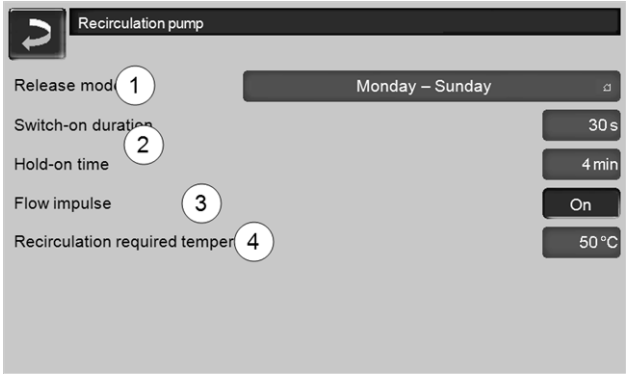



Abb. 2-36

***Release mode* 1**

*Always off*: The recirculation control is switched off permanently.

*Always on*: The recirculation control is switched on permanently. The recirculation pump is only triggered in consideration of the parameters *Switch-on duration* and *Hold-on time*.

Time switches (*Monday-Sunday, by block,* etc.): In this respect, time releases can be set for recirculation control.

***Switch-on duration / Hold-on time* 2**

Depending on the recirculation control selected, the pump is cycled in consideration of these two parameters, i.e. alternation between *Switch-on duration* and *Hold-on time*.

***Required recirculation temperature* 4**

Is the required temperature in the recirculation line (only displayed when a recirculation sensor is connected).

## 8.2 Recirculation control - Options

In order to be able to make use of the following controls, time switch (*Monday-Sunday, in blocks,* etc.) must be selected for the parameter *release type*.

### Time-controlled recirculation

In the event of time-controlled recirculation, the recirculation pumps are triggered on a cycled basis if a time release (see parameter *release type*) is present. Pulsing (i.e. switching between control/no control) is conducted in accordance with the *Switch-on duration* and *Hold-on time* parameters.

Example:
- Release type = *Monday-Sunday,*
- The recirculation control currently has, for example, a time release of 06:00 to 08:00
- Switch-on duration = 30 seconds
- Hold-on time = 4 minutes

The recirculation pump runs for 30 seconds. After this, the pump pauses for 4 minutes in order to then run for 30 seconds again. This repeats in the time release from 06:00 to 08:00. Outside the time release, the pump is not triggered.

### Temperature- and time-controlled recirculation

Temperature-controlled recirculation is only available if a temperature sensor is connected for the recirculation temperature. The control takes the recirculation temperature (*required recirculation temperature*) into account within the time release. This means that the pump is only cycled if the recirculation temperature is below the *required recirculation temperature* minus 5°C.

Example:
- Release type = *Monday-Sunday*
- The recirculation control currently has, for example, a time release of 06:00 to 08:00
- Switch-on duration = 30 seconds
- Hold-on time = 4 minutes
- Required recirculation temperature = 50°C
- Recirculation temperature = 48°C

The recirculation pump is not triggered as the recirculation temperature (48°C) is above the *required recirculation temperature* minus 5°C (50°C minus 5°C = 45°C). If the recirculation temperature falls below 45°C, the recirculation pump is triggered for 30 seconds. After this, the pump pauses for 4 minutes in order to then run for 30 seconds again. This repeats until the recirculation temperature reaches the *required recirculation temperature*. Outside the time release, the pump is not triggered.

### Extension of recirculation by means of a flow impulse

Recirculation being controlled by a flow impulse ***3*** is only possible in fresh water modules > 24, and is used as an extension of the control options previously named.

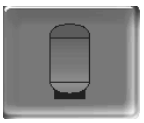
In order to activate this function, the *Flow impulse* ***3*** parameter must be set to *on*. When a DHW extraction point is opened briefly, an electronic sensor detects the pressure drop in the line. The recirculation pump is triggered even if there is no time release.

Exception: If a temperature sensor for the recirculation temperature (=recirculation sensor) is connected and the recirculation temperature is sufficient (see *Temperature- and time-controlled recirculation*), then the recirculation pump is not triggered.

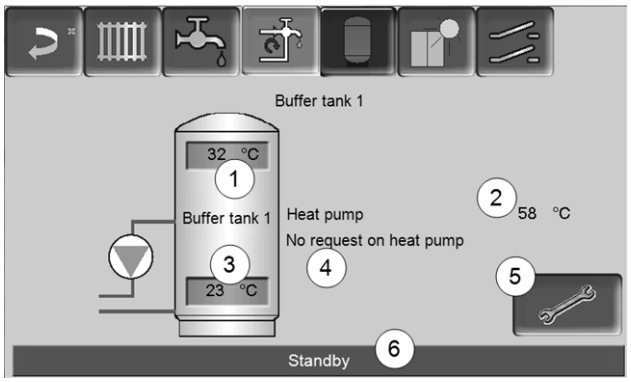
Example:
- Release type = *Monday-Sunday*
- No time release has been set.

As soon as DHW is drawn, the recirculation pump is triggered.

# 9 Buffer tank



(optional additional function)




1 Buffer cylinder temperature top
2 Temperature of the energy source
3 Buffer cylinder temperature bottom
4 Info line: Heating request (Yes/No) to the energy source.
5 Buffer tank settings
Button is only visible when *Time switch* is selected as the buffer tank operating mode; may be adjusted by qualified personnel only.
6 Buffer tank status line

## Set buffer cylinder temperatures

***Min. buffer cylinder temperature top***

When *Buffer cylinder temperature top* falls below this value, the energy source for the buffer tank starts (e.g. heat pump) and the buffer tank is re-charged (upon time release).

***Max. buffer cylinder temperature bottom***

The buffer tank is charged until the *Buffer cylinder temperature bottom* has reached this value.

# 10 Solar system

(optional additional function)

The solar yield is charged into a solar tank. This tank can be a buffer tank or a DHW tank.

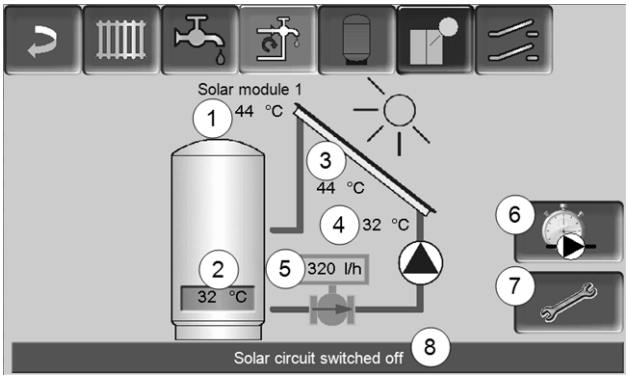



Abb. 2-37

1 Collector temperature (measured at the collector sensor)
2 Tank temperature bottom
3 Collector flow temperature
4 Collector return temperature
5 Solar circuit flow rate
6 Operating hour counter
7 Solar circuit settings
8 Solar circuit status line

Additional information on the solar functions for which a charge is due, (e.g. control of two or three solar circuits) will be provided in a separate manual upon purchase, DR-0007.

The solar yield is displayed in the *mySOLARFOCUS app* > 28 (prerequisite: A solar system controlled by the **eco**manager-*touch* control, including heat meter).

# 11 Temperature difference, charge control

(optional additional function)

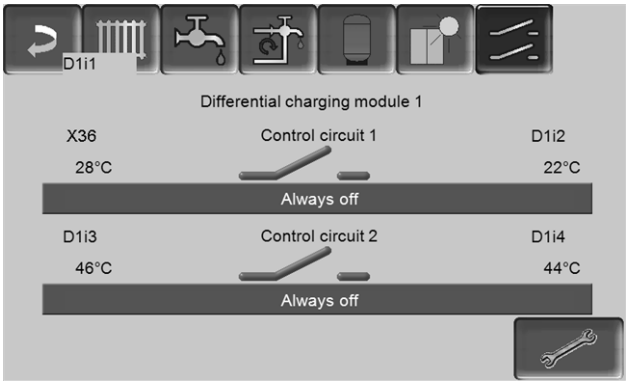



Abb. 2-38

- This function extends the **eco**manager-*touch* control with two (independent) differential control circuits. Suitable, for example, for charge pump control, for (rapid) tank charge, or return-stratification in the tank.
- The components of this charging circuit (e.g. circulation pump, motor valve, etc.) can be regulated by means of temperature differences between sensors.

Further information can be obtained in a separate manual when you purchase this function, DR-0014.

# 12 mySOLARFOCUS app

Function: The *mySOLARFOCUS app* allows you to use your smartphone to access specific **eco**manager-*touch* control functions.

- Set the room temperature and heating circuit flow temperature, including heating times.
- Hot water programs, with one-time DHW tank charge.
- Display the solar yield of your solar power system.

Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

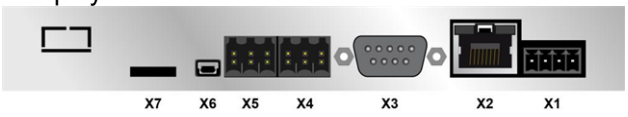
## 12.1 Requirements for use

- The control must be connected to the internet.
- Smartphone with Apple IOS 7.0 or higher or Android OS 4.4 or higher

## 12.2 Connecting the control to the internet

**Create a network connection between the router and the touch display**

► Use the *X2 Ethernet* (RJ45) on the rear of the display.




***IP configuration* screen**


► To access the *IP-VNC* icon, select the following in the control
  - *Selection menu* screen
  - *Customer menu* screen
  - Qualified personnel button 

► Enter the data for your router. Recommended process:
  - Select *DHCP ON*.
    ↳ The IP address is determined automatically.
  - Select the *DHCP OFF + Adopt* button.
  - The IP address must be unique in each Ethernet network and is dependent on the other network components (PC, modem/router, etc.).
  - Recommendation: Set a fixed IP address (=*DHCP OFF*), i.e. the control has a constant IP address.

## 12.3 Register on the web server

The touch display must be registered on the SOLARFOCUS Web server:

► Press the app button

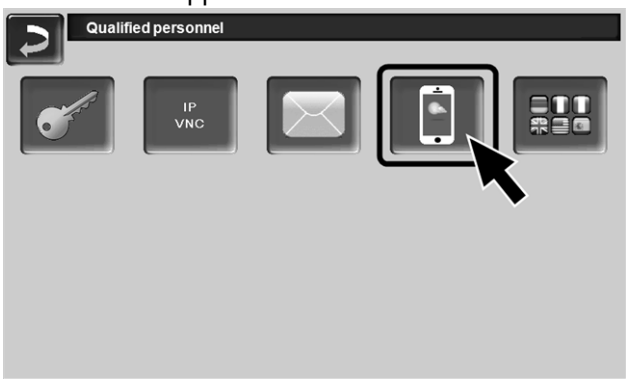



Abb. 2-39

► Continue by pressing *Accept*

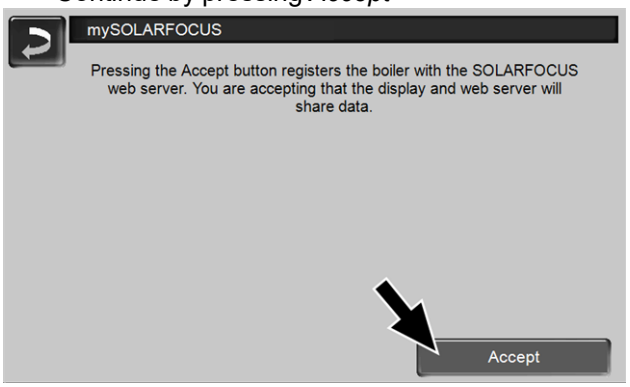



Abb. 2-40

► Note the serial number and PIN
► Switch the *Send data* parameter to *Yes*.

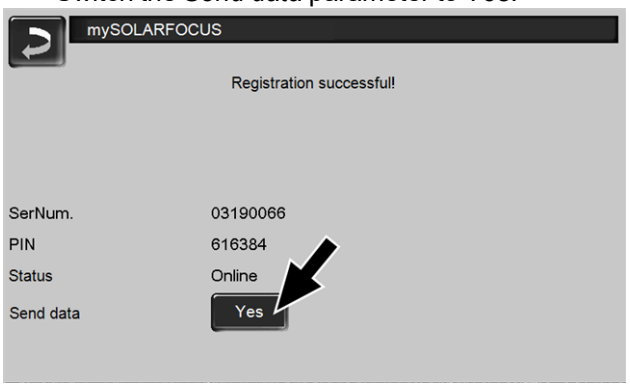



Abb. 2-41

If the connection is faulty, possible causes include:

► Check the connection from the display to the router.
► Check the IP addresses you have entered.
► Check your network router (status, etc.).

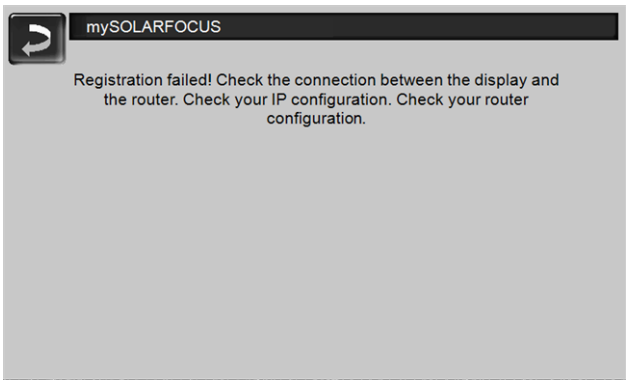



Abb. 2-42

## 12.4 Install app, register user

The *mySOLARFOCUS app* is available in the Apple Store and Google Play Store.

► Download, install and start the app.

► Press the *Register new user* button.


Abb. 2-43

► Enter the information required and press the *Register* button.
  ↳ An email will be sent to the email address you provided.
► Open the email and click on the *Confirm account* link.
  ↳ You can now sign into the app (to sign in, enter your email address and password).

## 12.5 Add system

☑ You have successfully signed into the app.

► Press the *Add new system* button.

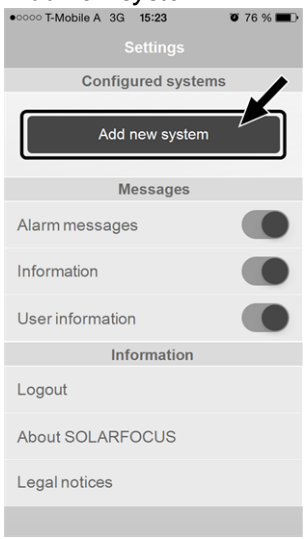



Abb. 2-44

► Enter the data for your heating system (serial number and PIN).

ⓘ The weather forecast data for the weatherman function are sent to the control on the basis of the *Postcode* and *Location* fields.

ⓘ As an alternative to the app, you can also add systems on the website: https://www.mysolarfocus.com

ⓘ Important: In principle only *one* user may access a system. If additional users are to access a system, then they must be approved in advance *Approve additional users* > 30

## 12.6 Use of the mySOLARFOCUS app

In the control, the app icon indicates that the parameter has been changed on the basis of an entry in the app; e.g.

- in the *heating circuit* screen: If *short-term mode* has been activated in the app.
- in the *heating circuit* screen, in *room settings*
- in the *heating curve* screen

Changes using the app:

- On the *heating circuit* screen, only *Daily* time switch is available in the *Time switch* heating circuit mode, and not *By block*.
- In the *heating domestic hot water* screen, the time switches *Monday - Sunday* and *By block* are not available for DHW tank mode.

## 12.7 Approve additional users

You can enable access to your control for additional users, for example heating engineers.

**Issuing approval**

► Select the *Approval* menu item.

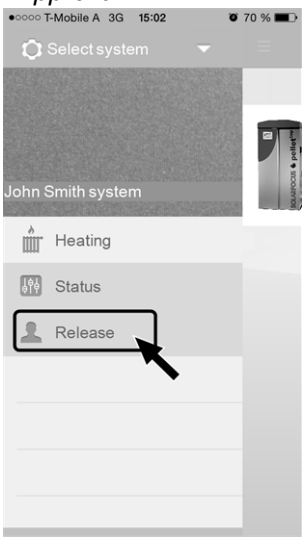



Abb. 2-45

► Enter the user's email address and select the *Invite* button.

↳ The invited user will receive an email with an approval code for the system. They can use this to add the system to their app account.

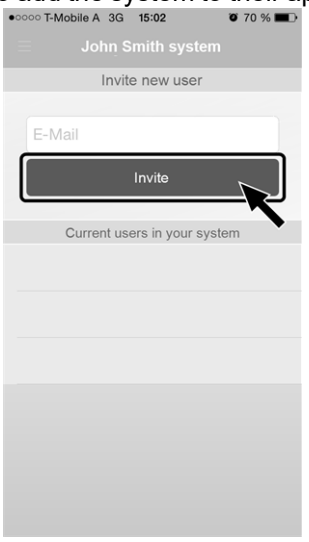



Abb. 2-46

# 13 Remote access to the control

The **eco**manager-*touch* control allows access to the control screens from a PC or mobile device (e.g. smartphone).

Installation and configuration of this function must be performed by the customer (i.e. not included in the commissioning, service and support activities).

Two access options:

- External access: via *SOLARFOCUS-connect*, for a fee
- Access from the home network: via *VNC Viewer*, free

## 13.1 External access: *SOLARFOCUS-connect*

Detailed information can be obtained in a separate manual when you purchase this function, DR-9964.

**Function**

- The control display can be operated externally, via app or web portal.
- Access option for the system operator, as well as other users authorised by them (e.g. family members, heating engineer, SOLARFOCUS customer service).

**Requirements for use**

- Maintenance contract concluded for the heating system (including the *Remote access* option); or order the item (Art. 60893) for a fee.
- Possible as of software version V 21.050 > 13 of the control.
- Internet connection for the control (cable connection, IP address defined > 16, etc.).
- Data line with a bandwidth of >1 Mbit/s.

## 13.2 Access from the home network

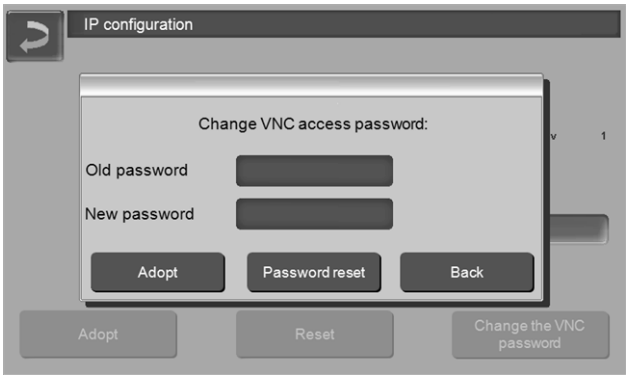
The *VNC* (Virtual Network Computing) software is used for this. The control has an integrated *VNC server*. The free *VNC Viewer* software is required for remote access.

The following points are helpful for setting up a PC/-router to control the VNC server, which requires knowledge of networking technology.

**Installation of VNC viewer for access from a local PC**


- ► Download the free VNC Viewer from the Internet, install it on the PC and start the application.
- ► Enter the previously defined IP address of the control.
  - – As soon as the VNC Viewer is able to access the control, a password must be entered.
  - – The password predefined by the manufacturer is *solarfocus*
  - – After login, the screen view of the control can be seen.

**Change the VNC password**




- ► Press the *Change VNC password* button on the *IP setup* view.
- ► To change it, first enter the old password, then the new password, then press the *Adopt* button.
- ► The new password must be used to log on after restarting the VNC Viewer on the local PC.
- ► Press the *Reset password* button to reset the password to the default password *solarfocus*.

# 14 Weatherman function

Function: The **eco**manager-*touch* control receives current weather forecast data on an ongoing basis. If good weather is forecast, then the control delays starting the heat pump when there is a heating request.

The requirements for using the weatherman function are as follows:

- – Registration of the control on the SOLARFOCUS web server, or in the *mySOLARFOCUS app*, > 28.

After successful online registration of the heating system, the 'weatherman' button *1* is displayed in the *Selection menu* after 2 to 3 hours.

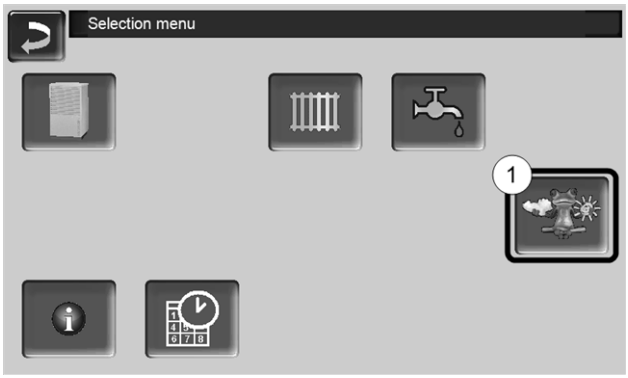



Abb. 2-47

Press button *1* to access the weatherman menu.

If you cannot see the button, check the following (see *mySOLARFOCUS app*, > 28).

- ■ Has your heating system been correctly registered on the SOLARFOCUS web server?
- ■ Is the connection status between the control and the SOLARFOCUS web server *online*?
- ■ Is the *Send data parameter* set to *Yes*?

# 15 Maintenance (and cleaning)

The heat pump requires little maintenance. To maintain maximum efficiency, perform the following activities a few times a year.

## 15.1 Activities required

The responsibility for carrying out the maintenance activities is defined according to type and extent (system operator *SO* or qualified personnel *QP* ).

| Activity | Interval | SO | QP |
|---|---|---|---|
| Keep air pathways clear > 32 | reg. | ✓ | |
| Clean evaporator > 32 | reg. | ✓ | |
| Check system pressure > 32 | monthly | ✓ | |
| Remove dirt and leaves > 32 | reg. | ✓ | |
| Clean cladding > 32 | reg. | ✓ | |
| Clean dirt and sludge trap > 32 | reg. | | ✓ |
| Maintenance by qualified personnel > 32 | yearly | | ✓ |
| Refrigerant testing obligation > 33 | Depending on type | - | ✓ |

### Keep air pathways clear

- Always keep the suction and discharge area of the heat pump free (e.g. observe changed vegetation, drifting snow, ...).
- Remove snow deposits on the top and back of the heat pump to prevent ice formation.

### Clean evaporator

If necessary, wash off dirt or dust deposited on the evaporator surface.

To do this, spray detergent onto the evaporator fins, then rinse with water.

**CAUTION** - The evaporator's thin aluminium fins are fragile and may be damaged by careless handling.

- Clean only with low water pressure.
- Do not work with high-pressure washer.
- Wear gloves to protect against cuts.

### Check system pressure

The water pressure in the heating system can be read on the pressure gauge. As a rule of thumb (for buildings of up to three storeys), the pressure should be 1 to 2 bar for a cold system and 1.5 to 2.5 bar for a hot system.

It is important that the pressure remains constant at all times. A constant fall in pressure requires the addition of extra water and indicates a fault in the system (e.g. a leak).

TIP: Make a note of the set system pressure during initial commissioning.

### Remove dirt and leaves

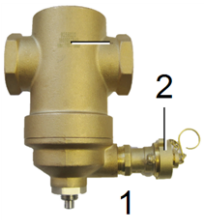
Remove dirt and leaves deposited on the heat pump with a hand brush.

### Remove cladding

Remove accumulated dust and debris on the outside of the cladding with a damp cloth.

Do not use acidic, chlorine-containing or basic detergents or abrasive cleaners.

### Clean dirt and sludge trap




The trap prevents impurities from entering the heat pump from the heating system. Uncleaned traps can cause faults.

Cleaning the trap:
The trap can be cleaned during operation, i.e. no drainage of the lines is required.

- ► Unscrew magnetic rod *1* from the immersion sleeve.
- ► Briefly open the desludging tap *2*.
- ► Close the desludging valve again, screw in the magnetic rod.

Detailed information is provided in the trap manufacturer's documentation, DR-0069.

### Moisture

Directly below the heat pump, condensation from water may form some moisture that is not caught by the condensate tray. This is normal and does not require special measures.

If a larger amount of liquid should escape outside the heat pump, switch off the heat pump and contact the system installer.

## 15.2 Maintenance by qualified personnel

Regular maintenance not only includes the annual inspection of the device, but also the optimization of the system for a more efficient functional sequence of the individual components. This not only extends the life of the device, it also saves energy costs.

Contact your heating engineer or the SOLARFOCUS *Service Hotline* > 3

#### Arrange for a heat pump maintenance contract

By purchasing a maintenance agreement, SOLARFOCUS will manage the annual appointment and contact you directly when a maintenance appointment is due.

## 15.3 Refrigerant testing obligation

In accordance with the *F-Gas Regulation* (EU Regulation 517/2014, in effect from 01/01/2015), a regular leak test of the refrigerant circuit is required for air-to-water heat pumps.

This test is based on the $CO_2$ equivalent of the refrigerant used.

The heat pump **vamp**$^{air}$ is filled with the refrigerant R410A (hermetic system). The greenhouse potential of 1 kg R410A corresponds to 2088 kg $CO_2$-equivalent.

An annual refrigerant test obligation applies from 10 tonnes $CO_2$-equivalent.

**Calculation for vamp$^{air}$ K 08 and K 10**

Refrigerant quantity
x $CO_2$-equivalent R410A
= $CO_2$-equivalent total

4.78 kg x 2088 kg/kg = **9980 kg**

↳ i.e. there is no testing obligation

**Calculation for vamp$^{air}$ K 12 and K 15**

Refrigerant quantity
x $CO_2$-equivalent R410A
= $CO_2$-equivalent total

6.70 kg x 2088 kg/kg = **13989 kg**

↳ i.e. there is an annual testing obligation

# 16 Messages

Messages that arise are shown in the **eco**manager-*touch* control display, each message is saved in the *message log* > 15.

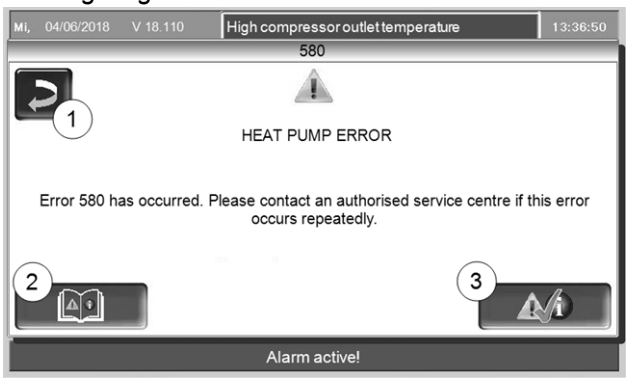



Abb. 2-48: Information window with message

## 16.1 Possible messages

The overwhelming majority of occurring operating faults require remedy by qualified personnel.

For some messages, switching off the heat pump (i.e. de-energizing by switching off the circuit breaker) can remedy the fault. You will be notified of this option in the message window that appears in these messages (*..."disconnect the heat pump from the power supply for 2 minutes)"*.

**Overtemperature reset has triggered**

The overtemperature reset (OTR) is a safety device that prevents overheating of the electric heating element (optional accessory). Function: The OTR stops the heating element at a temperature of ~85°C. After triggering, the OTR must be reset manually > 34. If the overtemperature reset trips, this is indicated on the control display.

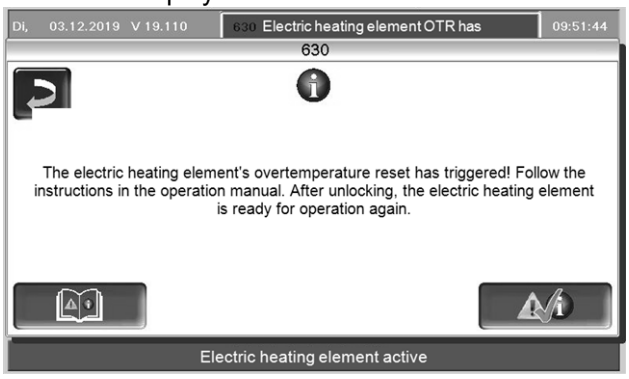



Abb. 2-49.

## 16.2 Reset overtemperature reset

### vamp$^{air}$ K 08 and K 10

**Dismantling the cover**

► Loosen the 4 x cylinder head screws TX25 *1* and remove the covers.

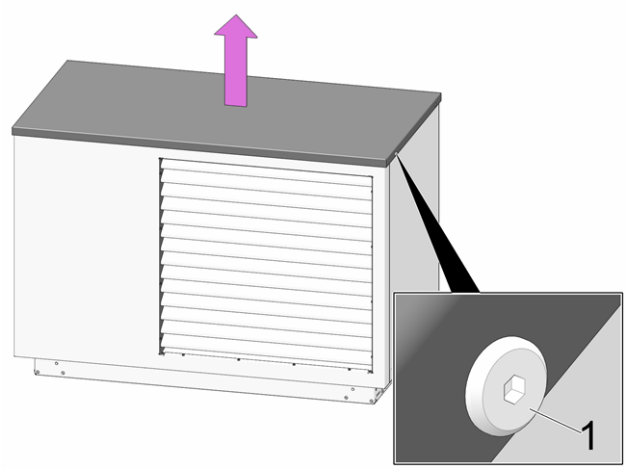



Abb. 2-50

**Dismantle the cover of the terminal area**

**DANGER - There is a risk of fatal electric shocks when working on electrical components of the system**

- Work may be performed only by a qualified electrician.
- Applicable standards and regulations must be observed.

► Loosen 10 pcs. sheet metal screws *1* and remove cover *2*.

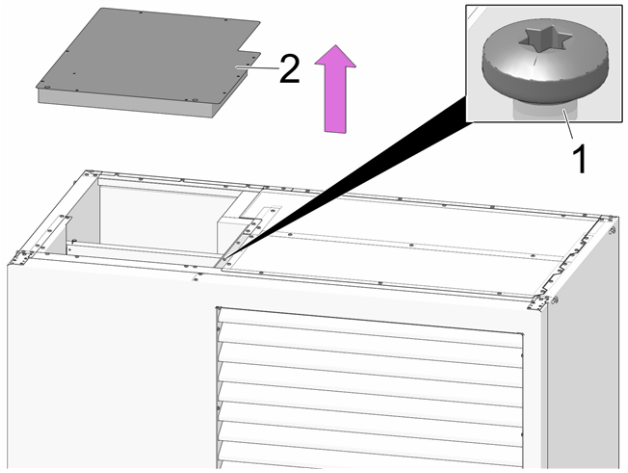



Abb. 2-51

**Reset overtemperature reset**

► Unscrew the black cap *1* and press the button underneath.

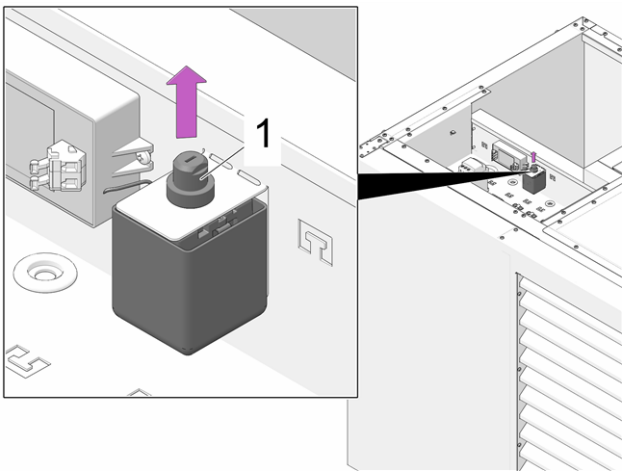



Abb. 2-52: Overtemperature reset

### vamp$^{air}$ K 12 and K 15

**Dismantling the cover**

► Loosen the 4 x cylinder head screws TX25 *1* and remove the covers.

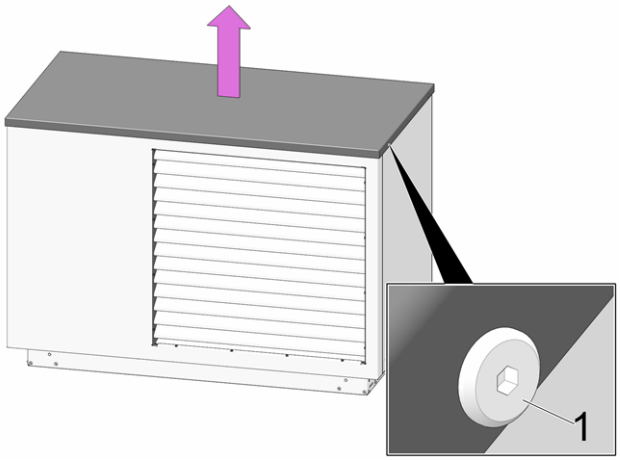



Abb. 2-53

**Dismantle the cover of the terminal area**

**DANGER - There is a risk of fatal electric shocks when working on electrical components of the system**

- Work may be performed only by a qualified electrician.
- Applicable standards and regulations must be observed.

- Loosen 5 pcs. sheet metal screws *1* on underside.
- Loosen 2 pcs. sheet metal screws *2* on both suspensions.
- Lift cover *3* and remove.

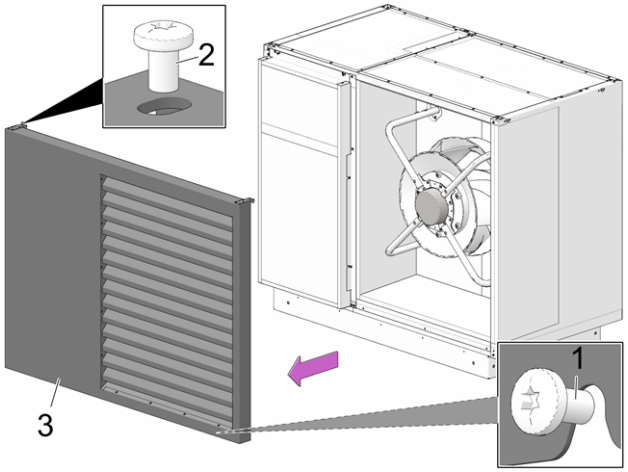



Abb. 2-54

- Loosen 2 pcs. screws *1* on top side.
- Loosen 2 pcs. screws *2* each on left and right side of cover *3*.
- Remove cover *3*.

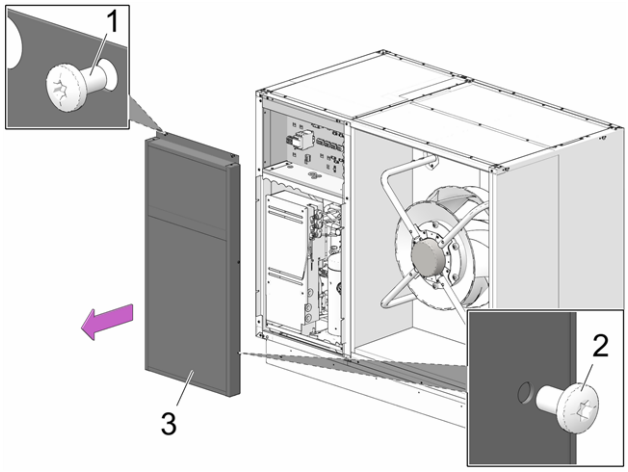



Abb. 2-55

**Reset overtemperature reset**

- Unscrew the black cap *1* and press the button underneath.

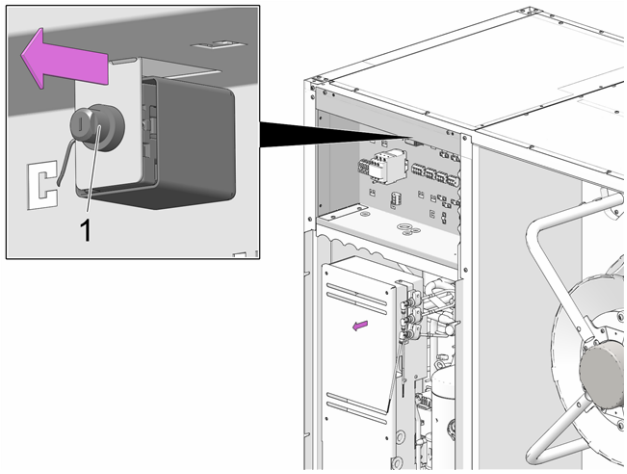



Abb. 2-56: Overtemperature reset

# 17 Shut-down

**Temporarily shut down the heat pump**

Switch off the heat pump by means of the separation device installed on-site installed separator (e.g. circuit breaker).

> **!** **CAUTION** - If there is no power supply to the heat pump, there is no frost protection function in the heating circuit.

**Permanently shut down the heat pump**

Contact your responsible qualified personnel - contact person (SOLARFOCUS service technician or SOLARFOCUS service partner).

# 18 Manufacturer's declaration

SOLARFOCUS GmbH
Werkstrasse 1
A-4451 St. Ulrich/Steyr, Austria

confirms that the tested product was a production sample and fully representative for the current production.

St. Ulrich/ Steyr, 10/01/2019

SOLARFOCUS GmbH

Johann Kalkgruber, CEO

# 19 Technical long datasheet - **vamp**$^{air}$ K 10

| | |
|---|---|
| Type of heat source / sink | Air / water |
| Equipped with additional heater | No |
| Combination heater with heat pump | No |
| Applied standards | EN14825, EN14511, EN12102 |

## 19.1 Average climate

### 19.1.1 Low temperature (35°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 7,9 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 186 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | 6,89 | kW | $T_j$ = -7°C | COPd | 3,35 | - |
| $T_j$ = +2°C | $P_{dh}$ | 4,42 | kW | $T_j$ = +2°C | COPd | 4,62 | - |
| $T_j$ = +7°C | $P_{dh}$ | 2,82 | kW | $T_j$ = +7°C | COPd | 5,33 | - |
| $T_j$ = +12°C | $P_{dh}$ | 3,07 | kW | $T_j$ = +12°C | COPd | 5,71 | - |
| $T_j$ = bivalent | $P_{dh}$ | 7,71 | kW | $T_j$ = bivalent | COPd | 3 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 7,71 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 3 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | -10 | °C | Operation limit temperature | TOL | -10 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,022 | kW | Rated heat output (**) | Psup | 0,2 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,022 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,022 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,019 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 3563 | kWh | | | | |

### 19.1.2 Medium temperature (55°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 8,2 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 147 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | 7,34 | kW | $T_j$ = -7°C | COPd | 2,61 | - |
| $T_j$ = +2°C | $P_{dh}$ | 4,59 | kW | $T_j$ = +2°C | COPd | 3,66 | - |
| $T_j$ = +7°C | $P_{dh}$ | 2,97 | kW | $T_j$ = +7°C | COPd | 4,41 | - |
| $T_j$ = +12°C | $P_{dh}$ | 2,92 | kW | $T_j$ = +12°C | COPd | 5,23 | - |
| $T_j$ = bivalent | $P_{dh}$ | 8,37 | kW | $T_j$ = bivalent | COPd | 2,31 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 8,37 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 2,31 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | -10 | °C | Operation limit temperature | TOL | -10 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02 | kW | Rated heat output (**) | Psup | 0 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,02 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 4733 | kWh | | | | |

## 19.2 Cold climate

### 19.2.1 Low temperature (35°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 9,2 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 157 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | 5,67 | kW | $T_j$ = -7°C | COPd | 3,65 | - |
| $T_j$ = +2°C | $P_{dh}$ | 3,57 | kW | $T_j$ = +2°C | COPd | 4,81 | - |
| $T_j$ = +7°C | $P_{dh}$ | 2,81 | kW | $T_j$ = +7°C | COPd | 5,42 | - |
| $T_j$ = +12°C | $P_{dh}$ | 2,9 | kW | $T_j$ = +12°C | COPd | 5,71 | - |
| $T_j$ = bivalent | $P_{dh}$ | 7,31 | kW | $T_j$ = bivalent | COPd | 2,99 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 5,63 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 2,34 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | 6,9 | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | 2,84 | - |
| Bivalence temperature | $T_{biv}$ | -13 | °C | Operation limit temperature | TOL | -22 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02 | kW | Rated heat output (**) | Psup | 3,6 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,02 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 5684 | kWh | | | | |

### 19.2.2 Medium temperature (55°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 9,9 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 127 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | 6,1 | kW | $T_j$ = -7°C | COPd | 2,86 | - |
| $T_j$ = +2°C | $P_{dh}$ | 3,7 | kW | $T_j$ = +2°C | COPd | 3,81 | - |
| $T_j$ = +7°C | $P_{dh}$ | 2,8 | kW | $T_j$ = +7°C | COPd | 4,73 | - |
| $T_j$ = +12°C | $P_{dh}$ | 3,1 | kW | $T_j$ = +12°C | COPd | 6,39 | - |
| $T_j$ = bivalent | $P_{dh}$ | 7,6 | kW | $T_j$ = bivalent | COPd | 2,37 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 6,1 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 1,84 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | 7,3 | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | 2,24 | - |
| Bivalence temperature | $T_{biv}$ | -13 | °C | Operation limit temperature | TOL | -22 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02 | kW | Rated heat output (**) | Psup | 3,8 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,02 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 7505 | kWh | | | | |

## 19.3 Warm climate

### 19.3.1 Low temperature (35°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 5,5 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 178 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | | kW | $T_j$ = -7°C | COPd | | - |
| $T_j$ = +2°C | $P_{dh}$ | 5,5 | kW | $T_j$ = +2°C | COPd | 4,19 | - |
| $T_j$ = +7°C | $P_{dh}$ | 3,7 | kW | $T_j$ = +7°C | COPd | 5,02 | - |
| $T_j$ = +12°C | $P_{dh}$ | 2,9 | kW | $T_j$ = +12°C | COPd | 5,71 | - |
| $T_j$ = bivalent | $P_{dh}$ | 5,5 | kW | $T_j$ = bivalent | COPd | 4,19 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 5,5 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 4,19 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | 2 | °C | Operation limit temperature | TOL | 2 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02 | kW | Rated heat output (**) | Psup | 0 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,02 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 1626 | kWh | | | | |

### 19.3.2 Medium temperature (55°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 5,8 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 148 | % |
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | | Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | | kW | $T_j$ = -7°C | COPd | | - |
| $T_j$ = +2°C | $P_{dh}$ | 5,8 | kW | $T_j$ = +2°C | COPd | 2,86 | - |
| $T_j$ = +7°C | $P_{dh}$ | 3,8 | kW | $T_j$ = +7°C | COPd | 3,61 | - |
| $T_j$ = +12°C | $P_{dh}$ | 2,9 | kW | $T_j$ = +12°C | COPd | 5,25 | - |
| $T_j$ = bivalent | $P_{dh}$ | 5,8 | kW | $T_j$ = bivalent | COPd | 2,86 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 5,8 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 2,86 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | 2 | °C | Operation limit temperature | TOL | 2 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02 | kW | Rated heat output (**) | Psup | 0 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0,02 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 2900 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 50 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 2050 | kWh | | | | |

# 20 Technical long datasheet - **vamp**$^{air}$ K 15

| | |
|---|---|
| Type of heat source / sink | Air / water |
| Equipped with additional heater | No |
| Combination heater with heat pump | No |
| Applied standards | EN14825, EN14511, EN12102 |

## 20.1 Average climate

### 20.1.1 Low temperature (35°C)

| **Rated heat output** | $P_{rated}$ | 14,5 | kW |
|---|---|---|---|
| Declared capacity for heating for part load at indoor | | | |
| $T_j$ = -7°C | $P_{dh}$ | 12,7 | kW |
| $T_j$ = +2°C | $P_{dh}$ | 7,8 | kW |
| $T_j$ = +7°C | $P_{dh}$ | 5,5 | kW |
| $T_j$ = +12°C | $P_{dh}$ | 5,9 | kW |
| $T_j$ = bivalent temperature | $P_{dh}$ | 14 | kW |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 14 | kW |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW |
| Bivalence temperature | $T_{biv}$ | -10 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW |
| Degradation coefficient | $C_{dh}$ | 0,98 | - |

| **Seasonal space heating energy efficiency** | $\eta_s$ | 195 | % |
|---|---|---|---|
| Declared coefficient of performance or primary energy ratio | | | |
| $T_j$ = -7°C | COPd | 3,29 | - |
| $T_j$ = +2°C | COPd | 4,87 | - |
| $T_j$ = +7°C | COPd | 5,9 | - |
| $T_j$ = +12°C | COPd | 6,75 | - |
| $T_j$ = bivalent temperature | COPd | 2,97 | - |
| $T_j$ = operation limit temperature (TOL) | COPd | 2,97 | - |
| $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Operation limit temperature | TOL | -10 | °C |
| Cycling interval efficiency | COPcyc | | - |
| Heating water operation limit temperature | WTOL | 65 | °C |

| Power consumption in modes other than active mode | | | |
|---|---|---|---|
| Off mode | $P_{OFF}$ | 0,02197 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW |
| Standby mode | $P_{SB}$ | 0,02197 | kW |
| Crankcase heater mode | $P_{CK}$ | 0 | kW |

| Supplementary heater | | | |
|---|---|---|---|
| Rated heat output (**) | Psup | 0 | kW |
| Type of energy input | | electric | |

| Other items | | | |
|---|---|---|---|
| Capacity control | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) |
| annual energy consumption | $Q_{HE}$ | 6229 | kWh |

| Rated air flow rate, outdoors | 4400 | m³/h |
|---|---|---|
| Rated water flow rate heating side: | variable | |

### 20.1.2 Medium temperature (55°C)

| **Rated heat output** | $P_{rated}$ | 14,9 | kW |
|---|---|---|---|
| Declared capacity for heating for part load at indoor | | | |
| $T_j$ = -7°C | $P_{dh}$ | 13,2 | kW |
| $T_j$ = +2°C | $P_{dh}$ | 8,1 | kW |
| $T_j$ = +7°C | $P_{dh}$ | 5,6 | kW |
| $T_j$ = +12°C | $P_{dh}$ | 6 | kW |
| $T_j$ = bivalent temperature | $P_{dh}$ | 14,8 | kW |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 14,8 | kW |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW |
| Bivalence temperature | $T_{biv}$ | -10 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW |
| Degradation coefficient | $C_{dh}$ | 0,98 | - |

| **Seasonal space heating energy efficiency** | $\eta_s$ | 151 | % |
|---|---|---|---|
| Declared coefficient of performance or primary energy ratio | | | |
| $T_j$ = -7°C | COPd | 2,51 | - |
| $T_j$ = +2°C | COPd | 3,74 | - |
| $T_j$ = +7°C | COPd | 4,65 | - |
| $T_j$ = +12°C | COPd | 5,5 | - |
| $T_j$ = bivalent temperature | COPd | 2,3 | - |
| $T_j$ = operation limit temperature (TOL) | COPd | 2,3 | - |
| $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Operation limit temperature | TOL | -10 | °C |
| Cycling interval efficiency | COPcyc | | - |
| Heating water operation limit temperature | WTOL | 65 | °C |

| Power consumption in modes other than active mode | | | |
|---|---|---|---|
| Off mode | $P_{OFF}$ | 0,02197 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW |
| Standby mode | $P_{SB}$ | 0,02197 | kW |
| Crankcase heater mode | $P_{CK}$ | 0 | kW |

| Supplementary heater | | | |
|---|---|---|---|
| Rated heat output (**) | Psup | 0 | kW |
| Type of energy input | | electric | |

| Other items | | | |
|---|---|---|---|
| Capacity control | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) |
| annual energy consumption | $Q_{HE}$ | 8227 | kWh |

| Rated air flow rate, outdoors | 4400 | m³/h |
|---|---|---|
| Rated water flow rate heating side: | variable | |

## 20.2 Cold climate

### 20.2.1 Low temperature (35°C)

| **Rated heat output** | $P_{rated}$ | 17 | kW |
|---|---|---|---|
| Declared capacity for heating for part load at indoor | | | |
| $T_j$ = -7°C | $P_{dh}$ | 10,3 | kW |
| $T_j$ = +2°C | $P_{dh}$ | 6,2 | kW |
| $T_j$ = +7°C | $P_{dh}$ | 5,5 | kW |
| $T_j$ = +12°C | $P_{dh}$ | 5,9 | kW |
| $T_j$ = bivalent temperature | $P_{dh}$ | 12,9 | kW |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 10,4 | kW |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | 12,4 | kW |
| Bivalence temperature | $T_{biv}$ | -13 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW |
| Degradation coefficient | $C_{dh}$ | 0,98 | - |

| **Seasonal space heating energy efficiency** | $\eta_s$ | 169 | % |
|---|---|---|---|
| Declared coefficient of performance or primary energy ratio | | | |
| $T_j$ = -7°C | COPd | 3,54 | - |
| $T_j$ = +2°C | COPd | 5,15 | - |
| $T_j$ = +7°C | COPd | 6,31 | - |
| $T_j$ = +12°C | COPd | 6,76 | - |
| $T_j$ = bivalent temperature | COPd | 2,97 | - |
| $T_j$ = operation limit temperature (TOL) | COPd | 2,28 | - |
| $T_j$ = -15°C (if TOL < -20°C) | COPd | 2,84 | - |
| Operation limit temperature | TOL | -22 | °C |
| Cycling interval efficiency | COPcyc | | - |
| Heating water operation limit temperature | WTOL | 65 | °C |

| Power consumption in modes other than active mode | | | |
|---|---|---|---|
| Off mode | $P_{OFF}$ | 0,02197 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW |
| Standby mode | $P_{SB}$ | 0,02197 | kW |
| Crankcase heater mode | $P_{CK}$ | 0 | kW |

| Supplementary heater | | | |
|---|---|---|---|
| Rated heat output (**) | Psup | 6,6 | kW |
| Type of energy input | | electric | |

| Other items | | | |
|---|---|---|---|
| Capacity control | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) |
| annual energy consumption | $Q_{HE}$ | 10034 | kWh |

| Rated air flow rate, outdoors | 4400 | m³/h |
|---|---|---|
| Rated water flow rate heating side: | variable | |

### 20.2.2 Medium temperature (55°C)

| **Rated heat output** | $P_{rated}$ | 18 | kW |
|---|---|---|---|
| Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | $P_{dh}$ | 10,7 | kW |
| $T_j$ = +2°C | $P_{dh}$ | 6,3 | kW |
| $T_j$ = +7°C | $P_{dh}$ | 5,5 | kW |
| $T_j$ = +12°C | $P_{dh}$ | 5,9 | kW |
| $T_j$ = bivalent temperature | $P_{dh}$ | 13,5 | kW |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 11,9 | kW |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | 13,1 | kW |
| Bivalence temperature | $T_{biv}$ | -13 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW |
| Degradation coefficient | $C_{dh}$ | 0,98 | - |

| **Seasonal space heating energy efficiency** | $\eta_s$ | 137 | % |
|---|---|---|---|
| Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature $T_j$ | | | |
| $T_j$ = -7°C | COPd | 2,84 | - |
| $T_j$ = +2°C | COPd | 4,11 | - |
| $T_j$ = +7°C | COPd | 5,15 | - |
| $T_j$ = +12°C | COPd | 5,94 | - |
| $T_j$ = bivalent temperature | COPd | 2,38 | - |
| $T_j$ = operation limit temperature (TOL) | COPd | 1,8 | - |
| $T_j$ = -15°C (if TOL < -20°C) | COPd | 2,27 | - |
| Operation limit temperature | TOL | -22 | °C |
| Cycling interval efficiency | COPcyc | | - |
| Heating water operation limit temperature | WTOL | 65 | °C |

| Power consumption in modes other than active mode | | | |
|---|---|---|---|
| Off mode | $P_{OFF}$ | 0,02197 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW |
| Standby mode | $P_{SB}$ | 0,02197 | kW |
| Crankcase heater mode | $P_{CK}$ | 0 | kW |

| Supplementary heater | | | |
|---|---|---|---|
| Rated heat output (**) | Psup | 6,1 | kW |
| Type of energy input | | electric | |

| Other items | | | |
|---|---|---|---|
| Capacity control | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) |
| annual energy consumption | $Q_{HE}$ | 13051 | kWh |

| Rated air flow rate, outdoors | 4400 | m³/h |
|---|---|---|
| Rated water flow rate heating side: | variable | |

## 20.3 Warm climate

### 20.3.1 Low temperature (35°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 15 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 212 | % |
| Declared capacity for heating for part load at indoor | | | | Declared coefficient of performance or primary energy ratio | | | |
| $T_j$ = -7°C | $P_{dh}$ | | kW | $T_j$ = -7°C | COPd | | - |
| $T_j$ = +2°C | $P_{dh}$ | 15 | kW | $T_j$ = +2°C | COPd | 3,1 | - |
| $T_j$ = +7°C | $P_{dh}$ | 9,6 | kW | $T_j$ = +7°C | COPd | 5,18 | - |
| $T_j$ = +12°C | $P_{dh}$ | 5,8 | kW | $T_j$ = +12°C | COPd | 6,12 | - |
| $T_j$ = bivalent temperature | $P_{dh}$ | 15 | kW | $T_j$ = bivalent temperature | COPd | 3,1 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 15 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 3,1 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | 2 | °C | Operation limit temperature | TOL | 2 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02197 | kW | Rated heat output (**) | Psup | 0 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02197 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 4400 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 3826 | kWh | | | | |

### 20.3.2 Medium temperature (55°C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated heat output** | $P_{rated}$ | 15 | kW | **Seasonal space heating energy efficiency** | $\eta_s$ | 164 | % |
| Declared capacity for heating for part load at indoor | | | | Declared coefficient of performance or primary energy ratio | | | |
| $T_j$ = -7°C | $P_{dh}$ | | kW | $T_j$ = -7°C | COPd | | - |
| $T_j$ = +2°C | $P_{dh}$ | 15 | kW | $T_j$ = +2°C | COPd | 2,5 | - |
| $T_j$ = +7°C | $P_{dh}$ | 9,7 | kW | $T_j$ = +7°C | COPd | 3,85 | - |
| $T_j$ = +12°C | $P_{dh}$ | 6,1 | kW | $T_j$ = +12°C | COPd | 4,82 | - |
| $T_j$ = bivalent temperature | $P_{dh}$ | 15 | kW | $T_j$ = bivalent temperature | COPd | 2,5 | - |
| $T_j$ = operation limit temperature (TOL) | $P_{dh}$ | 15 | kW | $T_j$ = operation limit temperature (TOL) | COPd | 2,5 | - |
| $T_j$ = -15°C (if TOL < -20°C) | $P_{dh}$ | | kW | $T_j$ = -15°C (if TOL < -20°C) | COPd | | - |
| Bivalence temperature | $T_{biv}$ | 2 | °C | Operation limit temperature | TOL | 2 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | kW | Cycling interval efficiency | COPcyc | | - |
| Degradation coefficient | $C_{dh}$ | 0,98 | - | Heating water operation limit temperature | WTOL | 65 | °C |
| Power consumption in modes other than active mode | | | | Supplementary heater | | | |
| Off mode | $P_{OFF}$ | 0,02197 | kW | Rated heat output (**) | Psup | 0 | kW |
| Thermostat-off mode | $P_{TO}$ | 0,02197 | kW | | | | |
| Standby mode | $P_{SB}$ | 0,02197 | kW | Type of energy input | | electric | |
| Crankcase heater mode | $P_{CK}$ | 0 | kW | | | | |
| Other items | | | | Rated air flow rate, outdoors | | 4400 | m³/h |
| Capacity control | | variable | | Rated water flow rate heating side: | | variable | |
| Sound power level, indoors/ outdoors | $L_{WA}$ | - / 55 | dB (A) | | | | |
| annual energy consumption | $Q_{HE}$ | 4936 | kWh | | | | |

# 21 ErP product data sheet

According to EU-Regulation 813/2014, Annex II

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Manufacturer | SOLARFOCUS GmbH., Werkstraße 1, 4451 St.Ulrich/Steyr | | | | | | | |
| Model designation | **vamp**$^{air}$ K 08 | | **vamp**$^{air}$ K 10 | | **vamp**$^{air}$ K 12 | | **vamp**$^{air}$ K 15 | |
| Temperature application °C | | | 35 | 55 | | | 35 | 55 |
| | | | low temperature | medium temperature | | | low temperature | medium temperature |
| Nominal heating output $P_{designh}$ kW | | | 7.9 | 8.2 | | | 14.5 | 14.9 |
| Energy efficiency class | | | A+++ | A++ | | | A+++ | A+++ |
| Seasonal space heating energy efficiency % | | | 195 | 147 | | | 195 | 151 |
| Annual energy consumption kWh | | | 3563 | 4733 | | | 6229 | 8227 |
| Sound power level $L_{WA}$ dB(A) | | | - / 50 | - / 50 | | | - / 55 | - / 55 |
| Special precautions to be taken for assembly, installation and maintenance | The enclosed technical data sheets, installation manuals and warranty passes must be observed before assembly, installation or maintenance. The relevant, country-specific standards and guidelines must be observed for the installation and operation of the heat pump. | | | | | | | |

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Heat pump


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