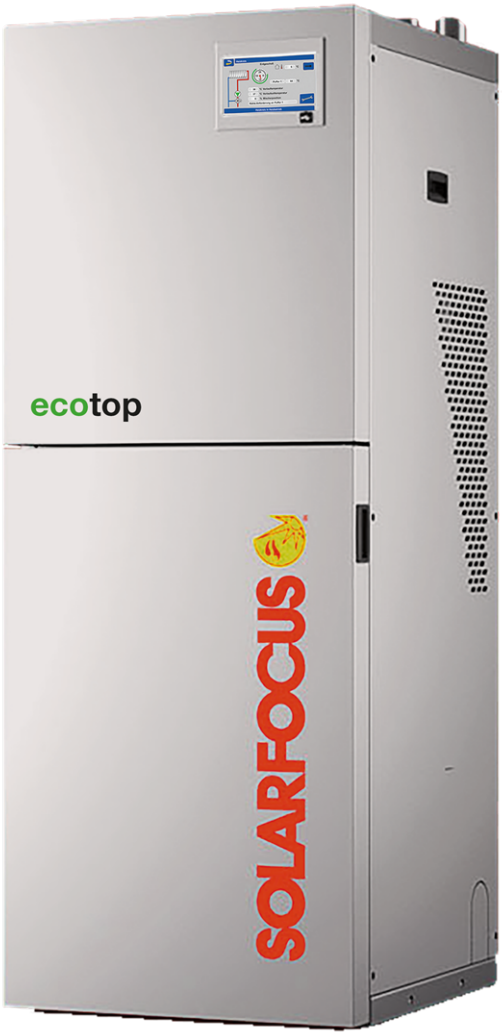
SOLARFOCUS



Pellet boiler
ecotop^zero, ecotop^light

Operation manual for the system operator

Read carefully before operating
DR-0178-EN / v13-230502

Content

1 About this manual

Dear Customer,

To ensure reliable and efficient operation of your boiler, the following points are extremely important:

- Professional planning and installation of the heating system.
- Training of system operator in starting up the boiler.
- Regular maintenance by the operator.
- Regular maintenance by qualified personnel.
- Compliance with the specifications and information in this manual.

Software version of boiler control

This manual describes operation from software version 22.020.

Language

The language of the original manual is German. All other language versions of this manual are translations.

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.

Tips 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.

ATTENTION - Failure to comply with this instruction could result in damage to property.

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

Manufacturer

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2 Safety information

Qualification of personnel

- The work procedures described in this manual must be carried out by qualified specialist personnel.
- Work on electrical components must only be performed by trained electricians and in accordance with the relevant rules and directives.

Installation and commissioning

The system may only be installed and brought into operation by certified qualified personnel (SOLARFOCUS service technician or SOLARFOCUS service partner).

DANGER - Written warnings must be displayed on the fuel storage room according to EN ISO 20023 and EN 303-5:

- The boiler must be switched off and the combustion process must be completely finished before commencement of filling and conveying.
- We highly recommend venting the storage area/room before entering it (CO concentration).

Keep unauthorized persons and children away

Danger of burns due to hot lines and hot components, risk of injury from mechanically moving parts. Keep unauthorised persons away, do not leave children unattended, and control access to the boiler room and fuel storage room.

Safety devices

Never disable the safety equipment of (fehlender oder ungültiger Codeausschnitt)the heating system under any circumstances. In case of failure, arrange for immediate repair.

Maintenance and repair

- Perform maintenance activities at the specified intervals. No or incorrect maintenance leads to inefficient operation, higher failure risk of the boiler and increased potential for hazards.

  Recommendation: Conclude maintenance contract
- Have repairs carried out by qualified personnel only. Improper repairs can lead to risks for the user and impaired operation.
- Store hot ashes only in metal containers. Never put hot or warm ash in the dustbin. High risk of fire.
- For repairs use only original spare parts or parts approved by the manufacturer (e.g. standard parts).

Damage to the system

- If the electrical insulation on cables, plugs, switches becomes damaged, switch off the power supply and have the insulation repaired.
- In the event of visible damage (e.g. thermal deformation, mechanical damage), operation of the system must not be continued. The system may only be operated if it is in perfect technical condition.

3 Warranty, guarantee

- Warrant claims apply within the scope of a boiler maintenance agreement.
- Warranty claims can be made by the customer and the dealer has a legal responsibility to honour them.

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.

Further information on the individual points can be found in the boiler's installation manual.

Regular maintenance and cleaning

- The boiler and the heating system components must be maintained and checked regularly.
- This is the prerequisite for the following:
- Long-term reliability of the boiler function
- Energy-saving and environmentally friendly operation of the boiler
- Long service life of the boiler.
- Option/recommendation: Conclude maintenance contract
- *Documentation* is crucial: When maintenance is performed by qualified personnel, the activities carried out/measures taken are documented in the maintenance log. It is advisable to keep a system book, especially when foregoing maintenance by qualified personnel (for documenting/as proof of one's own activities).

Fuel

- The fuel used must meet the specifications.
- Non-approved fuel may lead to inefficient combustion and cause damage to the boiler.

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 build-up (=limescale on heat exchanger surfaces):
- Take the water hardness into account
- Soften the fill-up water, or better: desalinate it.
- Avoiding water-side corrosion (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).

Sufficient ventilation

One of the most important basic requirements for trouble-free operation is the removal of air and gases in the heating system. Exposed expansion tanks or underfloor heating systems that are not diffusion resistant can result in above-average boiler corrosion due to too much air entering the system and because of poor ventilation.
SOLARFOCUS recommends the installation of a deaerator, such as a SpiroVent, in the hottest area in the system.

Return temperature in the boiler

- A temperature below the dew point (leads to corrosion in the boiler) must be prevented by a sufficiently high return temperature in the boiler.
- In the case of the **ecotop** zero/light, this is ensured by the return flow boosting which is integrated as standard.

Supply air to the boiler

- The boiler can be supplied with air dependently or independently of the room air.
- For operation independent of the ambient air (room-sealed), a boiler-controlled room air flap can be integrated in the line as an option.
- The supply air in the boiler must not contain any aggressive substances. These substances can cause corrosion in the boiler and chimney.
- Aggressive substances are, for example, chlorine or fluorine compounds (used in cleaning agents, solvents, adhesives, etc.).

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.

Limitation of liability

SOLARFOCUS GmbH assumes 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
- Employment 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 boiler **ecotop** zero/light is intended for heating up water in closed heating systems.
- Only use fuel as specified in the next chapter *Fuel*.

4.2 Fuel

Pellets

Use wood pellets only in accordance with these specifications:

- Pellets according to the ISO 17225-2 standard, class A1.
- Pellets that meet the additional ENplus certification.
- Pellets that meet the additional DINplus certification.

4.3 Requirements of storage area/room

The requirements of a pellet storage area are described in detail in ISO 20023.
The main requirements of a pellet storage area are as follows: protect the fuel against moisture, ensure that the storage area/room is well ventilated, provide ports or filling points to allow pellets to be blown in from the outside via a tanker.

As is the case with many biogenous substances, pellets also emit small quantities of toxic and odourless carbon monoxide (CO).
Particularly in the first two to three weeks after filling, the large amount of pellets in the small air volume of the store can lead to a critical concentration of CO.
This emission is usually associated with a build-up of unpleasant odour. Pellets that were processed with pine wood are particularly affected by this.
Filling pipe cover with ventilation function

To prevent CO from developing in the pellet storage area, the filling pipe cover with ventilation function has been developed. Even a small exchange of air caused by temperature deviations between the interior and the open air causes the CO to dissipate. The filling lines should therefore by fed to the outside and have as few bends or direction changes as possible. They must be electrically conductive and earthed. The filling pipes must be located a maximum of 2 metres above the footprint and must be equipped with covers that are capable of ventilation.

4.4 Product description

- The **ecotop** zero/**ecotop** light is a boiler for the combustion of wood pellets.
- The boiler has an automatic fuel ignition system, automatic fuel supply and automatic heat exchanger cleaning.
- The ash produced is collected in an ash container, which must be emptied at regular intervals.
- Integrated in **ecotop** zero is an electrostatic dust collector.
- This electrostatic dust collector can be retrofitted on **ecotop** light if desired.

4.5 Spare parts

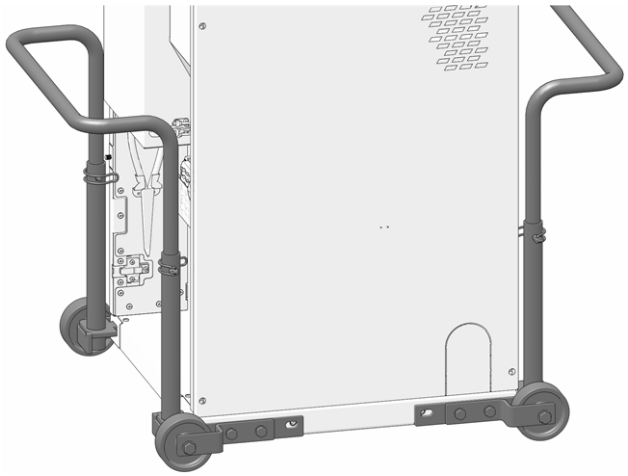
For repairs use only original spare parts or parts approved by the manufacturer (e.g. standard parts).

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

4.6 Accessories

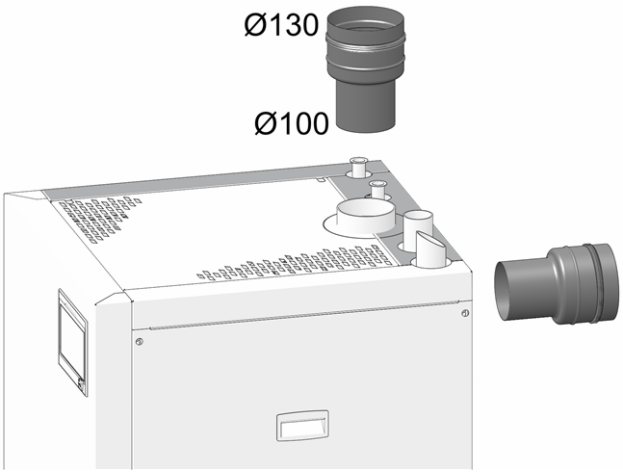
Lifting aid

- Optional accessories for carrying/moving the boiler.
- Art. 6144

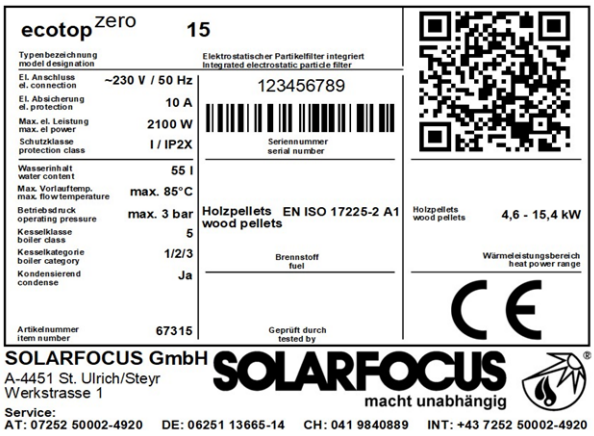


Extension for exhaust pipe connection

- Accessories (included) for optional extension of the connection, from Ø100 mm to Ø130 mm.
- Can be used for directing the flue gas pipe up or to the rear.
- Art. 66556NIRO



4.7 Type plate



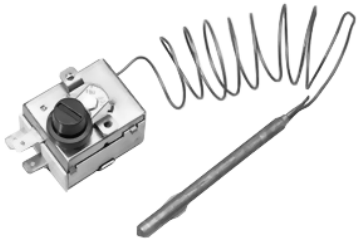
4.8 CE declaration of conformity

The conformity of the product is declared by the manufacturer in accordance with the Machinery Directive 2006/42/EC; the documents are available for inspection at the manufacturer.

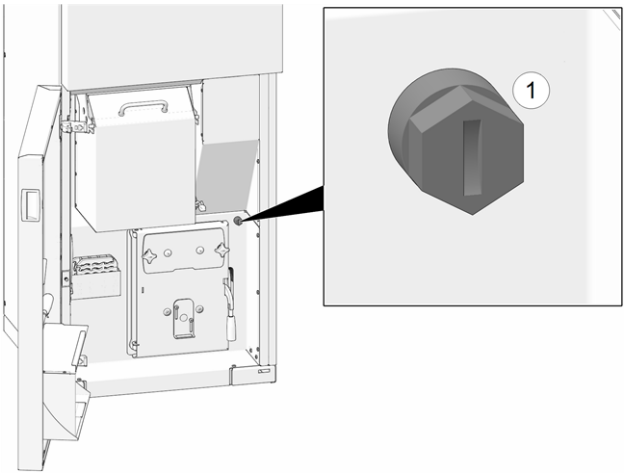
The product corresponds to Directive 2011/65/EU (RoHS 2) and does not use any materials containing asbestos. The product does not contain any PCB or mercury.

4.9 Safety devices

Overtemperature reset (OTR)

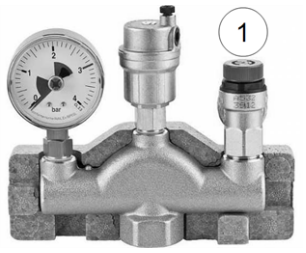


- The overtemperature reset is a safety device that prevents overheating of the boiler and is integrated in the boiler safety group.
- Functioning: The overtemperature reset stops the heating process at a boiler temperature ~95°C (exclusively electrical function; fuel and air supply are interrupted).
- After tripping, the overtemperature reset must be manually released again by unscrewing the black sealing cap *1* and pressing the button as soon as the boiler temperature falls below 60°C.
- If the overtemperature reset trips, this is indicated on the boiler control display.



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 is discharged into an open drain via a blow-off line, which avoids subsequent damage to the components of the heating system. The safety valve is closed during normal operation.
- For normative specification see EN 12828.



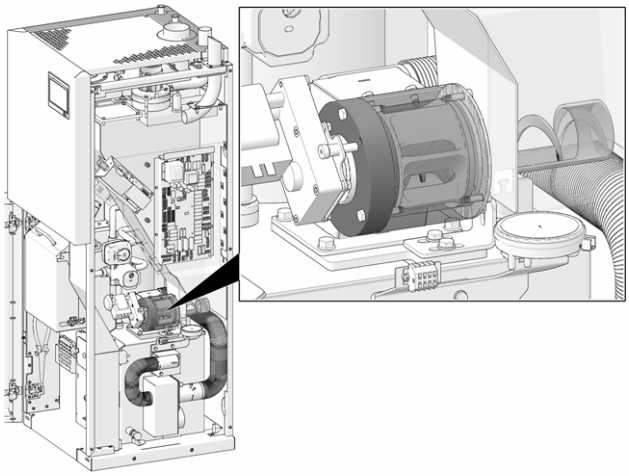
The safety valve (or a boiler safety group) is not included in the scope of delivery. This must be provided on site.

Emergency OFF switch

- The emergency OFF switch is a manually operated safety device. The burner and the fuel supply to the boiler are stopped. Circulation pumps remain in operation to dissipate heat and cool the boiler.
- The switch must be installed outside the boiler room in a safe place that is easy to access.

Rotary valve

The rotary valve fulfils all normative requirements for the approved fuels regarding fire protection, burn-back safety, backflow of gases:



- Complies with requirements regarding burn-back protection devices (BPD) according to TRVB 118 H.
- The single axis rotary valve prevents backflow of flammable products of combustion into the fuel supply (according to EN 303-5).
- Fire is held off from spreading into the fuel supply (according to EN 303-5).

4.10 Efficient and low-emission operation

Please note the following recommendations from the EU Energy Efficiency Directive:

Use of a buffer tank

Since maximum combustion is possibleonly in standard operation of the boiler, and greater losses and higher emissions occur during the warm-up and burn-out phases, use of a buffer tank is recommended.

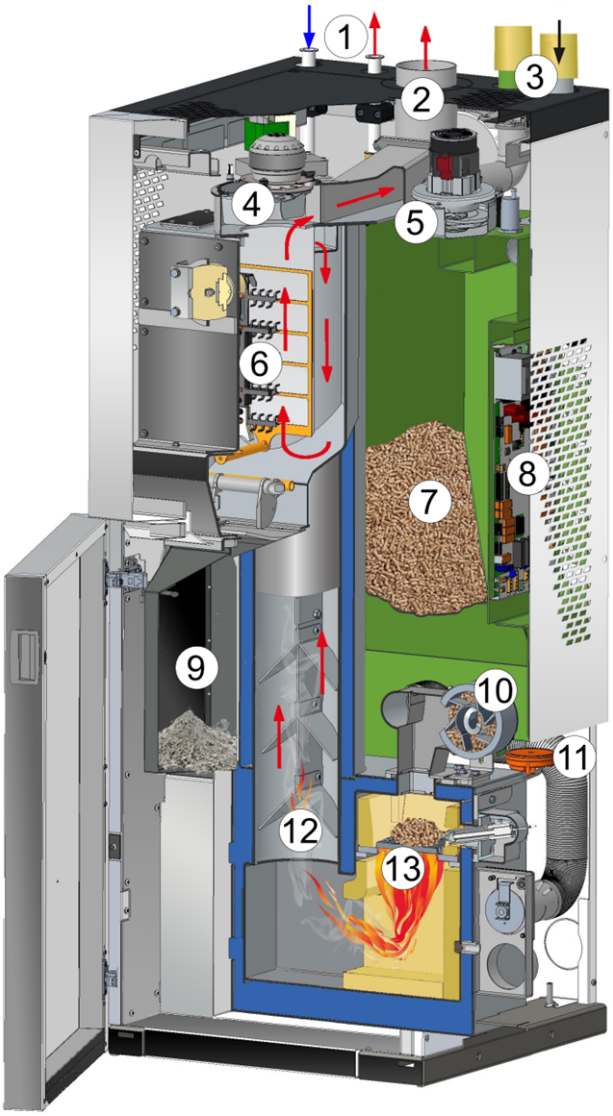
This tank stores the water heated by the boiler, allowing the connected devices (heating circuit, DHW tank, fresh water module, etc.) to access it as required. This ensures sufficiently long, uninterrupted combustion periods for the boiler.

Use of high-efficiency heating pumps

When using external heating pumps (e.g. existing heating circuit pumps, etc.), high-efficiency pumps with energy efficiency class A should preferably be used.

This delivers savings potential of up to 80 % in drive energy (compared to conventional heating pumps) with identical feed results.

4.11 Functional components



1 Heating water, heating circuit (return/supply)
2 Flue gas pipe
3 Connections for pellets
4 ID fan
5 Suction turbine for pellet extraction
6 Electrostatic dust collector (option with **ecotop** light) > 9
7 Pellet storage store
8 Boiler electrical power element
9 Ash container > 40
10 Single axis rotary valve > 8
11 Differential pressure gauge
12 Heat exchanger with interior turbulator
13 Stainless steel combustion grate > 42

4.12 Innovative technologies

Electrostatic dust collector[1]

To filter the last remaining dust particles from the flue gas stream as well, SOLARFOCUS has developed an integrated electrostatic dust collector. A special discharge electrode with a high voltage of up to 30 kV ionises the fine dust particles, which then form a layer of dust on the collection electrode. The discharge and collection electrodes are cleaned fully automatically together with the heat exchanger cleaning. External cleaning facilities that frequently incur additional costs are no longer required.

[1] Optional with **ecotop** light

4.13 Technical specifications

ecotop zero, **ecotop** light		**15**	**20**	**24**
Nominal heat output (NWL)	[kW]	15.4	19.7	24.0
Heat output range	[kW]	4.6 - 15.4	5.9 - 19.7	7.2 - 24.0
Energy efficiency class		A+	A+	A+
Boiler class (according to EN 303-5:2012)		5	5	5
Boiler efficiency - zero - full load	[%]	95.7	95.3	94.9
Boiler efficiency - zero - partial load	[%]	95.9	96	96.1
Boiler efficiency - light - full load	[%]	93.8	93.5	93.2
Boiler efficiency - light - partial load	[%]	92.1	93.2	94.3
Dimensions				
Width	[cm]	60	60	60
Depth	[cm]	66.5	66.5	66.5
Height (H) - including adjustable feet, adjustable feet screwed in all the way - without hydraulic connections on the top of the boiler	[cm]	157.3	157.3	157.3
Minimum room height	[cm]	185	185	185
Weight				
Weight	[kg]	280	280	280
Weight without wooden pallet	[kg]	288	288	288
Water side				
Water content	[l]	55	55	55
Max. permissible operating pressure	[bar]	3	3	3
Boiler flow/boiler return connection	["]	1" UN	1" UN	1" UN
Drain connection	["]	AG 1/2 "	AG 1/2 "	AG 1/2 "
Differential pressure at ΔT 10°K	[hPa]	145	245	345
Differential pressure at ΔT 20 °K	[hPa]	35	60	85
Thermal overload protection	["]	not required	not required	not required
Electrical connection				
Connection, fuse		230 V AC, 50 Hz C13 A	230 V AC, 50 Hz C13 A	230 V AC, 50 Hz C13 A
Fuel				
Fuel		Wood pellets acc. to EN17225-2, ENplus-A1	Wood pellets acc. to EN17225-2, ENplus-A1	Wood pellets acc. to EN17225-2, ENplus-A1
Capacity of intermediate pellet store	[l]	55	55	55
Capacity of ash container	[l]	20.3	20.3	20.3
Flue gas side				
Flue gas pipe diameter	[mm]	100/130	100/130	100/130
Height to centre of flue pipe	[cm]	143	143	143
Flue gas mass flow full load	[g/s]	9 / 10	12 / 12.5	15 / 15
Flue gas mass flow partial load	[g/s]	3 / 4	4 / 4.5	5 / 5
Maximum flue gas temperature [1] full load > 11	[°C]	140	140	140
Maximum flue gas temperature [1] partial load > 11	[°C]	100	100	100
Minimum draught requirement [2] > 11	[Pa]	5	5	5
Condensation		No	No	No
Emissions according to test report - ecotop zero				
Flue gas values (in relation to 13% O_2) from test report:testing institute/test report No.		TÜV Süd 2219038-1	TÜV Süd 2219038-2	TÜV Süd 2219038-3
CO full load	[mg/m³]	4	7	9
CO partial load	[mg/m³]	83	50	17

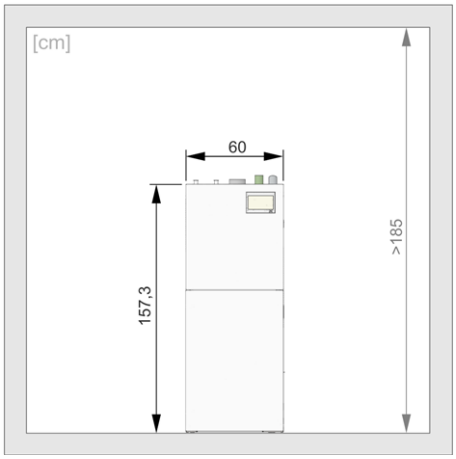
ecotop zero, **ecotop** light		**15**	**20**	**24**
NOx full load	[mg/m³]	111	114	116
NOx partial load	[mg/m³]	107	109	111
Org. C full load	[mg/m³]	0.3	0.6	0.9
Org. C partial load	[mg/m³]	1.5	1.1	0.6
Dust content full load	[mg/m³]	0.6	1	1.3
Dust content partial load	[mg/m³]	0.5	0.9	1.3
Emissions according to test report - ecotop light				
Flue gas values (in relation to 13% O_2) from test report:testing institute/test report No.		TÜV Süd 2220046-1	TÜV Süd 2220046-2	TÜV Süd 2220046-3
CO full load	[mg/m³]	8	6	5
CO partial load	[mg/m³]	70	49	29
NOx full load	[mg/m³]	112	113	114
NOx partial load	[mg/m³]	106	108	110
Org. C full load	[mg/m³]	1.7	2	1.9
Org. C partial load	[mg/m³]	1.8	3	3.2
Dust content full load	[mg/m³]	7.9	7	5.7
Dust content partial load	[mg/m³]	6.3	8	9.1
Regulation (EU) 2015/1187 - ecotop zero				
Nominal heating output	[kW]	15	20	24
Boiler's energy efficiency class		A+	A+	A+
Energy efficiency class EEI of boiler and control combined		A++	A++	A++
Energy efficiency index EEI of the boiler		121	121	122
Energy efficiency index EEI of the boiler and control combined		125	125	126
Space heating annual usage etaS	[%]	81	82	82
Annual emission values (in relation to 10% O_2)				
CO - carbon monoxide	[mg/m³]	98	58	22
NOx – nitrogen oxide	[mg/m³]	149	151	154
C - Total (carbon)	[mg/m³]	1	1	1
Dust	[mg/m³]	1	1	2
Regulation (EU) 2015/1187 - ecotop light				
Nominal heating output	[kW]	15	20	24
Boiler's energy efficiency class		A+	A+	A+
Energy efficiency class EEI of boiler and control combined		A+	A+	A++
Energy efficiency index EEI of the boiler		118	119	121
Energy efficiency index EEI of the boiler and control combined		122	123	125
Space heating annual usage etaS	[%]	80	81	82
Annual emission values (in relation to 10% O_2)				
CO - carbon monoxide	[mg/m³]	83	58	35
NOx – nitrogen oxide	[mg/m³]	146	150	153
C - Total (carbon)	[mg/m³]	2	2	3
Dust	[mg/m³]	8	11	12

[1] Flue gas temperature can be adjusted electronically

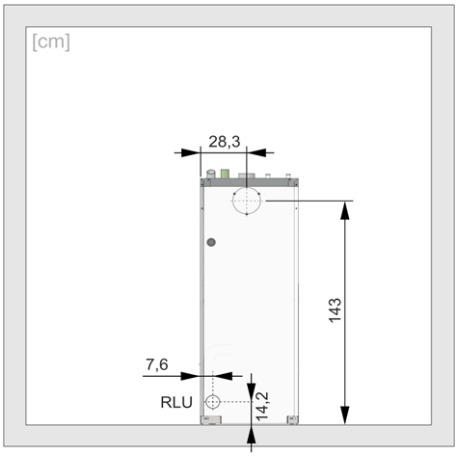
[2] A draught stabiliser must be fitted if the specified draught of 15 Pa is exceeded (attention: In the case of a boiler with room-sealed operation, a draught stabiliser must not be used)

4.14 Dimensions

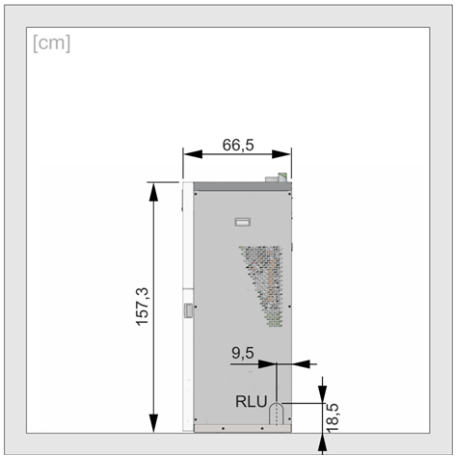
Front



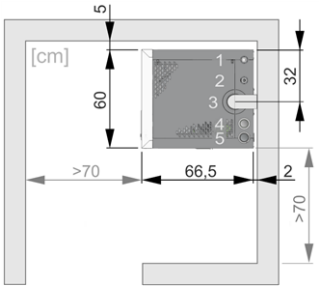
Back



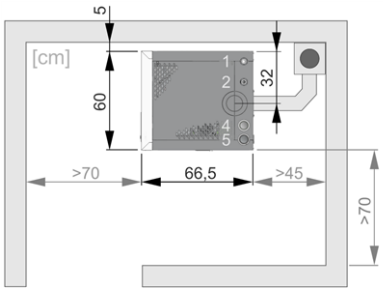
Side view



Top view: Flue gas pipe connection towards top



Top view: Flue gas pipe connection towards rear



1	Boiler return
2	Boiler flow
3	Flue gas pipe
4	Pellet return air
5	Pellet suction

5 Use and operation

Touch display for operation

If the boiler is supplied with a mains power supply, the boiler control starts **eco**manager-*touch*. The control is started up to show the main screen.

Operate the touch display with a finger. Do not use hard and/or sharp implements.

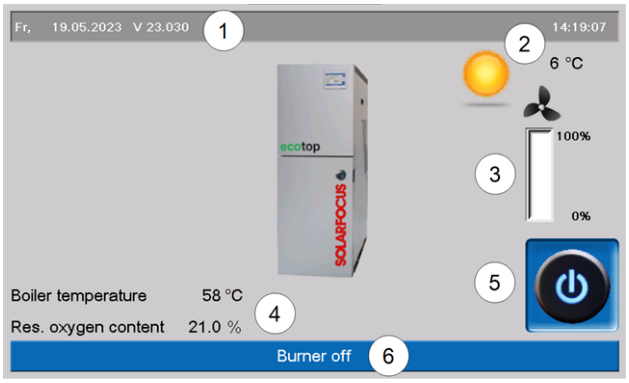
If no inputs are made for 5 minutes (factory setting), the display will switch to standby mode.

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

Buffer battery in operating element

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

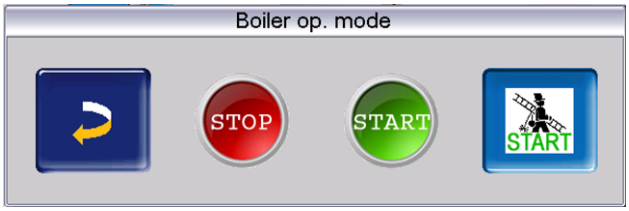
5.1 Main screen of boiler control



1 Software version for control
2 Outside temperature
3 Boiler output (rotational speed of induced draught fan)
4 Boiler temperature and residual oxygen content in flue gas
5 Boiler operating mode > 13
6 Status line

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

5.2 Boiler operating mode



STOP

The burnerisswitched off. No heating requests of the connected devices are fulfilled.

WARNING - The burner must not start! Only the automatic start-up of the heating circuit pump is active to protect against frost.

START

After pressing the *START* button, the burner is ready for operation and is able to fulfil heating requests from the connected devices. The burner goes into standby as soon as a heating request is fulfilled, or the time release > 14 is no longer available.

Chimney sweep function

This function is used to perform the emission measurements prescribed by law.

5.3 Selection menu

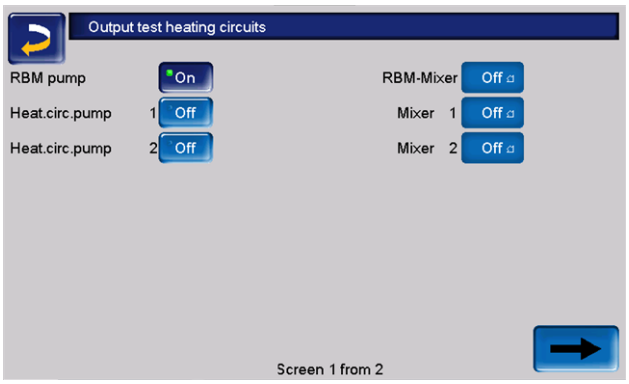
Access to the selection menu is possible by pressing the boiler symbol on the main screen.

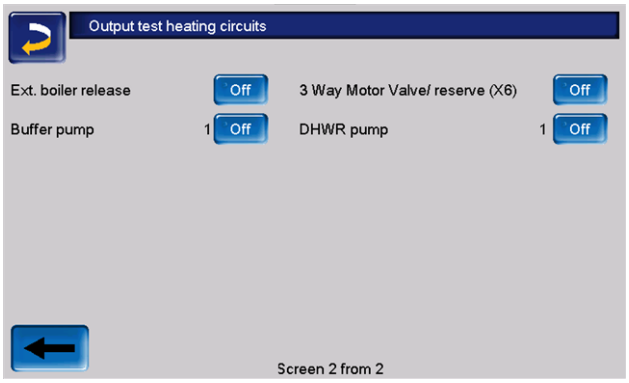
1 Customer menu > 14
2 Output test heating circuit > 14
(Only to be undertaken by qualified personnel.)
3 Heating circuit > 1
4 Hot water heating > 27
5 Circulation control (optional) > 29
6 Buffer tank(optional) > 31
7 Solar system (optional) > 32
8 Temperature difference, charge control (optional) > 32
10 Weatherman function (optional) > 37
11 Information
12 Remote line (optional)
13 Photovoltaic system (optional)
15 Boiler cleaning > 40

5.3.1 Heating circuit output test

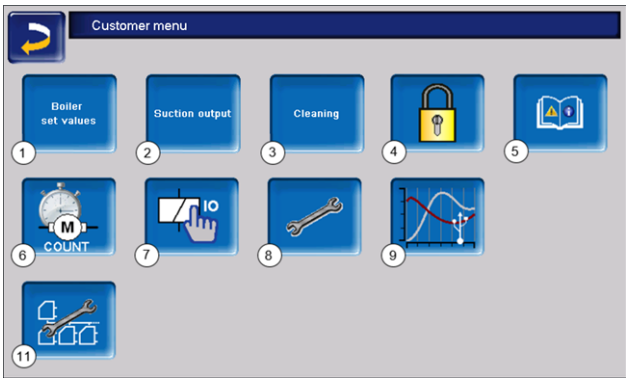
The available electrical outputs can be switched on/off directly using the button. Can be used to test the function of individual components.

> **!** **ATTENTION**: Only to be undertaken by qualified personnel.





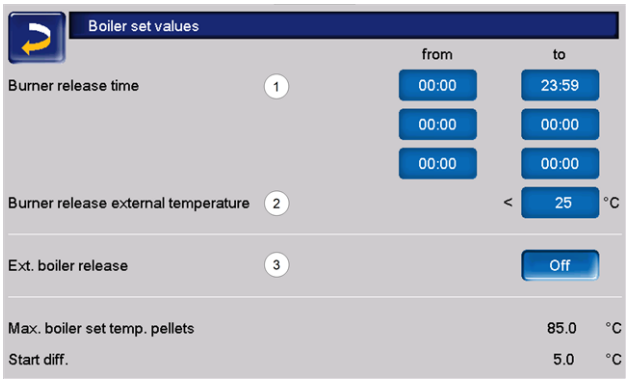
5.4 Customer menu



1 Required boiler values > 14
2 Vacuum output > 15
3 Heat exchanger cleaning > 15
4 User lock > 16
5 Message log [1]: Recording of alarm and notification messages > 16
6 Operating hour counter > 17
7 Boiler output test (ATTENTION: Only to be undertaken by qualified personnel).
8 Qualified personnel menu > 18
9 Customer trend (USB stick essential)
11 Cascade settings (optional)

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

5.4.1 Required boiler values



***Burner release time** 1*

The burner can start within the release times; outside of these times, starting does not take place and/or the burner is stopped. A time release from 00:00 to 23:59 means that no restriction is pending and the burner may start at any time.

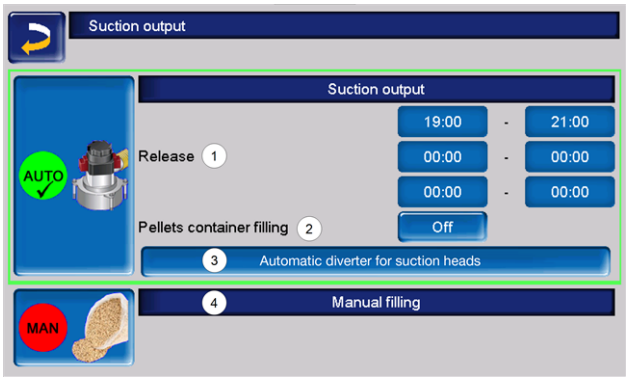
> **!** **ATTENTION** - In order to protect against frost, only automatic start-up of the heating circuit pump is active outside the release time.

> **DHW heating in summer**
>
> If the boiler is used for heating hot water, the required chimney draught of 5 Pa may not be present in the summer months (or outside the heating period). This may result in smoke escaping in the boiler room.
>
> Reason: High temperature on the chimney stack (greater than 30°C); as a result, the cooler air does not rise (~ 20°C air temperature when the burner starts) in the chimney.
>
> Remedy: Set the burner time release from 00:00 to 07:00 or from 21:00 to 23:59.

Burner release outside temperature *2*
The burner may not start if the outside temperature exceeds this value.

External boiler release *3*
On switches the function to standby. I.e. a connected external boiler may only start when it receives the release from the SOLARFOCUS boiler (e.g. on the basis of a lack of fuel, operating fault).

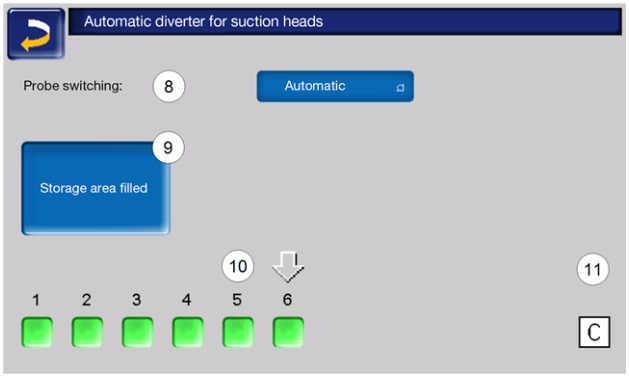
5.4.2 Vacuum output



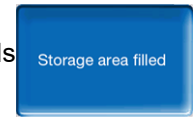
Release *1*
Within the release times, the pellet suction turbine can start. A release time from 00:00 to 23:59 means that no restriction is pending and suction can start at any time.

Intermediate pellet store filling *2*
Pressing the button starts the suction turbine and the tank is filled once (i.e. current level and release times are not considered). Prerequisite: the boiler must have the status *Switched off* or *Standby*.

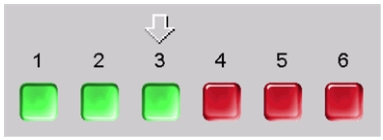
Automatic diverter for suction heads unit (optional) *3*
This button is only visible if the product has been purchased.



Possible settings: *8*
- *Automatic:* (Recommended setting) After three successful suction procedures at a head, the system switches to the next head. An even reduction of the fill level in the pellet storage area is achieved.
- *Selectively:* The heads are successively emptied through extraction.
- *Only head …:* Suction is performed only at the set head. Manual further switching in the boiler control is required.

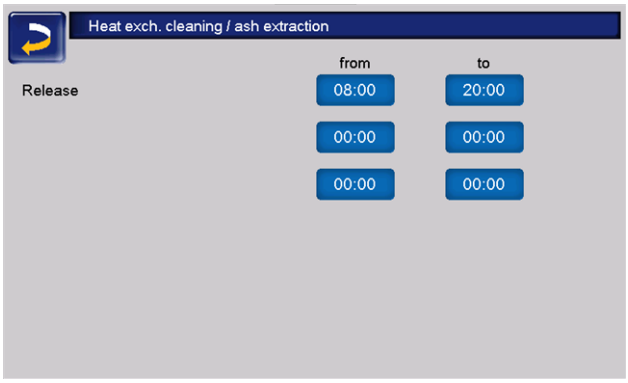


Pressing the "Storage area/room filled" *9* button marks all suction heads as full again.
Pressing the status button changes the head status (colour **red**: head is empty; colour **green**: head is full).
The arrow *10* above the heads shows which one is currently in use. Position C *11* of the arrow means that the pellet hose will be emptied through extraction. The occurs automatically and takes a few seconds.



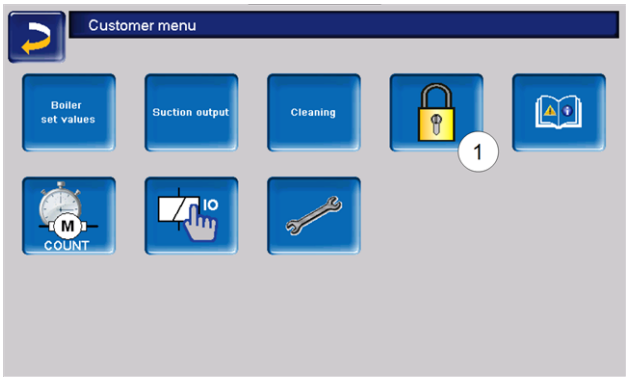
Manual filling *4*
Pressing the button deactivates the automatic suction system, i.e. the suction turbine may not start. (e.g. for manual filling of the intermediate pellet store through the inspection flap).

5.4.3 Heat exchanger cleaning



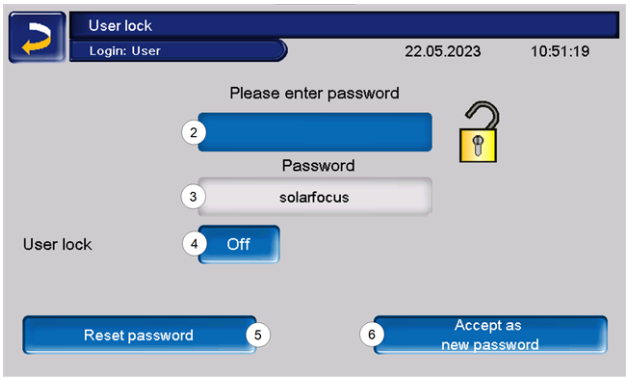
Release from-to:
Within the release times, heat exchanger cleaning can start automatically. A time release from 00:00 to 23:59 means that no restriction is pending and the functions can start at any time.

5.4.4 User lock



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* in the screens.

User lock screen



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

Password 3
The currently valid password is displayed.

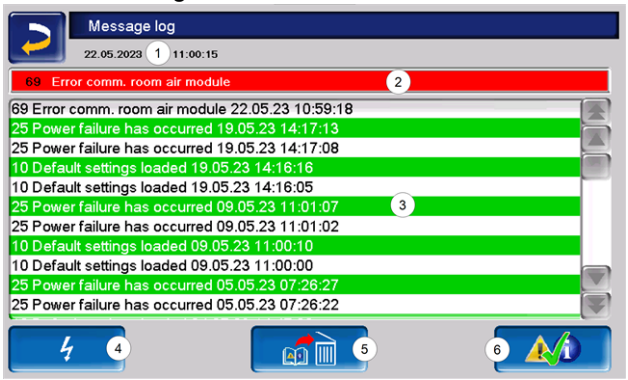
User lock 4
Off: The user lock is switched off.
On: Switches on the user lock function. If the display is not touched for one minute, the user lock is active in the screens.

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

Accept 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

The button is only visible if a message is active, i.e. not acknowledged.

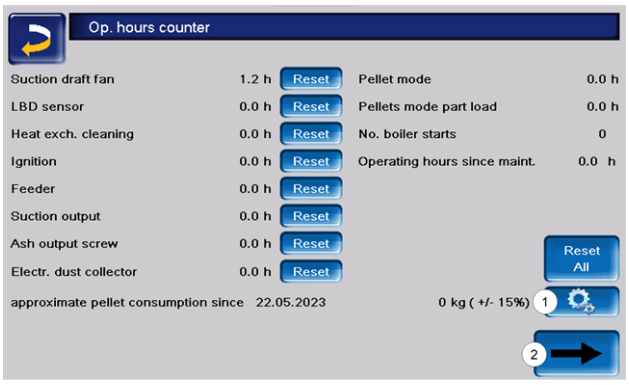


Located in the upper screen is both the date and the time 1. The messages 3 saved in the boiler control are recorded here, with the start and end time. The message with the highest priority is highlighted in red 2, acknowledged messages are green.

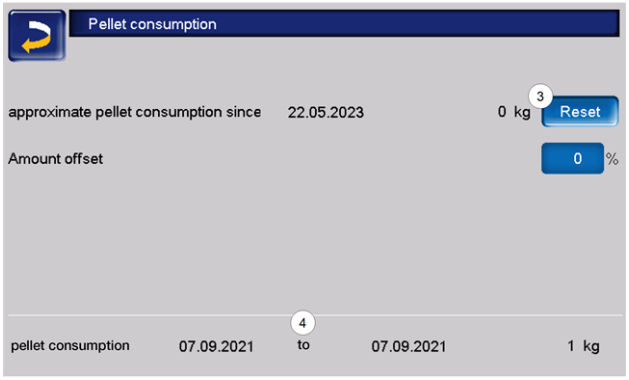
Press the 6 button to quit messages. Button 4 opens the power failure log. All messages are acknowledged with the 5 button and the entries in the message log are deleted.

Possible messages > 45

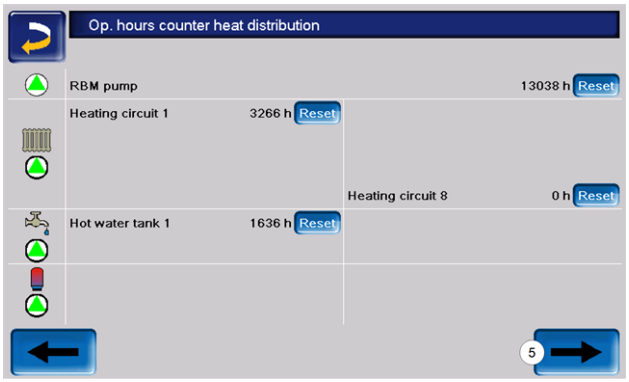
5.4.6 Operating hours counter

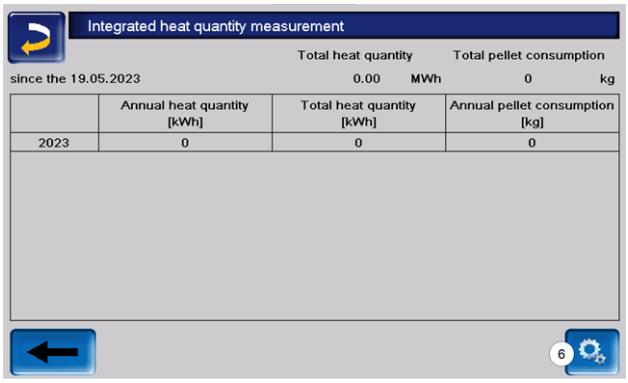


The operating hours of the individual outputs are listed in this menu. These are only counted when the corresponding output is switched on.
The display of the pellet consumption is accessed by clicking on the button 1. Pressing the *Reset* button sets the pellet consumption back to 0 and in the bottom area 4 the consumption is displayed over the elapsed time.

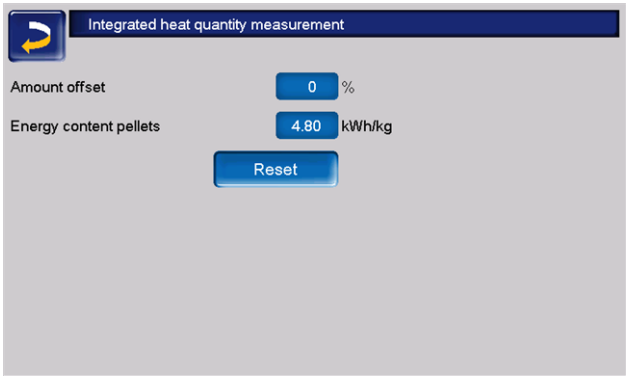


The heat distribution is reached via 2. Displayed here are the operating hours during which heat was requested by the various connected devices.





The integrated heat quantity measurement is reached via 5. The pellet consumption is displayed with maximum 15% deviation and is used together with the efficiency factor for calculating the heat quantity. The efficiency factor depends on the difference between the ambient temperature and flue gas temperature, residual oxygen content and energy content of the pellet 6.



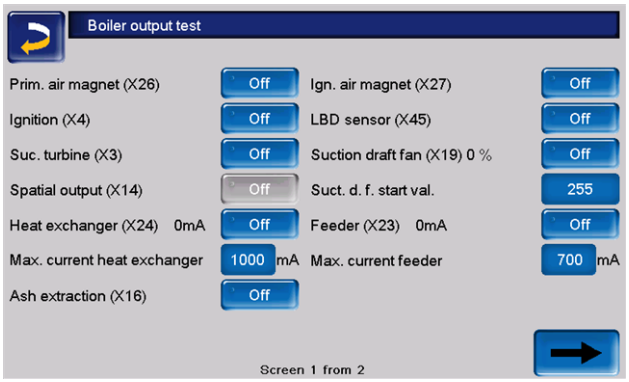
There is no need for an additional heat quantity counter.
The corresponding manufacturer declaration is present and can be accessed here:

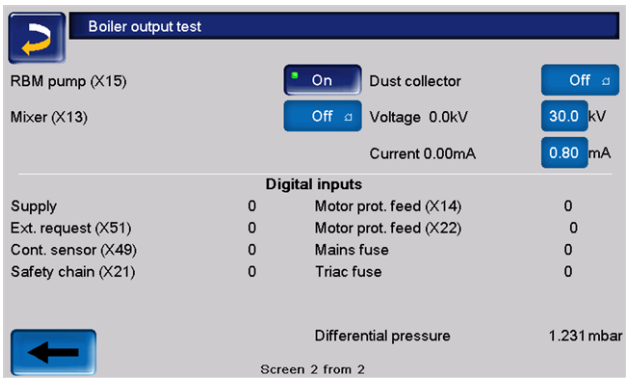
5.4.7 Boiler output test

ATTENTION: Only to be undertaken by qualified personnel.

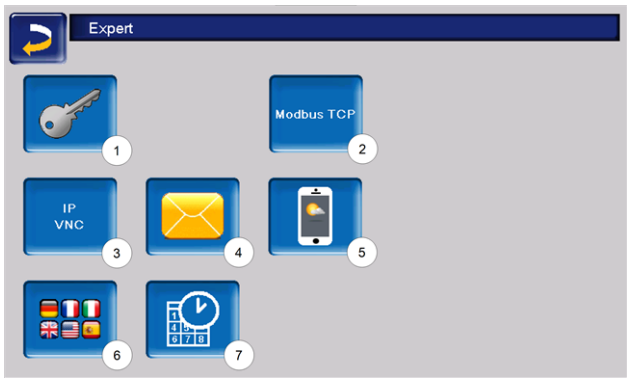
The function of the individual actuators (insertion motor, suction turbine, etc.) can be tested in the boiler output test.

The output test can only be opened when the boiler is switched off or the status is ready.
It is not possible to start the boiler during the output test.
On completion of the period *Screensaver active after*, the screensaver is activated but there is no automatic switch to the start screen. The output start remains active.
The output test is only possible while there is no remote access.





5.4.8 Qualified personnel menu



1 Service menu > 18
2 Modbus TCP interface
3 IP-VNC (IP address of the control) > 18
4 Send email
5 mySOLARFOCUS app > 13
6 Language selection > 19
7 Date and time > 19

Service menu

In the *Service menu* there are (factory predefined) settings for an optimum combustion process in the boiler. These can only be accessed by qualified personnel (code input required).

IP-VNC

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

The following boiler control functions require access to the internet.

- Remote access to the control
- mySOLARFOCUS app > 35
- Weatherman function > 37
- SOLARFOCUS-connect > 34

Hardware

A cable connection is required on site for connecting the control to the router. > 33

Mod bus TCP

With this function, the eco$^{manager\text{-}touch}$ control is able to communicate with a LOXONE control, e.g. for smart home controls, in both directions.

Installation and configuration of this function must be performed by the customer, i.e. they are not included in the commissioning and service activities for your SOLARFOCUS system.

Requirements for use

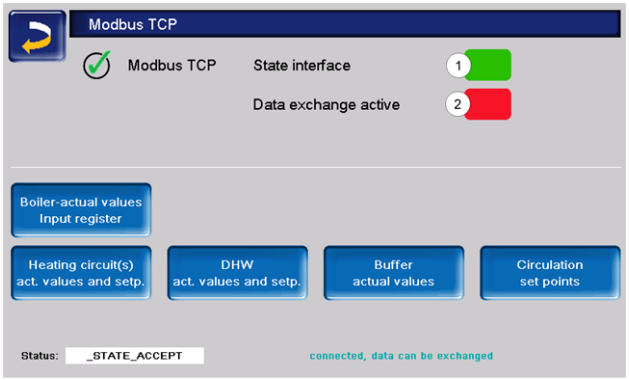
- ecomanager-touch control with 7" display
- Software version of boiler control: from V 19.050 or with thermi^{nator} II touch from V 19.072
- Master and display must be in the same network.

Modbus TCP interface

- The connection is made via port 502
- The UnitIdentifier (UnitID) for the connection to the slave is 1.
- To establish a connection with the panel, all that needs to be known is the IP address of the control. The connection can be established via the master.
- The instructions can be found here:

Setting in the boiler control

- Activate the Mocbus TCP interface
- The green colour 1 denotes the availability of the interface and the active data exchange. Red 2 in the display on the other hand indicates an interruption in the connection or a missing activation.



mySOLARFOCUS app

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

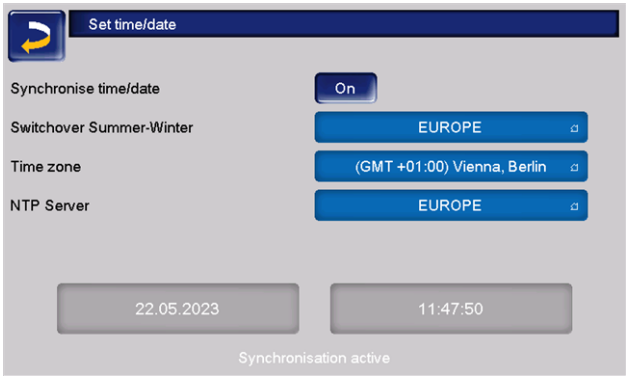
Detailed information on use of *mySOLARFOCUS app* > 35

Language selection

The language of the operating unit can be set on this screen.

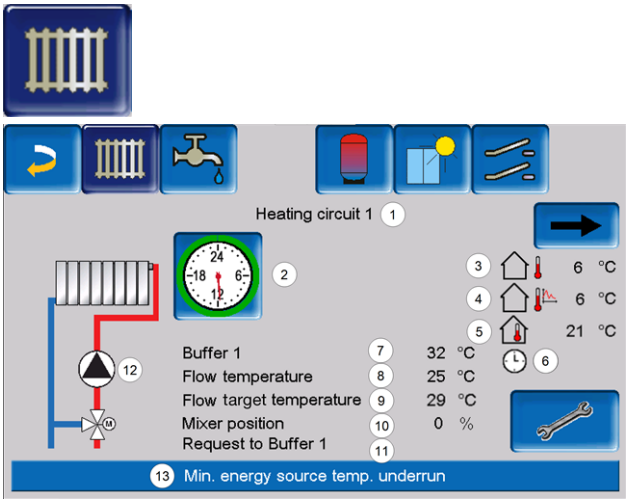
If a text is not available in the selected language, it will be displayed in English.

Date and time



Summer/winter time is changed automatically when the *Switchover Summer-Winter* 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.

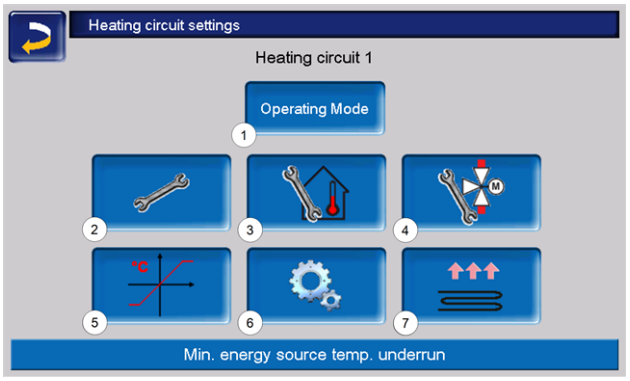
6 Heating circuit



1 Name of heating circuit
2 Operating mode
3 Outside temperature
4 Average outside temperature [1]
5 Room temperature
6 Display of room temperature sensor operating mode
7 Temperature of the energy source
8 Flow temperature of the heating circuit
9 Flow target temperature of the heating circuit
10 Position of the heating circuit mixing valve
11 Info line for heating request
12 Heating circuit pump
13 Status line
14 Heat. cir. settings

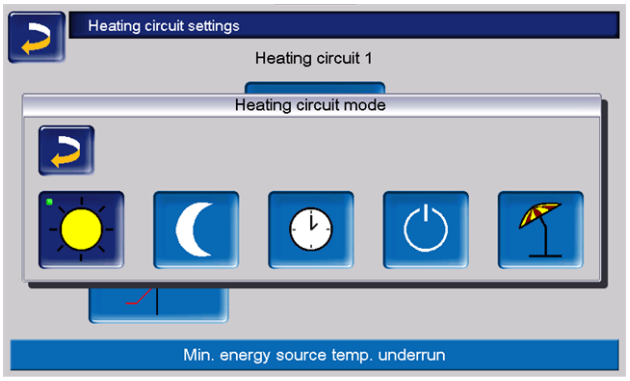
[1] Only visible if *outside temperature delay* is set higher than 0 hours.

6.1 Heating circuit settings



1 Heating circuit operating mode > 20
2 GeneralSettings
3 Room settings > 24
4 Mixing valve settings > 24
5 Heating curve > 22
6 System parameter
7 Screed program > 26

6.1.1 Heating circuit operating mode



Heating mode

The heating circuit pump is activated. A shutdown occurs whenever

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

The room effect must therefore be set to *on* or *continuous*.

The heating circuit is supplied with the *calculated required flow temperature*.

Reduced mode

The heating circuit pump is activated. A shutdown occurs whenever

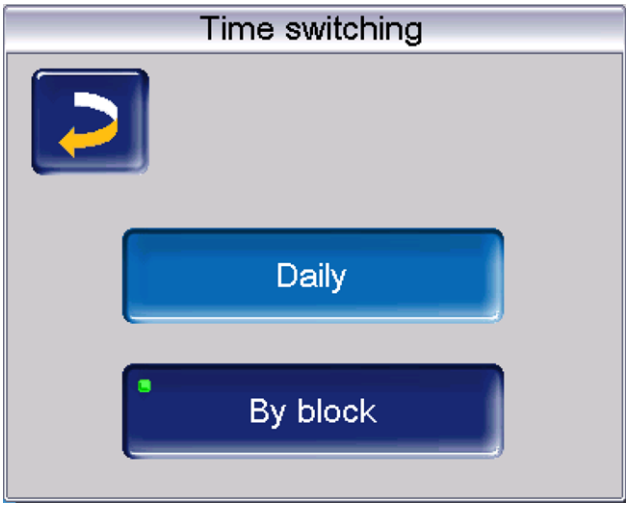
- the *ambient switch off temperature for reduced mode* is reached or
- a room temperature sensor is used and where *nominal room temperature for reduced mode* has been reached.

The heating circuit is provided with the reduced temperature, i.e. *calculated required flow temperature* minus *reduction*.

Time switch

In this operating mode, the timed switch-over between *Heating mode* and *Reduced mode* is defined. The times for heating mode can be entered *per day* or *by block*.

Usage example: *Heating mode* should be active during the day. At night, it should be changed to *reduced mode*.

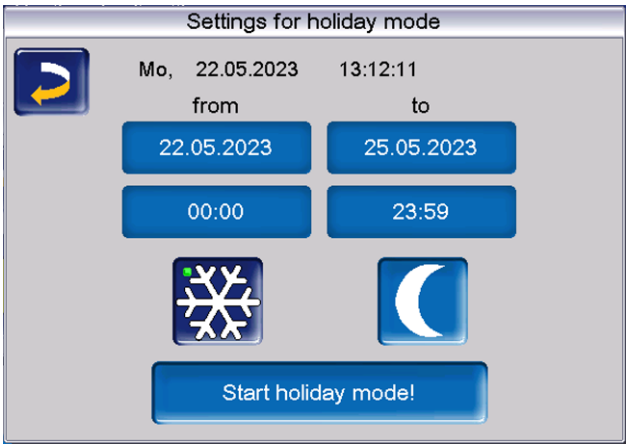


Switch off heating circuit

Heating circuit pump and heating circuit mixers 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.

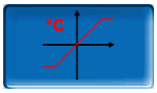


activates the frost protection mode for the heating circuit for the duration of the holiday.

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 Heating curve

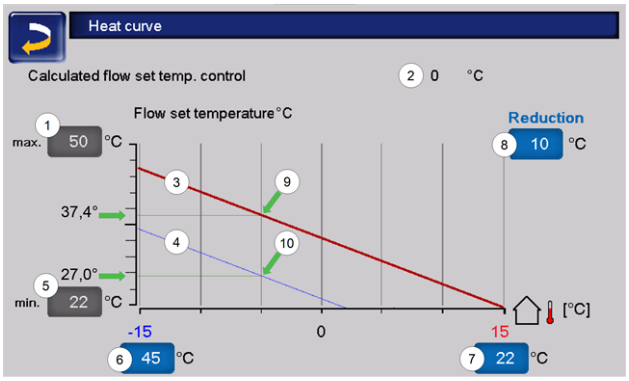


The heating circuit flow temperature is controlled by the heating circuit operating mode and by the outside temperature. The heating curve represents the relationship between these two temperatures. In other words, the boiler control uses the outside temperature to calculate the temperature (=*calculated 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*) (blue) is used.

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



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

! [1] **ATTENTION** - This temperature is system-specific and must be agreed with the heating engineer. If there is a risk of the boiler overheating, the hot water is discharged to the heating circuits at the *Maximum heating circuit flow temperature* 1. Only to be set by qualified personnel.

2-point heating curve

The desired heating circuit *required flow temperature* in heating mode is set for an outside temperature of -15°C *6* and +15°C 7. 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 *Continuous operation*:
> The calculated required flow temperature (**9**) is 37.4°C
> The heating circuit is supplied with 37.4°C.

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

Adaptation of the 2-point heating curve (in *Heating mode*)

Observe the currently set temperature before changing 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.

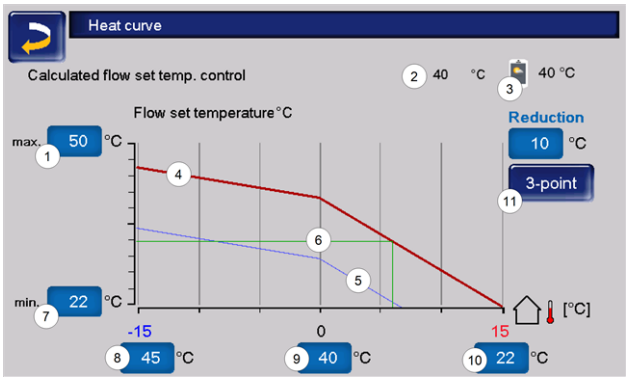
Current outside temperature	Perceived room temperature	Recommended adaptation of heating curve
-15°C to -5°C	too cold	Increase temperature value at *8*
	too hot	Reduce temperature value at *8*
-5°C to +5°C	too cold	Increase temperature value at *8* and *10*
	too hot	Reduce temperature value at *8* and *10*

Current outside temperature	Perceived room temperature	Recommended adaptation of heating curve
+5°C to +15°C	too cold	Increase temperature value at *10*
	too hot	Reduce temperature value at *10*

3-point heating curve

Function must be activated by qualified personnel at 11.

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 *9*, i.e. the heating curve can include a sharp deflection or bend.



1 Maximum heating circuit flow temperature[1]
2 Calculated required flow temperature
3 Setting in mySOLARFOCUS app
4 Heating curve for heating mode (shown in red)
5 Heating curve for reduced mode (blue)
6 Required flow temperature at current outside temperature
7 Minimum flow temperature
8 Flow temperature at outside temperature -15°C
9 Flow temperature at outside temperature 0°C (only visible with 3-point heating curve)
10 Flow temperature at outside temperature +15°C
11 Changeover between 2- and 3-point heating curve in qualified personnel menu

! [1)] **ATTENTION** - This temperature is system-specific and must be agreed with the heating engineer. If there is a risk of the boiler overheating, the hot water is discharged to the heating circuits at the *Maximum heating circuit flow temperature* 1. Only to be set by qualified personnel.

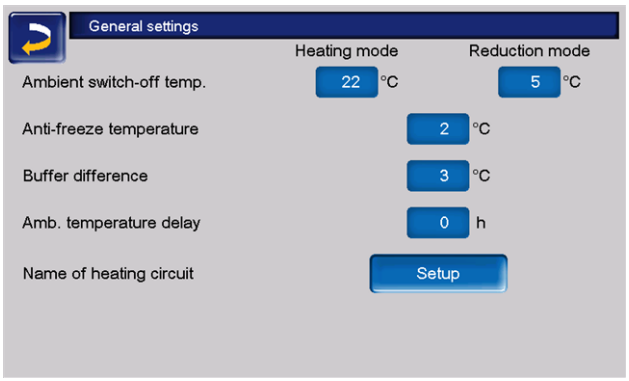
Adaptation of the 3-point heating curve (in *Heating mode*)

Observe the currently set temperature before changing the values.

Current outside temperature	Perceived room temperature	Recommended adaptation of heating curve
-15°C to -5°C	too cold	Increase temperature value at *8*
	too hot	Reduce temperature value at *8*
-5°C to +5°C	too cold	Increase temperature value at *9*
	too hot	Reduce temperature value at *9*

Current outside temperature	Perceived room temperature	Recommended adaptation of heating curve
+5°C to +15°C	too cold	Increase temperature value at *10*
	too hot	Reduce temperature value at *10*

6.1.3 General settings



Ambient switch off temperature

If the settings were carried out as per the above example, the boiler control will respond as follows:

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

Set *ambient switch off temperature* for heating mode: e.g. 18°C

Set *ambient switch off temperature* for reduced mode: e.g. 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 falls below the value set here, the heating circuit pump is switched on and the burner closes.

Buffer difference

The burner (fehlender oder ungültiger Codeausschnitt) starts when in the buffer 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 burner (fehlender oder ungültiger Codeausschnitt) starts as soon as the *tank temperature top* < 45°C.

A negative buffer difference value is added, i.e. the burner (fehlender oder ungültiger Codeausschnitt) starts earlier.

Example:
- Current required flow temperature = 50°C
- Buffer difference = - 5°C
The burner (fehlender oder ungültiger Codeausschnitt) 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).

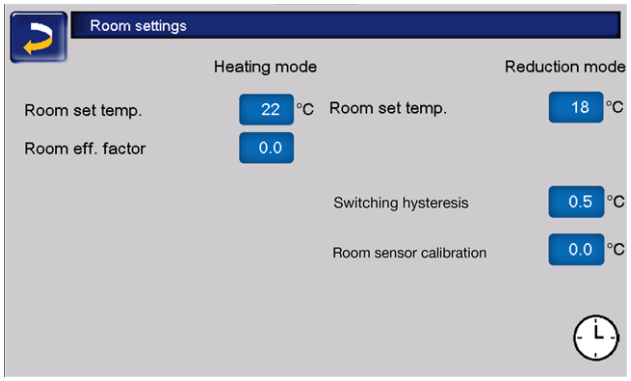
The heating circuit pump switches on as soon as the average and current outside temperatures fall below the ambient switch off temperature. The same applies if these fall below the *ambient switch off temperature reduced mode* outside the heating time.

The heating circuit pump switches off again as soon as the respective outside temperature rises above the value of the ambient switch off temperature. The average outside temperature is no longer taken account of.

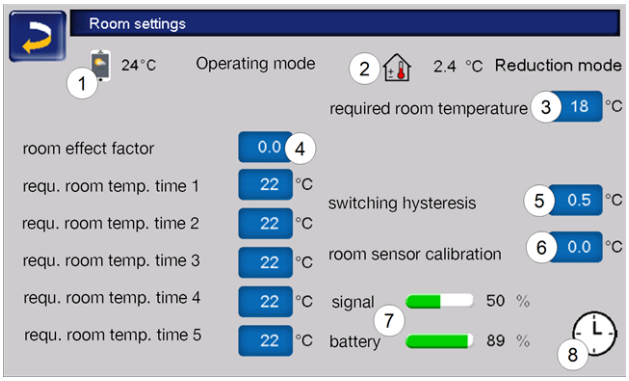
Heating circuit name

The heating circuit can be given an individual name.

6.1.4 Room settings



Room target temperature
If during heating mode the room temperature exceeds the set value for the *required room temperature* plus the *switching hysteresis*, the heating circuit pump is switched off and the heating circuit mixing valve closes. The status line shows "Required room temperature heating circuit reached".
The same applies in reduced mode when the *required room temperature* set there is reached.



1 Required room temperature in mySOLARFOCUS app
2 Required room temperature offset from room control unit
3 Required room temperature
4 Room effect factor
5 Switching hysteresis of room temperature
6 Room sensor calibration
7 Signal and battery status radio room control unit (optional)
8 Display of room thermostat operating mode (time switch)

In the qualified personnel menu, a custom required room temperature can be set for each heating time in the time switch. The following applies for the *heating mode*: *Required room temperature* heating mode = *required room temperature* heating time 1.

Room effect factor 4
The difference between the measured room temperature and the current *required room temperature* is multiplied by this factor and the result is added to the calculated required flow temperature.

Example:
Room temperature = 20°C
Required room temperature = 22°C
Room effect factor = 2
(22-20=2 x 2 =4)
In other words, the calculated required flow temperature is increased by 4°C.

Switching hysteresis room temperature 5
If the current room temperature exceeds the required room temperature plus the set switching hysteresis value, the heating circuit pump will switch off.[1] As soon as the room temperature falls below the current required room temperature minus the switching hysteresis, the heating circuit pump will be activated again.

[1] With room effect *continuous*, the heating circuit pump does not switch off. This setting can only be carried out in the service menu in the heater circuit system parameters.

Room sensor calibration 6
With this parameter, the room temperature sensor can be calibrated. The room sensor calibration is only visible upon login in the service menu and a one-off calibration setting of the sensors. The measured room temperature is increased or decreased by this value.

Example:
Measured room temperature = 20°C
Room sensor calibration = -1°C
Room temperature = 19°C

Required room temperature in mySOLARFOCUS app 1
This temperature has been set using the mySOLARFOCUS app and is displayed with the mobile phone symbol on the screen.

Required room temperature offset room control unit 2
The room control unit can be used to regulate the required room temperature via an offset, in other words increased or decreased.

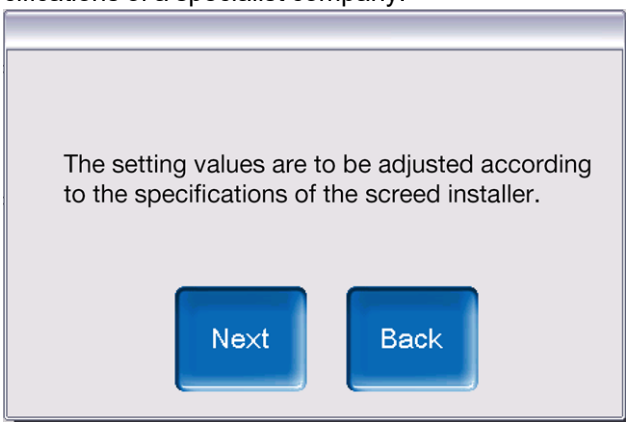
Example:
Required room temperature = 22°C
Room control unit offset = 2°C
Current required room temperature = 24°C

Room temperature thermostat operating mode 8
Shows the currently set operating mode (sliding switch) on the room temperature regulator (anti-freeze, reduced heating mode, continuous heating mode and also automatic).

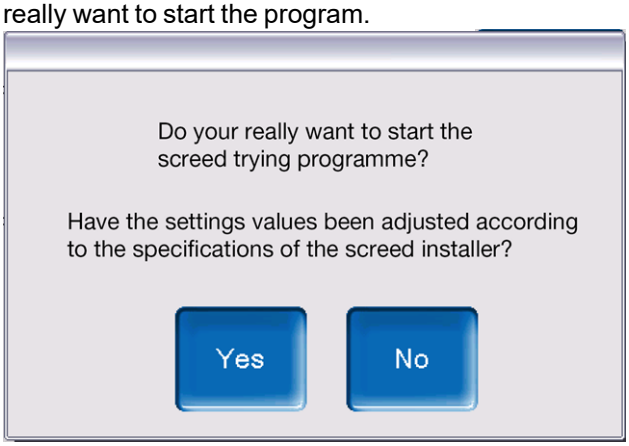
6.1.5 Screed program

! **ATTENTION** - This is a screed drying program, which needs to be adjusted precisely to the specifications of the screed installer.

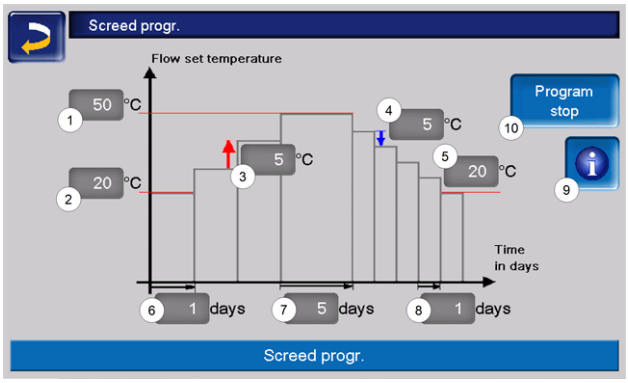
After clicking on the screed button, a pop-up window will appear immediately, which reminds you once again to adapt the setting values according to the specifications of a specialist company.



After selecting *Continue*, you can press the *Program start* button whereupon you will be asked again if you really want to start the program.



Once the drying program has been started, it will continue automatically depending on which protocol is set, and it will switch off automatically at the end. Also check the heating circuit settings (heating curve, maximum flow temperature), as the heating circuit automatically switches over to the control function set at the end of the drying program. To ensure that the required flow temperature can be maintained, ensure that sufficient fuel is being supplied to the boiler.



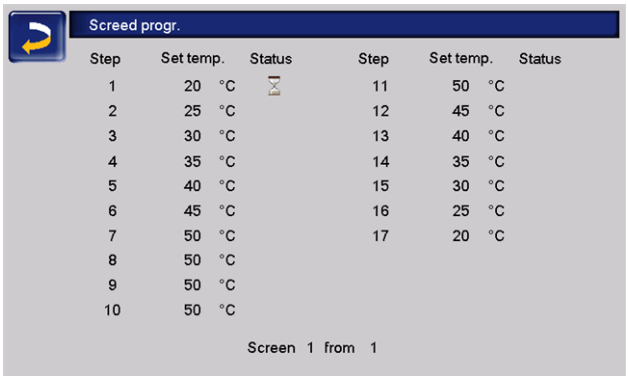
1 Maximum temperature
2 Start temperature
3 Temperature increase
4 Temperature reduction
5 End temperature
6 Heating time
7 Delay time
8 Lowering time
9 Screed protocol
10 Start/stop program

! **ATTENTION** - Once the function has started, the values can no longer be changed. If changes are made to the protocol, the drying program must be manually switched off. Following reactivation, it will start on the first day again.

Pressing the button opens the Screed protocol screen in which the individual set values of the individual stages for the required flow temperatures are displayed along with their progress.

denotes the relevant active stage.

marks the completed stages.



7 DHW heating

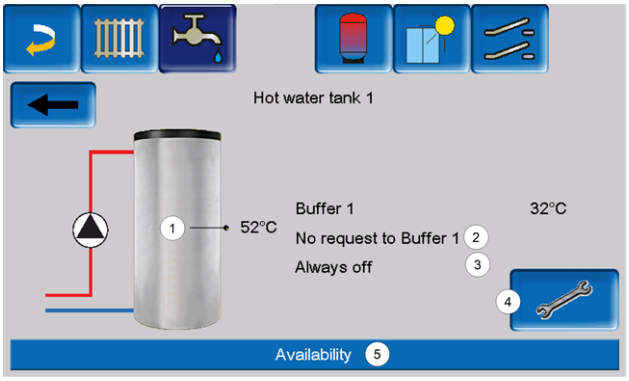
DHW can be heated up intwo ways:

- With a *DHW tank* > 27
  (the energy source of the DHW tank is the boiler or a buffer tank[1])
- With the HYKO hygiene combination tank (DHW is fed through the buffer tank in a stainless steel corrugated tube heat exchanger with circulation operation.)
- With a *fresh water module* > 28
  (The energy source of the fresh water module is a buffer tank[1])

[1] DHW area inBuffer tank

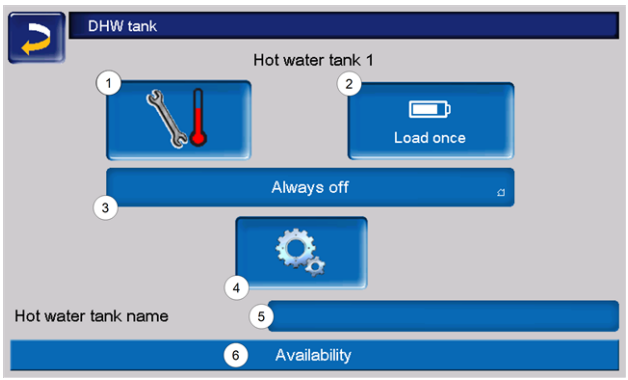
Warm water rises and collects in the uppermost area of the buffer tank (= thermal stratification). The DHW tank or the fresh water module draws the required energy for DHW heating from this uppermost area. Therefore, this (held at an adjustable temperature level) area in the buffer tank is also referred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

7.1 Domestic hot water tank



1 DHW tank temperature
2 Information: Requirements of the buffer tank
3 DHW tank operating mode > 28
4 DHW tank settings > 27
5 DHW tank status line

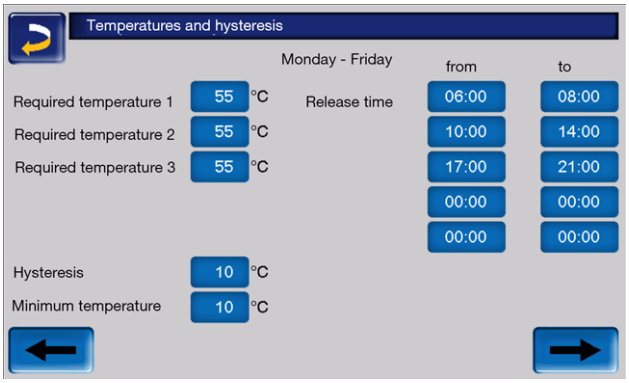
7.1.1 DHW tank settings



1 Temperatures and hystereses
2 One-time charge
3 Release mode
4 System parameter
5 Name of DHW tank if assigned
6 Status line

Temperatures and hystereses

Required temperature / hystereses



A separate required temperature can be set for each *time release*.

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

If the DHW tank temperature falls below the value *minimum temperature* outside the release time, the DHW tank is charged.
Within the *release time* the DHW tank is charged to the desired temperature as required.

One-time charge

This button is pressed 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).

DHW tank operating mode

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, minimum temperature* and *hysteresis* into account.

Time switching (*Monday-Sunday, by block, by day,* etc.): Various time ranges can be set in which the DHW tank charging pump is switched to *on*.

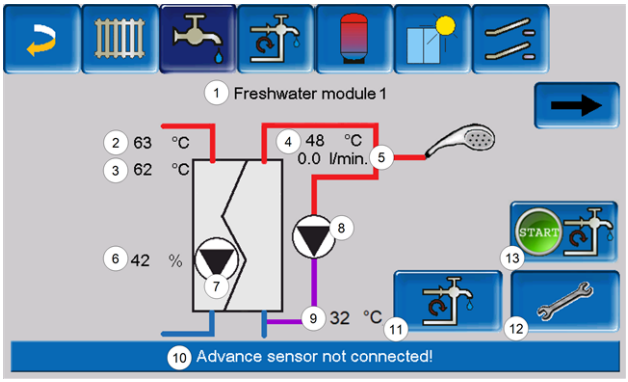
The operating mode *Monday - Sunday* is not available when using the *mySOLARFOCUS app* > 35.

7.2 HYKO hygiene combination tank

This tank is used for processing hot water and heating water at the same time. The hot water is fed into the hot water via a stainless steel corrugated pipe coil in circulation operation and heated up hygienically in this way. In addition, up to two solar coils can be installed in the HYKO combi tank depending on the model.

7.3 Fresh water module

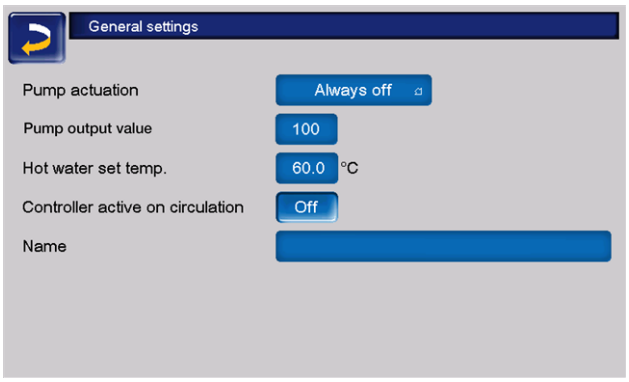
A fresh water module heats hot water in circulation operation via an external heat exchanger. The circulation pump of the fresh water module starts when a DHW output point is opened. The energy for heating up hot water is taken from the upper area (=DHW area) of the buffer tank.



1 Fresh water module name
2 Energy source temperature (e.g: buffer tank)
3 Heat exchanger inlet temperature[1]
4 Heat exchanger outlet temperature
5 Flow rate
6 Circulation pump speed
7 Status of circulation pump
8 Status of recirculation pump (optional)
9 Recirculation temperature (optional)
10 Fresh water module status line
11 Recirculation pump (optional)
12 General settings of fresh water module
13 Start recirculation pump

[1] Only visible when *Konvent* is set as the fresh water module type.

Fresh water module settings



Pump control

Always off: The fresh water module pump is switched off permanently. The hot water is not heated.

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 of a connected device is opened).

Pump output value

A manual entry for the pump speed is made here with the setting “Always on”. This value is visible only in the service menu.

Required DHW temperature

This parameter is active only for the release type *Automatic*. The fresh water module regulates the temperature at which the connected hot water devices receive water to this temperature. It is visible in the fresh water module screen > 28 as *DHW temperature*.

Controller active on circulation

When the parameter is active, the fresh water module pump and the recirculation pump start at the same time. This is helpful where recirculation pumps or lines have insufficient dimensions so that the required flow is reached to trigger the flow sensor.

Name

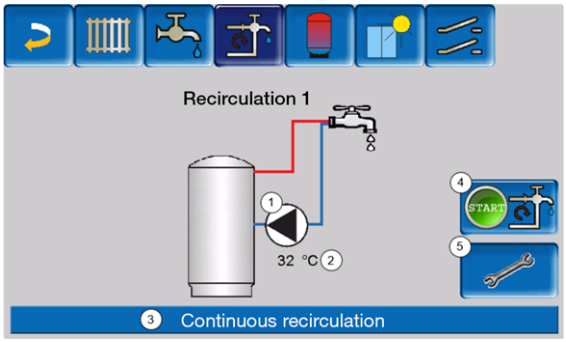
An individual name for the fresh water module can be assigned here.

8 Recirculation control

(optional additional function)

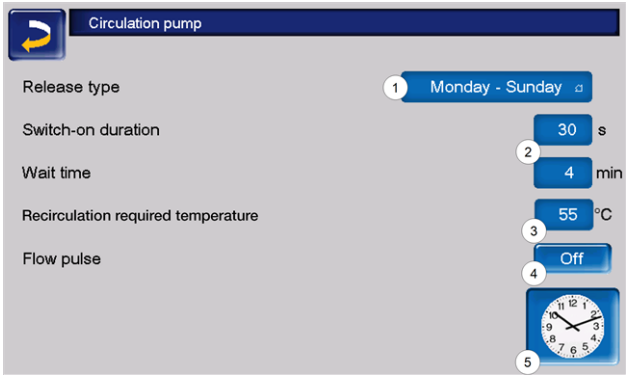
A recirculation line results in the hot water being quickly available at the extraction points (also called tapping points, e.g. basin, shower, bath, etc.), even with long supply pipes.

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



1 Status of recirculation pump
2 Recirculation temperature
3 Recirculation status line
4 Start recirculation
5 Recirculation pump settings

8.1 Circulation – settings



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 operated cyclically in consideration of the parameters *switch-on duration* and *waiting time*.

Time switching (*Monday-Sunday, by block,* etc.): In this respect, time releases can also 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*.

Recirculation required temperature *3*

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

Flow pulse *4* ***(only in connection with a fresh water module)***

When the parameter is active, circulation is active also when a flow impulse is detected.

When a hot water 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.

Example:
- Release type = *Monday-Sunday*
- No time release has been set. (00:00 to 00:00)

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

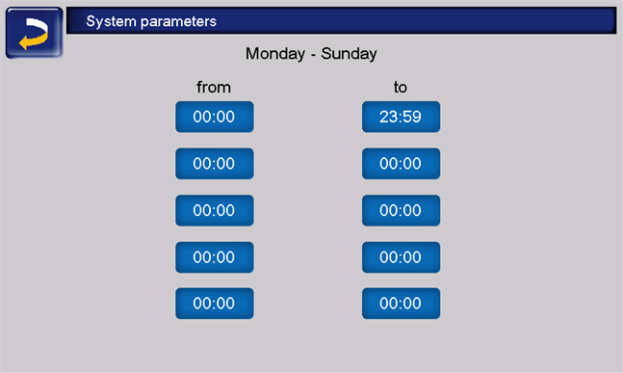
Exception: If a temperature sensor for the recirculation pump is connected and the recirculation temperature is sufficient, the recirculation pump is not triggered.

Boiler control with flow pulse is only possible in connection with a fresh water module.

If *Always off* is selected with the time release, the recirculation pump is not started and the flow pulse is ignored.

System parameters *5*

The release times for the recirculation pump can be set on this screen.



8.2 Recirculation control - options

To make use of the following controls, time switching *(Monday-Sunday, by block, 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 cyclical basis if a time release (see parameter *release type*) is present. Cycling (i.e. switching between control/no control) is conducted in accordance with the *switch-on duration* and *waiting 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 a time release from 06:00 to 08:00. Outside the time release, the recirculation pump is not triggered.

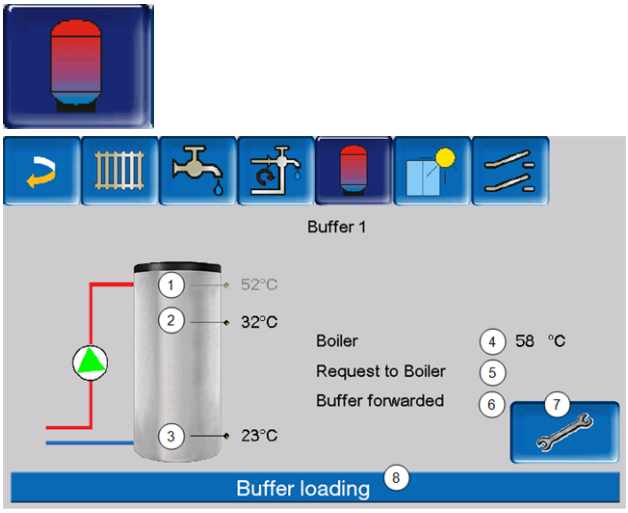
Temperature- and time-controlled recirculation

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. This value is permanently stored and cannot be changed.

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.

9 Buffer tank



1 DHW tank temperature
Temperature is only visible when the buffer tank has been selected as the energy source with existing hot water tank.
2 Buffer cylinder temperature top
3 Buffer cylinder temperature bottom
4 Temperature of heat source
5 Info line: Heating request (yes/no) to the energy source
6 Info line: Request (yes/no) to the buffer tank
7 Buffer tank settings
The button is only visible when *Time switching* is selected as the buffer tank operating mode. It may only be adjusted by qualified personnel.
8 Buffer tank status line
9 Status, buffer charging pump
On the first buffer tank whose energy source is the boiler, the status of the return booster pump is displayed here.

9.1 Setting the buffer tank temperatures

MinimumBuffer cylinder temperature top

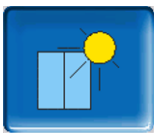
When *Buffer cylinder temperature top* falls below this value, the energy source for the buffer cylinder starts (e.g. boiler) and the buffer cylinder is re-charged (upon time release). Recommendation: 30°C

Maximum buffer cylinder temperature bottom

The buffer tank is charged until the *Buffer cylinder temperature bottom* has reached this value. Recommendation: 60°C

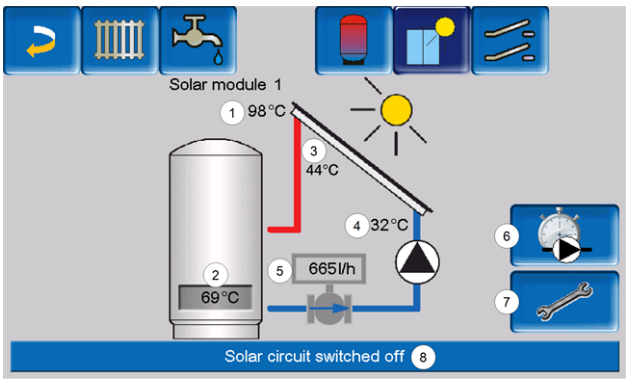
In order to ensure optimum and efficient use of the buffer tank, the difference between these two temperatures should be >15°C.
The minimum buffer cylinder temperature top must always be smaller than the maximum buffer cylinder temperature bottom.

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.



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 hours counter
7 Solar circuit settings
8 Solar circuit status line

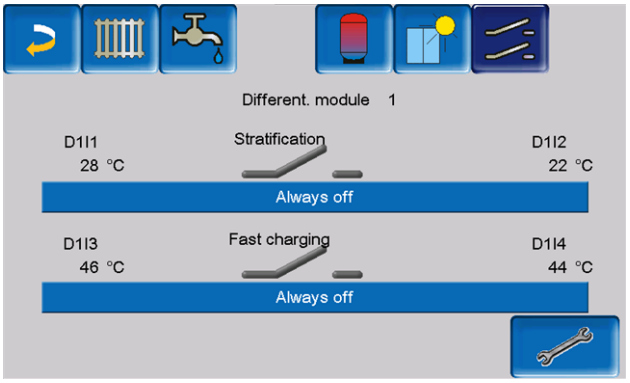
Further information about solar system

Further information can be obtained in a separate set of instructions when you purchase this function, DR-0007.

The solar yield is displayed in the *mySOLARFOCUS app* > 35 (prerequisite: solar system controlled by **eco**manager-*touch* control, including thermal unit counter).

11 Temperature difference - charge control

(optional additional function)



– This function extends the **eco**manager-*touch* control to include 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.

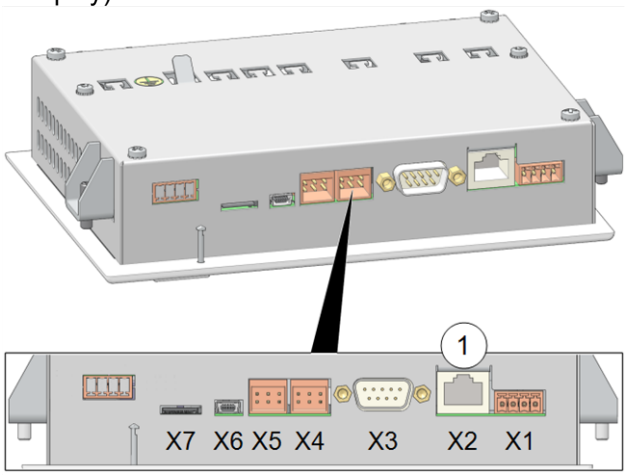
Further information can be obtained in a separate set of instructions when you purchase this function, DR-0014.

12 Connecting boiler control to the internet

The customer is responsible for the installation and configuration of *SOLARFOCUS-connect* and the mySOLARFOCUS app.

Hardware

► The cable is to be connected from the touch display (Ethernet interface **X2** on the rear of the display) to the router.



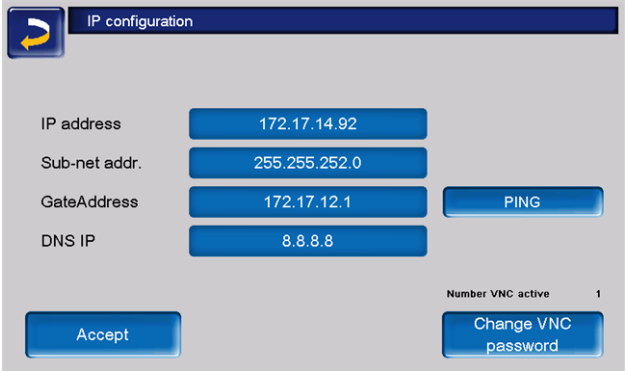
IP configuration screen

► Perform the necessary settings in the boiler control (IP address, Gateway address, etc.).
To access the *IP-VNC* icon, select it in the boiler 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 boiler control has a constant IP address.

Integration in the home network is required for the use of all external controls. All apps cannot be setup without this.

The apps are based on a secure VPN connection.

13 SOLARFOCUS-connect

With SOLARFOCUS-connect, you can access the display of the boiler control **eco**manager-touch from any location using a PC or mobile device.

- All settings can be carried out as if you were there on-site.
- Access to the boiler control can be enabled for other users (limited time or permanently).

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

13.1 Ordering/enabling

SOLARFOCUS-connect is obtained as follows:

- Order Art. 60893 (by email to app@solarfocus.at) or:
- Agree a maintenance contract for the heating system with the “plus SOLARFOCUS-connect” option.

Artikel-Nr.	Designation
60893	SOLARFOCUS-connect (valid for at least 5 years)
6074-VNC	Maintenance contract biomass up to 70 kW, “Premium package” plus SOLARFOCUS-connect
6075-VNC	Maintenance contract biomass up to 70 kW, “Power package” plus SOLARFOCUS-connect
6094-VNC	Maintenance contract biomass up to 45 kW, “Premium package” plus SOLARFOCUS-connect
6095-VNC	Maintenance contract biomass up to 45 kW, “Power package” plus SOLARFOCUS-connect
6093-VNC	Maintenance contract heat pump plus SOLARFOCUS-connect

Activating your heating system

- After billing, the system will be activated weekdays between 08:00 and 15:30.
- You will receive an invitation via the email address given with the order

13.2 Requirements for use

- The regulator must first be integrated in the home network (IP configuration) > 33
- Forwarding of display serial number to SOLARFOCUS
- Compatibility with **eco**manager-touch boiler control from software version ≥ 22.020
- Internet connection with a bandwidth of >1 Mbit/s.

Compatible with:
ecomanager-touch control with 7" display for

- **vamp**air
- **ecotop** zero
- **pellet** elegance
- **octo** plus
- **pellet** top touch
- **maxi**mus
- Central control **eco**manager-touch

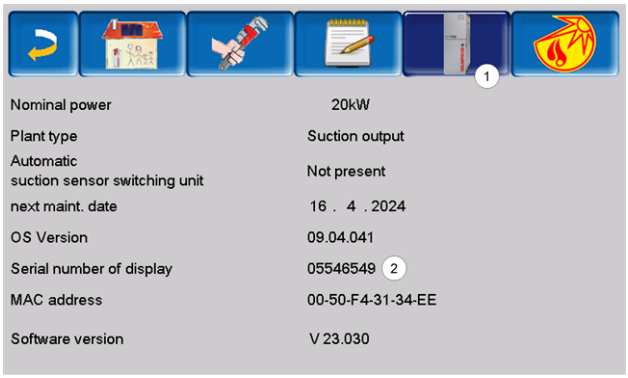
Not compatible with:

- Control ecomanager
- **eco**manager-touch control with 5.7” display
- All boilers of the model series **thermi**nator**II**

13.3 Reading display serial number

To access the *Information* screen, select:

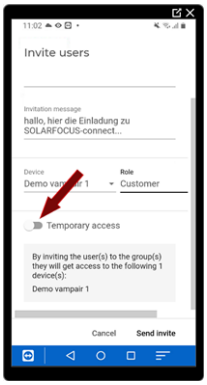
- *Selection menu* screen
- *Information* button
- On the fifth index card 1 is the parameter Serial number display 2. This must be sent to SOLARFOCUS when ordering SOLARFOCUS-connect.



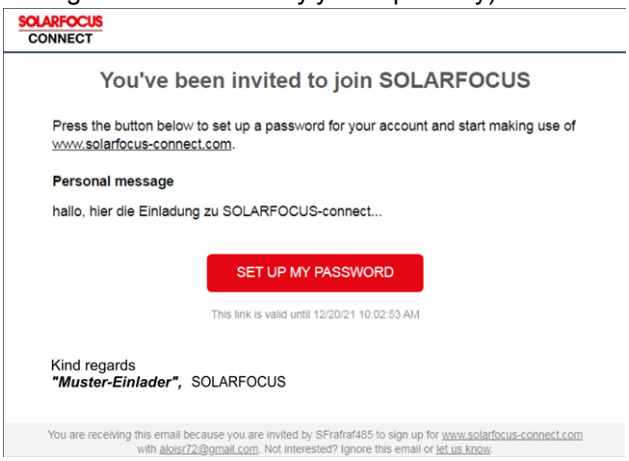
13.4 Installing the app

- SOLARFOCUS-connect is available for Android and Apple.
- The SOLARFOCUS-connect app can be installed from the corresponding app store or via a browser (https://www.solarfocus-connect.com/).

13.5 Approving additional users



You have the option of inviting other users to take advantage of SOLARFOCUS-connect, that is allow these users to access your heating system.
The access can be restricted in time and the user can also be removed.
After the invitation, the invited user will receive an email (validity 14 days).
The user can then register themselves in SOLARFOCUS-connect and subsequently connect to the boiler control of your heating system (without having to be authorised by you separately).


SOLARFOCUS CONNECT

You've been invited to join SOLARFOCUS

Press the button below to set up a password for your account and start making use of www.solarfocus-connect.com.

Personal message

hallo, hier die Einladung zu SOLARFOCUS-connect...

SET UP MY PASSWORD

This link is valid until 12/20/21 10:02:53 AM

Kind regards
"Muster-Einlader", SOLARFOCUS

You are receiving this email because you are invited by SFrafraf485 to sign up for www.solarfocus-connect.com with aloisr72@gmail.com. Not interested? Ignore this email or let us know.

14 mySOLARFOCUS app

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 of 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).

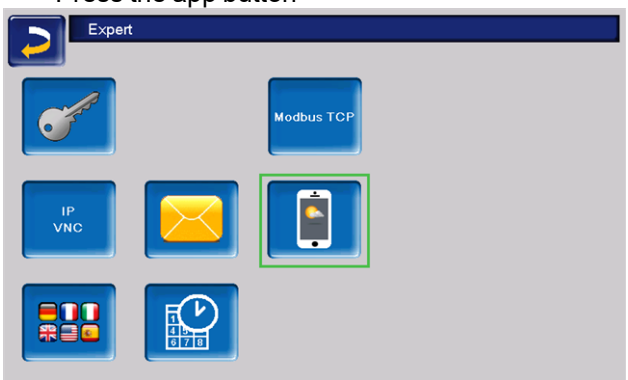
14.1 Requirements for use

- The control must be connected to the internet.
- Smartphone with Apple IOS 13.6 or higher or Android OS 8 or higher
- Compatibility with **eco**manager-touch boiler control from software version 22.020
- The software version of the boiler control is ≥ V 22.020 at **octo** plus, **pellet** elegance, **pellet** top, Central control **eco**manager-*touch*, **maxi**mus M and L, **vamp**air, **ecotop** zero/light.

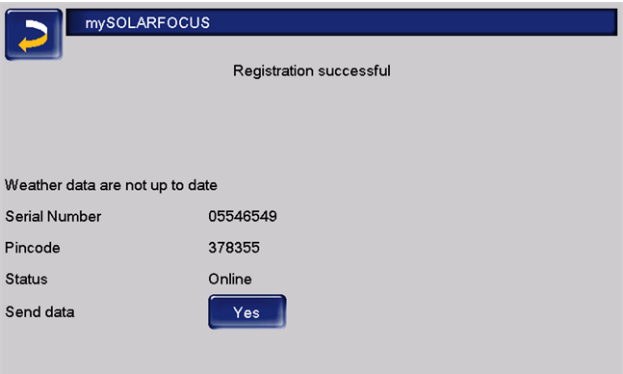
14.2 Registering on the web server

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

► Press the app button



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



In the event of registration not being successful, check the following:
► Connection from display to router…
► Entered IP addresses
► Network router (e.g. status…).

14.3 Installing the app, registering the 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.
► 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).

14.4 Adding system

☑ Requirement: You have successfully signed into the app.

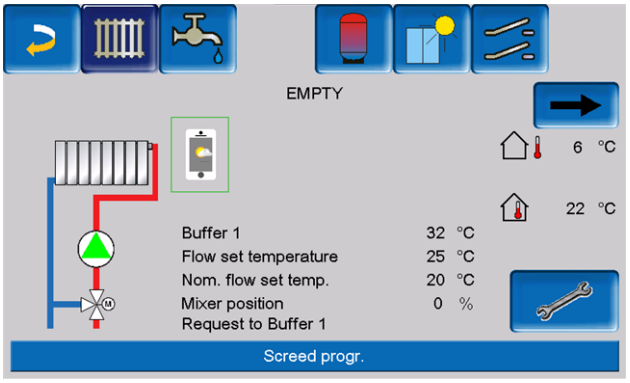
► Press the *Add new system* button.
► Enter the data for your heating system (serial number and PIN).

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

ⓘ Other than adding systems by means of the app, you can also use the website. https://www.mysolarfocus.com

ⓘ Important: In principle only *one* user may access a system. If additional users wish to access a system, then they must be approved in advance. *Approving additional users* > 36

14.5 Using the mySOLARFOCUS app



In the boiler control, the app icon indicates that the parameter has been changed on the basis of an entry in the app; e.g.
– on the *heating circuit* screen: If *short-term mode* has been activated in the app
– on the *heating circuit* screen, in *room settings*
– on the *heating curve* screen

Changes using the app:
– On the *heating circuit* screen, only *by day* switch is available in the *time switch* heating circuit mode, and not *by block*.
– In the *heating hot water* screen, the time switches *Monday - Sunday* and *By block* are not available for DHW tank mode.

14.6 Approving additional users

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

Issuing an approval

► Select the *Approval* menu item.

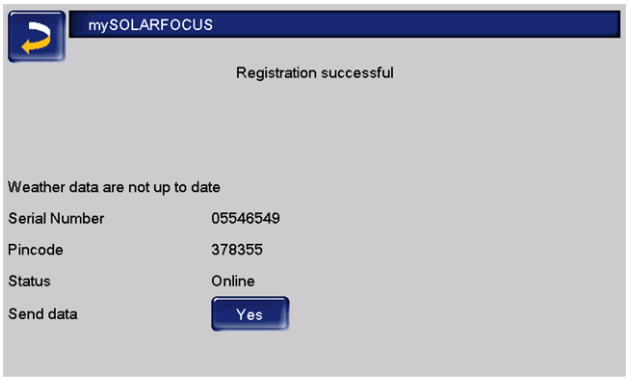
► Enter the user's email address and select the *Invite* button.
  ↳ The invited user will receive an email with an approval code for the system. They can use this to add the system to their app account.

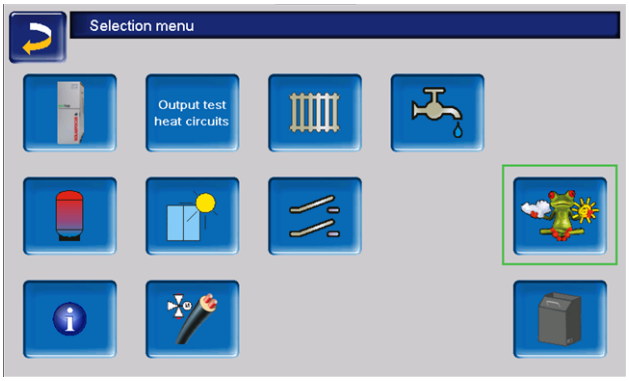
15 Weatherman function

The boiler control **eco**manager-*touch* receives current weather forecast data on an ongoing basis. The weather forecast feature (weatherman) is integrated as standard. The control accesses live data from a weather server and uses this to tell the boiler when to heat – or when to remain inactive, because sunshine is expected.

Prerequisite for using the weatherman function: Registration of the boiler on the SOLARFOCUS web server (www.mysolarfocus.com), or in the mySOLARFOCUS app.

During initialisation, it may take up to 4 hours until the current weather details are transmitted. You can see whether the weather data are already up-to-date in the qualified personnel menu of the mySOLARFOCUS app:





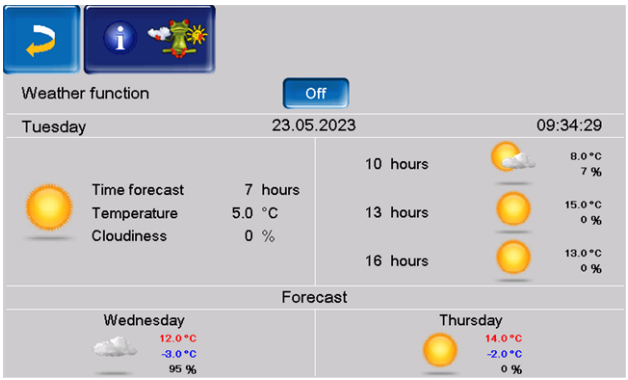
Press the button to access the weatherman menu.

If no connection is made and therefore the weather data are not updated, check the following points:

- ► 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*?

15.1 Information

The *weatherman information* menu visualises the current weather forecast.



Weatherman function

Off: The weather forecast is shown in the display, but does not influence the control at all.
On: Depending on the weather forecast (cloud coverage) and the current time and season, the following control systems can be influenced:

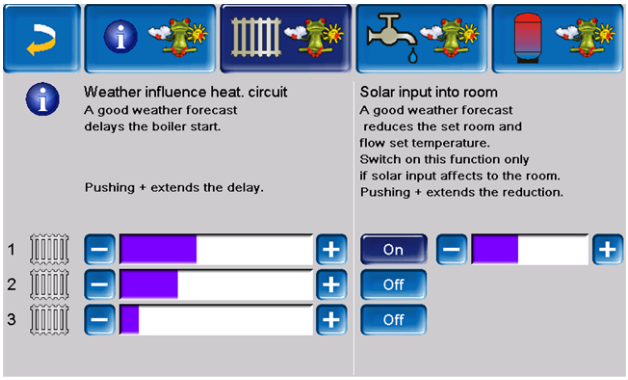
- Weather influence heating circuit
- Sun entering the room
- Weather influence DHW
- Weather influence buffer charging

The following applies for all menus: The level of influence can be set using the plus/minus buttons on the bar, in 10% steps

- 0% means that a good weather forecast has no influence.
- 100% means a maximum level of influence.

15.2 Heating circuit

This menu is only visible when a heating circuit is enabled in the control.



Weather influence heating circuit 1

This area is only visible when the heating circuit obtains its energy from a buffer tank enabled in the control.

Activate the *weather influence heating circuit* function only if the buffer tank is connected to a solar power system.

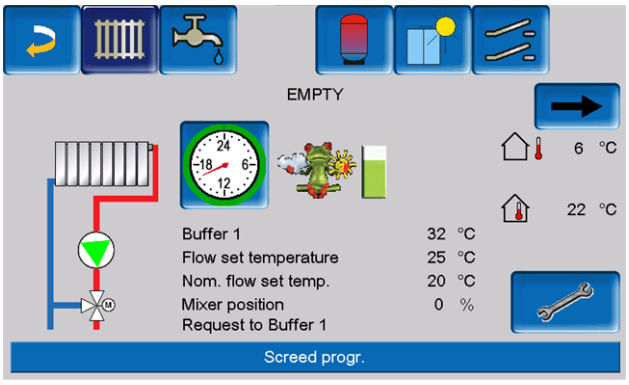
Good weather being forecast delays the start of the burner in the event of a request from the heating circuit. In this way, the thermal solar system has the means and time to charge the tank at a later stage without the boiler having to start.
The maximum possible delay is calculated by an algorithm and depends inter alia on the following:

- Weather forecast
- Date and time
- Deviation between actual/required buffer tank temperature
- Duration of buffer tank temperature deviation
- Individual setting influence on weather prognosis

The bar 2 can be used to set the duration of the request delay for each heating circuit individually. (fehlender oder ungültiger Codeausschnitt)

0% = no delay to burner start.
100% = maximum delay to burner start in the event of good weather being forecast.

If the function delays the burner start due to good weather being forecast, then the weatherman icon appears in the main heating circuit menu.(fehlender oder ungültiger Codeausschnitt)



The green column indicates the delay. When 100% is reached, the burner starts.

Solar yield in the room 3

Activate this function only if solar radiation directly influences the heating circuit (e.g. solar radiation through a glass panel).

Good weather being forecast means the following:

- The flow temperature of the heating circuit is reduced (within the heating period) to maximum lowering temperature
- The room temperature is reduced (if the *Room effect* parameter is activated in the heating circuit menu)

The bar 4 can be used to set the temperature reduction for each heating circuit individually

0% = no reduction in the heating circuit flow temperature, or the room temperature.

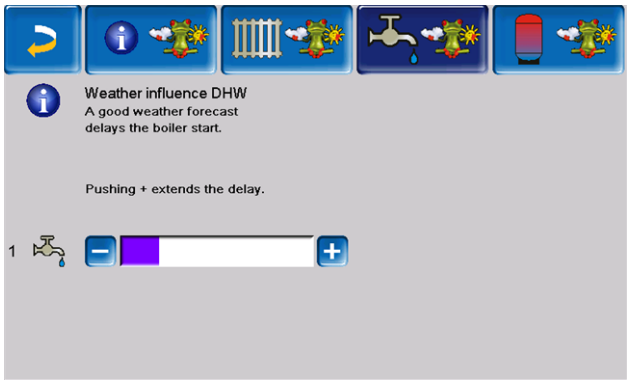
100% = maximum reduction in the heating circuit flow temperature, or the room temperature, in the event of good weather being forecast to maximum lowering temperature

Within the heating period, the heating circuit flow temperature is reduced by a maximum of the *reduction* set on the *heating curve* screen.

Within the heating period, the inside setpoint temperature is reduced as a maximum to the *inside setpoint temperature reduced mode* set on the *heating circuit room settings* screen.

If the *Solar yield in the room* function reduces the temperature(s) due to good weather being forecast, then the weatherman icon appears in the main heating circuit menu.

15.3 DHW



Activate the *weather influence hot water* function only if the DHW tank/hot water area is heated by a solar power system, or is charged from a buffer tank that is heated by a solar power system.

Good weather forecast delays the start of the burner in the event of a request from the DHW tank/hot water area.(fehlender oder ungültiger Codeausschnitt)
In this way, the thermal solar system has the means and time to charge the tank at a later stage without the boiler having to start.
The maximum possible delay is calculated by an algorithm and depends inter alia on the following:

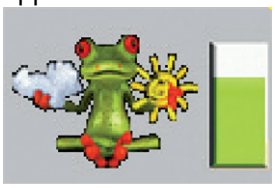
- Weather forecast
- Date and time
- Deviation between actual/required buffer tank temperature
- Duration of buffer tank temperature deviation
- Individual setting influence on weather prognosis

The bar can be used to set the duration of the delay for each DHW tank/hot water area individually.

0% = no delay to burner start..

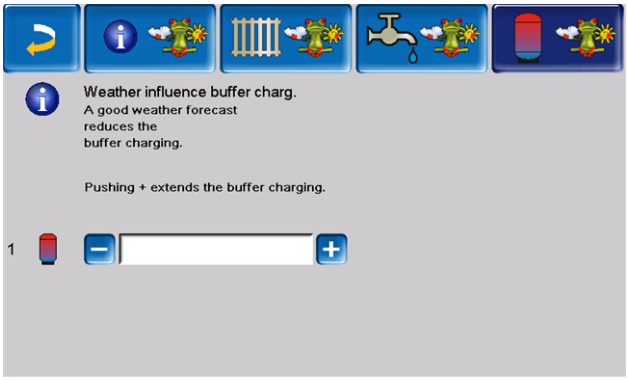
100% = maximum delay of burner start in the event of good weather being forecast.

If the function delays burner start due to good weather being forecast, then the weatherman icon appears in the main hot water menu.



The green column indicates the delay. When 100% is reached, the burner starts and the DHW tank is charged.

15.4 Buffer tank charging



This menu *1* is only visible when a buffer tank is enabled in the boiler control.

In the event of good weather being forecast, the buffer tank is charged for a shorter time within the release time.
In this way, the thermal solar system has the means and time to charge the tank at a later stage without the boiler having to start.
The maximum possible delay is calculated by an algorithm and depends inter alia on the following:

- Weather forecast:
- Date and time
- Deviation between actual/required buffer tank temperature
- Duration of buffer tank temperature deviation
- Individual setting influence on weather prognosis

The bar *2* can be used to set the level of influence for each buffer tank individually.

0% = if the burner has started and the buffer tank is within a release time, then the buffer tank is completely charged. The charge request is fulfilled when the *buffer cylinder temperature bottom* has reached the *maximum buffer cylinder temperature bottom* (in the buffer tank main menu).(fehlender oder ungültiger Codeausschnitt)

100 % = if the burner has started and the buffer tank is within a release time, then the buffer tank is not completely charged. The charge request is then already fulfilled when the *buffer cylinder temperature bottom* has exceeded the *minimum buffer cylinder temperature top* (in the buffer tank main menu).

16 Maintenance and cleaning

Regular maintenance of the heating system is a prerequisite
- for permanently reliable functioning of the boiler,
- for energy-saving and environmentally friendly operation of the boiler,
- Long service life of the boiler.

Basic information on boiler maintenance (including cleaning activities):
- Part of the boiler cleaning is done automatically in the boiler. > 40
- Some activities must be done manually.

On the following pages you will find an overview > 40 of these manually required activities:
- Which activities have to be performed?
- At what frequency must this activity take place?
- Who is responsible for carrying out the respective activity?

16.1 Required activities - overview

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

Activity	Interval	SO	QP
Empty ash container > 40	upon notification message	X	
Perform boiler cleaning > 41 – Check the stainless steel combustion grate for wear > 41 – Check the stainless steel combustion grate support > 41 – Remove ash from the combustion chamber > 42	every second time the ash container is emptied	X	
Replace stainless steel combustion grate > 42	in case of wear	X	
Check system pressure > 42	monthly	X	
Clean flue gas pipe > 42	six-monthly [1]	X	
Check safety valve > 43	yearly	X	
Maintenance by qualified personnel > 43	yearly		X
Perform emissions measurement > 43	as per regional regulations		X

[1] Indication is valid for average consumption values; adjust the interval according to your own requirements.

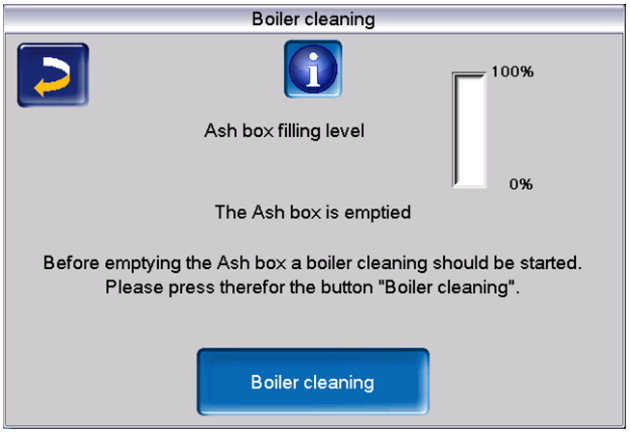
16.1.1 Emptying the ash container

Empty the ash container when the notification message on the boiler control display appears.

ATTENTION Before emptying the ash container, boiler cleaning must be carried out.

The display of the ash container fill level is for guidance (i.e. it may vary following boiler cleaning).

- ▶ Confirm the notice on the display with *OK1*.
- ▶ Commence boiler cleaning:



Clicking on the info button provides access to the boiler cleaning statistics. The last five boiler cleaning operations are logged there.

16.1.2 Boiler cleaning - automated processes

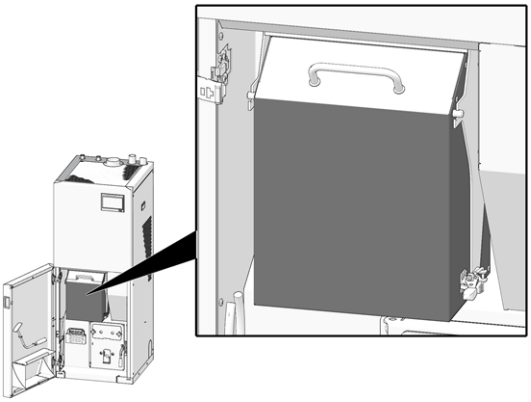
- Clean the turbulators by rotating the inside of the heat exchanger, whereupon the ash falls into the combustion chamber.
- The ash from the burnt pellets fall through the stainless steel combustion grate into the combustion chamber.
- The flue ash caused by combustion in the combustion chamber makes its way with the flue gas through the heat exchanger, through the electrostatic dust collector (optional) and ends up in the ash container.

ATTENTION - Do not remove the ash container during automatic ash extraction.

16.1.3 Visual inspection of moving components

At the same frequency as boiler cleaning, a visual inspection of the moving components (air positioning flaps, stainless steel combustion grate, …) is recommended.
In the event of visible damage, have it repaired by qualified personnel.

Emptying the ash container



- ▶ Open the boiler door.
- ▶ Open the quick-release on the right of the container
- ▶ Remove the ash container.
- ▶ Empty the ash container and place it back in the boiler.

DANGER - risk of fire due to hot ash self-igniting. Only store removed ash in metal containers with a lid.

- ▶ Press the *Ash container emptied* button.

16.1.4 Boiler cleaning - manual activities

- ▶ Press the *boiler cleaning* button.

There are two ways to start with the boiler cleaning:
The burner is active:

- ▶ Switch the boiler off (press the *STOP* button > 13) and leave to cool.

The boiler is in *standby* status:

- ▶ Press the *STOP* button> 13, and if necessary allow the boiler to cool down.
- ▶ Press the button with the ash container symbol (in the selection menu > 13)
- ▶ Perform the following activities:
  - Check the stainless steel combustion grate for wear > 41
  - Check the stainless steel combustion grate support > 41
  - Remove ash from the combustion chamber > 42

Check the stainless steel combustion grate for wear

In the event of advanced wear of the stainless steel combustion grate, the spaces in the grate enlarge. A seriously worn stainless steel combustion grate will allow incompletely burned pellets to fall through.

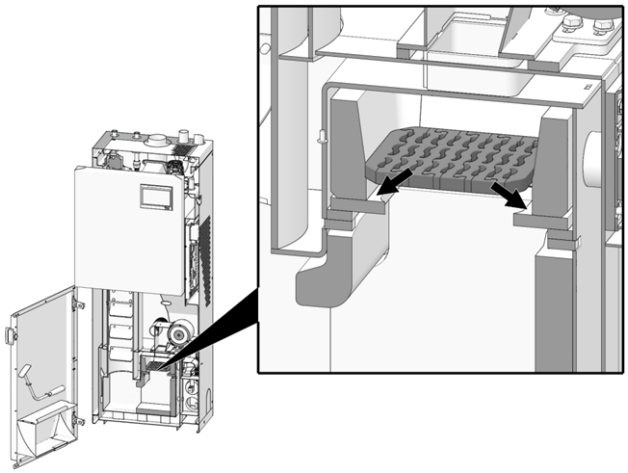
Check this regularly if you remove the ash from the combustion chamber; if necessary, replace the stainless steel combustion grate > 42

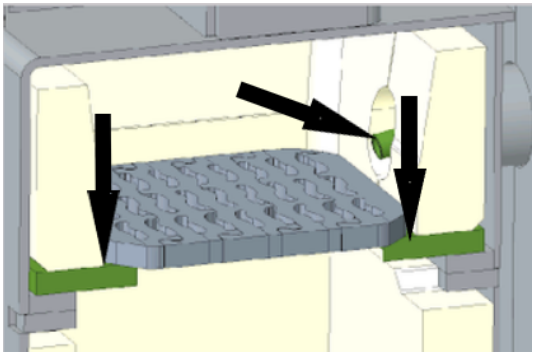
ATTENTION - Risk of burning from hot components

- ▶ Open combustion chamber door
- ▶ Remove closure stone
- ▶ Remove stainless steel combustion grate upwards
- ▶ Clean stainless steel combustion grate

Checking stainless steel combustion grate support

The stainless steel combustion grate must lie completely flat and horizontally. When inclined, ignition problems are possible, or this can lead to uneven wear of the stainless steel combustion grate.



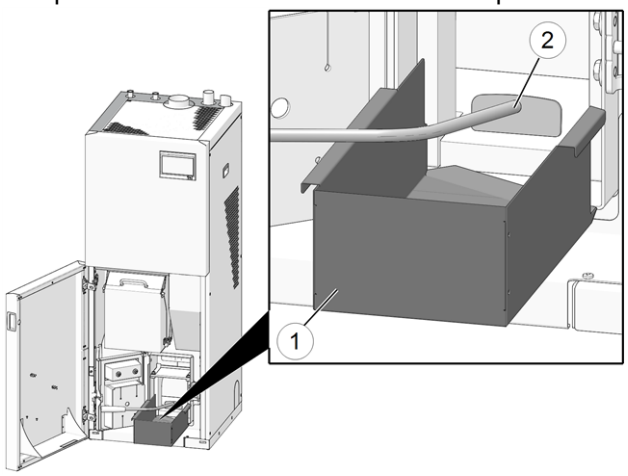


- ▶ Clean the entire circumference of the stainless steel combustion grate support in the hopper.
- ▶ Insert stainless steel combustion grate.

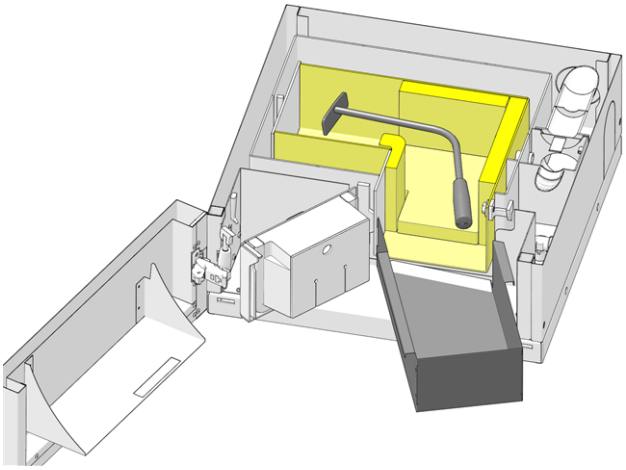
► Clean ignition pipe.
► Reinsert the closure stone.

Removing ash from the combustion chamber

► Switch the boiler to *STOP* > 13 and leave to cool.
► Open the combustion chamber door, use the ash pusher *1* to draw ash into the ash receptacle *2*.



Note: Use the ash pusher or an ash extractor to remove the cooled-down ash located on the left of the combustion chamber.



16.1.5 Replacing the stainless steel combustion grate

► Switch the boiler to *STOP* > 13 and leave to cool.
► Open filling room door *1*
► Remove closure stone *2*.
► Remove the stainless steel combustion grate *3* with long-nose pliers and insert a new stainless steel combustion grate (note: Before inserting the new stainless steel combustion grate, clean the support surface > 41)
► Reinsert the closure stone.

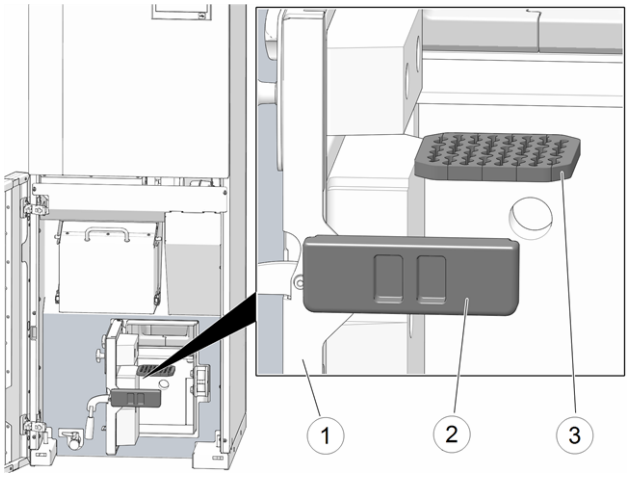


Abb. 2-1

16.1.6 Check system pressure

(fehlender oder ungültiger Codeausschnitt)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.

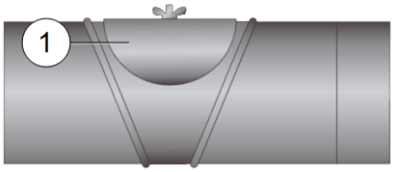
It is important that the pressure remains constant at all times. A constant fall in pressure requires the addition of extra water and indicates a fault in the system (e.g. a leak).

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

16.1.7 Cleaning the flue gas pipe

The flue gas pipe is located between boiler and chimney.

► Remove cover *1* in the flue gas pipe.



► Remove combustion deposits (e.g. dust, fly ash) from the pipe.

16.1.8 Check safety valve

Carry out a visual check for leaks at the valve (inspect around outlet of dump hose). Turning the valve cap is not recommended, as the valve may not seal completely afterwards.

Information on safety valve > 8

16.1.9 Replace pellet suction turbine

The suction turbine for conveying the pellets is a wearing part. Depending on the degree of soiling[1] of the suction turbine, the service life of the suction motor carbon brushes is around 300 operating hours for the initial equipment, and another 300 operating hours for the replacement carbon brush set. After approx. 800 operating hours, we recommend replacing the suction turbine.

[1] The cleaner the working air (air in the pellet hose) and cooling air (ambient air sucked in from the room), the longer the service life of the brushes will be.

16.1.10 Maintenance by qualified personnel

Depending on the operating hours (in each case after 1800 hours, fixed value) or a defined duration (in months), the control shows an indication of the necessary professional maintenance of the boiler.

Contact your heating engineer or the SOLARFOCUS customer centre. > 3

Boiler maintenance agreement(fehlender oder ungültiger Codeausschnitt)

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

17 Perform emissions measurement

- The emissions measurement at the boiler is a legal requirement and must be performed by qualified personnel on a regular basis.
- For more information, consult the relevant chimney sweep and your heating engineer.
- When performing the emission measurement, the boiler control's *chimney sweep function* must be used.

17.1 Chimney sweep measurement release

The chimney sweep function is available in the boiler operating mode screen > 13

Notes on chimney sweep function

- May only be performed by qualified personnel.
- Do not open the boiler door during the measurement.
- Ensure sufficient heat removal for the boiler (e.g. energy removal to buffer tank or heating circuit).
- The removal of heat is increased by opening the heating circuit mixing valve and by switching on the heating circuit pumps.

Start the chimney sweep function

► Press the 

button.

↳ The prerequisites for enabling a measurement are tested

► As soon as *Measurement enable* appears in the status bar, the measurement can be started.

– The chimney sweep function remains active for a period of 40 minutes. Before this period expires, a message allowing extension of the period by 30 minutes is displayed.

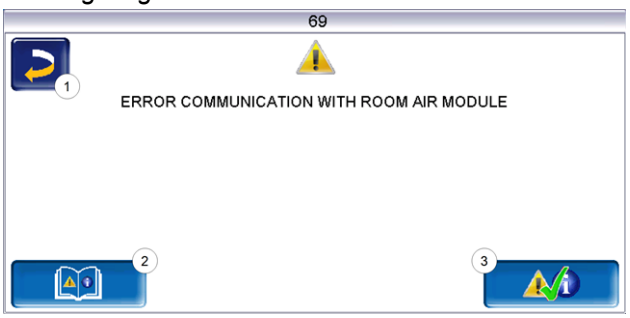
– To abort the function prematurely, switch to a different boiler operating mode.

17.2 Emission measurement for external boilers

If necessary, use the menu *output test heating circuit* > 14 to carry out the emission measurement on an external boiler. In this menu, the electrical outputs for the remote boiler, 3-way motor valve as well as for the heating circuit pump and heating circuit mixing valve can be switched on/off manually.

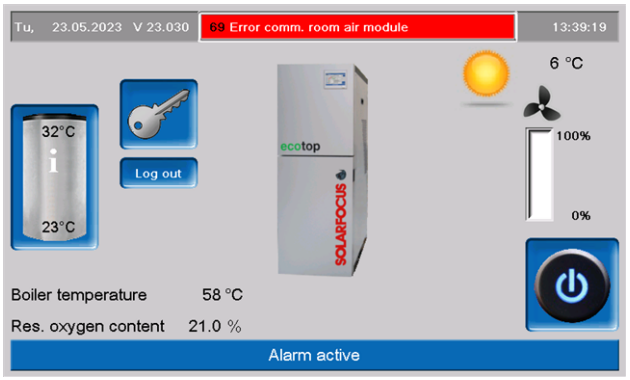
18 Messages

Messages that arise are shown in the **eco**manager-*touch* control display, each message is saved in the *message log* > 16.



Handling of messages

Button *1*: Close window, change to main screen. The message remains active, i.e. the burner may not start depending on the type of message.



Button *2*: Switch to the *message log* > 16

Button *3*: Acknowledge the message.
For some messages, an acknowledgement is only possible if the cause of the fault has been rectified; the burner may then restart after a heating request is received.

Alarm symbol


This symbol indicates an alarm message: The boiler is no longer ready for operation if such a message occurs.

Note symbol


This symbol indicates a notification message: The boiler is still ready for operation.

Possible messages

The message in question determines who is supposed to take the required action (system operator *SO* or qualified personnel *QP*).

No.	Message	SO	QP
1	Internal memory is invalid	x	
3	Filling level sensor may be dusty		x
5	Flue gas temperature too low	x	
6	Flue gas sensor disruption		x
7	Flue gas sensor wrong measured value		x
9	Flue gas sensor short circuit		x
10	Factory settings loaded		x
11	Error rotational speed feedback	x	
12	Rotational speed feedback test	x	
13	Rotational speed feedback Not OK		x
14	Maximum suction run time reached	x	
16	Error lambda sensor measurement		x
17	Error boiler temperature sensor		x
18	Boiler temperature is too high		x
19	Extraction auger is blocked	x	x
20	First ignition attempt was unsuccessful	x	
23	Communication with module interrupted		x
24	Safety chain has triggered	x	
25	A power failure has occurred	x	
26	Mains fuse F3 defective		x
27	Triac fuse F6 defective		x
30	Feed blockage	x	
31	Heat exchanger is blocked		x
32	Heat exchanger is blocked		x
33	No feed motor current flow		x
35	CAN bus interruption		x
36	Fuse at fresh water module defective		x
37	A fuse in the electronic module (solar module) is defective		x
38	Commissioning settings have been loaded		x
40	Pellet ignition fault/pellet shortage?	x	x
41	FUSE F1 or F8 defective		x
42	Shortage of pellets in storage area	x	
43	Fault in diverter for suction heads		x
44	Communication error cascade		x
46	The ash container is full and must be emptied	x	
47	Boiler maintenance recommended!	x	
50	Boiler door is open!	x	
51	Battery in operating element (display) is dead		x
52	Limiting thermostat is open	x	x
67	Room air flap does not open		x
68	Room air flap does not close		x
69	Error communicating with the room air module		x
71	No current flow heat exchanger		x
72	Note: No current flow heat exchanger		x
73	Fault in reference switch, diverter		x
75	Room temperature sensor assignment		x
76	Overtemperature reset triggered		x
77	Fuse F12 defective		x
78	Automatic ash extraction blockage		x
79	No current flow automatic ash extraction		x
80	Differential pressure - boiler stop	x	x
81	Electrostatic dust collector offline		x
82	Differential pressure - suction turbine	x	
83	Differential pressure - insert	x	
84	Electrostatic dust collector warning		x
85	High voltage cable dust separator		x
86	Emergency operation differential pressure sensor		x
87	Differential pressure - boiler immediate stop	x	

1 - Internal memory is invalid

An error has occurred in the memory of the boiler control.

► Check whether the customer/system-specific settings are present in the boiler control.

3 - Filling level sensor may be dusty

► Open the inspection cover on the intermediate pellet store. Check whether there are any pellets in front of the sensor. If there are no pellets present, then the green LED should not light up. If it does, wipe the sensor. If there is no change, replace the sensor.

5 - Flue gas temperature too low

The time limit for reaching the calculated flue gas required temperature has been exceeded.

► Clean the stainless steel combustion grate, combustion chamber and flue gas pipe

6 - Flue gas sensor disruption

The flue gas temperature sensor has a fault and must be replaced.

7 - Flue gas sensor wrong measured value

The flue gas temperature sensor has a fault and must be replaced.

9 - Flue gas sensor short circuit

The flue gas temperature sensor has a fault and must be replaced.

11 Error rotational speed feedback

Message is triggered when the burner is active but no speed is measured at the induced draught fan (ID fan).

- ► Acknowledge the message, the ID fan will be tested for one minute. After the test, an OK or Not OK message will be output.

12 - Rotational speed feedback test

Message during active ID fan test run.

13 - Rotational speed feedback Not OK

Cleaning of the flue gas pipe may be necessary. > 42

14 - Maximum suction time reached

This message is only possible in conjunction with a pellet suction system. Message is triggered when a specified duration is exceeded during the suction filling of the intermediate pellet store.

The pellet storage area is empty

- ► Check pellet level

Suction turbine, extraction motor or filling level sensor is defective

- ► Acknowledge the message and check (see/listen) whether the suction turbine or extraction motor commence operation

Blockage in pellet hose

- ► Check, if possible rectify blockage
- ► This may be caused by an excessive dust content (poor pellet quality)

16 - Error lambda sensor measurement

Message is triggered when the residual oxygen content in the ID fan lag is measured at over 15.5% for a period of 1.5 hours.

17- Error boiler temperature sensor

Message is triggered when a boiler temperature sensor short-circuits (display -30.0°C) or a disruption occurs (display 150.0°C). The burner stops, all pumps are switched off (to prevent a rise in the boiler temperature).

18 - Boiler temperature is too high

19 - Extraction auger is blocked

The thermal contact on the motor of the storage area auger has triggered. The boiler is still ready for operation.

The suction process took too long and the motor overheated

The motor was blocked by a blockage and overheated

Electrical contact fault in the motor supply line

- ► Switch the boiler off and allow the motor to cool down!
- ► Visually inspect the pellet hose for blockage, rectify as necessary.

20 - First ignition attempt was unsuccessful

The boiler remains in operation and starts a second ignition attempt. - If the second ignition attempt is also unsuccessful, message No. 40 is shown.(fehlender oder ungültiger Codeausschnitt)

23 - Communication with electronic module is interrupted

The CAN bus or RS-485 communication between the operating element (display) and the electronic module has been interrupted.

Interruption in the bus cabling

- ► Check cable connection

Error in the electronic module's power supply

- ► Check, replace if necessary

Incorrect device address for the electronic module

- ► Check whether the correct address is entered in the module for the intended use of the module. For further information, see the module's installation manual.

Fuse F1 or F3 on electronic module is defective

- ► Check, replace if necessary

24 - Safety chain has triggered

Due to a sudden reduction in the heat removal, the boiler temperature can rise above 90°C. In this case, the overtemperature reset trips and initiates a rapid shut-down of the boiler.

- ► Wait until the boiler temperature has dropped below 70°C.
- ► Remove the sealing cap on the overtemperature reset and depress the button until it stops.
- ► If the message appears again, contact qualified personnel.

25 - A power failure has occurred

The message serves to inform the system operator that there was a power failure. The boiler is operationally ready again.

26 - Mains fuse F3 defective

Mains fuse F3 on the electrical power element of the boiler is defective and must be replaced.

27 - Triac fuse F6 defective

Triac fuse F6 on the electrical power element of the boiler is defective and must be replaced.
The pellet auger is blocked.

Too many pellets in the filling chamber of the boiler; often as a result of ignition faults due to improper stainless steel combustion grate support, > 1

- ► Switch the boiler off and allow it to cool down. Check the stainless steel combustion grate for soiling, heavy deposits.

31 - Heat exchanger is blocked

Message is triggered if the heat exchanger cleaning blocked the last time it was performed.

The boiler is still ready for operation.

32 - Heat exchanger is blocked

Message is triggered if the heat exchanger cleaning has blocked 5 times in a row. The boiler can only be switched back on once the message has been acknowledged.

Check the combustion chamber

- ► Check for overfilling, deposits

Perform output test

- ► Press the *Heat exchanger cleaning* button on the *Output test boiler* menu > *5.4 Customer menu* > 14

33 - No feed motor current flow

35 - CANbus interruption

Communication between the operating element (touch display) and the boiler's electrical power element is interrupted.

Bus cable defective

- ► Check cable connection

CANbus interface defective

- ► Check

36 - Fuse at fresh water module defective

A fuse in the electronic module of the fresh water module is defective and must be replaced. (Message only possible with electronic module with RS485 bus system, not with CAN bus).

37 - A fuse in the electronic module (solar module) is defective

A fuse in the electronic module (solar module) is defective and must be replaced. (Message only possible with electronic module with RS485 bus system, not with CAN bus).

38 - Commissioning settings have been loaded

During commissioning of the heating system, the customer-specific settings were saved (by qualified personnel). The message is triggered when this saved status is loaded back into the boiler control.

40 – Ignition not possible

This message appears after two unsuccessful ignition attempts.

Intermediate pellet store is empty

► Check whether pellets are being conveyed

The combustion chamber or flue gas pipe to the chimney is full of ash

► Check and if necessary empty, clean

The combustion chamber door is not closed properly

► Check

The stainless steel combustion grate is covered with ash and should be cleaned check

► Check

The stainless steel combustion grate is worn, pellets are falling through

► Visual inspection inside the combustion chamber/ash container

Fault on the ignition device

► Contact qualified personnel

An auger is defective (pellet auger, tank auger, storage area auger)

► Contact qualified personnel

41 - Fuse F1 or F8 defective

Concerns the electrical fusing on the boiler's power element. Message is triggered when the 24 V DC supply is not available for the digital outputs.

Fuse is defective

► Check, replace if necessary

42 - Shortage of pellets in storage area

Message triggered if at the automatic diverter for suction heads (optional accessory) only two suction heads are marked as *full* (if a total of only two heads is present, then only if one head is still marked as *full*).

Low filling level in pellet storage area

► Check the fill level, if necessary cover suction heads with pellets, fill the pellet storage area. (fehlender oder ungültiger Codeausschnitt)

43 - Fault in diverter for suction heads (DFSH)

This message only appears in conjunction with the optional accessory *Automatic diverter for suction heads*, see also separate manual DR-0004.

There is an operating fault on one of the DFSH components (motor, switch) or their cabling to the electronic module.

The CAN bus communication between the **eco**manager-*touch* boiler control and the electronic module works.

One of the two switches (position switch, reference switch) in the DFSH is defective, or there is a disruption, short-circuit

► Check switches, replace if necessary

Cabling fault between DFSH (motor, switches) and electronic module

► Check cabling

Input/output at the electronic module is defective

► Check

Electric fuse F2 (relay output) in the electronic module is defective

► Check, replace if necessary

The DFSH's motor is defective

► Check motor, replace if necessary

Permitted positioning run duration exceeded (> 20 sec)

► Check position pins (shorter clamping pins)

44 - Communication error cascade

46 - The ash container is full and must be emptied

47 - Boiler maintenance recommended

50 - The boiler door is open! A burner start is not possible.

Check the boiler door for correct closure.

51 - Battery in operating element is dead

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

52 - Limiting thermostat is open

The heating circuit limiting thermostat is open. Heating water with excessive temperature was diverted to the heating circuit. The thermostat responds and stops the heating circuit pump, damage to the heating circuit is prevented.

Operating fault/defect on one of the components

► Check that the heating circuit pump, heating circuit mixing valve and heating circuit flow sensor are working properly.

67 - Room air flap does not open

This message only appears in conjunction with the optional accessory *Room air module for room air flap*, see also separate manual DR-0071.

The room air flap's slide does not open.
Consequence: The burner is no longer ready for operation.

Mechanical problem possible

► Check for slide obstructions (e.g. snow/ice, dirt).

68 - Room air flap does not close

This message only appears in conjunction with the optional accessory *Room air module for room air flap*, see also separate manual DR-0071.

The room air flap's slide does not close. The burner remains ready for operation.

Error in the cabling, cable break

► Check cable connection

69 - Error communicating with the room air module

This message only appears in conjunction with the optional accessory *Room air module for room air flap*, see also separate manual DR-0071.

Communication error with the electronic module (which controls the room air flap).

The burner is no longer ready for operation.

A fuse in the electronic module is defective

► Check fuse, replace if necessary

Error in the electronic module's power supply

► Check

Faulty bus cabling

► Check cable connection

Incorrect device address set for the electronic module

► Check

71 - No current flow heat exchanger

72 - Note: No current flow heat exchanger

73 - Fault in reference switch, diverter

This message only appears in conjunction with the optional accessory *Automatic diverter for suction heads*, see also separate manual DR-0004.

During the zero point search of the diverter for suction heads, the reference switch was not actuated.

The reference switch in the DFSH is defective, or there is a disruption, short-circuit

► Check switch

Cabling fault between DFSH (reference switch) and electronic module

► Check cabling

Inaccurate position of the reference switch

► Check switch, for secure seating, mechanical fault, etc.

Problem with position pin, possible mechanical fault

► Check position pin (longer clamping pin)

75 - Room temperature sensor assignment

76 - Overtemperature reset triggered

77 - Fuse F12 defective

Fuse F12 protects the X26, X27 and X80 outputs on the boiler power element (holding magnets for the air supply to the boiler). If the fuse trips, this may indicate a fault with one of the magnets.

For further information on the use of the connections, see the boiler installation manual, *Electrical connection* section, *Connections to the power element* section.

Defective fuse

- ▶ One of the electromagnets (supply air) is causing a short circuit.
- ▶ Another cause of the tripping could be a fault/defect on the power element's rectifier.
- ▶ Please contact an authorised service engineer.

– A spare fuse for F12 can be found at slot F13; further information about the electrical fuses > 51
– For information regarding the accessibility of the boiler power element, see the boiler installation manual.

78 - Automatic ash extraction blockage

79 - No current flow automatic ash extraction

80 - Differential pressure - boiler stop

The permissible pressure difference measured by the differential pressure gauge has fallen below the minimum.

Insufficient air flow at stainless steel combustion grate

- ▶ Check stainless steel combustion grate for residue or deposits

Insufficient air flow in combustion chamber, possible ash deposits

- ▶ Clean combustion chamber > 42

False air is drawn in at the ash container

- ▶ Check the ash container to ensure it is positioned and closed correctly

Insufficient air supply, check air supply

- ▶ Check primary air holding solenoid for defects
- ▶ Check air hose for leaks and/or damage

81 - Electrostatic dust collector offline

Communication with the electrostatic dust collector is interrupted. The collector is not working. The boiler is switched off when the fault message is acknowledged.

- ▶ Contact qualified personnel.

82 - Differential pressure suction turbine

The permissible pressure difference measured by the differential pressure gauge has fallen below the minimum.

False air is drawn in at the ash container

- ▶ Check ash container is positioned correctly

False air is drawn in at the ash door

- ▶ Check ash door is closed correctly

Is the air supply to the boiler free of obstruction?

- ▶ Check

Does the primary air solenoid open?

- ▶ Qualified personnel: Check *output test - boiler* screen, which can be found in the *Service menu* of the boiler control.

83 - Differential pressure - insert

The permissible pressure difference measured by the differential pressure gauge has fallen below the minimum.

Insufficient air flow at stainless steel combustion grate

- ▶ Check stainless steel combustion grate for residue or deposits

Insufficient air flow in combustion chamber, possible ash deposits

- ▶ Clean combustion chamber > 42

False air is drawn in at the ash container

- ▶ Check ash container is positioned correctly

False air is drawn in at the ash door

- ▶ Check ash door is closed correctly

84 - Electrostatic dust collector warning

- ▶ Contact qualified personnel.

85 - High voltage cable dust separator

Wiring connection disconnected

- ▶ Check that wiring connection is firmly seated

86 - Emergency operation differential pressure sensor

- ▶ Contact qualified personnel.

87 - Differential pressure - boiler immediate stop

The permissible pressure difference measured by the differential pressure gauge has fallen below the minimum.

False air is drawn in at the ash container

► Check ash container is positioned correctly

False air is drawn in at the ash door

► Check ash door is closed correctly

Is the air supply to the boiler free of obstruction?

► Check

Does the primary air solenoid open?

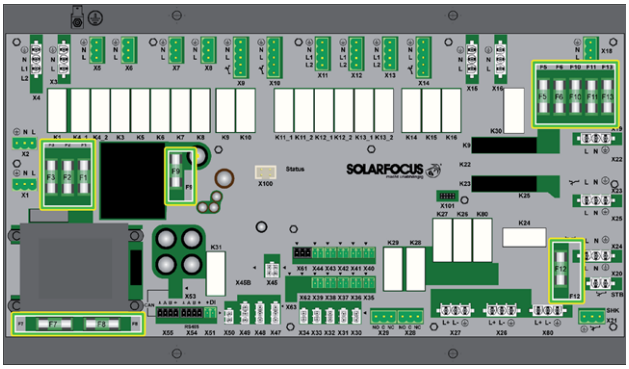
► Qualified personnel: Check *output test - boiler* screen, which can be found in the *Service menu* of the boiler control.

19 Electrical fusing

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

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

Position of the fuses on the power element



Fuses on the power element

	Rating	Size	Use
F1	T 3.15A	5x20 mm	Fuse 230 V AC: Main transformer pre fuse
F2	T 125mA	5x20 mm	Fuse 230 V AC: Standby transformer pre fuse
F3	T 10A	5x20 mm	Fuse 230 V AC: Relay outputs
F5	F 8A	5x20 mm	Fuse for X18 (power supply to external modules 230V AC)
F6	F 8A	5x20 mm	Fuse 230 V AC: Triac outputs
F7	T 2.5A	5x20 mm	Fuse 12V AC: Heating lambda sensor
F8	T 2.5A	5x20 mm	Fuse 18V AC: Internal electronics for main transformer
F9	T 800mA	5x20 mm	Fuse 18V AC: Internal electronics for standby transformer; display supply
F10	T 10A	5x20 mm	Spare fuse
F11	F 8A	5x20 mm	Spare fuse
F12	F 0.5A	5x20 mm	Fuse 230 V AC: Relay outputs X26, X27 and X80
F13	F 0.5A	5x20 mm	Spare fuse for F12

For information regarding the accessibility of the power element, see the boiler installation manual.

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