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PelletsUnit
7 - 15 kW

Operation

ETA Heiztechnik
Gewerbepark 1
A-4716 Hofkirchen an der Trattnach
Tel: +43 (0) 7734 / 22 88 -0
Fax: +43 (0) 7734 / 22 88 -22
info@eta.co.at
www.eta.co.at

Contents

1 General

1.1 Preface

Dear customer,

This user manual provides important information and instructions, to ensure safe and satisfactory operation of your product. Please take the time to look through it.

Warranty and guarantee

You should also read the "Conditions for warranty, guarantee, liability" (see 1.3 "Warranty, guarantee and liability") carefully. As a rule, these conditions will be satisfied by a professional heating technician. Nevertheless, inform the technician of our warranty conditions. All of the requirements we impose are intended to prevent damage that neither you nor we wish to occur.

Read the user manual

Please read the user manual carefully before starting up the system. This is the only way to ensure that you can operate your new boiler efficiently and with minimum environmental impact.

Take advantage of the knowledge and skills of an expert

Only allow an expert to assemble, install and commission the equipment and carry out the basic boiler settings. Insist on receiving an explanation and training on how your new boiler functions and how to operate and maintain it.

Extended warranty

We grant an extended warranty if the product is commissioned by an authorised partner company or by our own customer service. In this regard, please note the warranty conditions applicable at the time of purchase.

Service agreement

You can ensure the best care for your heating system by taking out a service agreement with one of our certified contractors or our own customer service.

Remote control of the boiler via the internet

The remote control enables you to operate your ETA boiler remotely via your own network (VNC Viewer) or the internet <www.meinETA.at> using a PC, smartphone or tablet, as though you were standing right in front of the ETAtouch control system of your ETA boiler. A LAN cable is required for the connection from the ETAtouch control system to the internet modem.

Details for the remote control can be found in the manual "Communication platform meinETA". Details for the connection of the LAN cable can be found in the boilers installation manual.

1.2 General information

Copyright

Subject to technical changes

We reserve the right to make technical modifications without notice. Printing and typesetting errors or changes of any kind made in the interim are not cause for claims. Individual configurations depicted or described here are only available optionally. In the event of contradictions between individual documents regarding delivery scope, the information in our current price list applies.

Software Description

The software version described in this documentation corresponds to the version valid at the time of publication. The software version installed on your product may differ from that described in this documentation.

A software update to a more recent version can always be performed. With the appropriate authorisation, the required files can be found at "www.eta.co.at".

Explanation of symbols

Instructions and information

Layout of safety instructions

SIGNAL WORD!

Type and source of danger

Possible effects

- Measures for avoiding the danger

Types of safety instruction

CAUTION!

On non-compliance with this safety instruction, there is a risk of material damage.

WARNING!

On non-compliance with this safety instruction, there is a risk of physical injury.

DANGER!

On non-compliance with this safety instruction, there is a risk of major physical injury.

1.3 Warranty, guarantee and liability

Requirements

We can only accept liability for the function of our products if they are correctly installed and operated. This is only possible if the conditions below are complied with.

Maximum of 2,000 hours at full load per year

The boiler described in this user manual may only be used for heating and producing hot water, with no more than 2,000 full-load hours annually.

Installation in a dry room

For set-up, a dry room is required. In particular, only condensation dryers may be used as clothes dryers in the same room.

Observe local building and fire safety regulations

Local building and fire safety regulations must be observed.

Connecting pipe to chimney

The connecting pipe to the chimney must be a moisture-resistant stainless steel flue pipe with maximum diameter of 120 mm and at least 3 cm of insulation. For lengths over 2 m, correspondingly more insulation is needed.

Suitable fuel

The boiler is suitable for use with wood pellets according to EN ISO 17225-2:2014, quality class A1, ENplus-A1. Operation with unsuitable fuels, in particular those containing halogens (chlorine) or high-slag pellets such as from grain waste, is not permitted.

Ensure supply air is free from aggressive substances

The air supplied to the boiler must be free from aggressive substances such as chlorine and fluorine from solvents, cleaning agents, adhesives and propellants, or ammonia from cleaning agents, to prevent corrosion of the boiler and chimney.

Permissible water hardness

Water is the intended heat-transfer medium. For special anti-frost requirements, up to 30% glycol may be added. Softened water is required for the initial fill-up of the heating system and for refilling after repairs. Addition of hard water should be minimised to limit limescale build-up in the boiler.

In order to protect the boiler from calcification, the water hardness of the heating water must be taken into account. Observe the indications outlined in ÖNORM H 5195-1. Details can be found in chapter 8.1 "Water hardness".

pH value between 8 and 9

The pH value of water used to fill the heating system must be between 8 and 9.

Use a sufficient number of shut-off valves

Set enough shut-off valves to avoid bleeding large amounts of water during repairs. Any leaks in the system must be repaired at once.

Sufficiently large expansion tank

To protect against air suction if the system cools off, a specialist must design a sufficiently large expansion tank. The 18-litre expansion tank built into the boiler is sufficient for typical underfloor or radiator systems. If there is a buffer storage tank, an additional expansion tank will be needed.

Sufficient air venting must also be ensured. Open expansion tanks or underfloor heating with permeable piping also have a high air intake, resulting in above-average boiler corrosion. Corrosion damage to the boiler due to insufficient air venting or high air intake is excluded from warranty, guarantee and liability.

Sufficient power

Continuous operation with heat consumption below the minimum specified on the type plate is only permitted with a buffer storage tank of sufficient size.

Expanding the control system

Only components provided by us may be used for expanding the control system, unless these are generally available standard devices, such as thermostats.

Regularly perform cleaning and maintenance

Cleaning and maintaining the product is essential. The required steps and intervals are either contained in this documentation or included as a separate document.

Repairs

Repairs are only permitted using spare parts provided by us. The only exceptions are common standardised parts such as electrical fuses or fastening materials, as long as they possess the required features and do not restrict the functionality of the system.

Proper installation

The installing contractor is liable for proper installation according to the corresponding installation instructions and the relevant rules and safety regulations. If you as customer have installed the heating system partly or entirely without relevant training and in particular without up-to-date practical experience, without having the installation checked by a trained and responsible expert, we exclude defects in our delivery and consequential damages resulting from this cause from our warranty, guarantee and liability.

Repair of defects

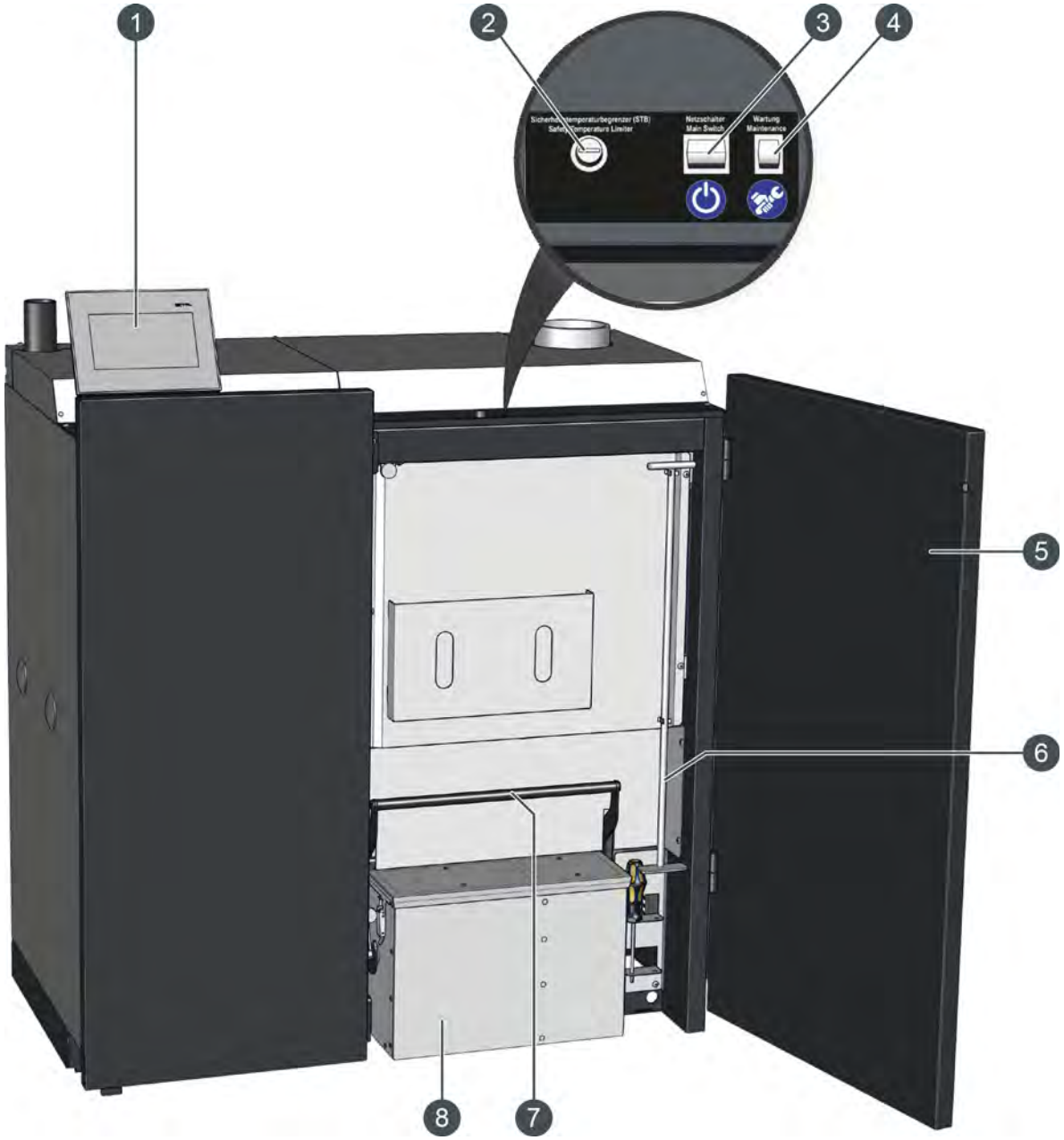
For repairs of defects carried out by the customer or by a third party, ETA shall only bear the costs or remain obligated by warranty if this work was approved in writing in advance by the customer service of ETA Heiztechnik GmbH.

No tampering with boiler safety devices

Boiler safety devices such as those mentioned below must not be tampered with: Temperature monitoring and control devices, safety temperature limiters, safety valves and thermal discharge valves.

2 Description

Operating elements of the boiler



1 Screen for the ETAtouch control system
2 Release button for safety temperature limiter (STB)
3 Mains switch (symbol)
4 Maintenance switch (symbol)
5 Boiler door
6 Poker for cleaning
7 Lever to lock the ash box in the boiler
8 Ash box

Explanation of the maintenance switch

The maintenance switch on the boiler is needed for performing maintenance with the aid of the [Maintenance] function in the ETAtouch control system. This displays the individual maintenance steps on the boiler screen.

With this variant the heating mode is stopped, but the boiler remains on at the mains switch. So that all drives are disconnected, the safety chain of the boiler is disrupted with the maintenance switch. The screen will display a message when it is time to actuate the maintenance switch.

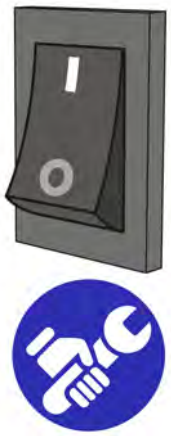


Fig. 2-1: Maintenance switch

The maintenance switch is marked with the symbol and has two settings.

- ***"1" = regular operation***
  This is the standard position of the maintenance switch. The boiler can execute heating mode in this position.
- ***"0" = maintenance mode***
  In this position, all drives are disconnected to perform maintenance. The circuit boards, however, are still live.

Display maintenance steps on the screen

With this boiler, the maintenance steps can also be displayed on the ETAtouch control system screen. The required activities will be explained to you step-by-step and supplemented with detailed graphics. Each maintenance is saved and the details can be viewed at any time. So you can maintain a long-term overview of the maintenance carried out. Of course, the maintenance can also be carried out using the service guide, without the support of the ETAtouch control system.

To access maintenance, switch to settings in the boiler function block ([Settings] button) and then select the function [Maintenance].

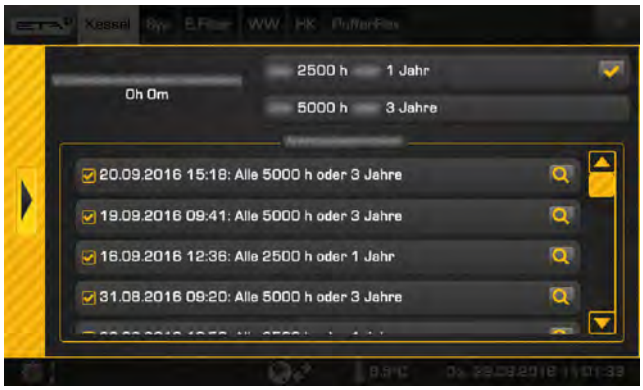


Fig. 2-2: Overview (example)

You can also access this overview by pressing the maintenance switch. Also when the message appears that maintenance of the boiler is required.

In the overview the different maintenance intervals are listed in the upper area. This includes the maintenance already carried out. With the button, information about the selected maintenance is displayed. Maintenance that you can carry out as an end customer is labelled with the symbol. All others are reserved for specialists and require authorisation.

Press the button to start the maintenance. The individual steps are displayed on the screen. You can switch to the next or the previous screen respectively with the arrow keys on the left and right side of the screen.

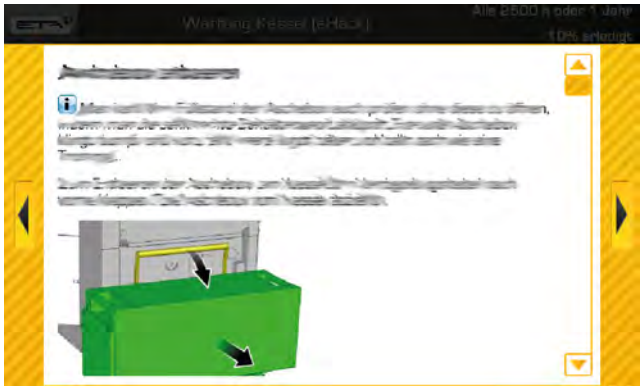


Fig. 2-3: Maintenance step (example)

Follow the on-screen instructions and carry out all steps carefully. Enter your name at the end of maintenance (button) and save the maintenance with the button.

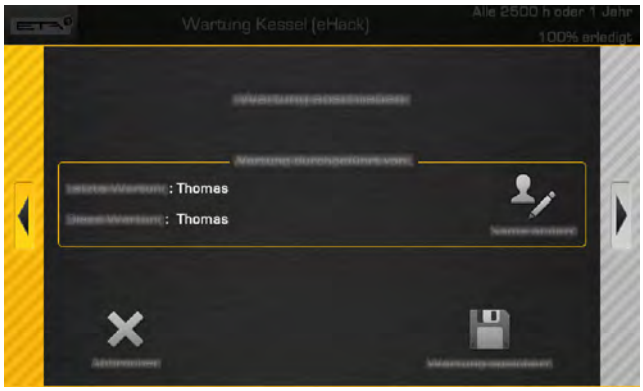


Fig. 2-4: End of maintenance

To end maintenance prematurely, press the right arrow key several times until you get to the end. There you can end the maintenance with the button. Cancellation during a maintenance step is not possible.

Adjust the hinges for the screen

The ease of movement of the hinges to swivel the screen can be adjusted with the Allen key supplied. If the screen does not remain in its desired position, tighten the screws on the hinges a little.

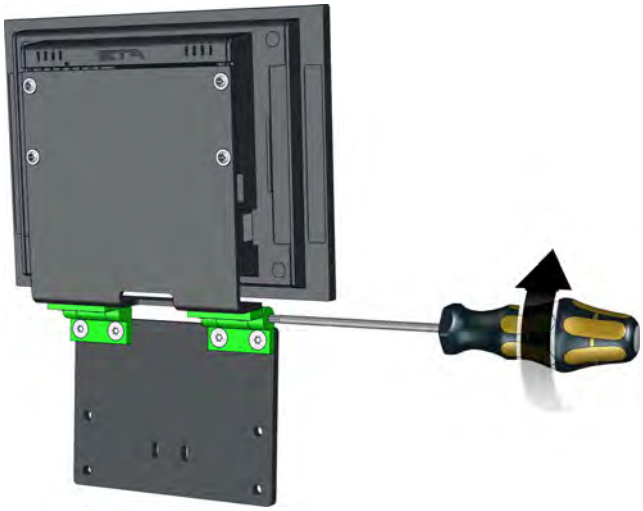


Fig. 2-5: Hinges

Clean panels

If necessary, clean the panels of the boiler and the ETAtouch screen with a moist cloth.

Under no circumstances use aggressive solvents, chemicals or scouring agents. They can lead to stress cracks and damage.

Protection function for drives and pumps

Lets you switch on the boiler in summer, or outside the heating period on the main switch. As the ETAtouch control system starts some drives and pumps for a short time at regular intervals so that they do not seize in the event of a longer standstill.
If the boiler is switched off for a longer time on the mains switch, then this protection function is missing. Drives or pumps could then seize and cause faults when being switched back on.

3 Safety

3.1 General information

Operation only by trained personnel

The product may be operated by trained adults only. Training may be provided by the heating technician or our customer service. Please read the associated documentation carefully in order to avoid errors during operation and maintenance.

Persons who lack experience and knowledge as well as children may not operate, clean, or maintain the product.

Keep children away from the pellet store

Children must be kept away from the pellet store. It is a good idea to lock the door to the pellet store. The door handle on the inside of the pellet store must not be removed. It must be possible to open the door from the inside in an emergency.

Keep fire extinguishers in a clearly visible location

In Austria, the minimum requirement is an ABC powder extinguisher with 6 kg. An AB foam extinguisher with 9 litres, which produces less damage when used, is preferable. The fire extinguisher should be kept outside the boiler room, visible and easily accessible.

Fig. 3-1: Fire extinguisher

In Germany and Switzerland, fire extinguishers are not required for heating systems in private residences. In spite of this, we recommend having one in the house.

Storage of ash

The ash must be kept in non-flammable containers with covers for cooling. Never put hot ash into the waste bin!

Emergency stop switch for the boiler

In Austria, heating systems installed in boiler rooms must be equipped with an emergency stop switch. The switch must be situated immediately outside the access door and clearly marked. For boiler rooms that are only accessible from outdoors, these switches may also be within the boiler rooms, immediately next to the access doors.

Fig. 3-2: Emergency stop switch

A single-pole emergency stop switch is integrated into the boiler's safety chain. When actuated, it interrupts the supply of combustion air and fuel. The pumps continue running to cool the boiler.

3.2 Safety devices

Pump safety run, automatic heat dissipation at overtemperature

If the boiler temperature exceeds 90°C (factory setting) for any reason, the pump safety run will start. All heating pumps and boiler pumps that are connected to the boiler control system are switched on to dissipate heat from the boiler.

This action prevents the boiler temperature from rising further and triggering further safety devices such as the safety temperature limiter.

Heat dissipation is limited by the selected maximum flow temperature in the heating circuits and the target hot water temperature.

Safety shutdown by safety temperature limiter

For additional safety against boiler overheating, a safety temperature limiter is built into the boiler. When a boiler temperature of 100 °C (tolerance +0°/-6 °C) is reached, the power supply to the draught fan and the fuel intake is interrupted. When the boiler temperature decreases back below 70°C, the safety temperature limiter can be manually released for a restart of the boiler.

Safety valve against overpressure

A safety valve with 3 bar opening pressure has already been installed on the boiler at the factory. If solar or other heat sources provide energy to the buffer storage tank via a heat exchanger, a safety valve (3 bar maximum) is also required on the buffer storage tank.

Fig. 3-3: Safety valve

Normally an expansion tank that is too small or defective, or blocked heating lines are the cause of the safety valve activation.

DANGER!

Safety valve outlet

The safety valve outlet must be directed to the ground in a pipe so nobody is endangered by hot water or steam.

- ▶ The safety valve outlet must be directed to the sewer via a clearly visible, open route (siphon funnel), so that malfunctions, especially a failure of the safety valve to close, can be detected. If no sewer connection is available, the outlet must be directed to the ground in a pipe.

4 Empty the ash box

Stop heating

End the boiler's heating mode with the On/Off switch in the boiler overview window. The boiler performs an ember burnout and then changes to [Switched off] mode. Press the [De-ash] button to make the boiler perform a final de-ashing.

Empty the ash box and inspect the seals

Open the boiler door and fold the locking lever forwards. Remove the ash box from the boiler.

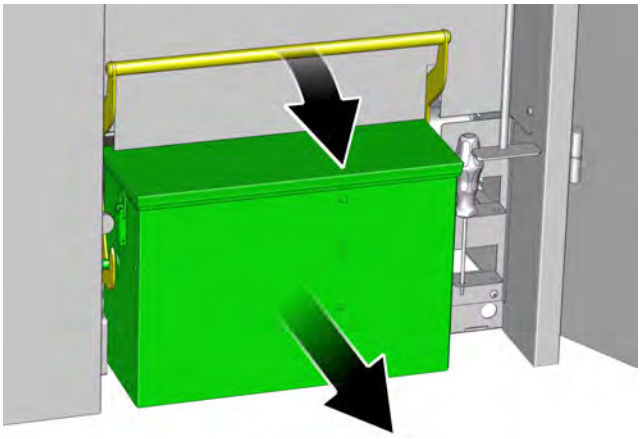


Fig. 4-1: Locking lever

Take off the cover of the ash box by loosening the two fasteners and empty the ash box.

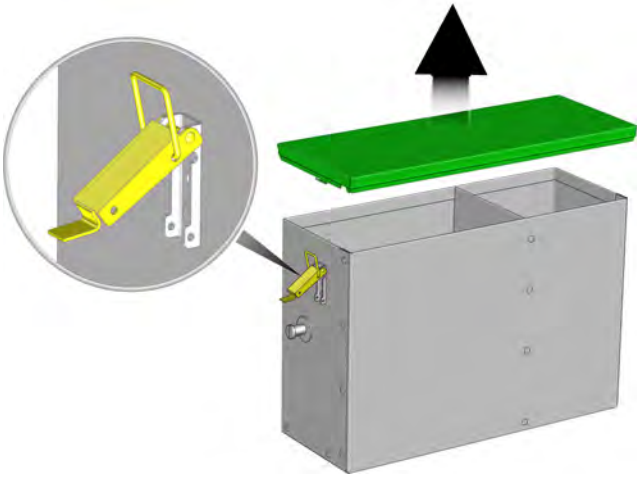


Fig. 4-2: Lid

Check the ash for embers. Never put hot ash into the waste bin!

Inspect the seal on the ash box lid for integrity, and replace it if necessary.

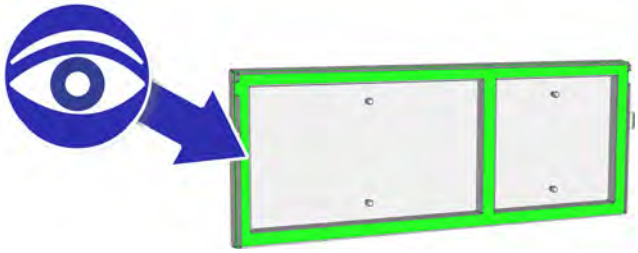


Fig. 4-3: Seal

Inspect the integrity of the ash box seals on the boiler, replace them if necessary.

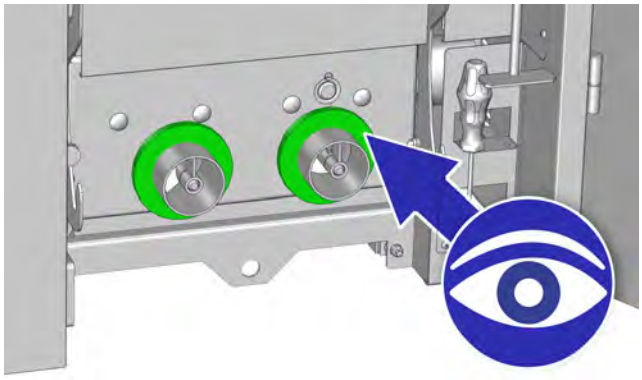


Fig. 4-4: Seals

Attaching the ash box to the boiler

Reattach the cover of the ash box and secure with the fasteners. Push the ash box over the connection on the boiler and attach it to the boiler with the locking lever.

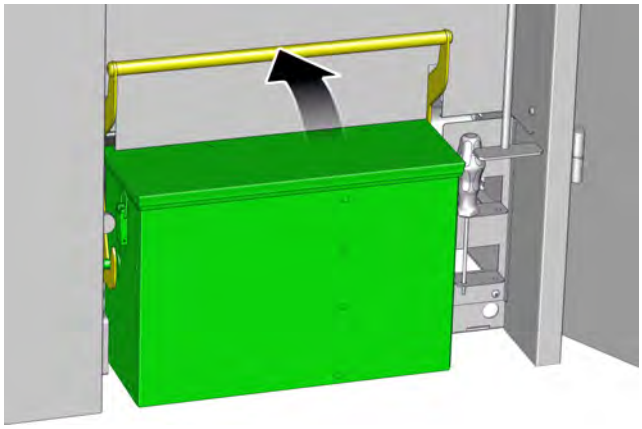


Fig. 4-5: Locking lever

Switching on the boiler

Switch the boiler back on with the On/Off switch.

5 ETAtouch controller

5.1 Getting to know the control system

Get to know the control system

Take your time and read the following chapter carefully. It describes the functions and settings of the ETAtouch control for your heating system. If you are familiar with these, it will be easier for you to make adjustements, even without consulting the manual.

Design of the control system

The individual components of the heating system, e.g. buffer, hot water tank or heating circuit are shown in the control system as "function blocks". These are listed in the uppermost row on the screen. The respective user interface is opened with a single tap of the finger.

Fig. 5-1: ETAtouch control system function blocks

1 Currently selected function block

2 Other function blocks, e.g. hot water tank, heating circuit, solar heating system

3 Scroll to other function blocks (displayed if not all function blocks can be displayed simultaneously)

4 This button opens an overview of all installed function blocks. This allows the user to switch between function blocks faster.

5 Help button. Details can be found in chapter 5.1.3 "Integrated help".

6 Settings of the selected function block

7 Date and time

8 Current outside temperature

9 Status of the remote control for the boiler (via www.meinETA.at), see chapter 5.1.7 "meinETA remote control"

10 System configuration

Several views are available for each function block. To switch between these, tap on the ETA symbol at the top left. The selection of views appears.

Fig. 5-2: Selection of views

1 User interface
2 Text menu
3 Inputs and outputs menu
4 Messages menu

In the user interface, you can set the most important and common settings. For example, adjustment of the charging times, heating times, room temperatures and operating modes are contained in this list. Details can be found in chapter 5.1.1 "User interface".

The parameters of a function block are displayed in the text menu and can be adjusted, if necessary. See chapter 5.1.2 "Text menu".

The terminal assignment of individual components, such as temperature sensors, pumps and mixers, are visible within the input and output menu, where they can be changed if required. Also, for example, pumps and mixers can be started in manual mode. This menu is intended for specialists only. Details can be found in chapter 5.1.5 "Inputs and outputs".

Any hints, errors or faults are displayed in the messages menu, see chapter 5.1.4 "Messages".

5.1.1 User interface

The user interface

The user interface is always displayed by default. If you are in a different view, switch to the user view by tapping the ETA symbol (upper left) and then selecting .

In the user interface, you can set the most important and common settings. The display is dependent on the selected function block. The illustrated example shows the user interface of a heating circuit with a room sensor.

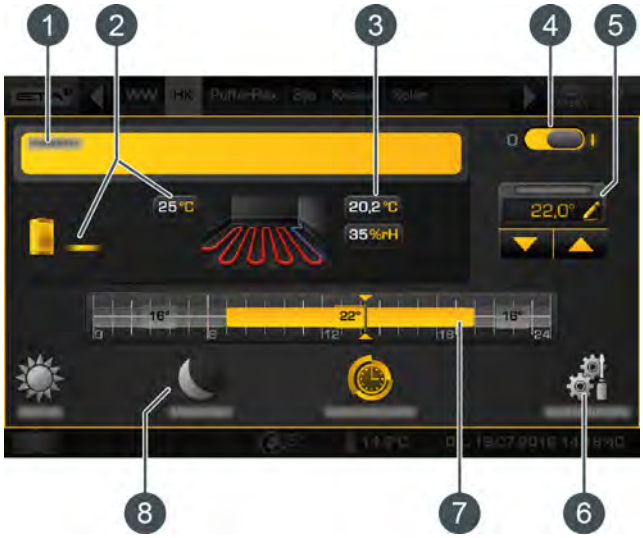


Fig. 5-3: Heating circuit user interface

1 Operating condition and information
2 Producer for the heating circuit.
Currently, the buffer provides a feed temperature of 25 °C to the heating circuit.
3 Current room temperature
4 On/off switch for the heating circuit
= switched on
= switched off
5 Increase or decrease the room temperature
6 Function block settings.
In this menu, the settings and functions most commonly used can be stored. For the heating circuit, for example, the heating times and the heating curve are adjusted here.
7 Graphic display of the heating times and room temperatures settings
8 Different operating modes of the heating circuit

5.1.2 Text menu

Adjust parameters in the text menu

To enter the text menu, tap in the upper left on the ETA symbol, followed by . In the text menu, the required parameters for the control system of the function block are listed. Modifiable parameters are indicated by the symbol.

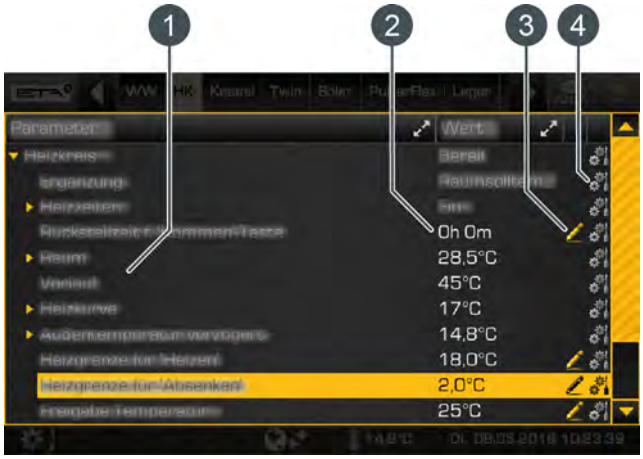


Fig. 5-4: Text menu

1 Parameter
2 Current value or setting
3 Editable parameter
4 Other settings, such as adding the parameter to Favourites

Changing a parameter is simple. Select it and tap on the symbol. The settings window appears.

Fig. 5-5: Settings window

1 Factory setting and adjustment range
2 Reset to factory setting
3 Save and close
4 Cancel and close

The default setting and the setting range are displayed on the right side. The new value is entered with the keypad, and stored by pressing the [Save] button.

Resetting to factory settings is done by pressing the [Factory settings] button. To cancel and close the window, tap the arrow on the left side of the screen.

Only modify parameters whose function you're familiar with. Before making any changes, read the relevant section of the user manual or configuration manual, or open the integrated help feature. If you cannot find sufficient information about a parameter, please consult a specialist.

Commonly used parameters can be found in the settings

Commonly used parameters can be found in the function block settings (button). There, the parameters are identified by the symbol and can be adjusted by tapping. This saves you having to search through the text menu for these parameters.

5.1.3 Integrated help

How to use the integrated help

Use the integrated help to find information. This appears when the ? button is pressed. If help is activated, annotations will appear in the user interface in blue fields.

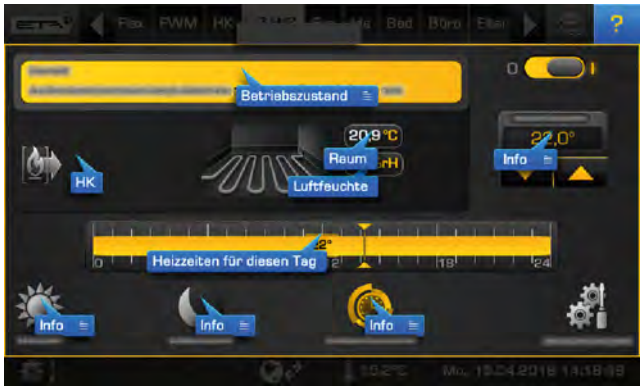


Fig. 5-6: Activated help in the user interface

Fields with additional line symbols on the right side (example: [redacted]) indicate that further information is available. Tap on the appropriate field and a window with the description will open. Close the window using the arrow on the left side.

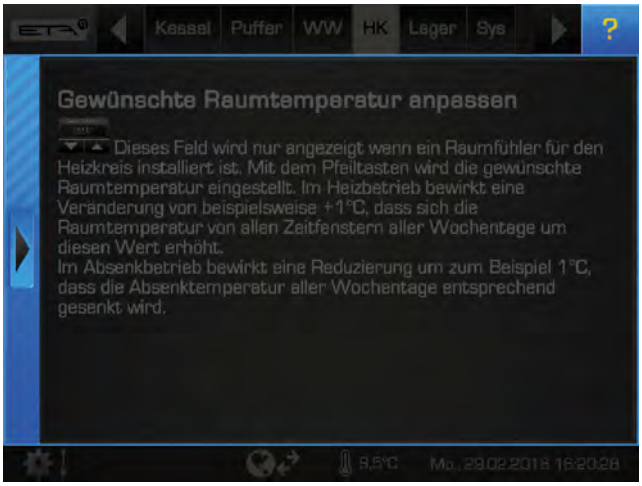


Fig. 5-7: Description

The help function can also be accessed via the text menu. A detailed description is available for all the parameters displayed in blue writing. Just tap on a parameter and a window will open with the description.

Fig. 5-8: Activate help in the text menu

To disable help, press the ? button again.

5.1.4 Messages

An error message appears

If an error occurs, a symbol of the type of error appears in the corresponding function block. This symbol is also displayed at the bottom of the screen.

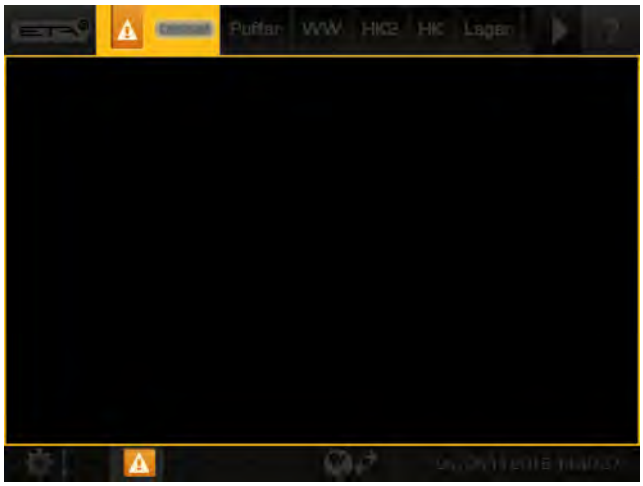


Fig. 5-9: Symbols when an error occurs

Types of errors and their meaning

- ***Notification***
  A notification does not interrupt operation, and therefore no acknowledgement is required. Notifications inform the user, for example, that pump anti-blocking protection has been activated.
- ***Warning***
  A warning is displayed on failure of a function which is not absolutely essential for continued operation. It can be acknowledged before the cause of failure is remedied. However, it will continue to be displayed until the cause has actually been dealt with.
- ***Malfunction or alarm***
  An error or alarm stops operation. Some of these can be acknowledged before the cause of the problem is remedied. However, they will continue to be displayed until the cause has actually been dealt with. Other errors and alarms can only be acknowledged after the cause has successfully been remedied. Once an error or alarm has been resolved and acknowledged, you must restart the boiler or the affected function block.

If the error symbol at the bottom of the screen is tapped, a window appears. In this, the function block in which the error occurred will be displayed.

Fig. 5-10: Display of the function blocks in which the error occurred

If the function block is selected, the view changes to the messages menu. By tapping the error, the error description is displayed.

Fig. 5-11: Error description

To acknowledge, press the [Acknowledge] button. Depending on the nature of the fault, this either remains visible or disappears.

You can also switch to the messages menu to display any errors. Just tap on the ETA symbol and then select .

5.1.5 Inputs and outputs

See terminal assignment of individual components

The terminal assignments of the individual components of the selected function block are displayed in the inputs and outputs menu, e.g. pumps, temperature sensors, and mixers.

When authorization is given, the terminal assignment can be changed. Also, manual mode for, e.g. a pump or a mixer, is possible.

Below is an example of the function block of the heating circuit. To view the terminal assignment, first select the heating circuit. To access the inputs and outputs menu, tap on the ETA symbol, followed by . An overview screen opens.

Fig. 5-12: Overview

Details of a component, such as the current situation or the operating state, are displayed when the symbol is tapped. Try this with the heating circuit mixing valve. A settings window appears.

Fig. 5-13: Settings window

With the appropriate authorization, the heating circuit mixing valve can be manually put into operation in the settings window using the [Forward], [Back] and [Stop] buttons. However, this is primarily intended for specialists.

Close the settings window using the arrow on the left side.

5.1.6 Getting started

5.1.6.1 System settings

Opening the system configuration

Tap the  symbol (in the lower left of the screen) to open the system configuration menu.

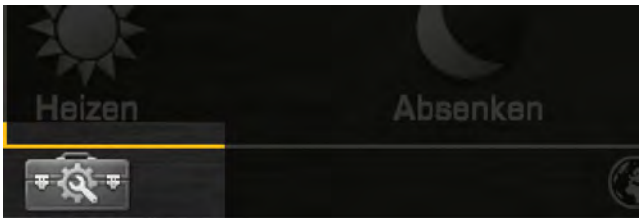


Fig. 5-14: Opening the system configuration

In the system configuration, among other things, the date and time is set, the language of the control system is set, and access to the remote "meinETA" system is activated.

With corresponding authorisation, the software for the ETAtouch control system is updated in this menu.

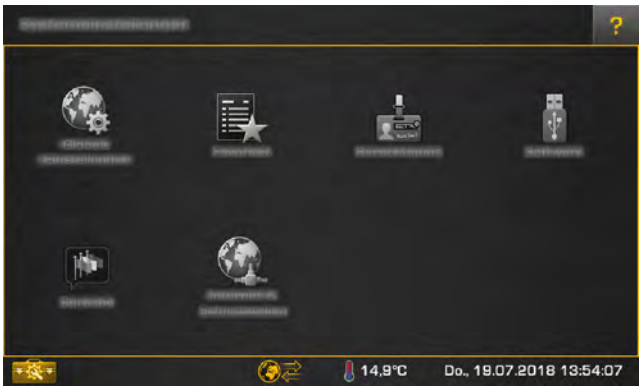


Fig. 5-15: System configuration menu

To close the system configuration, simply tap the  symbol again.

5.1.6.2 Setting the language

Changing the language using the ETAtouch control system

The preferred language can be changed using the ETAtouch control system. To do so, open the system configuration  and tap on the  [Language] symbol. A settings window appears.

Fig. 5-16: Setting the language

Select the desired language. Following this, the ETAtouch control system will appear in the chosen language.

5.1.6.3 Setting the date and time

Setting the date and time

The date and time can be adjusted to the respective time zone. The date and time are factory-set to Central European Time (UTC+01:00). For setting on the screen, tap the date or time. A settings window appears.

Fig. 5-17: Date and time

Using the arrow keys, set the time. Tap on the date field to open the calendar. Press the [Save] button to save. Then tap  to close the system configuration.

5.1.6.4 Changing the names of function blocks

Renaming function blocks

You can individually adapt the names of function blocks to make them easier for you to recognise.

Be sure to keep the name short. This improves the clarity of the screen.

To change a name, first open the desired function block settings using the [Settings] button. Below the hot water tank function block is explained.

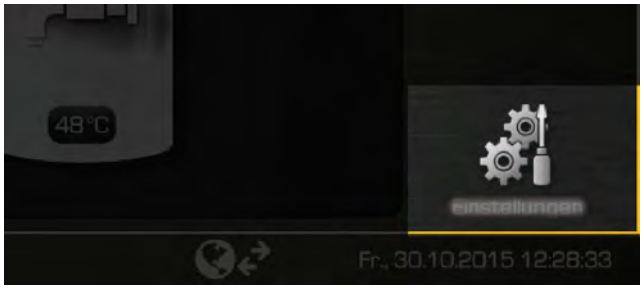


Fig. 5-18: Function block settings

An overview of the setting options appears. These depend on the function block and can vary in number.

Fig. 5-19: Overview of the settings menu

To change the name, tap on the [Change name] symbol. An on-screen keyboard appears in order to enter the new name.

Fig. 5-20: On-screen keyboard

Press the [Save] button to save. To cancel, close the window using the arrow on the left side.

5.1.6.5 Switch between function blocks

The principle of "producers" and "consumers"

In the user interface, the "producer" of the function block and (if present) also the "consumer(s)" are displayed. Producers are those components of the heating system that produce heat, for example the boiler or the buffer. Consumers are those components which absorb the heat, for example the heating circuit or the hot water tank.

The principle of "producers" and "consumers" are explained using the example of the buffer below. The buffer is charged by the boiler. The boiler is a "producer" for the buffer, and the buffer is a "consumer" of the boiler.
The heating circuit and the hot water tank are connected to the buffer. Thus, the buffer is a producer for the two consumers, namely the heating circuit and the hot water tank.

In the user interface, producers for the function block are always displayed on the left side and consumers on the right side.

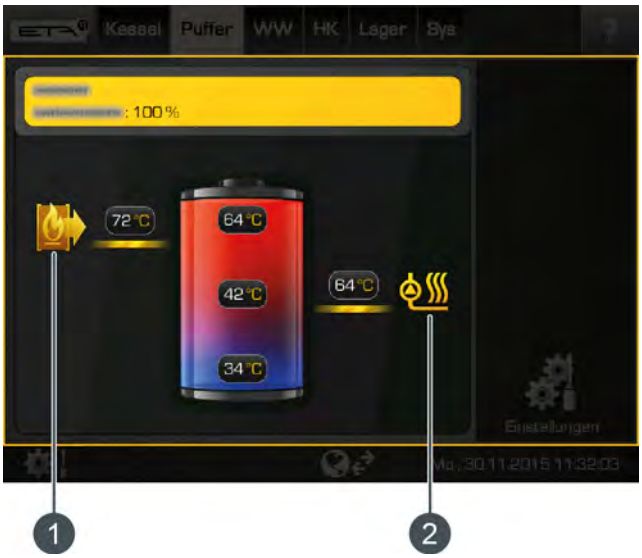


Fig. 5-21: Consumers and producers in the overview

1 Producers (in this example the boiler)

2 Consumers (e.g. heating circuit, hot water tank)

These symbols are also used to navigate. For example, tapping the symbol of the producer ( )switches to its function block. The same works with the symbol of the consumer ( ). If several producers or consumers are present, a selection window appears.

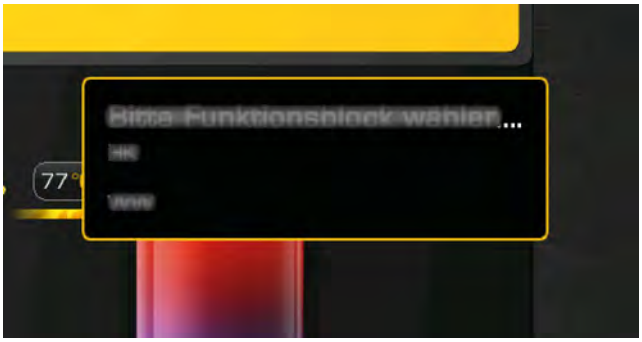


Fig. 5-22: Selection window

The symbols for both producers and consumers vary between the function blocks.

5.1.6.6 Setting a time window

Setting the charging and operation times

In some function blocks, the time window for charging the tank (for example the buffer and hot water tank), or the operating times (for example for the heating circuit) are set. This time window must be created in the settings of the respective function block.

Subsequently, the setting of the charging times and temperatures will be described in relation to the hot water tank. This example applies accordingly to other function blocks.

Open the overview of the time window settings

1. Open the settings for the function block with the [Settings] button.

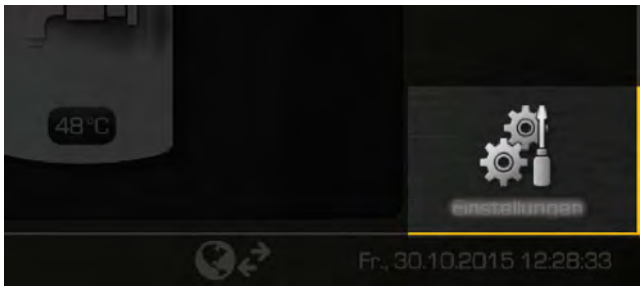


Fig. 5-23: Open the settings

2. Access the charge times of a particular day with the [Charging times Daily plan] button.

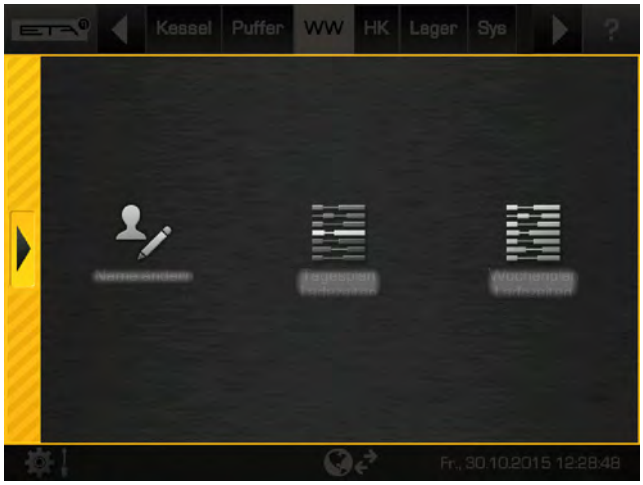


Fig. 5-24: Access charging times

3. An overview screen opens.

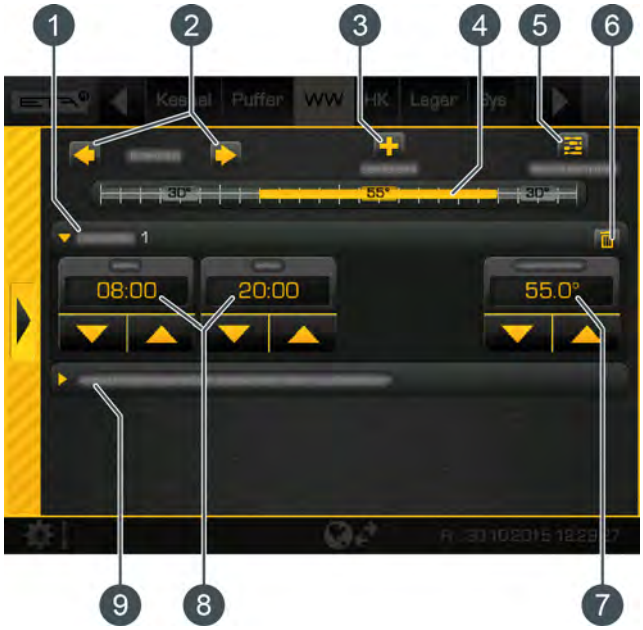


Fig. 5-25: Overview

1 Selected time window (charging times or operating times)

2 Select day of the week

3 Add another time window

4 Graphical representation of the time window setting

5 Overview of all time windows for the entire week

6 Delete time window

7 Adjustable target temperature.
This is dependent on the function block, and, in this example, corresponds to a hot water temperature of 55 °C.

8 Period of the time window.
In this example, the hot water is charged between 08:00 a.m. and 8:00 p.m. to 55 °C.

9 Set-back temperature.
Outside the time window, the hot water is charged to this set temperature.

Setting the time window is described below.

Setting the charging times

1. In the overview, select the charge time. In each field, use the arrow keys (,) to set the time and temperature.

Fig. 5-26: Setting time slot and temperature

In this example, the hot water is charged between 08:00 a.m. and 8:00 p.m. to 55 °C

2. If an additional time window is necessary, add it using the button. Adjust as described above.

A maximum of 3 time windows can be set. To delete an unnecessary time window, press the button in the selected time window.

3. For the period outside of the set charging times, a reduced temperature can be set. To adjust the settings, select the [Set-back temperature outside the time window] field and use the arrow keys to select the desired temperature.

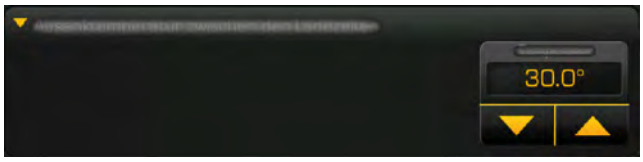


Fig. 5-27: Reduced operation temperature settings

In this example, the desired hot water temperature outside the charging times is 30 °C.

When loading times and temperatures of a day of the week have been set, they can be copied to other days of the week.

Copying time windows

In the following example, the time windows from Wednesday are copied to Saturday and Sunday.

Time windows from Wednesday copied to Saturday and Sunday.

1. In the overview, press the [Weekly plan] button to switch to view all days of the week.

Fig. 5-28: Copying time windows to days of the week

2. This opens an overview of time windows for all days of the week. First, choose the day of the week to copy (this is framed) and then press the [Copy selected day] button.

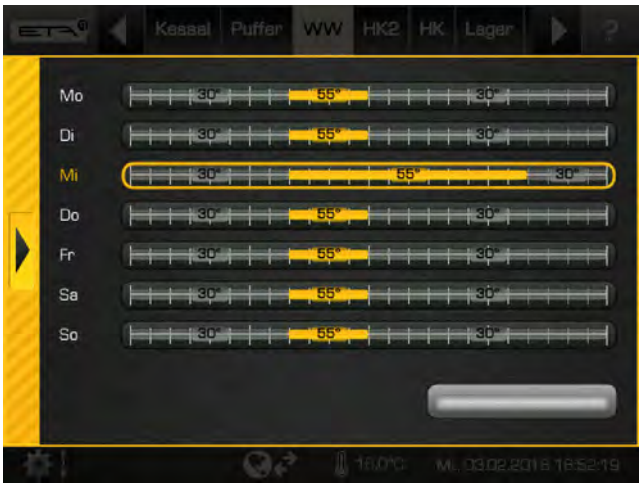


Fig. 5-29: Overview

3. Now, select the days of the week for which the time window is to be copied. In this example Saturday and Sunday.

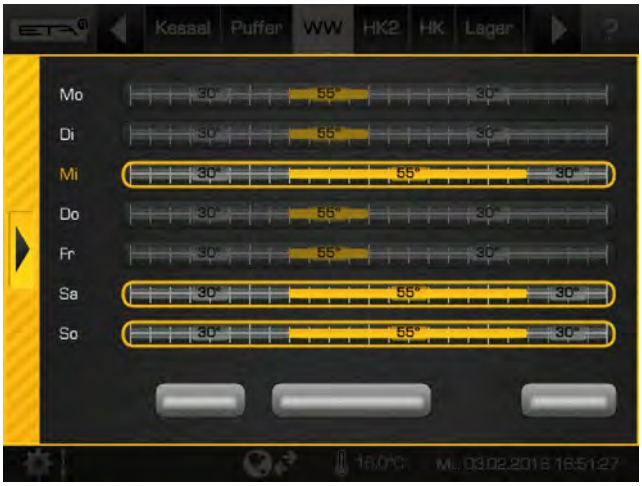


Fig. 5-30: Select days of the week

Pressing the [Mark all days] button marks all days.

4. Press the [Save] button to save. The overview will be updated accordingly. Close the window using the arrow on the left side.

You can also access the week overview via the function block settings (button). For this, press the [Charging times Weekly plan] button in the settings.

5.1.7 meinETA remote control

Remote control of the boiler via the internet

All boilers with the ETAtouch control system can be controlled remotely via smartphone, tablet or PC. The boiler's touch screen is connected to the Internet via a network cable.

A LAN socket near the boiler is required for the internet connection. If none are available, an internet connection can be established using a dLAN adapter via the in-house power grid. This dLAN adapter is also available from ETA.

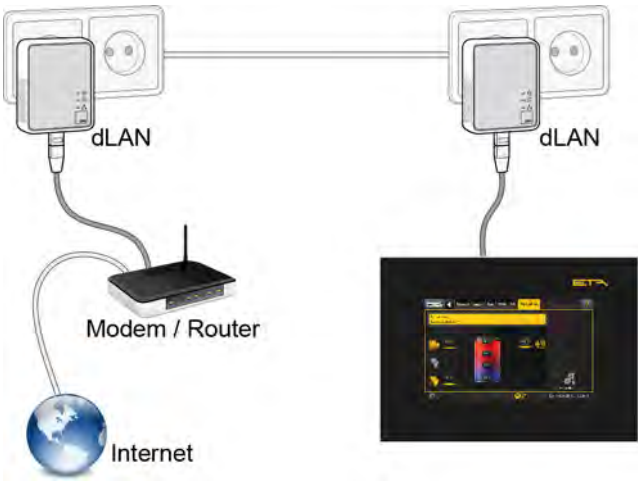


Fig. 5-31: dLAN network

Worldwide access via www.meinETA.at

Remote control via the free internet platform ***www.meinETA.at***.
After registering on this platform, the boiler can be controlled remotely. It can be accessed by smartphone, tablet or PC and is, of course, protected by username and password. You can also access the boiler's control system via your home network with a free VNC Viewer. To see how remote operation of your boiler works, please visit *www.meinETA.at*.

Entering the access data for the boiler remote control

After receiving your login information (after registering on "www.meinETA.at"), enter it in the system configuration in the [meinETA Access] menu. This enables access to remotely control the boiler.

To enter the login information, open the system configuration (symbol bottom left) and switch to the [Internet & interfaces] menu. Then press the [meinETA Access] button.

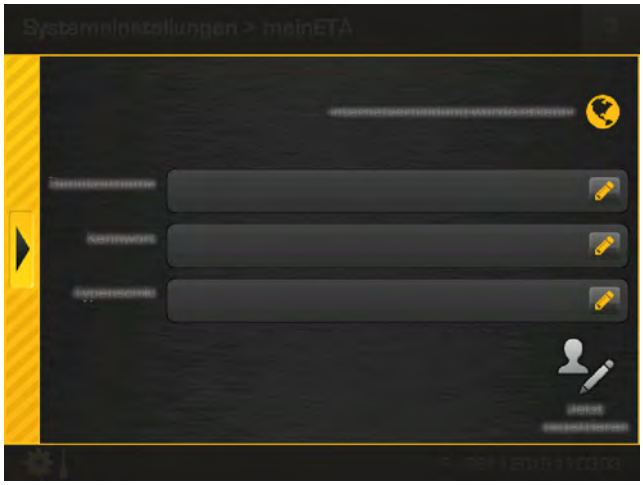


Fig. 5-32: Entering access data

The upper area indicates whether an internet connection to the screen is established. If there is no connection, it must be established.

Enter the login information and the type plate number of the boiler (if this is not displayed) in the relevant fields. Do this by pressing the symbol. An on-screen keyboard opens.

Fig. 5-33: On-screen keyboard

To finish, press the [Register now] button. Activation is performed (if an internet connection is available). If this is successful, the symbol for the remote control

appears at the bottom of the screen. If an error is displayed, check the access data and the internet connection.

Fig. 5-34: Settings window for remote control

After successful activation, options for remote control appear in the settings window. This is switched on or off using the selector switch ( ):

- [Start local VNC service IP address:]:
  You can also access this via the free VNC Viewer on your boiler.
- [Send messages to meinETA server]:
  Messages are then also displayed on the platform "www.meinETA.at".
- [Establish a meinETA connection]:
  Permit or block remote control via the platform "www.meinETA.at". If this option is turned off, the remote control is also switched off and therefore the boiler is not visible on "www.meinETA.at". The symbol of the remote control changes to .
- [Full access]:
  Thus, access is cut off remotely, but the control system still remains visible on "www.meinETA.at". The symbol of the remote control changes to . Changes to the control system can only be performed on-site. This is to ensure that no changes can be remotely performed on your control system.

You can change the options at any time by pressing the remote control symbol at the bottom of the screen.

5.1.8 Favourites

The "Favourites" function

With the "Favourites" function you can collect any parameter from the text menu (and from other function blocks) in groups, so-called "Favourites". You can, for example, create a favourite group with the current buffer temperature, hot water temperature and collector temperature. Another group could contain the outside temperature and several room temperatures. In this way you gain a quick overview of any values that are important for you. Naturally, parameters can be added or deleted at any time.

First create or designate a favourite group so it is easier to assign parameters later on. To do so, open the system configuration and tap the [Favourites] symbol. An overview screen opens.

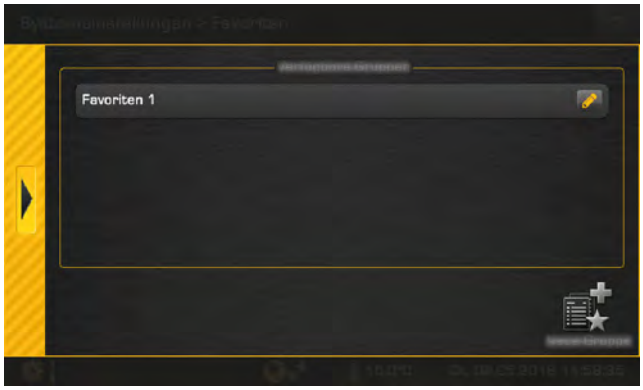


Fig. 5-35: Overview of favourite groups

If another group is required, add it with the [New group] button. Tap on the pen symbol to edit a favourite group. A window appears.

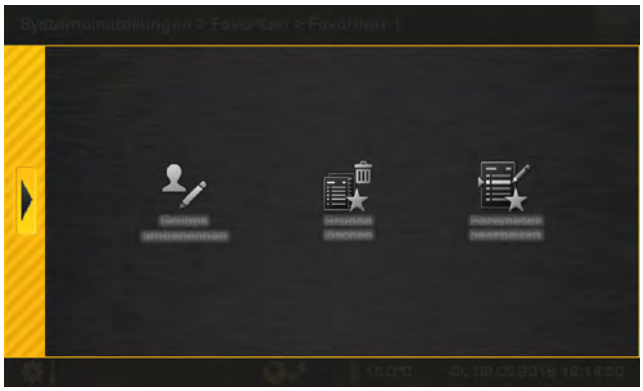


Fig. 5-36: Editing a favourite group

The name is changed with the [Rename group] button and the group deleted with the [Delete group] button.

Parameters already added are adapted with the [Edit parameter] button. Their sequence display is changed with the arrow keys. With the button a parameter is deleted from this group, or with the button copied into another group.

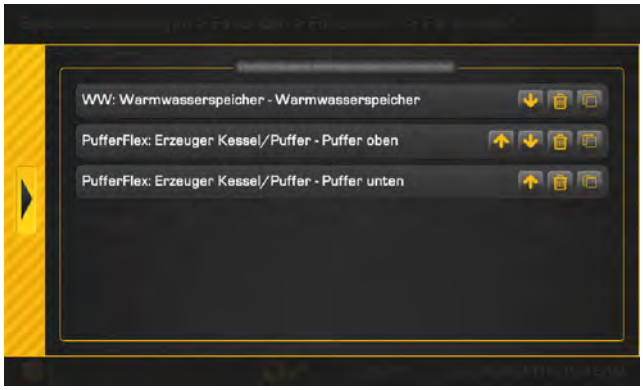


Fig. 5-37: Editing parameters

Adding parameters to favourites

Adding parameters to favourites groups takes place in the text menu of the corresponding function block. In the following example, the current hot water temperature is added to favourites.

First, change in the function block of the hot water tank to its text menu. For parameters [Hot water tank] on the right edge of the screen tap on the symbol.

Fig. 5-38: Adding parameters

In the settings window that opens tap on the [Favourites] button.

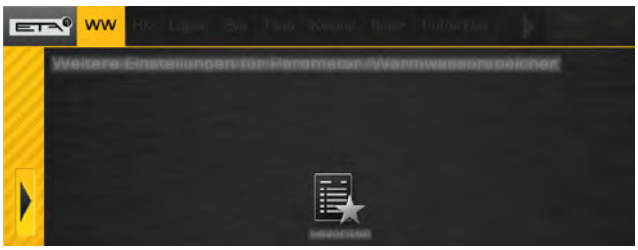


Fig. 5-39: Settings window

The overview of the favourite groups appears. With the button choose any group to which you want to add parameters. You can also select several groups.

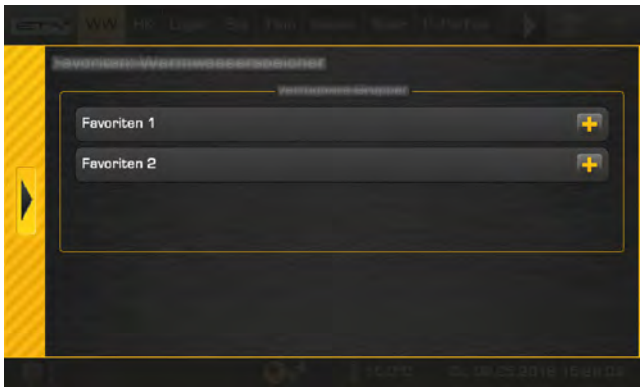


Fig. 5-40: Overview

Other parameters are added in the same way.

Displaying the values of the favourites parameters

If parameters are added to favourites, the symbol for the favourites also appears next to the text menu symbol . Tap on this to see the individual parameters.

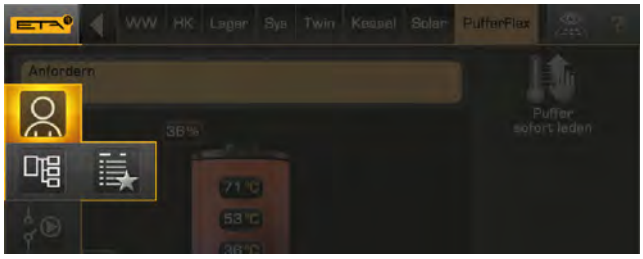


Fig. 5-41: Display favourites

An overview screen opens.

Fig. 5-42: Overview

To close this overview tap the symbol and select the user view , for example.

5.1.9 USB camera

Connecting the USB camera to the control system

There is the option of connecting a USB camera to a free USB port of the control panel. You can use this to monitor the stock of your fuel store, for example.

So that the USB camera is recognised by the control system it must be suitable for "Windows XP" or "Windows Vista". For example: "Microsoft LifeCam Studio", "Logitech HD Pro Webcam C920" or "SpeedLink Reflect LED Webcam". A maximum line length of 40 m is possible when a USB 2.0 (or later) extension cable is used with signal amplification (active).

Displaying the camera image

1. Connect the camera to a free USB port on the ETAtouch control panel.
2. Open system configuration and switch to the [Global Settings] menu. Press the [Camera] button and then the [USB cable] button.
3. The button starts and stops the transmission of the camera image.

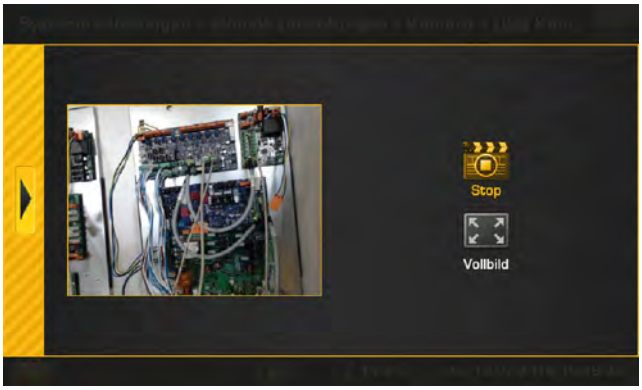
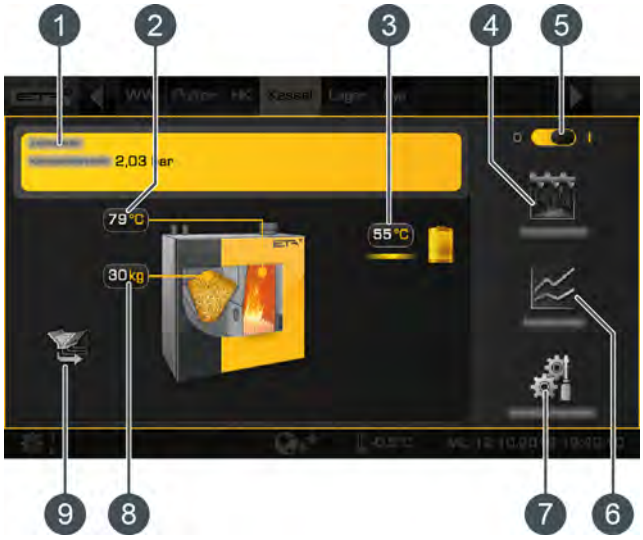


Fig. 5-43: Displaying the camera image

5.2 Function block [Boiler]

Boiler overview



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Boiler temperature

3 Boiler consumers
If a consumer is being charged (in this example the buffer), a line appears and the feed temperature and the symbol of the consumer are shown in yellow.

4 [De-ash] button.
An additional boiler de-ashing is started.

5 Boiler On/Off switch.
= switched on
= switched off

6 [Measurement] button.
The menu for emission measurement of the boiler is opened.

7 [Settings] button.
In this menu, the settings and functions most commonly used can be stored.

8 Pellet stock in boiler.
If the amount of pellets in the pellet hopper drops below the minimum, the vacuum turbine starts and refills the pellet hopper.

9 Producer for the boiler (pellet store)

Mode of operation

If the boiler is turned on ( ), it will be in standby mode ([Ready] mode). If there is a request from a connected consumer (for example, buffer, heating circuit or hot water tank), the heating mode starts automatically. Once the heat is delivered to the consumer, a yellow line appears beside the flow temperature and the symbol of the consumer in the overview.

If there is no heat demand, the heating operation is completed upon burnout. The operating condition changes to [Ember burnout] and then back to standby.

The pellet bin on the boiler is automatically topped up as soon as the stock of pellets falls below a minimum limit. The [Fill-up time] button sets the daily time for complete refilling of the boiler pellet bin, if pellets have been used up.

Boiler de-ashing takes place automatically within an adjustable interval (see chapter 5.2.2 "Text menu - Adjustable parameters", parameter [De-ash after min.]).
De-ashing can also be disabled for a time, for example to prevent the boiler from de-ashing at night (see chapter 5.2.2 "Text menu - Adjustable parameters", parameter [Duration idle time]).

After a certain, configurable quantity of pellets has been consumed, the control system issues a reminder to empty the ash box. If the ash box is only partially full, this quantity can be increased (see chapter 5.2.2 "Text menu - Adjustable parameters", parameter [Empty ash box after]).

5.2.1 Operating elements

[De-ash] button

Thus, an additional boiler de-ashing is started. When active, the button is highlighted in yellow . If the boiler is in operation, burnout first takes place when this button is pressed, and de-ashing only after this. If the boiler is switched off or on standby, de-ashing can be started straight away.

[Measurement] button

When this button is pressed, a settings window appears for the emission measurement. Using the [Begin measurement] button, a date for sweeping of the chimney can be selected. The boiler will then start in time to reach the operating

temperature for measurement purposes. By pressing the [Start now] button, the boiler will immediately begin preparations for a subsequent measurement.

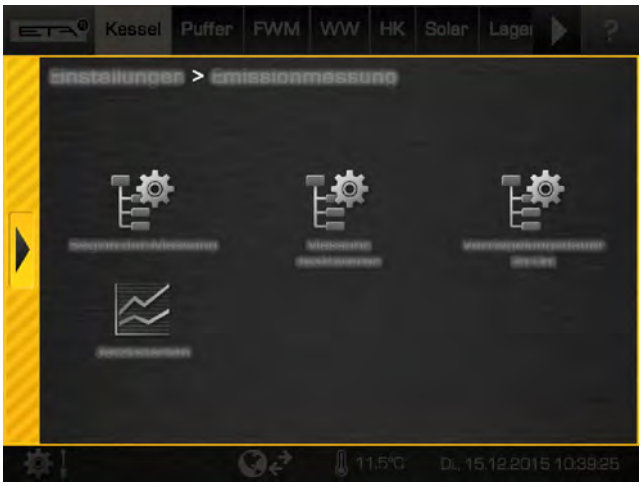


Fig. 5-44: Settings window for emission measurement

In addition, the locking time of the boiler can be adjusted in the settings window ([Lock duration] button). This relates to the set time of the measurement. During this period no heating operation will be started, so that the heating system has time to cool down.
Example: If a time of 17:00 is set for the emission measurement and at [Lock duration] 8 h, heating will end at 09:00 .

The [Deactivate measurement] button ends the emission measurement and switches the boiler back to normal mode.

Settings menu

In the settings menu ([Settings] button in the overview), the following functions and parameters can also be set:

[Fill-up time] button

This sets the daily time for complete refilling of the boiler pellet bin if pellets have been used. This prevents refilling during the night. This time applies for every day of the week.

[Hopper Fill] button

This fills the reservoir on the boiler immediately, independent of the suction time settings.

5.2.2 Text menu - Adjustable parameters

Adjustable parameters

- Boiler
  - Ash removal
    - Start idle time
    - Duration idle time
    - De-ash after min.
    - De-ash after max.
    - Empty ash box after

Detailed descriptions of the parameters are provided below.

Explanation of [Duration idle time]

The [Duration idle time] parameter is used to select the duration of the idle time for the boiler's entire de-ashing system.
The start time for the idle time is set with the [Start idle time] parameter.

The idle time should be kept as short as possible. If noise is not expected to be a nuisance, you should reduce the value to 0 hours.

Explanation of [De-ash after min.] and [De-ash after max.]

The boiler's de-ashing interval is set with the [De-ash after min.] and [De-ash after max.] parameters. The boiler de-ashes within the range specified by these two parameters.

The de-ashing interval may only be modified after consultation with a specialist or ETA customer service.

Explanation of [Empty ash box after]

This parameter adjusts the quantity of pellets used, after which a reminder to empty the ash box is displayed on the screen.

If the ash box is then only partially full, this quantity can be increased. If you set the value to zero, the reminder will no longer appear.

5.3 [BufferFlex] function block

"BufferFlex" overview

The consumers appear in the overview with different levels to the right of the buffer, and the heat producers to the left of the buffer. The following graphic shows a buffer with four temperature sensors and two consumer levels.

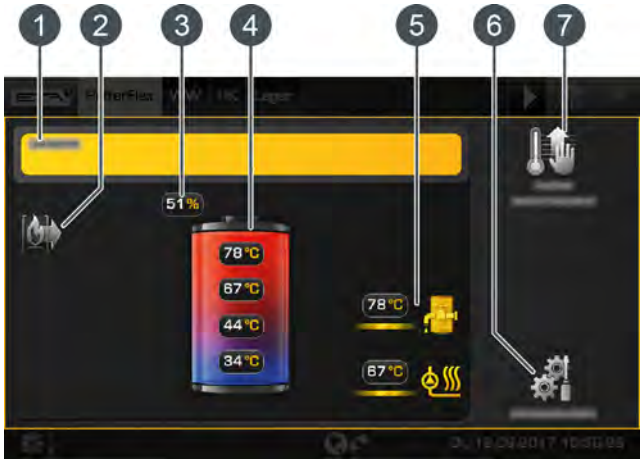


Fig. 5-45: Overview

1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Producer for the buffer

3 Current buffer charging status

4 Temperatures of the buffer in the individual areas

5 Buffer consumers.
Both consumer levels are currently charged with different flow temperatures

6 [Settings] button.
In this menu, the charge times are set.

7 [Immediately charge buffer] button
This starts immediate charging of the buffer.

[Immediately charge buffer] button

This button activates an immediate charging of the buffer, even outside the time window which is already set. When active, the button is highlighted in yellow . Pressing the button again prematurely terminates this charging process.
If a clock is displayed in the button , the time programme is active. The buffer is thus charged at a preset time every day (irrespective of time windows already set).

Separate minimum temperatures ([Charge buffer min extra]) and switch off temperatures ([Charge buffer from extra]) can be set for this immediate buffer charging. Likewise, it is possible to set a daily time for charging the buffer (=time programme). All of these settings can be found in the buffer's settings (button) under [Starting after additional criteria] -> [Extra charge].

For example, you can adjust the settings so that the buffer is charged daily from 9:30 am at the top to 65 °C and only swiches off when 45 °C is reached at the bottom.

Even if the time programme is active, immediate charging can still be started.

Mode of operation

In the settings menu (button), the time window for buffer charging can be set and, therefore, the charge times (see chapter 5.3.1 "Setting the buffer charging times"). The buffer only requests heat from the boiler during charge times. Within the charge times, it continues to be charged by the boiler until the required target temperatures have been exceeded in the buffer and the adjustable shutdown temperature is also reached (e.g., [Buffer off]). The operating mode then changes to [Charged].

If (within the charge times) there is no heat demand from the consumer, the buffer is charged only to the adjustable minimum temperature [Buffer min.]. The consumers connected to the buffer (for example, heating circuit or hot water tank) can also request heat from the buffer outside the charging times. The charging times of the consumers are independent of the charging times of the buffer.

Buffer charging times that are too brief can cause the temperatures in the buffer to fall too far and prevent individual consumers from being supplied with heat. For this reason, it is advisable to set generous charging times.
A solar heating system connected to the buffer can charge it at any time, regardless of the set buffer charging times.

When the buffer is the only heat producer in the heating system, the buffer charging times also indirectly determine the operating hours of the boiler. Because it can only switch to heating mode within the buffer charging periods.

Some parameters (e.g.: [Buffer min.], [Buffer off]) can also be adapted quickly in the buffer settings. In the settings ( ), press the button [Sensor assignments] to do so. In the overview, select the range (e.g.: [Boiler/buffer producer]) and change the parameters accordingly.

Fig. 5-46: Overview

5.3.1 Setting the buffer charging times

Open the overview of the charging times set

The operating hours of the buffer can be adjusted in the settings (button). To adjust, open the settings and then open the charging times of any given day with the [Charging times Daily plan] button. An overview screen opens.

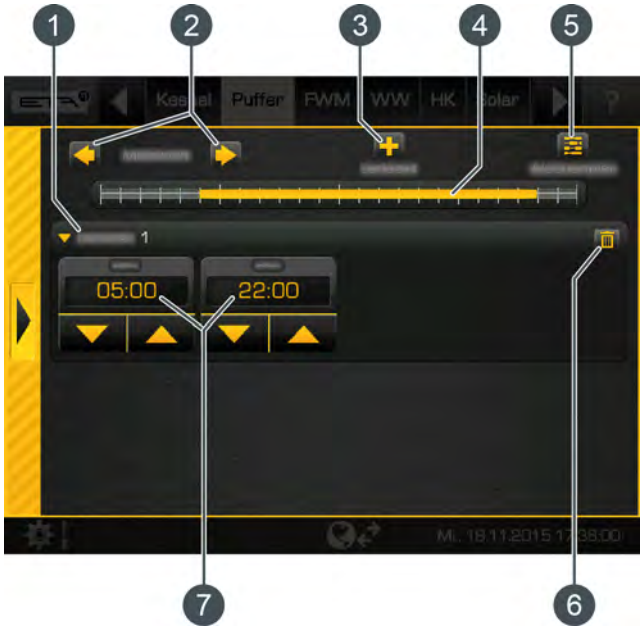


Fig. 5-47: Overview

1 Set time window (charging times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Period of the time window

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

5.3.2 Setting warnings

Set temperature warnings

As an option, limit values can be set for two different temperature sensors so that a warning is issued if they are undershot or exceeded.
The [Service] access level is required to make modifications. Then open the settings (button) and press the [Sensor assignments] button. In the overview, select [Assignment] or [Assignment].

Fig. 5-48: Set temperature warnings

If the allocation is set to [no association], the temperature warning is deactivated.

In the text menu, a delay time can be defined with the [Duration until warning] parameter before the warning appears.

5.3.3 Buffer with solar heating system

"BufferFlex" with solar heating system

The control principles of the solar heating system and the different variations are described in chapter 5.8 "[Solar] function block".

In the overview of the buffer, the solar heating system appears as another producer for the buffer. In the subsequent graphic, the buffer is charged by the solar heating system at a flow temperature of 98 °C.

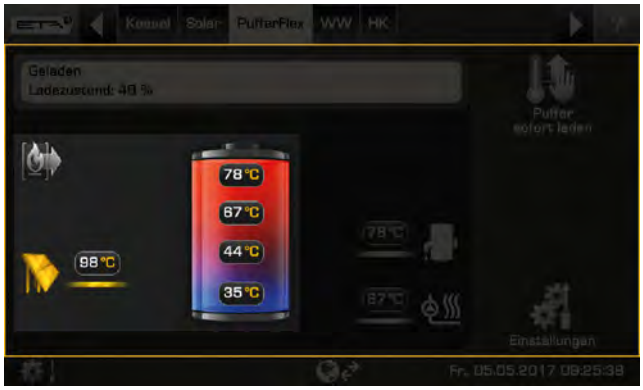


Fig. 5-49: Solar heating system on the buffer

The [Solar priority] function enables the solar heating system to charge the buffer without the boiler being started within two configurable time slots (see 5.3.5 "Text menu - Adjustable parameters").

If a stratified charger for the buffer is installed, the solar heating system can charge the upper and lower portion of the buffer. The solar heating system is displayed twice.

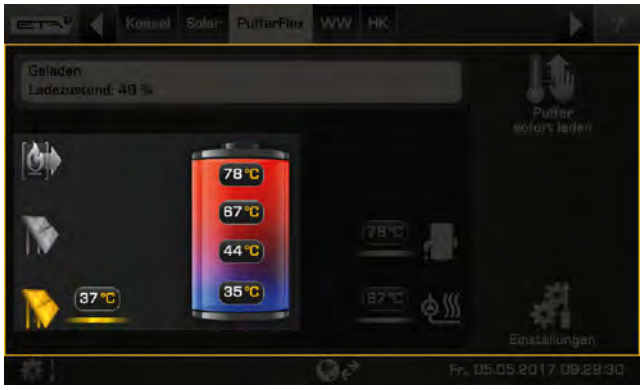


Fig. 5-50: Stratified charging of the buffer

In the "BufferFlex" text menu, different settings for the [Solar storage strategy] parameter are possible (see chapter 5.3.5 "Text menu - Adjustable parameters", parameter [Solar storage strategy]) for stratified charging of the buffer by the solar heating system.

5.3.4 Buffer as a combination tank

"BufferFlex" with integrated hot water tank or coils

The current hot water temperature is shown at the top of the screen by the water tap icon.

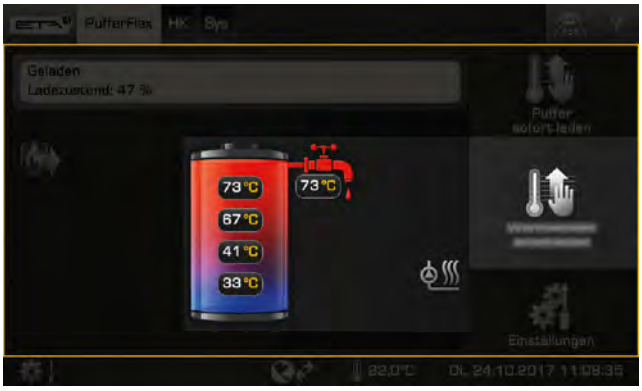


Fig. 5-51: Combination tank

In the settings menu (button), the time window for the loading of the hot water and the desired hot water temperature can be set (see chapter 5.3.4.1 "Setting the hot water charging times").

The configurable [Switch-on diff.] parameter additionally allows you to determine how far the hot water temperature can drop before the hot water tank again demands heat from the buffer (see 5.3.5 "Text menu - Adjustable parameters").

[Immediately charge hot water] button

This button causes the hot water to be charged to the highest set temperature of all time slots and days of the week if the current temperature has dropped below [Switch-on diff.], ignoring the current time slot. When active, the button is highlighted in yellow .

5.3.4.1 Setting the hot water charging times

Opening charging times and temperature for hot water with a combination tank

The charging times for the hot water and the set temperatures can be adjusted in the settings (button). To adjust, open the settings and then open the charging times of any given day with the [Hot water Charging times Daily plan] button. An overview screen opens.

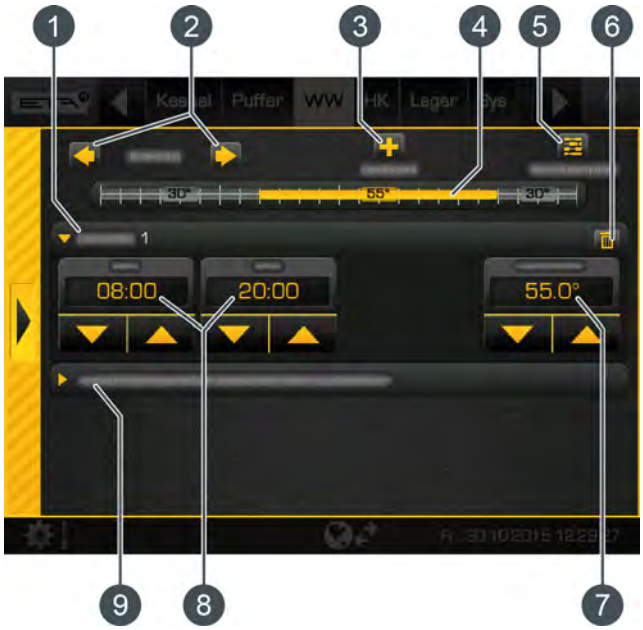


Fig. 5-52: Overview

1 Set time window (charging times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Adjustable hot water temperature within the time window
8 Period of the time window
9 Set-back temperature of the hot water outside the time window

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

5.3.5 Text menu - Adjustable parameters

Adjustable parameters

For the basic function of the buffer, the respective temperature sensors must be assigned in the buffer settings. Some of the following parameters can also be found in the settings of the BufferFlex [Sensor assignments].

- Settings
  - Buffer min.
  - Buffer off
  - Consumers[a]
    - Buffer off
  - Consumer levels[b]
    - Consumer 1 (top) (applies also to [Consumer 2] and [Consumer 3])
      - Buffer off

a. Only visible with a single consumer level

b. Only visible with multiple consumer levels

If a solar heating system is additionally connected to the buffer, further parameters can be set.

- Buffer
  - Solar producer
    - Solar storage strategy[a]
    - Buffer top min. solar[a]
    - Buffer max
    - Priority bottom
    - Priority top[a]
    - Solar priority
      - Solar priority
      - Begin solar prio.
      - Change priority at
      - End solar prio.
      - Min. out. temp. Solar prio.
  - Consumers[b]
    - Extra solar heat
      - from outside temp.
      - from accumulator tank temperature
  - Consumer levels[c]
    - Consumer 1 (top) (applies also to [Consumer 2] and [Consumer 3])
      - Excess solar heat
        - from outside temp.
        - from accumulator tank temperature

a. Only visible with stratified charging of the buffer

b. Only visible with a single consumer level

c. Only visible with multiple consumer levels

If the buffer is implemented as a combination tank, further parameters can be set.

- Buffer
  - Hot water area
    - Switch-on diff.
  - Circulation[a]
    - Circulation runtime
    - Circulation pause
    - Enable circulation

a. Only visible with additional circulation pump

Detailed descriptions of the parameters are provided below.

Explanation of [Buffer min.]

This defines the minimum temperature of the buffer within the configured time window at the allocated temperature sensor.

The higher this minimum temperature is set, the larger the heat reserve in the buffer. At the same time, however, higher temperatures in the buffer reduce the solar yield. This is because the buffer is kept at the minimum temperature using energy from the boiler, even if there is no demand from the consumers.

The factory setting can remain unchanged as long as all components of the heating system are controlled by the ETA control system. A higher value is required if peaks in output have to be covered or very fast heat availability is needed.

Explanation of [Buffer off]

This sets the shutdown temperature for the buffer charge through the boiler. If the temperature sensor in the buffer has exceeded the shutdown temperature, charging of the buffer by the boiler is stopped.

The value should be at least 5 - 10 °C above the average return temperature of the consumers, but no more than 70 °C. A high shutdown temperature reduces the number of boiler starts and improves boiler running time.

Explanation of [Buffer off]

This sets the shutdown temperature for the buffer charge when the consumer is in operation while requesting heat from the buffer.

If the temperature sensor in the buffer has exceeded the shutdown temperature, charging of the buffer ends and the buffer is charged.

If several consumer levels are configured, a different shutdown temperature can be set for each level.

Explanation of [Solar storage strategy]

Various settings can be made for stratified charging of the buffer by the solar heating system.

- [Charging by demand]:
  The current demands of the consumers on the buffer and the set minimum temperature of the solar heating system ([Buffer top min. solar]) are used to calculate the temperature required for buffer charging. The solar heating system will only begin to charge the buffer once the collector temperature is greater than the calculated temperature (for charging the buffer).
- [Optimise yield]:
  The solar heating system will begin to charge the buffer as soon as the collector temperature is greater than the current buffer temperature.
- [Charging according to buffer top min. solar]:
  The solar heating system only begins to charge the buffer once the collector temperature is greater than the set minimum temperature of the solar heating system ([Buffer top min. solar]).

Explanation of [Buffer top min. solar]

Optional: only for solar heating systems with stratified charging

With stratified charging by the solar heating system, this sets a minimum temperature for the top section of the buffer. This way, solar charging only takes place in the top section once the solar panel is at least 7 °C warmer than [Buffer top min. solar].

However, this minimum temperature only applies if the conditions for stratified charging are satisfied. If they are not, solar charging is switched to the bottom section of the buffer, to make use of the solar energy.

Explanation of [Buffer max]

This configurable shutdown temperature sets a threshold for how much the buffer can be charged by the solar heating system, to prevent the buffer from overheating. If the allocated temperature sensor reaches the configured shutdown temperature, the solar pump of the solar heating system is switched off.

Explanation of [Priority]

Optional: only with solar heating system and buffer with 2 internal coils

This parameter sets the priority of the top and bottom sections of the buffer for solar charging. A high priority means that this section will be charged by the solar heating system first. A low priority means that it will be charged last.

Function [Solar priority]

Optional: only with solar heating systems

This function is used to allow the solar heating system connected to the buffer to charge the buffer storage tank (or combination tank) without firing up the boiler.

For this, 2 time slots are set. During the first time slot (from [Begin solar prio.] to [Change priority at]), the boiler is "locked". This means that the boiler is not fired up to charge the buffer, even if the solar heating system is not delivering enough heat.

During the second time slot (from [Change priority at] to [End solar prio.]), the boiler can be fired up to charge the buffer if the solar heating system does not supply any heat for more than 3 minutes.

If the [Solar priority] function is not needed, it can be switched off at any time.

Explanation of [Begin solar prio.], [Change priority at] and [End solar prio.]

Optional: only with solar heating systems

These parameters are used to set the time slots for the [Solar priority] function.

The first time slot lasts from [Begin solar prio.] to [Change priority at]. The second time slot begins with [Change priority at] and ends with [End solar prio.].

Outside the 2 time slots, the boiler can charge the buffer at any time.

Set the start of solar priority before the first time window of the heating circuit and hot water tank. Otherwise, the boiler may start beforehand, in order to charge the heating circuit or hot water tank.

During the configured times for solar priority, it may happen that the heating circuits or the hot water are not supplied with sufficient heat.

Explanation of [Min. out. temp. Solar prio.]

This parameter sets the minimum value for the outside temperature, so that one of the conditions for solar priority and stratified charging of the buffer storage tank is satisfied.

Explanation of [Extra solar heat]

This parameter indicates whether the buffer is transferring the excess heat from the solar heating system to the consumers, even if they currently do not need heat. With the [No] display, the buffer will not transfer any excess solar heat. If [Yes] is displayed, excess solar heat is forwarded.

The following conditions must be met in order for the excess solar heat to be passed on in this way:

- The current outside temperature must be higher than the adjustable value [from outside temp.].
- In the function block for the hot water tank, heating circuits or other buffer storage tanks, the [Solar heat diss.] parameter must be set to [Yes].
- The following temperatures must be exceeded in the buffer:
  - –If the [Buffer] function block is configured, the [Buffer top] temperature must be above the configurable value [at buffer top] and the [Buffer bottom Solar] temperature above the value [at buffer bottom sol.].
  - –If the function block [BufferFlex] is configured, the temperature [from accumulator tank temperature] at the allocated temperature sensor must be exceeded.

Explanation of [Switch-on diff.]

Optional: only with combination tank

With a combination tank, this parameter regulates how far the current warm water temperature can fall before the hot water tank again demands heat from the boiler.

If the value is set to 15 °C, the current hot water temperature may drop by 15 °C from the value [Hot water tank target]. The combination tank does not demand heat from the boiler unless this happens.

With a combination tank, this value can be set to approximately 5°C to 8°C if the amount of hot water is insufficient.

Explanation [Circulation runtime]

Optional: only for circulation pump

This parameter specifies the duration for operating the circulation pump after it has been started by the control system. Once this time has expired, the circulation pump is switched off for the set duration [Circulation pause].

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

You can determine the required running time of the circulation pump in the following way. Start the circulation pump in the control system by means of manual operation in the inputs and outputs menu. After starting, measure the time until the fresh water module warms up the return line for the circulation. This time (e.g. 3 minutes) is required to heat the hot water pipe. Then enter this time in parameter [Circulation runtime]. During this time measurement, no hot water may be tapped (e.g. by sink, shower ...), because otherwise an incorrect time is measured.

Explanation [Circulation pause]

Optional: only for circulation pump

This parameter sets the pause after a circulation pump operation. The control system can only restart the circulation pump after this pause/break has expired.

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

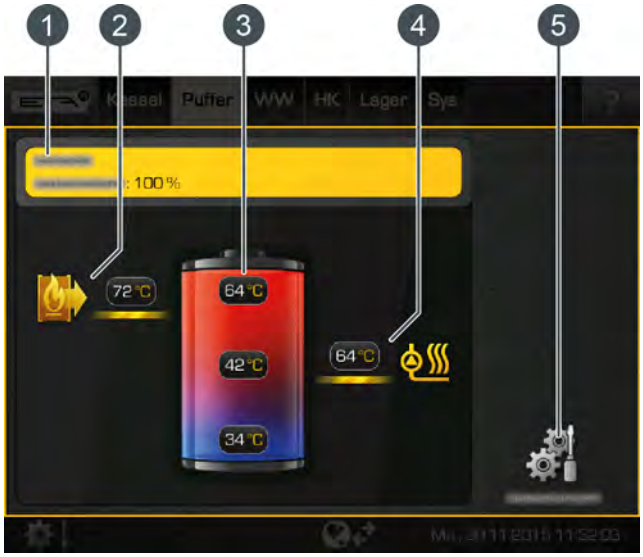
Explanation of [Enable circulation]

Optional: only for circulation pump

This parameter defines the minimum temperature of the hot water tank for starting the circulation pump. The circulation pump only starts once the hot water tank has exceeded this temperature.

5.4 [Buffer] function block

Buffer storage tank overview screen



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Producer for the buffer.
Currently, the buffer is charged by the burner at a flow temperature of 72 °C.

3 Temperatures of the buffer for individual areas (top, middle and bottom)

4 Buffer consumers.
Currently, the consumers are charged with a flow temperature of 64 °C.

5 [Settings] button.
In this menu, the charge times are set.

Mode of operation

In the settings menu (button), the time window for buffer charging can be set, and therefore the charge times (see chapter 5.4.1 "Setting the buffer charging times"). The buffer only requests heat from the boiler during charge times. Within the charge times, it will continue to be loaded by the boiler until the required temperature [Buffer target] has been exceeded in the upper part of the buffer and the adjustable shutdown temperature [Buffer bottom off] is reached in the lower part. The operating mode then changes to [Charged].

If (within the loading times) there is no heat demand from the consumer, the buffer is charged only to the adjustable minimum temperature [Buffer top min.]. The consumers connected to the buffer (for example, heating circuit or hot water tank) can also request heat from the buffer outside the charging times. The charging times of the consumers are independent of the charging times of the buffer.

Buffer charging times that are too brief can cause the temperatures in the buffer to fall too far and prevent individual consumers from being supplied with heat. For this reason, it is advisable to set generous charging times.
A solar heating system connected to the buffer can charge it at any time, regardless of the set buffer charging times.

When the buffer is the only heat producer in the heating system, the buffer charging times also indirectly determine the operating hours of the boiler. Because it can only switch to heating mode within the buffer charging periods.

5.4.1 Setting the buffer charging times

Open the overview of the charging times set

The operating hours of the buffer can be adjusted in the settings (button). To adjust, open the settings and then open the charging times of any given day with the [Charging times Daily plan] button. An overview screen opens.

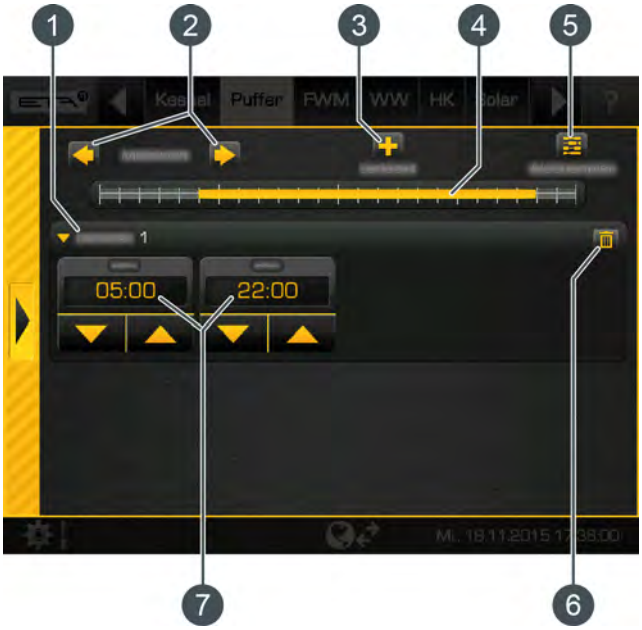


Fig. 5-53: Overview

1 Set time window (charging times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Period of the time window

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

5.4.2 Buffer with solar heating system

Buffer with solar heating system

The control principles of the solar heating system and the different variations are described in chapter 5.8 "[Solar] function block".

In the overview of the buffer, the solar heating system appears as another producer for the buffer.

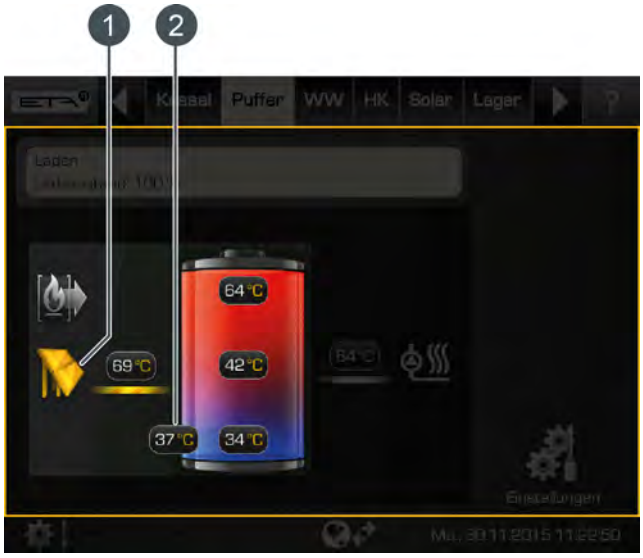


Fig. 5-54: Solar heating system on the buffer

1 Currently, the buffer is charged by the solar heating system at a flow temperature of 69 °C
2 Additional temperature sensor [Buffer bottom Solar] for control of the solar heating system

The [Solar priority] function enables the solar heating system to charge the buffer without the boiler being started within two configurable time slots (see chapter 5.4.4 "Text menu - Adjustable parameters", parameter [Solar priority]).

If a stratified charger for the buffer is installed, the solar heating system can charge the upper and lower portion of the buffer. The solar heating system is

displayed twice, and the additional buffer temperatures for solar stratified charging are displayed next to the buffer.

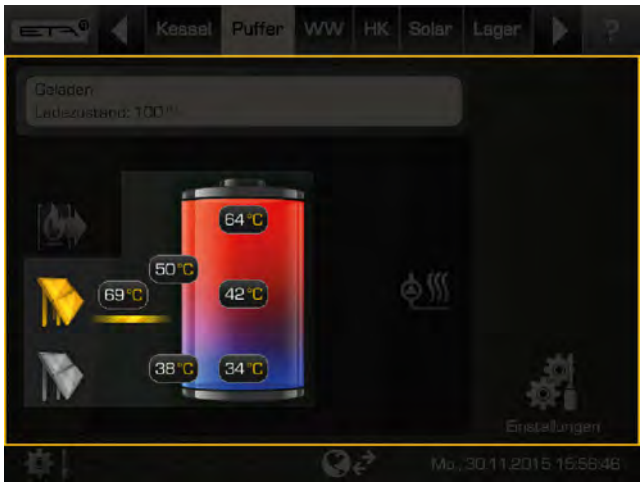


Fig. 5-55: Stratified charging of the buffer

5.4.3 Buffer as a combination tank

Buffer with integrated hot water tank or coils

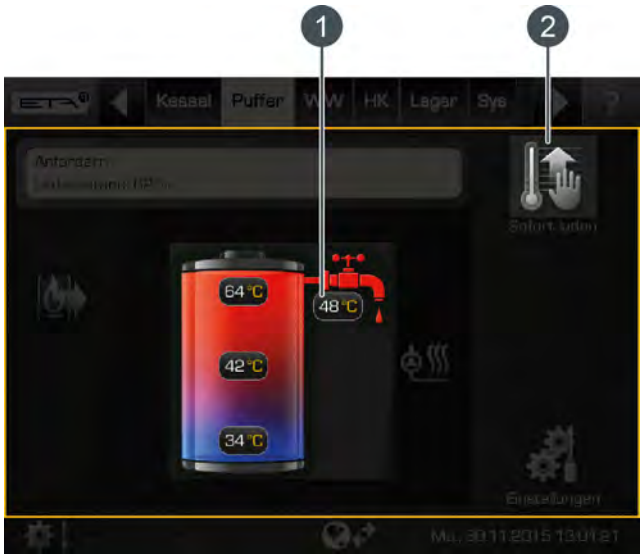


Fig. 5-56: Combination tank

1 Current hot water temperature

2 [Immediately charge hot water] button.
Immediate charging of the hot water, independent of the set time slots.

In the settings menu (button), the time window for the loading of the hot water and the desired hot water temperature can be set (see chapter 5.4.3.1 "Setting the hot water charging times").

The configurable [Switch-on diff.] parameter additionally allows you to determine how far the hot water temperature can drop before the hot water tank again demands heat from the buffer (see chapter 5.4.4 "Text menu - Adjustable parameters", parameter [Switch-on diff.]).

[Immediately charge hot water] button

This button causes the hot water to be charged to the highest set temperature of all time slots and days of the week if the current temperature has dropped below [Switch-on diff.], ignoring the current time slot. When active, the button is highlighted in yellow .

5.4.3.1 Setting the hot water charging times

Opening charging times and temperature for hot water with a combination tank

The charging times for the hot water and the set temperatures can be adjusted in the settings (button). To adjust, open the settings and then open the

charging times of any given day with the [Hot water Charging times Daily plan] button. An overview screen opens.

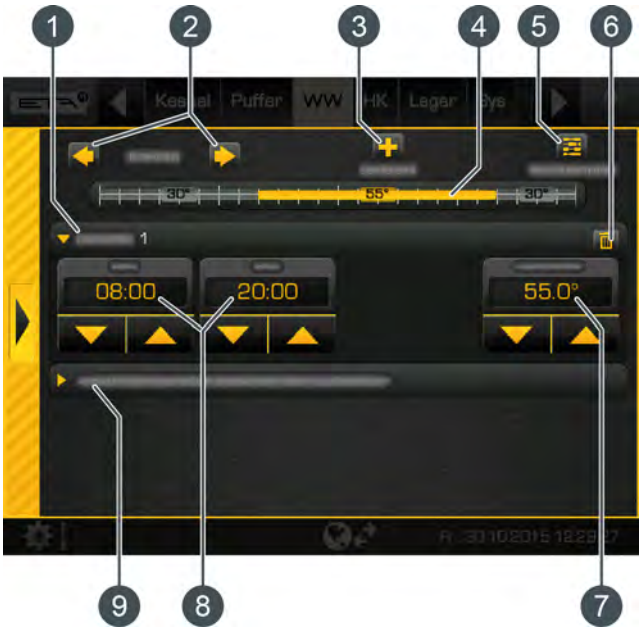


Fig. 5-57: Overview

1 Set time window (charging times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Adjustable hot water temperature within the time window
8 Period of the time window
9 Set-back temperature of the hot water outside the time window

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

5.4.4 Text menu - Adjustable parameters

Adjustable parameters

The following parameters can be configured for the basic function in the buffer text menu.

- Buffer
  - Buffer top
    - Buffer top min.
  - Buffer bottom
    - Buffer bottom off
  - Extra charge
    - Buffer top min.
    - Buffer bottom off
    - Start time
    - Immediately charge

If a solar heating system is additionally connected to the buffer, further parameters can be set.

- Buffer
  - Solar heat diss.[a]
    - Activate?
    - ...until buffer max
  - Buffer top Solar[b]
    - Buffer top min. solar
    - Min. out. temp. Solar prio.
    - Priority
  - Buffer bottom Solar
    - Buffer bottom max
    - Solar priority
      - Solar priority
      - Begin solar prio.
      - Change priority at
      - End solar prio.
      - Min. out. temp. Solar prio.
    - Extra solar heat
      - from outside temp.
      - at buffer top
      - at buffer bottom sol.
    - Priority[c]

a. Only visible with several buffer storage tanks and solar heating system

b. Only visible with solar heating system and buffer with 2 internal coils

c. Only for solar heating systems with switchover between several tanks

If the buffer is implemented as a combination tank, further parameters can be set.

- Hot water tank
  - Switch-on diff.
  - Circulation
    - Circulation runtime
    - Circulation pause
    - Enable circulation

Detailed descriptions of the parameters are provided below.

Explanation of [Buffer top min.]

This parameter defines the minimum temperature of the buffer storage tank inside the configured time slot.

The factory setting for this parameter is 10°C. The higher this temperature is set, the larger the heat reserve in the buffer. At the same time, however, higher temperatures in the buffer reduce the solar yield. Because the buffer is kept at the [Buffer top min.] temperature using energy from the boiler, even if there is no demand from the consumers.

The factory setting can remain unchanged as long as all components of the heating system are controlled by the ETA control system. A higher value is required if peaks in output have to be covered or very fast heat availability is needed.

Explanation of [Buffer bottom off]

This parameter ends charging of the buffer storage tank by the boiler. As soon as the [Buffer bottom] temperature sensor in the buffer storage tank has exceeded the configured [Buffer bottom off] temperature, charging of the buffer by the boiler is stopped.

The factory setting for this parameter is 40°C. The value should be at least 5 - 10°C above the average return temperature of the consumers, but no more than 70°C.

A high [Buffer bottom off] temperature reduces the number of boiler starts and improves boiler running time.

Explanation of the [Extra charge] function

This function defines a daily point in time for the buffer (=[Start time]) to charge the buffer additionally. This charging is done independently of the actual consumer requirements and independently of the set time windows.
A separate minimum temperature [Buffer top min.] and shutdown temperature [Buffer bottom off] can be set for this charge. Charging ends as soon as the buffer reaches these temperatures.

The function is turned on or off with the parameter [Activate time programme?].

To immediately start this additional buffer charge, the [Immediately charge] parameter must be set to [On].

Explanation of the [Solar heat diss.] function

Optional: only for several buffer storage tanks and solar heating system

This function defines whether the selected buffer may take up excess solar heat from a buffer charged by the solar heating system.

If you set the function with the [Activate?] parameter set to [Yes], this buffer takes up the solar excess. This buffer is then charged up to the configured maximum temperature [...until buffer max].

Explanation of [Priority]

Optional: only with solar heating system and buffer with 2 internal coils

This parameter sets the priority of the top and bottom sections of the buffer for solar charging. A high priority means that this section will be charged by the solar heating system first. A low priority means that it will be charged last.

Explanation of [Buffer top min. solar]

Optional: only for solar heating systems with stratified charging

With stratified charging by the solar heating system, this sets a minimum temperature for the top section of the buffer. This way, solar charging only takes place in the top section once the solar panel is at least 7 °C warmer than [Buffer top min. solar].

However, this minimum temperature only applies if the conditions for stratified charging are satisfied. If they are not, solar charging is switched to the bottom section of the buffer, to make use of the solar energy.

Explanation of [Min. out. temp. Solar prio.]

This parameter sets the minimum value for the outside temperature, so that one of the conditions for solar priority and stratified charging of the buffer storage tank is satisfied.

Explanation of [Buffer bottom max]

Optional: only with solar heating systems

This switch-off temperature can only be set when the solar heating system is charging the buffer. This configurable temperature sets a threshold for how much the buffer can be charged by the solar heating system, in order to prevent the buffer from overheating. If the [Buffer bottom Solar] temperature sensor reaches the configured [Buffer bottom max] temperature, the solar pump of the solar heating system is switched off.

Function [Solar priority]

Optional: only with solar heating systems

This function is used to allow the solar heating system connected to the buffer to charge the buffer storage tank (or combination tank) without firing up the boiler.

For this, 2 time slots are set. During the first time slot (from [Begin solar prio.] to [Change priority at]), the boiler is "locked". This means that the boiler is not fired up to charge the buffer, even if the solar heating system is not delivering enough heat.

During the second time slot (from [Change priority at] to [End solar prio.]), the boiler can be fired up to charge the buffer if the solar heating system does not supply any heat for more than 3 minutes.

If the [Solar priority] function is not needed, it can be switched off at any time.

Explanation of [Begin solar prio.], [Change priority at] and [End solar prio.]

Optional: only with solar heating systems

These parameters are used to set the time slots for the [Solar priority] function.

The first time slot lasts from [Begin solar prio.] to [Change priority at]. The second time slot begins with [Change priority at] and ends with [End solar prio.].

Outside the 2 time slots, the boiler can charge the buffer at any time.

Set the start of solar priority before the first time window of the heating circuit and hot water tank. Otherwise, the boiler may start beforehand, in order to charge the heating circuit or hot water tank.

During the configured times for solar priority, it may happen that the heating circuits or the hot water are not supplied with sufficient heat.

Explanation of [Extra solar heat]

This parameter indicates whether the buffer is transferring the excess heat from the solar heating system to the consumers, even if they currently do not need heat. With the [No] display, the buffer will not transfer any excess solar heat. If [Yes] is displayed, excess solar heat is forwarded.

The following conditions must be met in order for the excess solar heat to be passed on in this way:

- The current outside temperature must be higher than the adjustable value [from outside temp.].
- In the function block for the hot water tank, heating circuits or other buffer storage tanks, the [Solar heat diss.] parameter must be set to [Yes].
- The following temperatures must be exceeded in the buffer:
  - –If the [Buffer] function block is configured, the [Buffer top] temperature must be above the configurable value [at buffer top] and the [Buffer bottom Solar] temperature above the value [at buffer bottom sol.].
  - –If the function block [BufferFlex] is configured, the temperature [from accumulator tank temperature] at the allocated temperature sensor must be exceeded.

Explanation of [Priority]

Optional: only for solar heating systems with switchover between several tanks

This parameter sets the priority for solar charging of the buffer. A high priority means that this tank will be charged by the solar heating system first. A low priority means that it will be charged last.

Explanation of [Switch-on diff.]

Optional: only with combination tank

With a combination tank, this parameter regulates how far the current warm water temperature can fall before the hot water tank again demands heat from the boiler.

If the value is set to 15 °C, the current hot water temperature may drop by 15 °C from the value [Hot water tank target]. The combination tank does not demand heat from the boiler unless this happens.

With a combination tank, this value can be set to approximately 5°C to 8°C if the amount of hot water is insufficient.

Explanation [Circulation runtime]

Optional: only for circulation pump

This parameter specifies the duration for operating the circulation pump after it has been started by the control system. Once this time has expired, the circulation pump is switched off for the set duration [Circulation pause].

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

You can determine the required running time of the circulation pump in the following way. Start the circulation pump in the control system by means of manual operation in the inputs and outputs menu. After starting, measure the time until the fresh water module warms up the return line for the circulation. This time (e.g. 3 minutes) is required to heat the hot water pipe. Then enter this time in parameter [Circulation runtime]. During this time measurement, no hot water may be tapped (e.g. by sink, shower ...), because otherwise an incorrect time is measured.

Explanation [Circulation pause]

Optional: only for circulation pump

This parameter sets the pause after a circulation pump operation. The control system can only restart the circulation pump after this pause/break has expired.

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

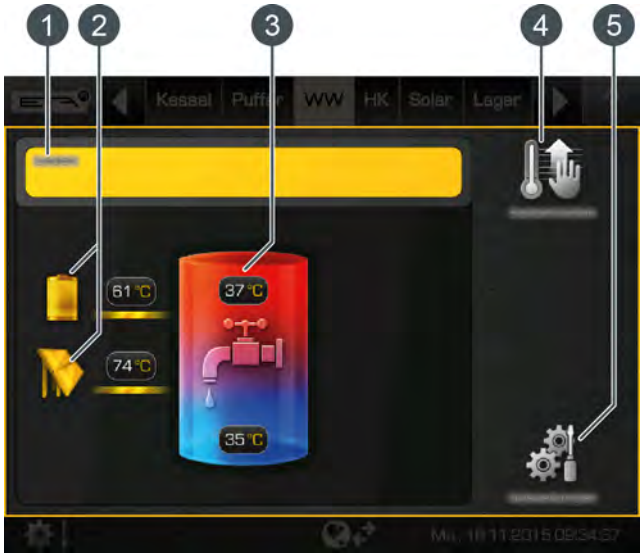
Explanation of [Enable circulation]

Optional: only for circulation pump

This parameter defines the minimum temperature of the hot water tank for starting the circulation pump. The circulation pump only starts once the hot water tank has exceeded this temperature.

5.5 [Hot water tank] function block

Hot water tank overview screen



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Producer for the hot water tank.
Currently, the hot water storage tank is charged by the buffer with a flow temperature of 61 °C, and from the solar system with 74 °C.

3 Temperature of the hot water tank.
The temperature in the lower area of the tank only appears if an additional temperature sensor is installed.

4 [Immediately charge hot water] button.
Immediate charging of the hot water, independent of the set time slots.

5 [Settings] button.
In this menu, the time window can be set, for example.

[Immediately charge hot water] button

This button causes the hot water to be charged to the highest set temperature of all time slots and days of the week if the current temperature has dropped below [Switch-on diff.], ignoring the current time slot. When active, the button is highlighted in yellow .

Mode of operation

In the settings menu (button), the time window for charging the hot water and the desired hot water temperature can be set. See chapter 5.5.1 "Setting the hot water charging times".

Within the charging times, the hot water is charged to the set hot water temperature (for example: 60 °C). The charge starts as soon as the current hot water temperature is lower than the set hot water temperature by the adjustable difference [Switch-on diff.].

Example:
In the time window, the hot water temperature is set to 60 °C. The difference [Switch-on diff.] is 15 °C.
=> Charging starts as soon as the hot water temperature drops to 45 °C, and it ends as soon as the hot water has reached 60 °C.

If an additional temperature sensor [] is installed for the lower part of the hot water tank, charging ends as soon as this sensor has reached the configurable temperature [HW bottom off].

5.5.1 Setting the hot water charging times

Open the overview screen of the set charging times and temperatures

The charging times for the hot water and the set temperatures can be adjusted in the settings (button). To adjust, open the settings and then open the charging times of any given day with the [Charging times Daily plan] button. An overview screen opens.

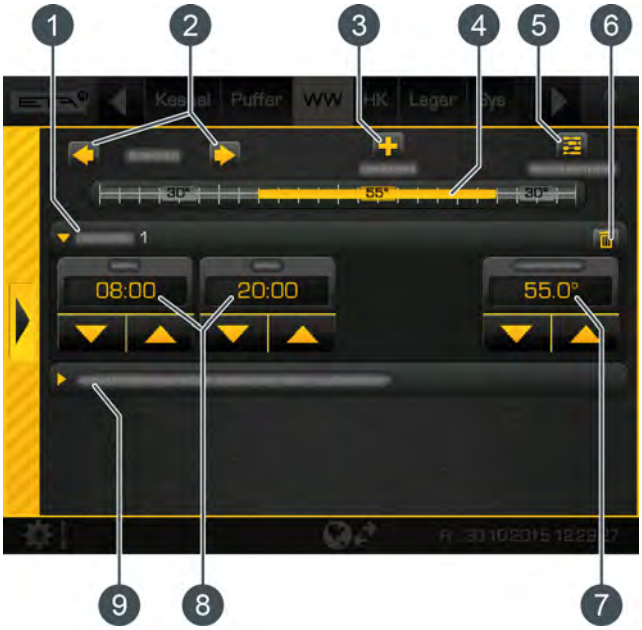


Fig. 5-58: Overview

1 Set time window (charging times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Adjustable hot water temperature within the time window
8 Period of the time window
9 Set-back temperature of the hot water outside the time window

If an additional circulation pump for hot water is installed, the operating times of this are set in the same way ([Circulation times Daily plan] button).

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

5.5.2 Text menu - Adjustable parameters

Commonly used parameters can be found in the settings

Commonly used parameters can be found in the function block settings (button). There, the parameters are identified by the symbol and can be adjusted by tapping. This saves you having to search through the text menu for these parameters.

Adjustable parameters

Hot water tank
➥ Switch-on diff.
➥ HW bottom off[a]
➥ Solar heat diss.[b]
➥ Priority[c]
Circulation[d]
➥ Circulation runtime
➥ Circulation pause

a. Only visible with additional temperature sensor

b. Only visible for buffers with solar heating system

c. Only visible for solar heating systems with switchover between several tanks

d. Only visible with additional circulation pump

Detailed descriptions of the parameters are provided below.

Explanation of [Switch-on diff.]

This parameter regulates how far the current warm water temperature can fall before the hot water tank again demands heat from the buffer or boiler.

If the value is set to 15 °C, the current hot water temperature may drop by 15 °C from the value [Hot water tank target]. The hot water tank only demands heat from the buffer or boiler when this happens.

Explanation of [HW bottom off]

Optional: only with additional [Hot water tank bottom] temperature sensor

This parameter defines when charging of the hot water tank will end. As soon as the additional [Hot water tank bottom] temperature sensor in the hot water tank reaches the adjustable [HW bottom off] temperature, charging of the hot water tank ends.

Explanation of [Solar heat diss.]

Optional: only for accumulator tanks with solar heating system

This parameter defines whether the hot water tank may take excess solar heat from the buffer.
If this parameter is set to [Yes], the hot water tank takes the solar excess up to the maximum temperature [Hot water tank max.].

This parameter is factory-set to [No]. You must check the conditions for the [Extra solar heat] function in the text menu of the accumulator tank.

Explanation of [Priority]

Optional: only for solar heating systems with switchover between several tanks

This parameter sets the priority for solar charging of the hot water tank. A high priority means that this tank will be charged by the solar heating system first. A low priority means that it will be charged last.

Explanation [Circulation runtime]

Optional: only for circulation pump

This parameter specifies the duration for operating the circulation pump after it has been started by the control system. Once this time has expired, the circulation pump is switched off for the set duration [Circulation pause].

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

You can determine the required running time of the circulation pump in the following way. Start the circulation pump in the control system by means of manual operation in the inputs and outputs menu. After starting, measure the time until the fresh water module warms up the return line for the circulation. This time (e.g. 3 minutes) is required to heat the hot water pipe. Then enter this time in parameter [Circulation runtime]. During this time measurement, no hot water may be tapped (e.g. by sink, shower ...), because otherwise an incorrect time is measured.

Explanation [Circulation pause]

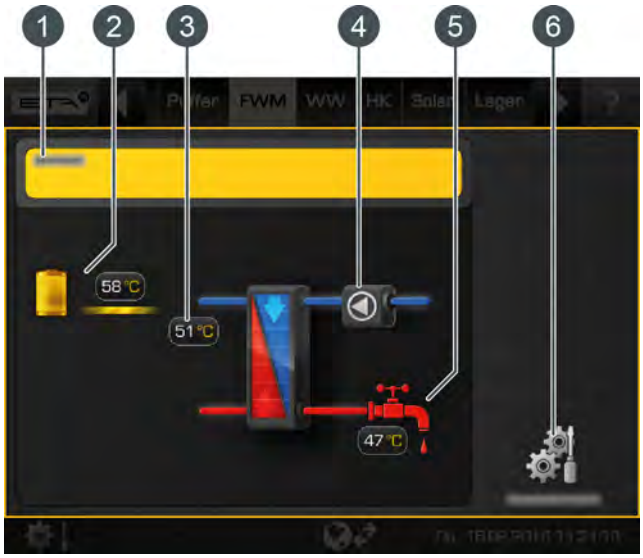
Optional: only for circulation pump

This parameter sets the pause after a circulation pump operation. The control system can only restart the circulation pump after this pause/break has expired.

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

5.6 [Fresh water module] function block

Fresh water module overview screen



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Producer for the fresh water module.
Currently, the fresh water module is charged by the buffer at a flow temperature of 58 °C.

3 Primary side return temperature

4 Circulation pump (only displayed if it has been installed and is in operation)

5 Hot water temperature (the tap is displayed only when hot water is currently being drawn)

6 [Settings] button.
In this menu, the time window can be set, for example.

Function of the fresh water module

The desired hot water temperature is set with the potentiometer on the fresh water module. If in the configuration the [Target value can be set with rotary knob] option has been disabled, different time windows and hot water temperatures can be set. See chapter on 5.6.1 "Setting the hot water charging times".

Inside these time windows, the upper part of the buffer is maintained at no lower than the configured hot water temperature. Outside the set time windows, the hot water is maintained at the lowest set temperature of the time windows, provided that the accumulator tank is sufficiently hot.

If an additional circulation pump for hot water is installed, the different operating modes for this pump are set in the same way. See the following description for this.

Operating modes for the circulation pump

There are two ways to operate the circulation pump. Either through automatic detection of the operating times ("self-learning" function, often referred to as "auto loop") or manual specification of the operating times (set time window).

- *"Self-learning" function:*
  This is already set at the factory (= parameter [Self-learning] to [Yes]). The hot water tappings of the past 2 weeks are stored for automatic determination of the daily operating times. On the basis of this, the operating times of the current day are calculated and the circulation pump is started in a timely manner.

  In this operating mode, the circulation pump starts as soon as hot water is drawn (detected by the flow sensor in the fresh water module). The pump will then run for a while and subsequently pause. These runtimes and pauses are configurable (=parameter [Circulation runtime] and [Circulation pause]).

  After commissioning, no more data is available for the "self-learning" circulation. That is why an operating period of about 4 weeks is required in the beginning, so that the control system can save sufficient data.
- *Setting a time window:*
  To do this, the "self-learning" function must be switched off (= parameter [Self-learning] to [No]).
  The operating times of the circulation pump are now set manually, for example from 10:00 am to 2:00 pm . Within these time windows, the circulation pump alternately starts and pauses,

based on the set runtimes and pauses, regardless of whether hot water is currently being drawn or not.

Example:
Time window = 10:00 am to 2:00 pm
[Circulation runtime] = 5 minutes
[Circulation pause] = 10 minutes
=> The pump runs from 10:00 am to 10:05 am , then pauses until 10:15 am , restarts at 10:15 am, pauses from 10:20 am to 10:30 am , and so on ... until the end of the time window at 2:00 pm .

In this operating mode, the circulation pump can also start outside of the time window when hot water is being tapped. This is useful if, for example, the time window ends at 8:00 pm and you shower at 9:30 pm . When you then turn on the hot water briefly, the circulation pump starts, and you will have hot water for showering shortly afterwards.
This runtime (outside the time window) is set in the text menu (parameter [Circulation pump delay]). Enter the same value as parameter [Circulation runtime].

Circulation
↳ Circulation pump delay

5.6.1 Setting the hot water charging times

Open the overview screen of the set charging times and temperatures

The standby times for the hot water and the set temperatures can be adjusted in the settings (button). To adjust, open the settings and then open the standby times of any given day with the [Stand-by times Daily plan] button. An overview screen opens.

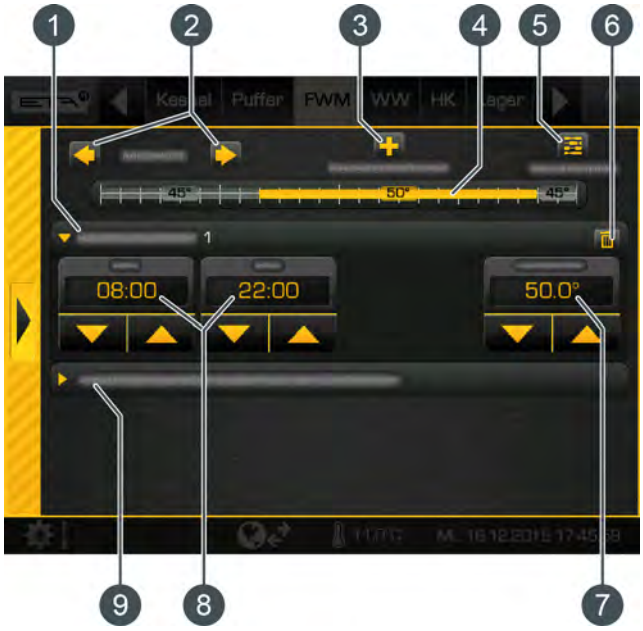


Fig. 5-59: Overview

1 Set time windows (standby times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Adjustable hot water temperature within the time window
8 Period of the time window
9 Set-back temperature of the hot water outside the time window

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

If a circulation pump is also installed (and the function [Self-learning] is switched off), these operating times are set in the same way (button [Circulation times Daily plan]).

5.6.2 Text menu - Adjustable parameters

Adjustable parameters

Hot water
- Automatic venting
- Emergency operation only with buffer pump

Circulation
- Self-learning
- Circulation runtime
- Circulation pause
- Circulation pump delay

Detailed descriptions of the parameters are provided below.

Explanation of [Automatic venting]

This function attempts to remove introduced air from the fresh water module automatically.
If the function is activated and the controller detects air intake, both pumps are operated at full speed for a short period of time to remove the air from the fresh water module. This can also take place multiple times sequentially.

This function is activated by default. During venting, the hot water can briefly be hotter than the target temperature set.

Explanation of the [Emergency operation only with buffer pump] function

Emergency operation of the fresh water module can be activated with this function if the admixing pump is defective.
If it is activated, water heating is only provided by the buffer pump. Without the admixing pump, calcification protection of the heat exchangers is not guaranteed Protracted emergency mode can therefore calcify the heat exchanger.

Explanation of the function [Self-learning]

With this function, the operating times of the circulation pump of the last 2 weeks are saved. The operating times of the current day are calculated based on this and the circulation pump will be put into operation accordingly. This function is also called the "Auto Loop" function.

This function is set to [Yes] by default. If [No] is set, the operating times for the circulation pump can be set manually.

Explanation [Circulation runtime]

Optional: only for circulation pump

This parameter specifies the duration for operating the circulation pump after it has been started by the control system. Once this time has expired, the circulation pump is switched off for the set duration [Circulation pause].

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

You can determine the required running time of the circulation pump in the following way. Start the circulation pump in the control system by means of manual operation in the inputs and outputs menu. After starting, measure the time until the fresh water module warms up the return line for the circulation. This time (e.g. 3 minutes) is required to heat the hot water pipe. Then enter this time in parameter [Circulation runtime]. During this time measurement, no hot water may be tapped (e.g. by sink, shower ...), because otherwise an incorrect time is measured.

Explanation [Circulation pause]

Optional: only for circulation pump

This parameter sets the pause after a circulation pump operation. The control system can only restart the circulation pump after this pause/break has expired.

Example:
[Circulation runtime] = 3 minutes
[Circulation pause] = 10 minutes
If the circulation pump has been started, it is in operation for 3 minutes and then disabled for 10 minutes. This means that it can only be requested again by the control system after 13 minutes.

Explanation [Circulation pump delay]

Optional: only for circulation pump

If a time is set for this parameter, then the circulation pump also starts outside the time window set. This is useful if, for example, the time window ends at 8:00 pm and you shower at 9:30 pm. When you then turn on the hot water briefly, the circulation pump starts, and you will have hot water for showering shortly afterwards.
Enter the same value for this parameter as for parameter [Circulation runtime].

5.7 [Heating circuit] function block

Overview of the heating circuit when a room sensor is installed

The following graphic shows a heating circuit with underfloor heating. If the heating circuit is equipped with radiators a radiator also appears in the overview.

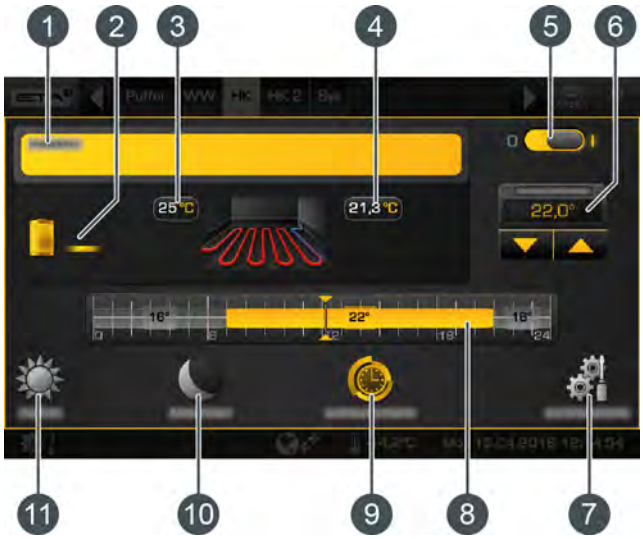


Fig. 5-60: Underfloor heating with room sensor

1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Producer for the heating circuit

3 Feed temperature for the heating circuit

4 Current room temperature

5 On/off switch for the heating circuit
 = switched on
 = switched off

6 Increase or decrease the room temperature

7 [Settings] button.
In this menu, the heating times and the heating curve can be adjusted, for example.

8 Graphic display of the heating times and room temperatures settings

9 Operating mode [Timer]

10 Operating mode [Set-back]

11 Operating mode [Heating]

Fig. 5-61: Overview with radiators

Overview of the heating circuit without room sensors

In the overview, a temperature slider appears, rather than the measured room temperature.

Fig. 5-62: Underfloor heating without room sensor

Mode of operation

If the heating circuit is turned on (), heat is supplied on the basis of the time windows set. The temperature is controlled with the heating curve (see chapter 5.7.3 "The heating curve"), the optional room sensor and the time window settings (see chapter 5.7.2 "Setting the heating time slots").

During a time window, the heating circuit is in heating mode. If a room sensor is installed, this regulates the heating circuit so that the set room temperature is achieved. If a room sensor is not installed, the heating circuit is controlled with the heating curve for the heating mode. Accurate temperature control is therefore difficult.

Outside the set time slots, the heating circuit is in reduced operation mode. This means that the room sensor only regulates to the set reduced room temperature [Set-back temperature outside the time window]. Without a room sensor, the heating circuit is controlled with the heating curve for the reduced operation mode.

Switching between heating and reduced operation takes place automatically when the button is used in the user interface to select the [Timer] operating mode.

The operating modes are also manually adjustable. Heating mode is activated with the button, and reduced operation mode with the button. See chapter 5.7.1 "Operating elements".

5.7.1 Operating elements

[Timer] button

The heating circuit is switched to automatic mode. This means that changing between operating modes [Heating] (within a time window) and [Set-back] (outside a time window) is based on the set time window. This operating mode is enabled by default if the heating circuit is turned off and then turned back on.

[Heating] button

Thus, the heating circuit is manually switched to heating mode. With the additional switch (above the symbol), the heating circuit can be set to remain permanently in heating mode, thus ignoring any time window, or set temporarily until the next time window.

[Set-back] button

Thus, the heating circuit is manually switched to reduced operation mode. With the additional switch (above the symbol), the heating circuit can be set to remain permanently in reduced operation mode, or set temporarily until the next time window.

Temperature slider

This slider is only displayed if a room sensor is installed for the heating circuit. The temperature slider is used to adjust the desired room temperature in a range of +/- 5 °C. By sliding the switch into the blue area of the scale, the flow temperature is lowered, and thus the room temperature also. In the red area, the flow temperature is raised.

Adjusting the required room temperature

This field is only displayed if a room sensor is installed for the heating circuit. The arrows are used to set the required room temperature. In heating mode, an increase of 1 °C causes the room temperatures of all time slots for all days of the week to increase by this value.

In reduced operation mode, a reduction by 1 °C causes the reduced temperature for all days of the week to decrease correspondingly.

5.7.2 Setting the heating time slots

Open the overview screen of set heating times

The operating hours of the heating circuit (heating times) can be adjusted in the settings (button). To adjust, open the settings and then open the heating times of any given day with the [Heating times Daily plan] button. An overview screen opens.

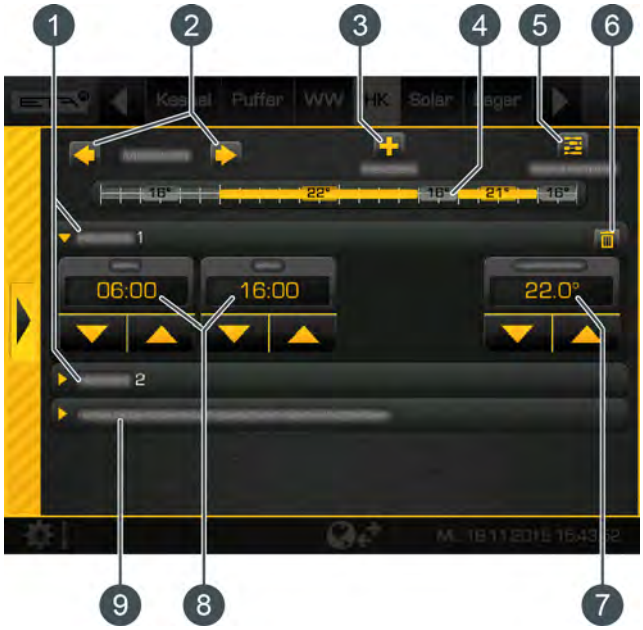


Fig. 5-63: Overview

1 Set time window (heating times)
2 Select day of the week
3 Add another time window
4 Graphical representation of the time window setting
5 Overview of all time windows for the entire week
6 Delete time window
7 Adjustable room temperature.
This is displayed only when an optional room sensor is installed.
8 Period of the time window
9 Set-back temperature.
The room temperature may drop to this value outside the time window.

Setting the time window and copying to other days of the week is described in chapter 5.1.6.6 "Setting a time window".

Setting absent time (holiday function)

In each heating circuit, a time frame can be defined for reduced operation mode. The heating circuit is then operated with the lowest set-back temperature. This function is also called the holiday function.

To set the holiday function, open the heating circuit settings (button), and press the [Vacation] button. A settings window appears.

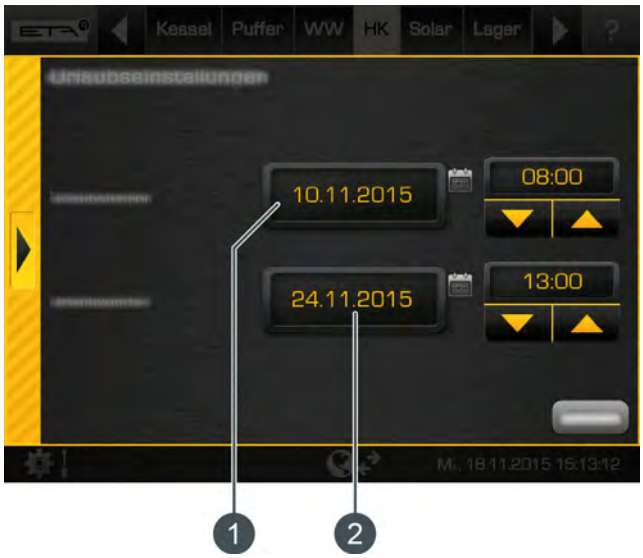


Fig. 5-64: Holiday function

1 Start of the period
2 End of the period

Tap the date field to open a calendar to select the date. Enter the time using the arrow keys. Close the window using the arrow on the left side.

In the above example, the heating circuit operates in reduced operation mode from 10 November at 08:00 a.m. until 24 November at 1:00 p.m. After expiry of the period, the heating circuit independently reverts to automatic mode.

During the set holiday time period, the heating circuit is operated only in reduced-temperature mode. Therefore, you must check the set heating limit for reduced-temperature mode (see chapter 5.7.3.2 "Setting the heating limits"). At settings below 0 °C, there is a risk of freezing.
Also check the reduced room temperature outside of the heating times (see Fig. 5-63: "Overview"). If the room temperature is set too low, there is a danger of freezing.

5.7.3 The heating curve

Description of the heating curve

The heating curve regulates the flow temperature for the heating circuit. Each heating circuit has its own heating curve, as underfloor heating requires different settings from radiators.

The heating curve is adjusted in the settings of the heating circuit (button). Open this and then change the heating curve in the menu with the [Heat curve] button. The settings for the heating curve are displayed.

Fig. 5-65: Heating curve settings

1 Heating curve for heating mode (red line) and reduced operation mode (blue line)

2 Parameters for setting the heating curve and the heating limits

3 Change settings for the heating curve in heating mode or reduced operation mode

The two adjustable parameters [Flow at -10 °C] and [Flow at +10 °C] are used to define the heating curve for the heating mode (red line in the diagram). The resulting line is the heating curve of the heating mode (within the preset heating times).
The heating curve for reduced operation mode (blue line in the diagram) is determined by a parallel shift of the heating curve of the heating mode. This shift is set via the [Set-back difference] parameter.

Based on the current outside temperature, the control system uses the heating curve to calculate the required feed temperature for the heating mode. For example, an outside temperature of -10 °C would result in a feed temperature of 33 °C (see diagram).

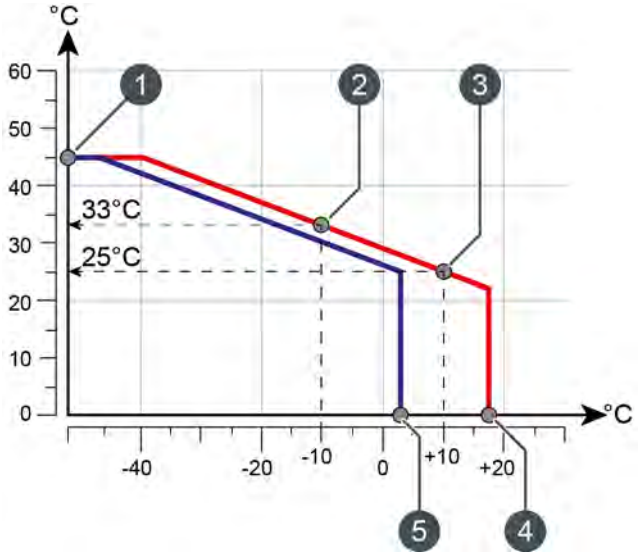


Fig. 5-66: Heating curve of underfloor heating

1 Maximum flow temperature

2 Parameter [Flow at -10 °C] is used for adjusting the heating curve for outside temperatures below freezing

3 Parameter [Flow at +10 °C] is used for adjusting the heating curve for outside temperatures above freezing

4 Heating threshold for heating mode

5 Heating limit for reduced-temperature mode

If an ETA room sensor is installed for the heating circuit, the flow temperature calculated on the basis of the heating curve is corrected. The actual flow temperature will then differ from the calculated temperature value.

For each heating circuit, separate heating limits are adjustable for heating mode (within the set heating times) and reduced operation mode (outside the set heating times). If the current outside temperature exceeds the configured heating temperature (for example 18 °C), the heating circuit is switched off. The same applies to reduced-temperature mode as soon as the outdoor temperature exceeds the set heating limit.

The [Flow max] parameter determines the maximum flow temperature for the heating circuit, to protect it from overheating. The factory setting is 45 °C for underfloor heating, and 65 °C for radiators.

When should the heating curve be adjusted?

If the rooms are not warming up, you should check the following points first before changing the heating curve in the control system. Cold rooms are often not only caused by an incorrectly set graph.

Rooms with radiator thermostats or room thermostats

- Check the current setting of the radiator thermostat or the room thermostat. If a room is not warm, open the thermostat fully or increase the temperature setting on the thermostat.

Fig. 5-67: Radiator thermostat and room thermostat

If the room is still not warm in heating mode (within the preset heating times), the temperature slider in the control system must be set higher (see chapter 5.7.1 "Operating elements") or the heating curve needs to be adjusted (see 5.7.1 "Operating elements").

If the room is too warm in heating mode, leave the radiator thermostat and room controller open, and instead lower the temperature slide in the control system or the heating curve.

If the rooms are too warm or cold in reduced operation mode (outside the heating times), only the [Set-back difference] parameter needs to be adjusted. See chapter Fig. 5-71: "Adjust reduced operation mode".

- Check the adjusted heating limits in the control system, see chapter 5.7.3.2 "Setting the heating limits". Heating limits that are set too high or too low can be the reason for rooms being too cold or too warm.

Check operating mode and target room temperature on the ETA room sensor

- If a room is too cold, check the room sensor, or in the control system set the operating mode and the desired room temperature. It is possible that the heating circuit has been switched off or the room temperature is set too low.

Fig. 5-68: ETA room sensor

- Check the settings of the following parameters in the text menu of the heating circuits:
  - –[Room effect], see chapter 5.7.4 "Text menu - Adjustable parameters"
  - –[Switch-on diff. room] and [Switch-off diff. room] see chapter 5.7.4 "Text menu - Adjustable parameters"
- If during heating mode the rooms are constantly too cold (within the set heating times), the heating curve must be adjusted. See chapter Fig. 5-69: "Adjust heating curve (at outdoor temperatures above freezing)".
  If the rooms are too cold in reduced-temperature mode (outside the heating times), only the [Set-back difference] parameter needs to be adjusted. See chapter Fig. 5-71: "Adjust reduced operation mode".

Check the heating time settings

- Check the heating time settings in the control system, see chapter 5.7.2 "Setting the heating time slots".
  For **heating systems with buffer storage**, often heating times that are too short are the reason for insufficiently warm rooms. Short heating times (less than 5 hours continuous heating) are particularly ill-advised for underfloor heating because such systems react very slowly.
  Optimal operation is enabled with low feed temperatures (=[Flow at +10 °C] and [Flow at -10 °C]) for the heating curve and long continuous heating times (10-14 hours). Thus, the heat is transferred evenly throughout the room. Therefore, it is advisable (in heating systems with a buffer) to first set a longer heating time and wait a few days. If the rooms are then still too cold, the heating curve must be adjusted. See chapter 5.7.1 "Operating elements".

If **no buffer storage tank** is available, several short heating times must be set with pauses in between. This increases the heat absorbed by the heating circuit from the boiler in the short heating times. Through this heating time interruption, the screed becomes a "buffer" in case of underfloor heating. Between the heating times, the screed cools and then absorbs heat again. In a well-insulated building, observe the following guidelines:

–Radiator heating: several intervals with 3 hours of heating and 2 hours break

–Underfloor heating: several intervals with 4 hours of heating and 3 hours break

The optimum settings depend on the heat demand of the building and each room. Explore this in consultation with your heating contractor or ETA customer service.

5.7.3.1 Adjusting the heating curve

Adjusting the heating curve

The heating curve is adjusted through the settings of the heating circuit (button) in the heating curve menu (button). How the heating curve is altered depends on whether the rooms are always too warm or too cold at outdoor temperatures above freezing or below freezing.

Make adjustments to the heating curve in small increments only. For underfloor heating, never change more than 2 °C at once, and for radiators never more than 4 °C. You may need to adapt the heating curve again after a couple of days, but if you, do it in small increments, it is more precise and energy efficient.

At outdoor temperatures above freezing, the rooms are always too hot or too cold:

1. Only parameter [Flow at +10 °C] is adjusted.
2. Change the selector switch to the heating mode position ( ). Use the arrow keys to reduce parameter [Flow at +10 °C] if it is too warm, or increase if it is too cold.

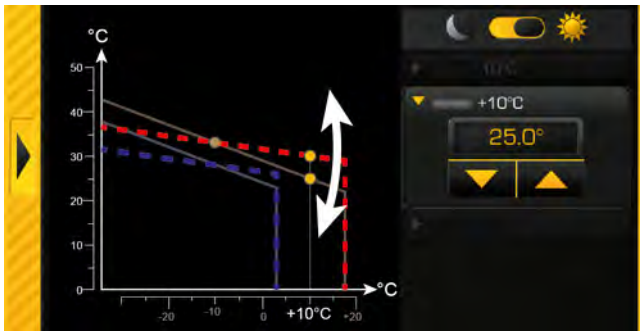


Fig. 5-69: Adjust heating curve (at outdoor temperatures above freezing)

At outdoor temperatures below freezing, the rooms are always too hot or too cold:

1. Only parameter [Flow at -10 °C] is adjusted.
2. Change the selector switch to the heating mode position ( ). Use the arrow keys to reduce parameter [Flow at -10 °C] if it is too warm, or increase if it is too cold.

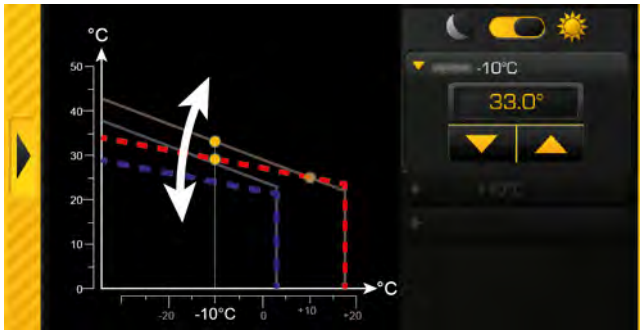


Fig. 5-70: Adjust heating curve (at outdoor temperatures below freezing)

Outside the heating times, the rooms are always too hot or too cold:

1. Then only the reduction is adjusted with parameter [Set-back difference].
2. Change the selector switch to the reduced operation mode position ( ). Use the arrow keys to reduce parameter [Set-back difference] if it is too cold, or increase if it is too warm.

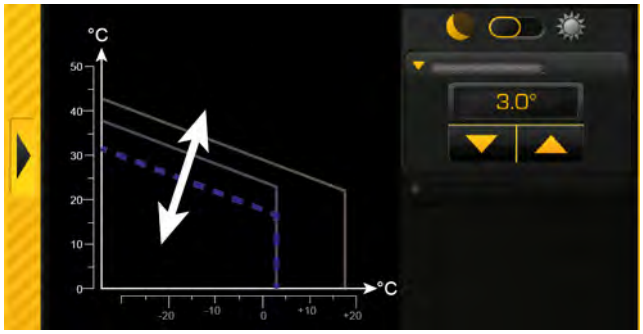


Fig. 5-71: Adjust reduced operation mode

With underfloor heating, reduced operation mode is only partially noticeable because this heating system reacts very slowly due to the high thermal mass of the screed. Changes in parameters [Set-back difference] are therefore often not noticeable.

5.7.3.2 Setting the heating limits

Specifying the heating limits for the heating circuit

For each heating circuit, separate heating limits are adjustable for heating mode (within the set heating times) and reduced operation mode (outside the set heating times).

If the current outside temperature exceeds the configured heating temperature (for example 18 °C), the heating circuit is switched off. The same applies to reduced-temperature mode as soon as the outdoor temperature exceeds the set heating limit.

If the outside temperature falls below the set heating limit (for example: 18 °C), a hysteresis of 2 °C will be observed in order to avoid cycling the heating circuit. Accordingly, the heating circuit will switch on only once the outside temperature falls below 16 °C (=18 °C - 2 °C).

The heating limits are adjusted through the settings of the heating circuit (button) in the heating curve menu (button).

Setting heating limits for heating mode

1. Change the selector switch to the heating mode position ( ).

   Use the arrow keys to reduce parameter [Heating threshold], so that the heating circuit in heating mode switches off at a lower outside temperature, or increase the value.

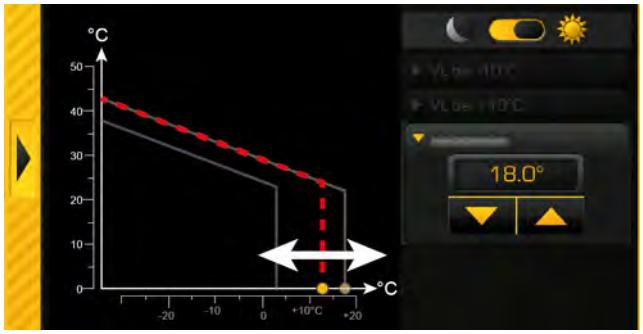


Fig. 5-72: Heating threshold for heating mode

Setting heating limits for the reduced operation mode

1. Change the selector switch to the reduced operation mode position ( ).

   Use the arrow keys to reduce parameter [Heating threshold], so that the heating circuit in reduced operation mode switches off at a lower outside temperature, or increase the value.

   At settings below 0 °C, there is a risk of freezing.

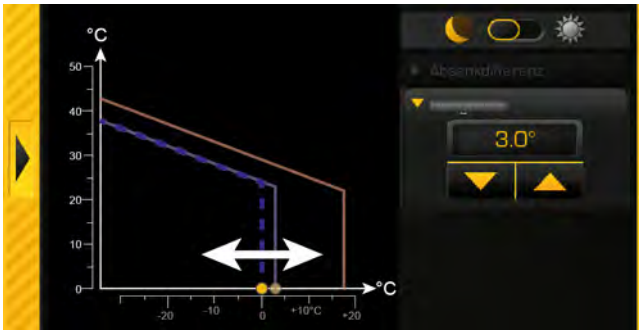


Fig. 5-73: Heating limit for reduced-temperature mode

5.7.4 Text menu - Adjustable parameters

Adjustable parameters

Heating circuit
- Room
  - Room effect
  - Switch-on diff. room
  - Switch-off diff. room

Detailed descriptions of the parameters are provided below.

Explanation of [Room effect]

Optional: only for room sensor

The flow temperature is calculated on the basis of the heating curve and the outside temperature. If the room temperature falls by 1°C, the target flow temperature is increased by this set value. If the room temperature rises by 1°C, the target flow temperature is decreased by the set value.

For underfloor and wall heating with a design temperature of 30 °C, set the room influence to 1 °C; with a design temperature of 40 °C, set it to 2 °C.

Explanation of [Switch-on diff. room] and [Switch-off diff. room]

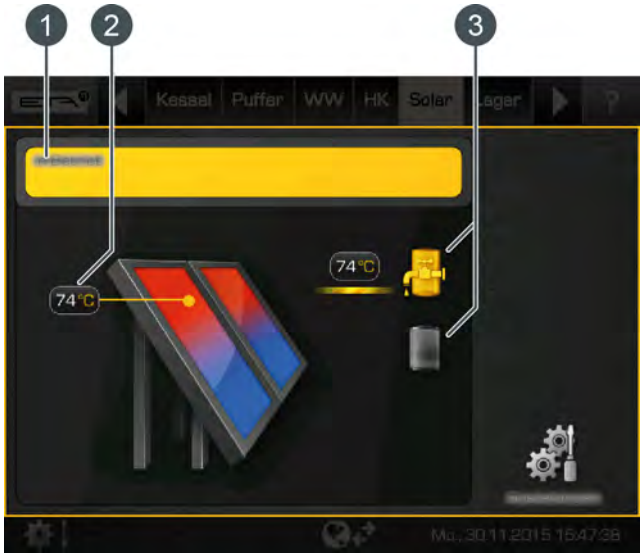
Optional: only for room sensor

These parameters specify the allowed deviation of the set room temperature for switching the heating circuit on and off.

Example:
Room temperature setting = 21 °C
[Switch-on diff. room] = 0.5 °C
[Switch-off diff. room] = 2 °C
=> The heating circuit will be switched off as soon as the room temperature reaches 23 °C (=21 + 2 °C). If the room temperature falls to 21.5 °C (=21+0.5 °C), heat is supplied to the heating circuit again.

5.8 [Solar] function block

Overview of the solar heating system



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Collector temperature

3 Solar heating system consumer.
Currently, the hot water storage tank is loaded from the solar heating system with a flow temperature of 74 °C. The second buffer consumer is not currently charged.

The solar heating system control principle

The ETA control principle for solar heating systems is defined so that an adjustable temperature difference between the panel and the tank (or the upper and lower buffer area in a buffer with 2 internal coils) is complied with. This is done by adjusting the speed of the solar pump.

Manual switching between "High Flow" (high speed at a lower collector temperature) and "Low Flow" (low speed at a higher collector temperature) is not necessary, because this is automatically controlled.

The ETAtouch control system is compatible with a great many versions, for enabling the integration of a solar heating system. The various versions are described below.

5.8.1 Solar heating system with one tank

Solar heating system with only one tank

The solar heating system is controlled by switching the collector pump on and off. This is switched on as soon as the collector has exceeded the minimum temperature [Collector min] and is warmer by the difference [Switch-on diff.] (factory setting 7 °C) than the tank being charged.

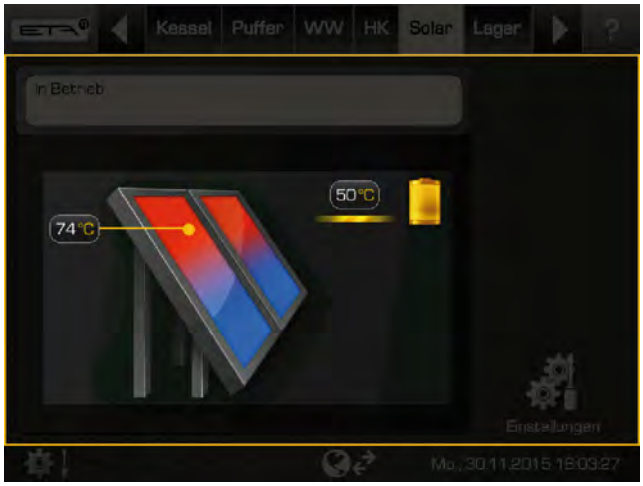


Fig. 5-74: Solar heating system connected to buffer

The speed of the collector pump is controlled in such a way that the collector supplies a temperature that is higher than the current tank temperature by the configurable offset [Target collector diff.].

When the tank has reached its maximum temperature (the factory setting of the buffer is 90 °C, and the hot water tank 60 °C), or if the collector is only warmer by the offset [Switch-off diff.] (factory setting 5 °C) than the tank, the collector pump is switched off.

Example:
Buffer temperature [Buffer bottom Solar]: 45 °C
[Target collector diff.]: 10 °C
[Switch-off diff.]: 5 °C
=> The speed of the solar pump is adjusted, so that the temperature on the collector reaches 55 °C. With the increase in buffer temperature, the collector temperature also increases, because the 10° difference is adhered to.

If the collector temperature cannot be increased (because the sun provides too little heat), the collector pump switches off when there is only a 5 °C difference between the collector and the buffer. Otherwise, the buffer is charged to the maximum temperature of 90 °C.

5.8.2 Solar heating system with 2 tanks

Switching between several tanks

If the solar heating system charges several tanks (for example, buffer and hot water tanks) it will switch between tanks on the basis of the currently set priorities. The tank with the highest priority is charged first.

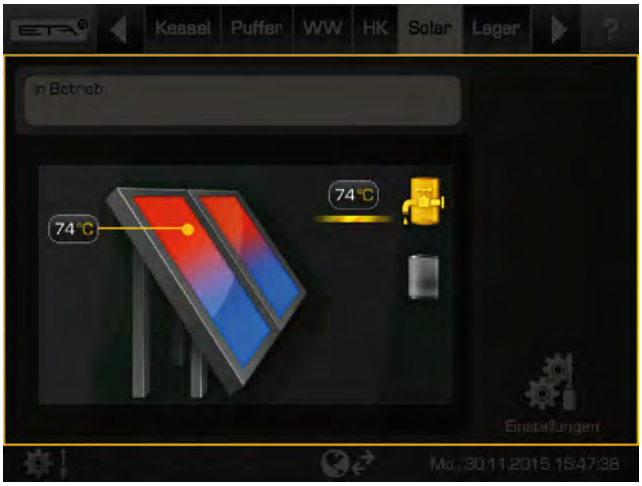


Fig. 5-75: Solar heating system for the buffer and hot water tank

If the solar power is not sufficient for charging the tank with the highest priority (collector is only warmer by the difference [Switch-off diff.] than the tank that currently requires charging), the tank with the next highest priority is charged after the minimum time has elapsed (factory setting 20 minutes).

If the solar power increases once more, after the minimum time has elapsed solar charging switches back to the tank with the higher priority. This ensures that the tank with the highest priority is always charged first.

Uniform charging of tanks without consideration of individual priorities is also possible. The [Service] permission is required for this. Then you can use the [Changeover if diff. >] parameter in the solar heating system text menu to configure the temperature difference between the tanks.

5.8.3 Solar heating system for buffer with 2 internal coils

Switching between two internal coils

When switching between two internal coils, charging is defined in two different areas of the buffer. The purpose is to produce a sufficiently high temperature in the top part of the buffer, so that the boiler does not have to start for hot water charging.

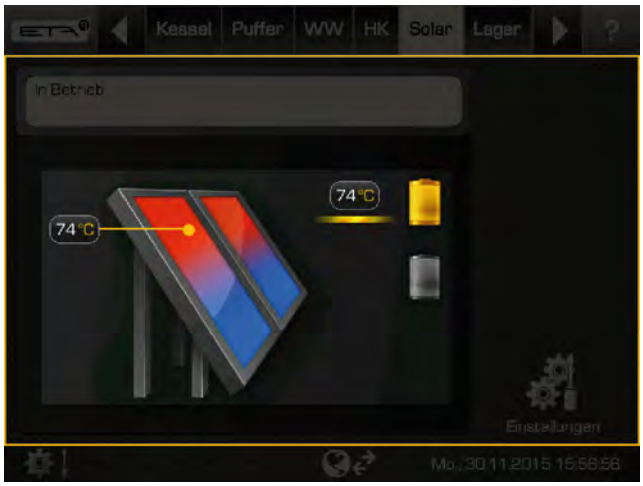


Fig. 5-76: Solar heating system with switching between two coils at the buffer

The solar pump starts as soon as the panel is warmer than the current temperature in the upper buffer area.

Depending on whether the "Buffer" or "Buffer-Flex" function block was installed, the switching differs between the two coils.

For "Buffer" function block:

An internal target temperature [Buffer target solar] is provided to control the switching. The target temperature is determined by referencing current requirements or minimum temperatures and can be viewed in the buffer's text menu under:

Buffer
↳ Buffer top Solar
↳ Buffer target solar

Tab. 5-1: "Buffer" function block

The conditions for solar charging into the upper buffer coil are:

- The buffer is not currently being charged from the boiler.
- The outside temperature is above the set minimum temperature of 10 °C ([Min. out. temp. Solar prio.]).
- The temperature in the upper buffer area is lower than the target temperature [Buffer target solar].

If all conditions are met and the collector is sufficiently warm, the upper buffer area will be charged until the target temperature [Buffer target solar] is exceeded. Subsequently, solar charging is switched to the lower coil in order to charge this buffer area.

If one of the described conditions is not met (for example, if the buffer is currently being charged by the boiler), there is no reason to feed the solar charge to the upper buffer coil. Therefore, the solar charge is directed into the lower coil in order to charge this area. If all conditions are once again met, charging is switched to the upper coil.

The only exception to this is when solar power increases while charging the lower buffer coil. Then, once the minimum time (factory setting 20 min.) passes, charging will switch to the upper coil, although the conditions are not met.

For "BufferFlex" function block:

Here too, there is a separate target temperature for controlling the switching [Buffer target solar]. This is visible under:

Buffer ↳ Solar producer ↳ Buffer target solar

Tab. 5-2: "BufferFlex" function block

The options for stratified charging of the buffer by the solar heating system have been simplified for the "PufferFlex". You can find the different settings in the "BufferFlex" text menu under parameter [Solar storage strategy]. The settings are described below.

Buffer ↳ Solar producer ↳ Solar storage strategy

Explanation of [Solar storage strategy]

Various settings can be made for stratified charging of the buffer by the solar heating system.

- [Charging by demand]:
  The current demands of the consumers on the buffer and the set minimum temperature of the solar heating system ([Buffer top min. solar]) are used to calculate the temperature required for buffer charging. The solar heating system will only begin to charge the buffer once the collector temperature is greater than the calculated temperature (for charging the buffer).
- [Optimise yield]:
  The solar heating system will begin to charge the buffer as soon as the collector temperature is greater than the current buffer temperature.
- [Charging according to buffer top min. solar]:
  The solar heating system only begins to charge the buffer once the collector temperature is greater than the set minimum temperature of the solar heating system ([Buffer top min. solar]).

5.8.4 Solar heating system with external heat exchanger

Solar heating system with external heat exchanger

The control principle is the same as in a solar heating system with just one tank, see chapter 5.8.1 "Solar heating system with one tank".
The speed of the collector pump also controls the adjustable temperature difference [Target collector diff.] between the collector and the tank.

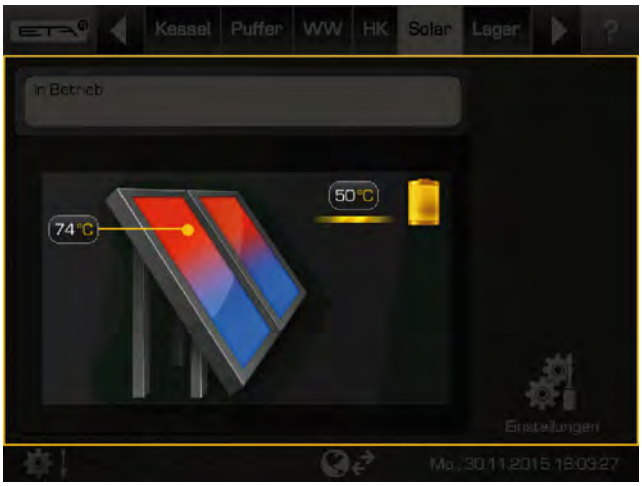


Fig. 5-77: Solar heating system with external heat exchanger connected to buffer

In addition, a variable speed secondary pump is available for the heat exchanger. Through speed adjustment, it attempts to adapt the temperature difference between collector and secondary flow (see chart 78 °C - 74°C = 4 °C) to the temperature difference between the return of the solar heating system and the tank (49 °C - 45 °C = 4 °C).

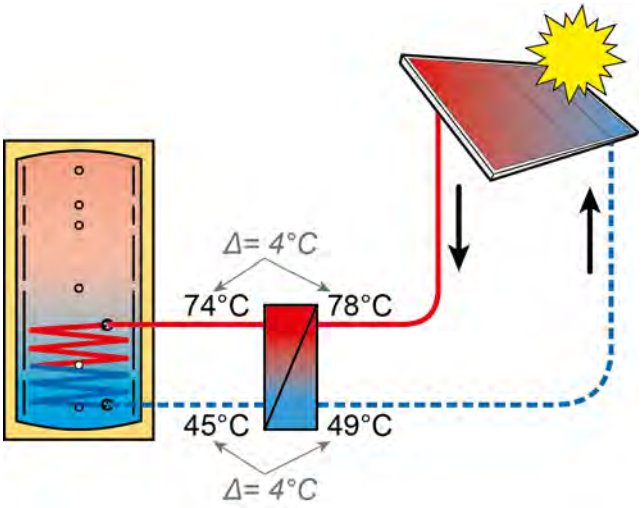


Fig. 5-78: Regulation principle

In solar heating systems with external heat exchangers, experience has shown that most of the energy from the solar heating system goes to the tank in this control principle.

5.8.5 Solar heating system with external heat exchanger and stratified charging valve

Solar heating system with external heat exchanger and stratified charging valve

This variation of solar heating system also aims to produce a sufficiently high temperature in the upper area of the buffer, so the boiler does not have to start for hot water charging.

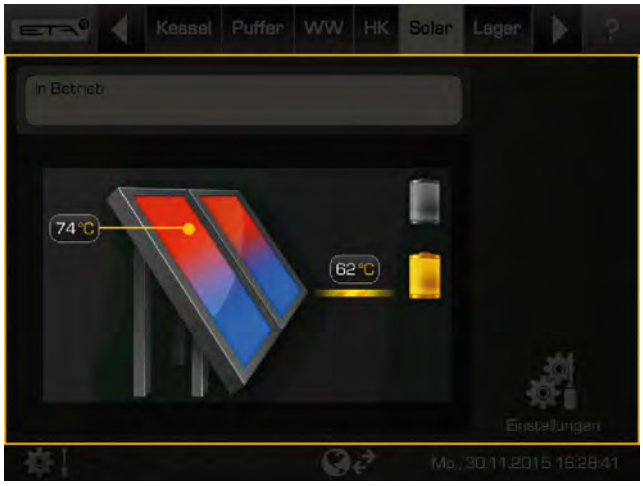


Fig. 5-79: Solar heating system with external heat exchanger and stratified charging valve

The collector pump starts as soon as the collector is warmer than the target temperature in the upper buffer area [Buffer target solar].

The control principle is identical to that of a buffer with two internal coils. The conditions for solar charging into the upper buffer coil are also the same. They are described in chapter 5.8.3 "Solar heating system for buffer with 2 internal coils".
The speed control of the secondary pump is identical to that of a solar heating system with an external heat exchanger, see chapter Fig. 5-78: "Regulation principle".

The only difference is the switching of solar charging from the lower buffer coil to the upper. If the conditions for solar charging into the upper coil are not met, the lower coil will be charged first. If the secondary feed temperature rises enough that the temperature in the upper buffer area [Buffer top Solar] is exceeded, solar charging is immediately switched to the upper coil. There is no minimum time for solar charging. Once the secondary feed temperature drops below the temperature [Buffer top Solar], the lower coil is again charged.

The secondary flow temperature rises when the collector temperature increases or the speed of the secondary pump decreases.

5.8.6 Text menu - Adjustable parameters

Adjustable parameters

State
- Collector
  - Collector min
- Collector pump
  - Target collector diff.

Detailed descriptions of the parameters are provided below.

Explanation of [Collector min]

This parameter sets the minimum temperature for starting the solar pump. The solar pump can only be started once the solar panel has exceeded this temperature.

Do not set this temperature too high, to ensure that it is possible for heat to supplied to pre-heat the tank even when there is little sunlight. The optimal range is between 30 °C and 50 °C.

Explanation of [Target collector diff.]

This parameter sets the desired temperature difference between the solar panel and the connected tank (buffer or hot water tank). This temperature difference is controlled by adjusting the speed of the solar pump.

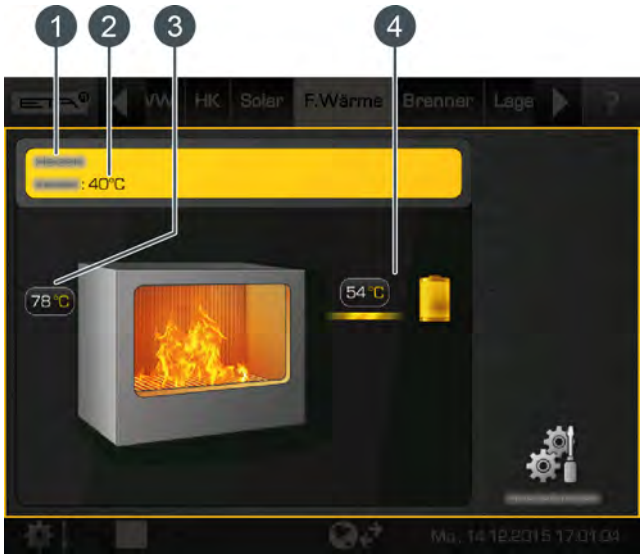
If the buffer is being charged by the solar heating system, the temperature of the solar panel [Collector] is compared with the buffer temperature [Buffer bottom Solar]. If the hot water tank is being charged, the [Hot water tank bottom] temperature is compared.

A **high temperature difference** results in a low speed of the solar pump. This way, a smaller quantity of water is conveyed through the solar panel. The water remains in the solar panel for a longer time, and therefore produces a higher working temperature in the panel. Consequently, a higher hot water temperature is achieved, but there are also more losses from the solar panel.

A **low temperature difference** results in a high speed of the solar pump. A larger quantity of water is therefore conveyed through the solar panel. The water remains in the solar panel for a short time, and so also becomes less hot. The working temperature of the solar panel is therefore lower, but there are fewer losses via the solar panel.

5.9 [External heat source] function block

Overview of external heat sources (additional heat producer)



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Temperature of the ETA boiler

3 Temperature of external heat source

4 External heat source consumer.
Currently, the consumer is charged by the external heating at a flow temperature of 54 °C.

How the external heat source works

"External heat source" refers to an additional non-automatic heat producer in the heating system. This is often a fireplace or wood chip boiler which cannot be requested by the ETAtouch control system, but not an oil or gas burner.

This can work in several ways, depending on how the additional heat producer was installed:

- **External heat source with diverter valve:**
  The boiler or the external heat source supplies heat to the consumers. Switching between the ETA boiler and the external heat source is achieved via a diverter valve.

  With the configurable parameter [Enable diverter valve], you can set the minimum temperature for switchover between the ETA boiler and the external heat source (see chapter 5.9.1 "Text menu - Adjustable parameters").
  If the temperature of the external heat source is below this minimum temperature [Enable diverter valve], the diverter valve switches to the ETA boiler, which then supplies heat. If this temperature is exceeded, the valve switches to the external heat source.
- **External heat source with charging pump:**
  The external heat source features a separate pump and can simultaneously convey heat to the buffer together with the boiler.

  The charging pump starts up when the external heat source has exceeded the minimum temperature [Enable temperature]. In addition, the temperature of the external heat source must be higher than the temperature of the charging tank, plus the difference [Thermostat diff.]. These parameters are configurable; see chapter 5.9.1 "Text menu - Adjustable parameters".

If the external heat source exceeds the configurable [Switch off boiler at] temperature, the ETA boiler is switched to [Locked] mode; see chapter 5.9.1 "Text menu - Adjustable parameters".

5.9.1 Text menu - Adjustable parameters

Adjustable parameters

Ext. heat
↳ Switch off boiler at
↳ Enable diverter valve

Charging pump
↳ Enable temperature
↳ Thermostat diff.

Detailed descriptions of the parameters are provided below.

Explanation of [Switch off boiler at]

This parameter determines at what temperature of the external heat source the ETA boiler switches to [Locked] mode.

If the temperature of the external heat source lies below this temperature [Switch off boiler at], the ETA boiler always supplies the heat. If this temperature is exceeded, the ETA boiler switches to [Locked] mode.

Explanation of [Enable diverter valve]

Optional: Only with diverter valve

This parameter is used to set the minimum temperature for the switchover between the ETA boiler and the external heat source.

If the temperature of the external heat source is below this minimum temperature, the diverter valve switches to the ETA boiler, which then supplies the heat. If this temperature is exceeded, the valve switches to the external heat source, which supplies the heat.

Explanation of [Enable temperature]

Optional: only with charging pump

This parameter sets the minimum temperature of the external heat source, for starting the charging pump of the external heat source.

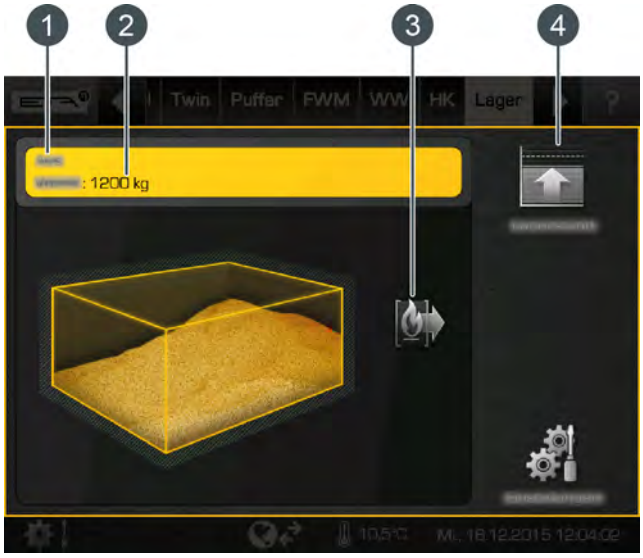
Explanation of [Thermostat diff.]

Optional: only with charging pump

This parameter is used to set the minimum difference between the temperature of the external heat source [Ext. heat] and the tank that needs charging [Tank temperature], to start the charging pump of the external heat source.

5.10 [Pellet store] function block

Pellet store overview screen



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Current pellet stock.
This is calculated by the control system and can therefore differ by +/- 15% from the actual pellet supply

3 Consumer of the pellet store (boiler)

4 Enter new stock levels after filling

[Stock level] button

After filling the pellet store, a new supply of pellets is fed in with this button.
Example: 1200 kg of pellets are available, and 3000 kg is refilled. The new stock will be registered as 4200 kg.

Entering a minimum level for the pellet stock

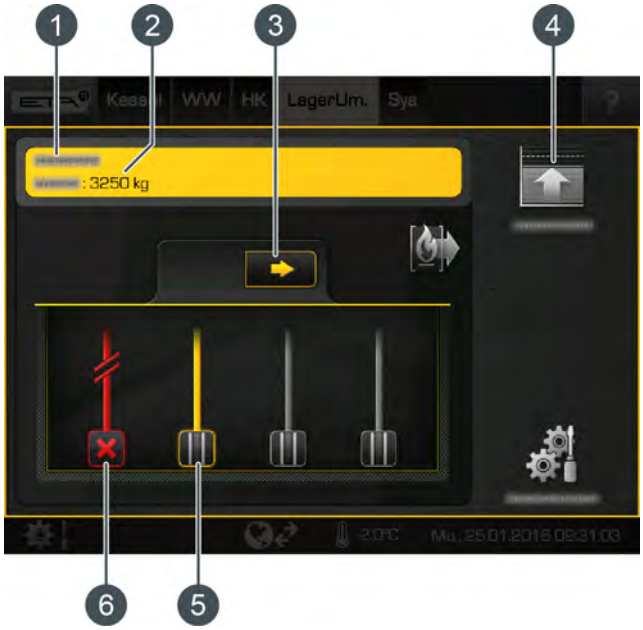
You can define a minimum level for the pellet stock so that a warning is issued when the stock goes below that level.

The minimum level is set with the [Warning limit for pellet stock] parameter in the text menu of the pellet stock.

5.11 [Pellet store with switch unit] function block

Overview of pellet store with switching unit

Up to 4 suction heads can be controlled by one switching unit.



1 Operating condition and information.
A description of the operating conditions can be found in the integrated Help menu by pressing the ? button.

2 Current pellet stock.
This is calculated by the control system and can therefore differ by +/- 15% from the actual pellet supply

3 Manually switch to next enabled suction probe

4 Enter new stock levels after filling

5 Suction probe enabled: pellets can be conveyed from this suction probe.

6 Suction probe restricted: this suction probe is not activated by the switching unit

[Stock level] button

After filling the pellet store, a new supply of pellets is fed in with this button.
Example: 1200 kg of pellets are available, and 3000 kg is refilled. The new stock will be registered as 4200 kg.

Manually changing suction probes

This button manually switches to the next enabled suction probe, in order to move the pellets.

Disabling and enabling a suction probe

This symbol represents an enabled suction probe. This can be controlled by the switching unit for conveying the pellets. If an enabled suction probe is selected, then this is locked (symbol). It will then no longer be activated by the switching unit. By re-selecting the locked suction probe, it is enabled again (symbol).

Function of the switching unit

The conveying and clear modes are represented by a green line between an enabled suction head and the switch unit. If a suction head is no longer able to convey pellets, the control system automatically switches to clear mode. Here the conveyance hose now introduces return air in order to dislodge any blockages in the conveyance hose or suction probe.

If an enabled suction probe is selected (symbol), this is then locked (symbol). It will then no longer be activated by the switching unit. Re-selection of the locked suction probe frees it again (symbol).

The switch unit regularly switches between the individual, enabled suction heads, to ensure that the pellet store is emptied uniformly. You can adjust the maximum number of fill-up operations by a suction head, see chapter 5.11.1 "Text menu - Adjustable parameters".
With the button, you can also manually change to another enabled suction probe.

Entering a minimum level for the pellet stock

You can define a minimum level for the pellet stock so that a warning is issued when the stock goes below that level.

The minimum level is set with the [Warning limit for pellet stock] parameter in the text menu of the pellet stock.

5.11.1 Text menu - Adjustable parameters

Adjustable parameters

Conveying system
↳ Switching at

Detailed descriptions of the parameters are provided below.

Explanation of [Switching at]

This parameter sets the maximum number of suction operations of an enabled suction head. When a suction head has reached this number, the switch unit automatically changes to the next enabled suction head.

6 Emission measurement

6.1 Information about measurement

6.1.1 Introduction

If possible, perform emissions measurements in winter only

It is preferable to measure emissions in winter so that heat consumption to the heating system is ensured during the emissions measurement.

In spring and fall, the consumers in the heating system usually need less heat. If emissions are measured during this time, excess heat cannot be safely removed from the heating system. As a remedy, temporarily switch the heating circuits to continuous "Day" operation. Also temporarily raise the target room temperature by a few degrees so that the heating circuits switch on safely. After measuring emissions, switch back to the original operating mode and room temperature.

Timely cleaning of the boiler for emissions measurement

The customer will be notified of the date of emissions measurement. Thoroughly clean the boiler and flue duct 3 to 5 days before measuring emissions. Refer to the documents included with the boiler (maintenance instructions, operating instructions) for the necessary steps. Once this is complete, heating can resume as usual.
If you wait to clean until just before the emissions measurement, large amounts of flue ash will be present in the flue gas, resulting in false measurement results.

Regular cleaning and maintenance of the boiler is essential for having low emissions and therefore good measurement results. You can perform cleaning by yourself but we recommend contracting a technical expert for maintenance. Then the heating system will be well prepared for the emissions measurement.

Required heat-up time and residual oxygen level.

Emissions may be measured only once the boiler has reached the necessary operating temperature (not flow temperature). Therefore, once switched on, the cooled boiler must run for a certain amount of time (heat-up time) in order to reach the required operating temperature. These times are indicated in the following table. Measuring during this heat-up time is thus prohibited.

Boiler	Heat-up time (hours)
eHACK	1:30 h
HACK 20-90	1:15 h
HACK 110-130	1:40 h
HACK 200	2:00 h
PE-K 32-90	1:15 h
PE-K 105-140	1:40 h
PE-K 180-220	2:00 h
Log boiler	1:30 h
TWIN pellet burner	1:35 h
PelletsUnit PelletsCompact 20-32	0:45 h
PelletsCompact 33-50	1:00 h
PelletsCompact 60-105	1:15 h

Tab. 6-1: required heat-up time

Once the boiler has reached the operating temperature, the residual oxygen level must be between 4% and 8%. This is indicated in the boiler's text menu under:

Boiler ↳ Residual O2

Tab. 6-2: Current residual oxygen content

If the boiler is at operating temperature and the residual oxygen level is above 8%, then leak air is probably getting into the boiler through improperly sealed boiler doors, the maintenance cover, or Lambda probe. The cause must be eliminated.

6.1.2 Flue pipe

Provide a short, ascending flue pipe to the chimney

The flue pipe from the boiler to the chimney must be short, leakproof and ascending. "Attractive" right-angle flue offsets with two or more bends are bad in a flue pipe. The optimum to strive for is the shortest pipe from the boiler to the chimney with a minimum of direction changes.

The flue pipe to the chimney must be leakproof. For unsealed sleeve pipes, use heat-resistant silicone as a sealant. Otherwise, you can expect smoke to escape into the boiler room as the boiler heats up. Ensure the flue pipe always ascends to the chimney

Long horizontal flue pipes to the chimney must have a narrow diameter and above-average insulation (>50 mm). Provide enough cleaning apertures in the flue pipe. A flue pipe to the chimney with a large diameter would reduce the necessary calculated chimney diameter. However, with low flow speeds ash deposits will form, and the theoretically calculated flue draught will be lost again.

If the chimney has a large diameter, the straight length of the connecting pipe can be at maximum half of the effective chimney height (calculation required).

Insulate the connecting pipe to the chimney

The connection between the boiler and the chimney should be insulated with at least 30 mm, preferably 50 mm, of mineral wool to avoid thermal losses, which can lead to a build-up of condensation.

Creating a measurement opening in the flue pipe

Create the measurement opening in the vertical portion of the flue pipe. A straight section of a suitable length must be present before and after the measurement opening because otherwise turbulence at the measurement points will prevent accurate measurements. The distance from the boiler's flue duct connection or from a pipe bend must be at least twice the diameter of the flue duct.

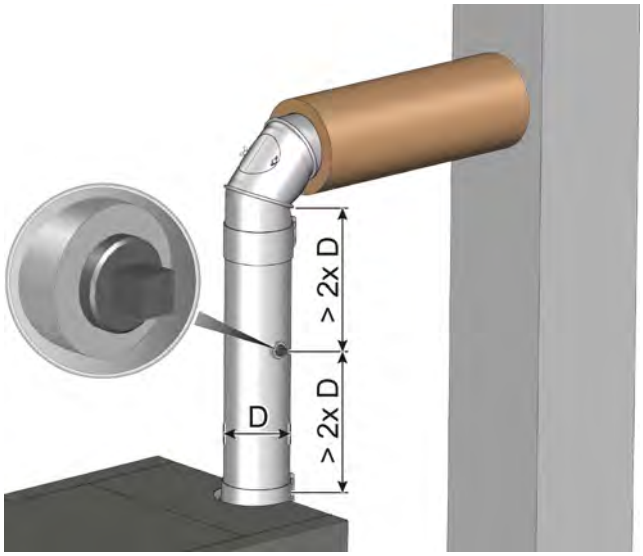


Fig. 6-1: Distances for measurement opening

Cleaning aperture in the connecting pipe

Easily accessible cleaning apertures must be available for cleaning the flue pipe.

Fig. 6-2: Cleaning aperture

6.1.3 Adjustable parameters

Setting the duration of the emission measurement

The duration of the emission measurement is factory-set to 45 minutes. If necessary, this can be increased with the [Service] access level. To do so, switch to the text menu of the boiler. You can adjust the duration as follows:

Boiler
↳ Flue gas
↳ Emission measure
↳ MeasDuration

Selecting emissions measurement for full load or partial load

In most cases, emissions measurements must be performed at full load. National regulations may stipulate emissions measurement at partial load as well. If this is the case, you must set the required output range before starting to measure emissions.

With access level [Service] go to the text menu of the boiler. Adjust the output range as follows:

Boiler
↳ Flue gas
↳ Emission measure
↳ Measurement type

If [Combination] is selected, full load measurements will be performed first. After passing of the selected duration ([MeasDuration]), a message will tell you when partial load measurements can be performed.

6.2 Perform emissions measurement

Clean the boiler 3 to 5 days before measuring emissions.

Thoroughly clean the boiler and flue pipe 3 to 5 days before the emissions measurement. Once this is complete, resume heating as usual.

This delay between cleaning and measurement is necessary in order to allow dust disturbed during cleaning to settle again. If the chimney sweep measures unsettled dust, the dust reading will be higher than normal and thus inaccurate.

CAUTION!

▶ Under no circumstances clean the boiler and flue pipe on the day of the measurement!

Allow the boiler and heating system to cool down

Stop heating mode about 6 to 8 hours before measuring emissions. Also switch off any other oil or gas burners in the heating system. This allows the boiler to cool down, and the additional water in the boiler is used to discharge heat during emissions measurement. The heating system will also cool down and the heat generated during emissions measurement will be directed safely to the consumers.

If enough heat is already removed during regular heating mode (in winter, for example), shutting down before the emissions measurement may not be necessary. Then the generated heat can be safely removed.

Ensure sufficient heat consumption

Open all radiator valves and turn all radiator and room thermostats to the maximum.

Switch the heating circuits to continuous "Day" operation and increase the room target temperature at the room sensor or in the controller so the heating circuits will continue to consume heat even during the transitional period. After measuring emissions, switch back to the original operating mode and room temperature.

Preparing and performing emissions measurement

1. The boiler must be switched on with the On/Off switch. In the boiler overview, press the [Measurement] button in order to open the emissions measurement settings window.

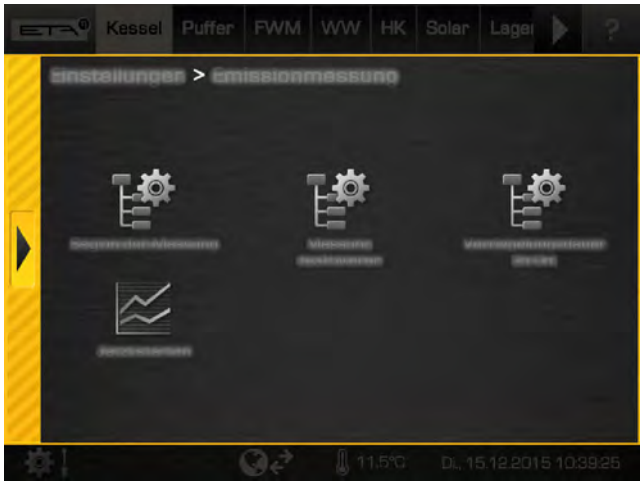


Fig. 6-3: Settings window for emissions measurement

2. Use the [Begin measurement] button to enter the date agreed for chimney sweeping. The boiler will then start in time to reach the permissible operating temperature for measurement purposes. By pressing the [Start now] button, the boiler will immediately begin preparations for measurement.

   In addition, the locking time of the boiler can be adjusted ([Lock duration] button). This is based on the selected measurement time. During this period no heating operation will be started, so that the heating system has time to cool down.
   Example: If a time of 17:00 is set for emissions measurement and at [Lock duration] 8 h, heating will end at 09:00 .

   Set the locking time so that the boiler cannot be started in the morning on the day of measurement. Example: If the measurement will take place at 2:00 pm , select a locking time of 8 hrs so that heating mode will stop at 6:00 am .

3. Once the date has been entered, it will appear in the boiler overview. The boiler will then start in time to reach the permissible operating temperature for measurement purposes.

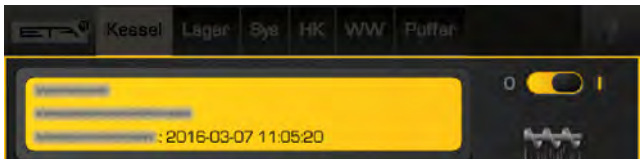


Fig. 6-4: Set date

4. If the boiler is ready for emissions measurement, a corresponding message will appear on the screen. In addition, a countdown for the emissions

measurement will be displayed. The emissions measurement is to be carried out during this period. The measurement takes about 2 to 3 hours.

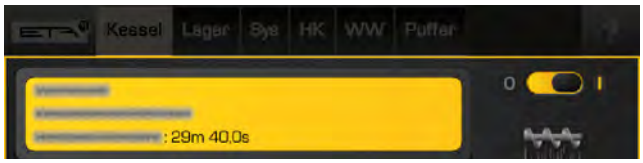


Fig. 6-5: Countdown

In this time the boiler is operated at full load (or partial load respectively) and the output adjustment is blocked while doing so. Therefore the boiler output is not reduced. The control system also ensures that heat is mandatorily dissipated into the heating system if this is possible.

5. Switch the boiler back to normal mode after the emissions measurement. To do this, press the [Deactivate measurement] button in the settings window. If you do not press this button, the boiler will automatically switch back to normal mode after some time.

7 Low-emission operation

Notes on complying with limit values in Germany after 1 January 2015

In accordance with the provisions of "BImSchV," lower limit values for the emission measurement in Germany apply to all new heating system installations starting 1 January 2015. In particular, compliance with the new dust limit value of 20 mg/m³ can lead to problems in practice.

It was determined under laboratory conditions in testing centres that the ETA boiler complies with the new limit values. To be fair, however, it should be noted that high-quality fuels were used and the heating system operated under optimal conditions. Things look different in practice. Low-quality fuels are often used, which represents a problem for the dust limit value.

Fuels used for testing

The following fuels were used as test fuel for emission measurements and approval of the boiler:

- Pellets according to EN ISO 17225-2 with the designation "D06 M10 A0.5"

The ash content of the fuel is an indicator for the dust emission

According to the current state of science, dust emissions from complete combustion are inorganic components in the fuel, so-called aerosol formers. Studies by renowned research institutes have clearly demonstrated that the aerosol formers present in the fuel (e.g., potassium, calcium, sulphur, chlorine, sodium, zinc, silicon, phosphorous...) are released in relatively fixed proportions. Accordingly, the level of dust emissions is determined by the proportions of these aerosol formers in the fuel.

The situation is made difficult by the fact that the percentage of aerosol formers in the wood depends on many factors (tree species, soil condition, season…). Even different parts of the tree (trunk, branches, core/ sapwood) can demonstrate stark fluctuations.

In practice, the ash content of the fuel has proven to be a good indicator of the percentage of aerosol formers. In order to operate the system with the lowest possible dust emissions, a properly maintained condition as well as high-quality fuels with the lowest possible ash content (barks, impurities, leaves, needles...) are indispensable.

The Clean Air Act 1993 and Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area).

In England appliances are exempted by publication on a list by the Secretary of State in accordance with changes made to sections 20 and 21 of the Clean Air Act 1993 by section 15 of the Deregulation Act 2015. Similarly in Scotland appliances are exempted by publication on a list by Scottish Ministers under section 50 of the Regulatory Reform (Scotland) Act 2014.

In Wales and Northern Ireland these are authorised by regulations made by Welsh Ministers and by the Department of the Environment respectively.

The ETA PU 7, 11 and 15 kW boiler has been recommended as suitable for use in smoke control areas when burning wood pellets according to EN ISO 17225-2-A1 or EN plus class A1 with a diameter of 6 to 8 mm and a length of 15 to 40 mm.

Further information on the requirements of the Clean Air Act can be found here:
https://www.gov.uk/smoke-control-area-rules

Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements.

8 Heating water

8.1 Water hardness

Determine permissible water hardness for the heating water according to ÖNORM H 5195-1

Specific water content in litre/kW		Table 1 Heat producer with large (> 0.3 l/kW) water content			Table 2 Heat producer with small (> 0.3 l/kW) water content		
		< 20 l/kW	≥ 20 /kW < 50 l/kW	≥ 50 l/kW	< 20 l/kW	≥ 20 l/kW < 50 l/kW	≥ 50 l/kW
Total output of the heat producer	≤ 50 kW	16.8 °dH	11.2 °dH	5.6 °dH	11.2 °dH	5.6 °dH	0.6 °dH
	> 50 kW ≤ 200 kW	11.2 °dH	5.6 °dH	2.8 °dH	5.6 °dH	2.8 °dH	0.6 °dH
	> 200 kW ≤ 600 kW	5.6 °dH	2.8 °dH	0.6 °dH	2.8 °dH	0.6 °dH	0.6 °dH
	> 600 kW	2.8 °dH	0.6 °dH	0.6 °dH	0.6 °dH	0.6 °dH	0.6 °dH

Instructions for determination:

1. Divide water content (litres) of the heat producer by its output in kW. If the result is larger than 0.3 l/kW, Table 1 applies. If the value is smaller or equal to 0.3 l/kW, Table 2 applies.
2. Divide the total heating water volume (in litres) by the output (in kW) of the smallest heat producer. The result is the specific water content and this determines the column within the previously calculated table.
3. Read the data for the permissible water hardness from the respective line using the total output of the heat producer.

Example: A heating system with a 45 kW boiler and 1500 litre total water volume.

1. The ratio of water content to output is more than 0.3 l/kW (117:45=2.6) => Table 1.
2. The specific water content is 33,3 l/kW (1500÷45 = 33.3) => middle column in Table 1.
3. The total output of the boiler is 45 kW; therefore, only the data from the first line (≤ 50 kW) are relevant.

The permissible water hardness in this example is 11.2 °dH.

Softening with a salt-regeneration ion exchanger

We recommend softening water with salt-regeneration ion exchangers, just as drinking water is softened. This method does not remove salt from the water. It replaces the calcium in the lime with sodium from the salt, and has considerable advantages. It is cheap and chemically stable against contamination. In addition, it produces a natural alkalinity that generally results in a sufficiently non-corroding pH value of around 8.

pH value between 8 and 9 may require dosing with trisodium phosphate

If the heating water's pH value has not itself changed to more than 8 after a week of operation, increase it by adding 10 g/m³ of trisodium phosphate (Na_3PO_4) or 25 g/m³ of trisodium phosphate dodecahydrate ($Na_3PO_4.12H_2O$). Wait another 2-4 weeks before making further corrections. The pH value must not exceed 9.

No hybrid installations

A disadvantage of salt-regeneration ion exchange is the salt content with its high electrical conductivity, which can lead to electrolytic corrosion, especially of aluminium or galvanized steel. If only steel, brass, gunmetal and copper are used in the heating system and the use of stainless steel is limited to small areas, then no corrosion problems should be expected, even with salty water.

Galvanized and aluminium parts in a heating system are always in danger of corrosion, especially in combination with copper tubing. In practice, this means no hot-galvanized fittings and no mixing of galvanized tubing with copper tubing. There is an illogical exception: galvanized steel tubing combined with boilers or buffer storage tanks made of steel. Presumably, the uniform zinc layer dissolves uniformly and is dispersed evenly throughout the system without localised corrosion.

Complete desalination not required

If there is no aluminium (heat exchanger in the gas boiler or aluminium radiator) in the system, then costly complete desalination with ion exchange cartridges or osmosis is not required.

Lime stabilisation can be dangerous

The addition of lime stabilising agents prevents limescale. However, we advise against doing this. These agents increase the salt content and result in an undefined pH value. If the system is filled with large amounts of water, exactly the same agent must be used again. Mixing with other water additives or with antifreeze can result in corrosion.

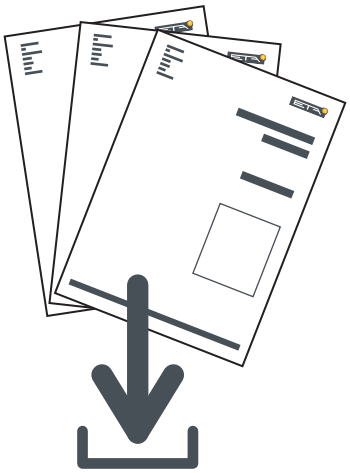
8.2 Refilling

Fill up heating water

If water refilling in the heating system is required, for example to adjust the pressure, the same water as used during initial filling should be used wherever possible.

If only a small amount of water is to be replenished (below 10% the system volume), then normal tap water can be used. This applies, for example, when replacing a pump or mixer.

The heating system is never to be refilled with rainwater, as this is usually contaminated and the pH value is too low.



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