

Manual

Heizomat "HeizoControl ET200" boiler control
combined with Simatic HMI TP700



Software version \geq B-01.07 / C-01.07 / D-01.07

Contents

1	Foreword.....	5
2	Important information	5
3	Operating elements	6
3.1	Button / Switch	6
3.2	Input field	6
3.3	List field	6
3.4	On-screen keyboard	6
4	Switch on / Home screen.....	7
4.1	System diagnostics indicator	7
4.2	Emergency stop button	8
4.3	Start button.....	8
4.4	Buffer button.....	8
4.5	System manager button	8
4.6	Buffer and system manager button	8
4.7	Ignition.....	8
4.7.1	with automatic ignition setup	8
4.7.2	without automatic ignition setup.....	9
4.8	Firebed forming	9
5	Login	10
5.1	Direct access.....	10
5.2	Remote access.....	10
6	Main menu	11
6.1	Load stages	11
6.1.1	Combustion cycle.....	12
6.1.2	Combustion break	12
6.1.3	Blower lag	12
6.1.4	Ash cycle.....	12
6.1.5	Ash break	12
6.1.6	Register cycle.....	12
6.1.7	Register break.....	12
6.1.8	Primary blower	12
6.1.9	Primary blower 2	12
6.1.10	Primary blower 3	12
6.1.11	Secondary blower	13
6.1.12	Secondary blower 2	13
6.1.13	Flue gas blower.....	13
6.1.14	Flue gas blower 2	13
6.1.15	Vacuum	13
6.1.16	Navigation buttons	13
6.2	Firebed forming	13
6.3	Operating values	14
6.3.1	Operation	14
6.3.2	Feeding	16
6.3.3	Ignition.....	16
6.3.4	Manual ignition	18
6.3.5	Deashing	19
6.3.6	Agitator	20
6.3.7	Stoker emptying	20
6.3.8	Vacuum	21
6.3.9	Return temp. monitoring.....	21
6.3.10	Return temp. increase.....	22
6.3.11	Boiler sequence control	22
6.3.12	E-filter.....	23
6.3.13	Network.....	24
6.3.14	Alarm.....	24
6.3.15	Date & Time	30

6.3.16	Buzzer	30
6.4	Operating times	31
6.4.1	Deashing break	31
6.4.2	Boiler operation	31
6.4.3	Boiler temperature lowering	31
6.5	Fuel.....	32
6.5.1	Fuel selection	32
6.5.2	Add fuel	32
6.5.3	Delete fuel	33
6.5.4	Rename fuel.....	33
6.5.5	Save basic settings	33
6.5.6	Load basic settings	34
6.5.7	Load factory settings.....	34
6.6	Manual operation.....	34
6.7	Operation mode.....	36
6.7.1	Continuous mode	36
6.7.2	Ignition mode	36
6.7.3	Boiler mode	37
6.8	12 hours recording.....	38
6.9	Recording sd card	38
6.10	Reports.....	39
6.11	Operating hours.....	40
6.12	System	40
6.12.1	Software components	40
6.12.2	Print set values.....	41
6.13	Function menu	41
6.13.1	Installer.....	41
6.13.2	Language	41
6.13.3	Chimney sweep.....	41
6.13.4	Sm@rtServer	42
6.13.5	Password protection.....	44
7	Buffer management	45
7.1	Buffer home screen	45
7.1.1	Emergency stop button	45
7.1.2	System manager button	45
7.1.3	Boiler button.....	45
7.2	Buffer and system manager main menu.....	45
7.2.1	Manual operation	46
7.2.2	Operating values buffer.....	46
7.2.3	12 hours recording	47
7.2.4	Recording sd card	48
7.2.5	Installer.....	48
8	System manager	49
8.1	System manager home-screen	49
8.1.1	Emergency stop button	50
8.1.2	Party button.....	50
8.1.3	Set values button	50
8.1.4	Boiler button.....	50
8.1.5	Main-menu button	50
8.2	Buffer and system manager main menu.....	51
8.2.1	Operating values of heating circuits 1-6	51
8.2.2	Manual operation	53
8.2.3	Operating values of the buffer tank.....	53
8.2.4	Operating values of the domestic water tank.....	53
8.2.5	Operating values of the solar system.....	55
8.2.6	12 hours recording	56
8.2.7	Recording sd card	56
8.2.8	General operating values	57
8.2.9	General functions.....	57

8.2.10	Installer.....	58
9	Timers	60
10	Modbus TCP	62
11	Basic settings.....	67
11.1	Systems up to 100 kW.....	67
11.2	Systems above 100 kW	69
12	Error messages.....	71
12.1	Infos.....	71
12.2	Warnings	72
12.3	Warnings with acknowledgement requirement.....	75
12.4	Interruptions	75
12.5	Errors.....	76
13	Appendix 1 Ignition process.....	80
14	Appendix 2 Ash errors	81
15	Summary	82

1 Foreword

Dear Heizomat customer,

Congratulations on the purchase of your new Heizomat wood chips and shavings combustion unit. You have chosen a product which has been produced with great care and which will offer you a very high level of comfort when heating with wood.

2 Important information



Before working on the system the control unit must be disconnected from the power grid and be secured against accidental restarting!
There is a great risk of an accident! Turning parts can squash or sever extremities!



Never open the combustion chamber or ash chamber door if a gas cloud has formed in the combustion chamber!
Opening can create an explosive flame or an explosion which could seriously injure you!



If modifications on the unit are made, either on mechanical or on electrical /electronic system, the EG conformity of regulations and with this the CE marking will expire.



The screen should never be touched with an angular or pointed object (e.g. screwdriver)!
We do not offer a guarantee for damage to the screen surface!



The system can only be operated if this manual has been previously carefully read by the user.
Damages to the boiler system due to incorrect use are not guaranteed.
Should you have any problems with your firing plant, please pick up this manual and give it a thorough read. You can find error messages with their appropriate explanations in the 'Error messages' chapter. You can answer many questions for yourself in this way.
However, if you should become completely stuck, our customer services are happy to help.

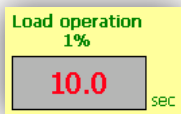
3 Operating elements

3.1 Button / Switch



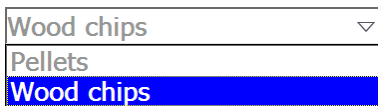
Upon pressing a button or a switch the action described in the label is carried out or systems are activated/deactivated or parameters are set/reset.

3.2 Input field



Upon touching an input field an on-screen keyboard is displayed with which you can enter numbers or texts (see below).

3.3 List field

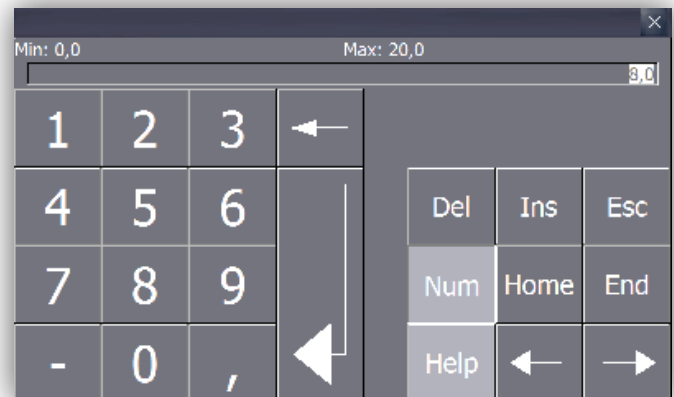


Upon pressing a list field a drop-down list of options is displayed, of which one

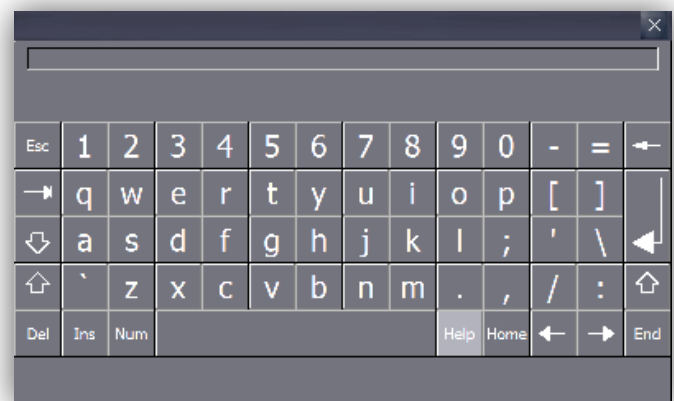
can be selected.

3.4 On-screen keyboard

The on-screen keyboard can be numerical



or alphanumeric



and is displayed when required. It serves the direct input of numbers or texts.

Switch between upper and lower case using shift and enter your entries with return.

In order to leave the keyboard without making an input, there is the Esc or close button in the top right-hand corner.

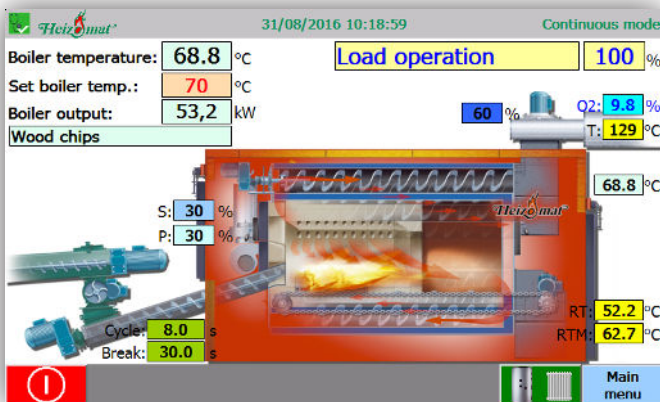
4 Switch on / Home screen

Upon switching on the system, the Heizomat logo appears for around 20 seconds¹:



During this time the connection to the control unit is set-up and the operating parameters are transferred to the control unit.

Subsequently, the current operating condition of the system is shown in the home screen:



If manual operation is not activated and if the display is not touched for three minutes, the display will return to the home screen automatically.

If no settings are entered and there is no operating fault, then the screen saver begins after 10 minutes.

In order to activate the display from the screen saver mode, simply touch the surface with a finger or with a soft stylus.

If the option Sm@rtServer (see section “6.13.4 Sm@rtServer” on page 42) is deactivated, you get directly into the main menu, by pressing the button or touching the background picture (see chapter “6 Main menu” on page 11).

If the Sm@rtServer is activated, the login window will pop up first (see chapter “5 Login” on page 10).



By pressing the input/output field “Set boiler temp.” you will directly find the input window for the setting of the boiler target temperature.

4.1 System diagnostics indicator

In the top left corner, the system diagnostics indicator is displayed. The system diagnostics indicator is a graphic symbol, which alerts you to errors in the control system.

If an error occurs, the indicator will change from green to red:



No error in the control system



Error in the control system

In case of error, please contact your Heizomat dealer.



If alerts are activated, a SMS and/or an e-mail will be sent upon the occurrence of an error in the control system, with “System error” as the subject.

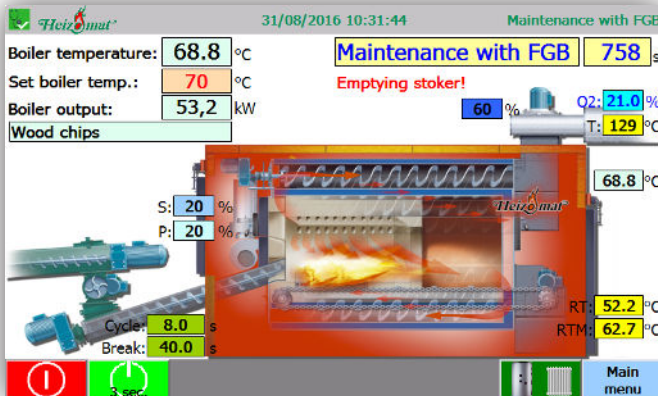
See also section “6.3.14 Alarm” on page 24.

¹ Upon changing the pre-set Ethernet addresses, the duration increases by approx. 1 minute!

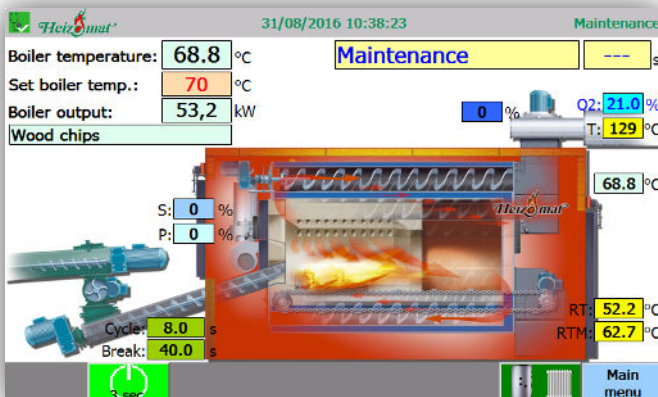
4.2 Emergency stop button



After touching this button the system switches to *Maintenance with FGB* and the flue gas blower stays at the value set for the highest load stage (100%). In order to avoid backfire, the stoker is idled for an adjustable period of time (see section “6.3.7 Stoker emptying” on page 20).



If you press the button again, then the system switches to *Maintenance*. All systems are stopped in this operating condition (even the flue gas blower)!



4.3 Start button



You can restart the system by pressing the Start button. The button has to be pressed for a minimum of 3 seconds. This is a safety measure in order to avoid unwanted switching on of the system by accidentally pressing the button.

4.4 Buffer button¹



By pressing this button the buffer management home screen opens (see chapter “7 Buffer management” on page 45).

4.5 System manager button²



By pressing this button, the system manager home-screen will open (see chapter “8 System manager” on page 49).

4.6 Buffer and system manager button³

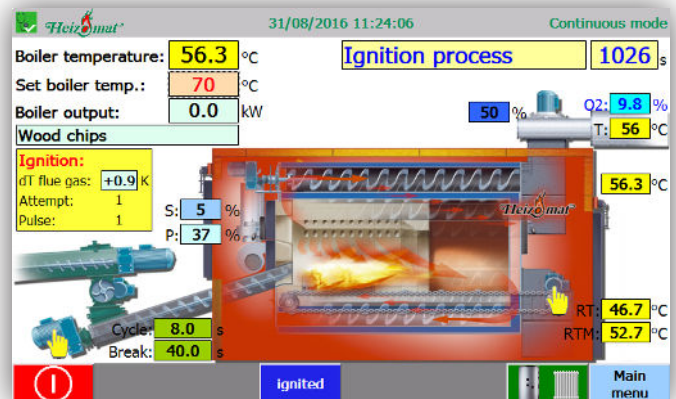


By pressing this button, the common home-screen for the buffer management and the system manager will open (see chapter “8 System manager” on page 49).

4.7 Ignition

Upon starting the system from cold⁴ there is first an ignition process. The home screen then has a different appearance depending on whether or not the system is equipped with an automatic ignition setup.

4.7.1 with automatic ignition setup



During ignition in-feed, the button “Stop ignition in-feed” appears in the tool bar at the bottom of the screen. Ignition in-feed can be discontinued through pressing this button, should there be a sufficient quantity of fuel in the combustion chamber.

¹ depending on equipment

² depending on equipment

³ depending on equipment

⁴ Flue gas temperature < limit temperature ignition and boiler temperature < target temperature

In the left area, a field with a yellow background is displayed with the most important information on the ignition process¹:

dT flue gas: current achieved flue gas temp. increase

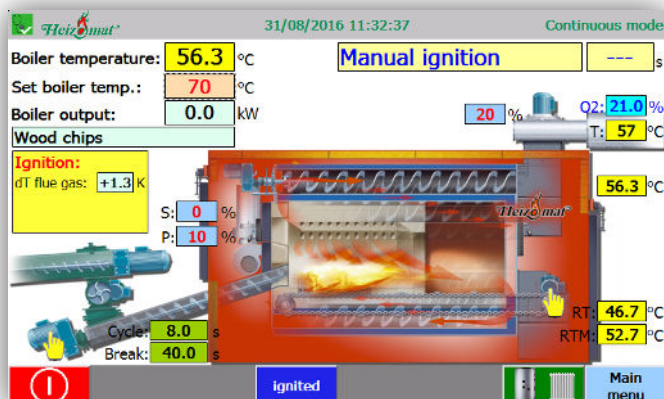
Attempt: current ignition attempt (of max. 2)

Pulse: current primary blower pulse

A yellow hand appears next to the motors of the stoker and the deashing. If you press at these positions then the complete feed system or the deashing starts and is stopped again when you let go. This gives you the opportunity to add fuel when required or to use a brief deashing to loosen the fuel pile and to allow better ventilation.

The “ignited” button is shown on the lower screen edge in the function menu. Once a sufficiently large flame has formed, you can leave the ignition process early and switch to “Firebed forming”² respectively “Load operation”.

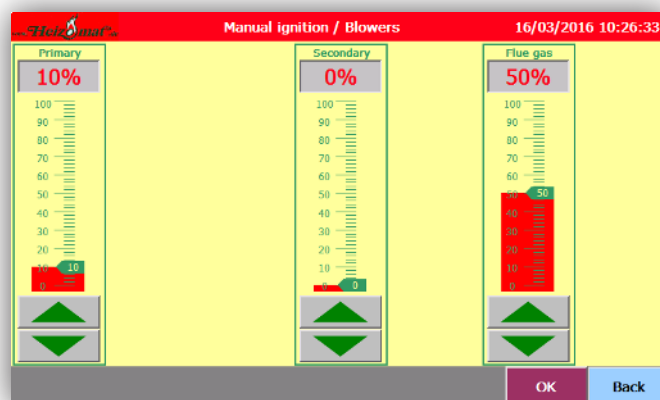
4.7.2 without automatic ignition setup



You can control the currently achieved flue gas temperature increase (dT flue gas) in the area with the yellow background on the left edge of the screen.

As with the ignition with automatic ignition system, the functions for manual operation of the feed system and deashing are also available here (see above).

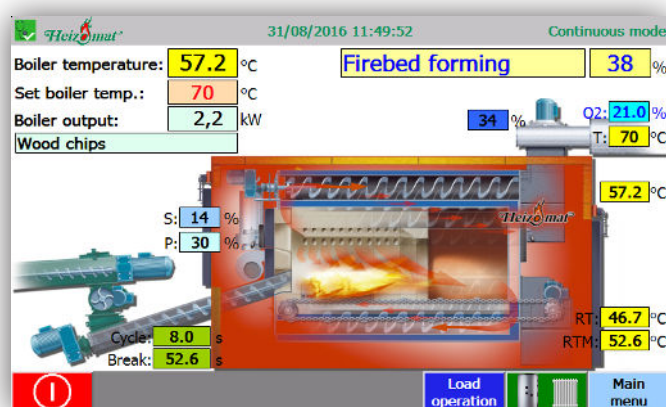
During manual ignition, the performance of the blower can be easily adjusted by pressing the appropriate input/output field. As soon as you touch one of these fields, the following window opens:



Using the arrow buttons, the blower performance can be altered in percentage stages. The input/output-fields can be used for substantial changes to blower performance. These allow for direct input of the desired percentage value through using the on-screen keyboard. To save the settings, press “OK”.

Once a sufficiently large flame has formed and the flue gas temperature has increased by 20 °C or to 100 °C, you can cancel the manual ignition with the “ignited” button and switch to “Firebed forming”³ respectively “Load operation”.

4.8 Firebed forming⁴



During the *Firebed forming*, the “Load operation” button appears in the function menu on the bottom edge of the screen. Once a sufficiently large firebed has formed, you can leave the *Firebed forming* condition early and switch to load operation.

¹ see also section “6.3.3 Ignition” on page 16 and appendix “Ignition process” on page 80

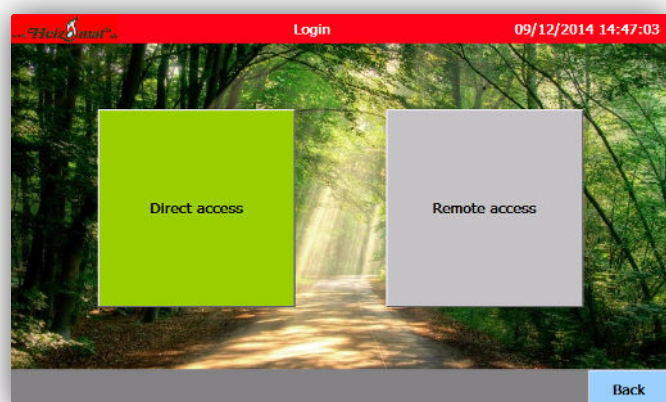
² depending on equipment

³ depending on equipment

⁴ depending on equipment

5 Login

When the Sm@rtServer is activated (see section “6.13.4 Sm@rtServer” on page 42) and you want to open the main menu, you have to decide between direct and remote access first.



5.1 Direct access

With this type of login, you have full access to the system on site. All the buttons are available for operation.

The Sm@rtServer will be deactivated for the duration of the direct access. Any existing network connection via Sm@rtServer will be disconnected!

Three minutes after the direct access, a new remote access is possible again.

5.2 Remote access

This type of login is intended for network access via Sm@rtServer. For reasons of safety this type of access only offers limited access to the system. With the exception of the boiler temperature set point, no changes of the settings are possible. This also applies for operation on site! But you may navigate through a large part of the menus for checking the current adjustments.

6 Main menu

The main menu is split into three columns: Settings/Operation/Info (from left to right)

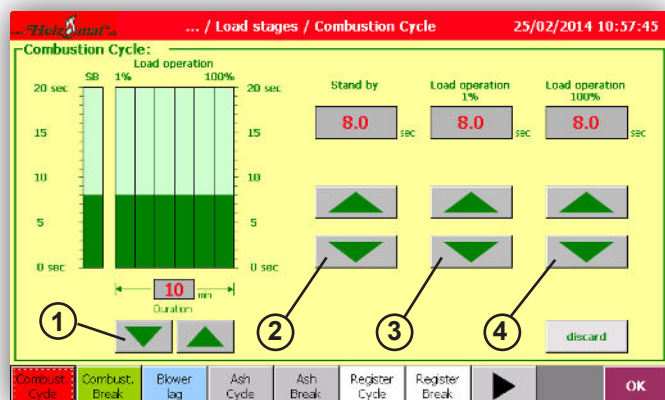
The following menu items can be selected:



6.1 Load stages

The load stage control takes place boiler-temperature dependently. Beginning with the 1% stage, the boiler-temperature is checked every second. If the target temperature has not yet been reached, depending on the set duration (see below), there is a switch to the next higher stage. Upon reaching the target temperature, the stages are 'reversed' accordingly.

If the target temperature exceeds the set temperature spread, then there is a switch to the *Stand by* operating condition (with "Continuous mode" operation type) or to the *Ignition mode break* or *Boiler mode break* operating condition (in "Ignition mode" or "Boiler mode" operation type). After lowering the boiler temperature to "target value minus spread" the lowest load stage (1%) of operation is renewed.



① Duration setting

You can use the arrow buttons to increase or reduce the time period for running through the load stages 1% - 100% and therefore the dwell period in each of the intermediate stages. The currently set value is shown in the output field above the two buttons. The value can be set in 5 minute steps from 5 to 150 minutes (recommended setting: 10 min).

② Stand by setting¹

You can increase or decrease the set value of the current parameters for the glow conservation phase via the arrow buttons. The currently set value is shown in the input/output field above. Also, the bar diagram changes depending on the setting.

③ Setting of the lowest load stage

You can increase or decrease the set value of the current parameters for the 1% stage via the arrow buttons. The currently set value is shown in the input/output field above. Also, the bar diagram changes depending on the setting.

④ Setting of the highest load stage

You can increase or decrease the set value of the current parameters for the 100% stage via the arrow buttons. The currently set value is shown in the input/output field above. Also, the bar diagram changes depending on the setting.



By touching the respective input/output field, the set values for the highest and lowest load stage as well as for stand by can be directly entered via the on-screen keyboard.



The fuel quantity (output) is regulated through adapting the combustion break. A shorter break means more fuel. A longer break means less fuel.

¹ The Stand by' operating condition is only run through in the 'Continuous mode' operation type.

6.1.1 Combustion cycle

Combust.
Cycle

Range: 0 - 20 seconds
Set value: see chapter "11 Basic settings" on page 67

In-feed time of the in-feed organs

6.1.2 Combustion break

Combust.
Break

Range: 1 - 250 seconds¹ / 1 - 180 minutes²
Set value: see chapter "11 Basic settings" on page 67

Idle time of the in-feed organs

6.1.3 Blower lag

Blower
lag

Range: 1 - 30 minutes
Set value: ca. 1 - 10 minutes; the larger the system, the longer³

Time lag of the blowers after a combustion cycle in the *Stand by* operating condition or after a transfer from the load operation in the operating conditions *Stand by*, *Ignition mode break* or *Boiler mode break* to reduce the firebed in the incinerator after the heating phase.

6.1.4 Ash cycle

Ash
Cycle

Range: 0 - 15 seconds
Set value: see chapter "11 Basic settings" on page 67

Duration of the ash discharger

6.1.5 Ash break

Ash
Break

Range: 1 - 60 minutes⁴ / 0 - 24 hours⁵
Set value: see chapter "11 Basic settings" on page 67

Time between two deashing processes

6.1.6 Register cycle⁶

Register
Cycle

Range: 0 - 250 seconds
Set value: see chapter "11 Basic settings" on page 67

Duration of register cleaning

6.1.7 Register break⁷

Register
Break

Range: 1 - 250 minutes⁸ / 1 - 24 hours⁹
Set value: see chapter "11 Basic settings" on page 67

Time between two cleaning processes

6.1.8 Primary blower

Primary
blower

Range: 0 - 100 %
Set value: see chapter "11 Basic settings" on page 67

Set value of the lower blower

The primary blower supplies heat in the combustion chamber. The dryer the fuel, the less primary air. The more moist (max. 30% water content) the fuel, the more primary air.

6.1.9 Primary blower 2¹⁰

Primary
blower 2

Set value of the 2nd lower blower (see section "6.1.8 Primary blower").

6.1.10 Primary blower 3¹¹

Primary
blower 3

Set value of the 3rd lower blower (see section "6.1.8 Primary blower").

1 for load operation
2 for stand by
3 30-100kW: 2 min >100kW: up to 10 min
4 for load operation
5 for stand by

6 depending on equipment
7 depending on equipment
8 for load operation
9 for stand by
10 depending on equipment
11 depending on equipment

6.1.11 Secondary blower

Secondary blower

Range: 0 - 100 %
Set value: see chapter "11 Basic settings" on page 67

Set value of the upper blower

The secondary blower ensures combustion in the combustion chamber. The dryer the fuel, the more secondary air. The more moist the fuel, the less secondary air.

6.1.12 Secondary blower 2¹

Secondary blower 2

Set value of the 2nd upper blower (see section "6.1.11 Secondary blower").

6.1.13 Flue gas blower²

Flue gas blower

Range: 5 - 100 %
Set value: see chapter "11 Basic settings" on page 67

Set value of the flue gas blower

The flue gas blower has to create the necessary vacuum in the incinerator. Higher primary and secondary blower settings require a higher flue gas blower value. The vacuum must always be at least high enough to ensure that no exhaust can escape from the boiler body during operation.

6.1.14 Flue gas blower 2³

Flue gas blower 2

Set value of the 2nd flue gas blower (see section "6.1.13 Flue gas blower")

6.1.15 Vacuum⁴

Vacuum

Range: 1 - 50 pascal
Set value: see chapter "11 Basic settings" on page 67

Set value of the pressure control

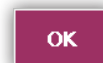
6.1.16 Navigation buttons

The following buttons serve to navigate through the load stage menu.

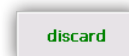
Left and right arrow buttons:
Switch page



OK button:
Save changes and switch to main menu



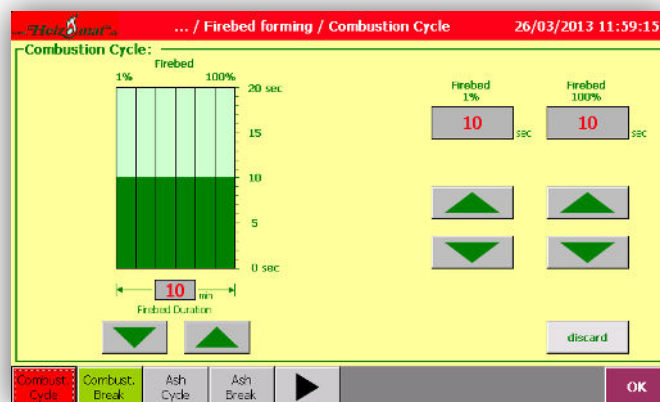
Discard:
Changes to the current parameters can be discarded.



Upon leaving a parameter the currently set values are automatically saved!

6.2 Firebed forming⁵

The firebed forming serves to create a firebed before the boiler switches to the actual load operation. The menu navigation and operation is the same as in the load stage menu.



Firebed forming set values: see chapter "11 Basic settings" on page 67

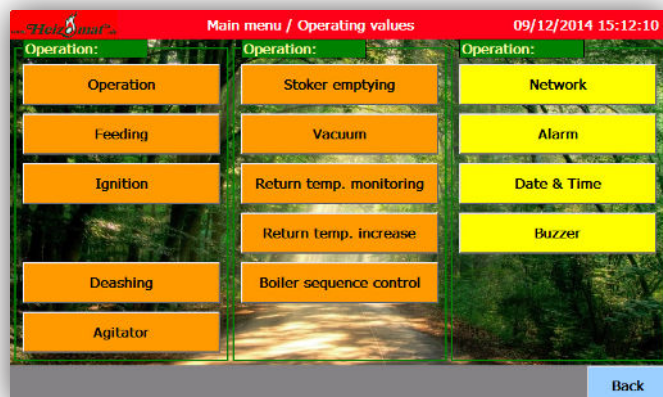


The set value for the duration is only valid for a transition from *Ignition process*. If the transition to *Firebed forming* is from the *Stand by* operating condition, the firebed duration will be halved!

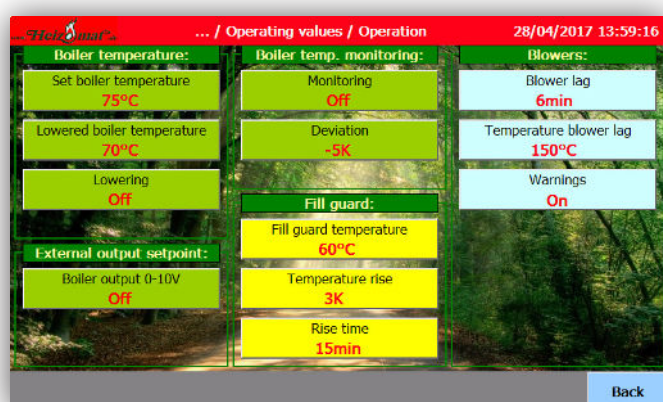
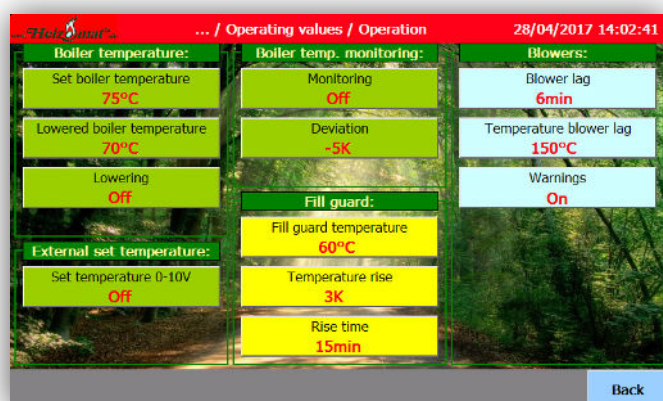
1 depending on equipment
2 depending on equipment
3 depending on equipment
4 depending on equipment

5 depending on equipment

6.3 Operating values



6.3.1 Operation



6.3.1.1 Set boiler temperature

Range: 0 - 95 °C¹
Set value: at least 70 °C

Target boiler temperature

The system continuously increases output in load operation until the set boiler temperature is reached. Once this temperature is reached, the output is reduced again.

¹ Standard range; higher temperature depending on equipment

Should the temperature be exceeded by the value of the temperature spread of approx. 4 K, an operation break² takes place.

When the boiler temperature falls below the set boiler temperature minus the value of the temperature spread, the load operation will resume.

6.3.1.2 Lowered boiler temperature³

Range: 70 - 95 °C⁴
Set value: ca. 70 °C

Lowered boiler temperature

If time intervals are stored at [Operating times]->[Boiler temperature lowering], the value set here is used for the boiler target temperature during these time periods. The same applies to the use of an external switching contact, whereby an open contact results in the lowering of the boiler temperature.

6.3.1.3 Boiler temperature lowering⁵

Off: No lowering of the boiler temperature

On: The boiler temperature can be lowered time-dependent via the [Operating times]->[Boiler temperature lowering] menu or via a gate input.

6.3.1.4 Set temperature 0-10V⁶

Off: Internally set boiler target temperature

On: Boiler target temperature is calculated from external 0-10V signal. When applying a DC voltage to the designated clamps, the voltage range from 0-10 V corresponds to a temperature range from 70-95 °C⁷.

6.3.1.5 Boiler output 0-10V⁸

Off: No external performance preset

On: Boiler output calculated through external 0-10V signal, as long as the boiler temperature is less

² Stand by or Ignition/Boiler mode break

³ depending on equipment

⁴ Standard range; higher temperature depending on equipment

⁵ depending on equipment

⁶ depending on equipment

⁷ Standard range; higher temperature depending on equipment

⁸ depending on equipment

than the set boiler temperature:

< 1.0 V:	no performance preset
1.0 - 3.0 V:	30 % output
3.0 - 10.0 V:	30 - 100 % output

6.3.1.6 Boiler temperature monitoring

- Off: No monitoring of the boiler temperature upon reaching the target range ¹
- On: The boiler temperature is monitored upon reaching the target range ². If the range has not yet been reached after 60 minutes in full load, then a corresponding warning is given.

6.3.1.7 Boiler temperature deviation

Range: -20 - 0 kelvin
Set value: ca. -5 kelvin

Temperature range below the set boiler temperature in which the boiler temperature can permanently be without a warning being created

6.3.1.8 Fill guard temperature

Range: 0 - 90 °C
Set value: ca. 5 - 10 °C below set boiler temp.

If the flue gas temperature falls below this value (regardless of the operating condition), the fuel feeding will stop 5 minutes later. A warning will be displayed. If the flue gas temperature does not rise again, the system switches to „error“ 10 minutes after the warning. Otherwise, if the flue gas temperature increases (e.g. due to manual infeed), the normal operating process continues.

6.3.1.9 Fill guard temperature rise

Range: 1 - 10 kelvin
Set value: ca. 2 - 3 kelvin

After **Ignition** and after **Stand by** the flue gas temperature must increase by this value. Otherwise there is a second ignition or the error *Fill guard* resp. *Flue gas temperature did not rise* is displayed.

The time period the temperature has to increase is set by the fill guard **Rise time** parameter.

6.3.1.10 Fill guard rise time

Range: 1 - 30 minutes
Set value: ca. 6 - 30 minutes; the larger the system, the longer the time

After **Ignition** or after **Stand by** the flue gas temperature

has to increase in this time. Otherwise there is a second ignition or the error *Fill guard* resp. *Flue gas temperature did not rise* is displayed.

How much the temperature has to rise by is set by the fill guard **Temperature rise** parameter.

6.3.1.11 Blower lag

Range: 0 - 30 minutes
Set value: ca. 1 - 10 minutes; the larger the system, the longer the time ³

To reduce the firebed in the combustion chamber after the heating phase, the blowers keep running for the time set here. If the flue gas temperature is still above **Temperature blower lag** after this time, the blower lag is controlled via the flue gas temperature. The blowers run until the flue gas temperature is below the **Temperature blower lag**.

6.3.1.12 Temperature blower lag

Range: 50 - 250 °C
Set value: ca. 150 °C

After the load operation the blowers keep running until the flue gas temperature falls below this value. If the flue gas temperature exceeds this value again, the blowers automatically switch back on (firewood logs emergency combustion).

6.3.1.13 Blower warnings

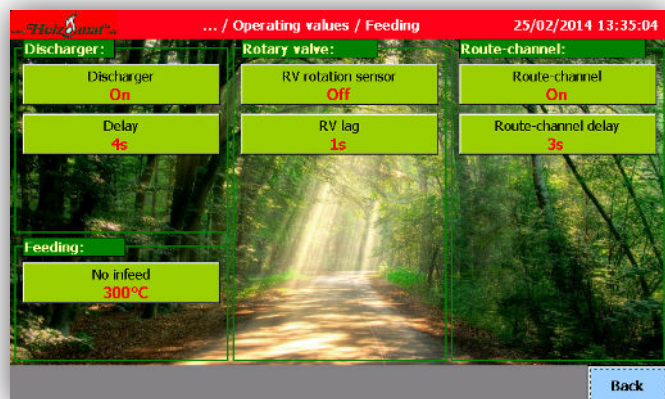
- Off: The warning and error messages of the blower controls are switched off.
- On: The warning and error messages of the blower controls are switched on.

¹ Set boiler temperature - Boiler temperature deviation

² Set boiler temperature - Boiler temperature deviation

³ 15-100kW: 2 minutes >100kW: up to 10 minutes

6.3.2 Feeding



6.3.2.1 Discharger

Off: The discharger motor can herewith be switched off, e.g. if there is a blockage in the drop-in shaft above the rotary valve.

On: Normal operation of the discharger motor

6.3.2.2 Discharger delay

Range: 0 - 10 seconds
Set value: ca. 4 seconds; at least 40 % of combustion cycle time

Switch-on difference between infeed / rotary valve and discharger motor

6.3.2.3 RV rotation sensor

Off: No monitoring of the rotary valve

On: Rotary valve is monitored for blockages: If anything gets stuck between one of the blades and the counter blade, the feeding system stops. The rotary valve springs back, turns forwards and tries to reduce the part that is too big – up to 5 times. If after the 5th time the lock is still blocked, operation is stopped and the *Rotary valve blocked* error message is displayed. If a passage is reached by the 5th attempt at the latest, the control-unit returns to normal operation.

6.3.2.4 RV lag

Range: 0 - 5 seconds
Set value: ca. 1 second

Lag of the rotary valve and infeed motor

In order to avoid fuel remaining on the rotary valve after an infeed cycle, it continues running together with the infeed motor for the set time period.

6.3.2.5 Route channel¹

Off: The route-channel motor can herewith be switched off, e.g. if there is a blockage in the drop-in shaft above the rotary valve.

On: Normal operation of the route-channel motor

6.3.2.6 Route-channel delay²

Range: 0 - 10 seconds
Set value: ca. 3 seconds; at least 40 % of combustion cycle time, but fundamentally smaller than the delay of the previous transport system in flow direction

Switch-on difference between infeed / rotary valve and route-channel

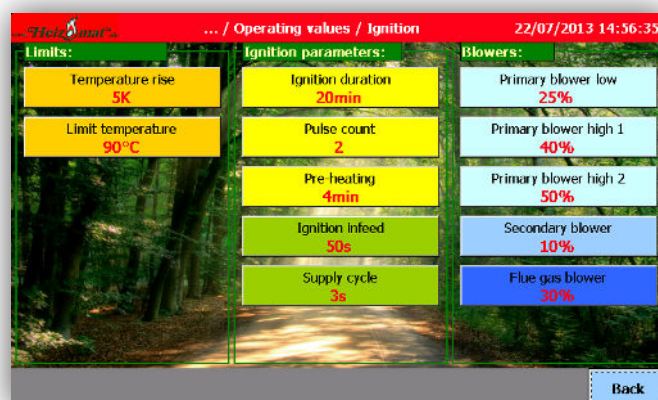
6.3.2.7 No infeed

Range: 100 - 400 °C
Set value: ca. 250 °C

No infeed (flue gas temperature dependent)

From this flue gas temperature the infeed cycle is reduced.

6.3.3 Ignition³



¹ depending on equipment

² depending on equipment

³ see also appendix "Ignition process" on page 80

6.3.3.1 Temperature rise

Range: 1 - 10 kelvin
Set value: ca. 3 - 8 kelvin; the larger the system, the lower the value

Temperature rise during ignition

If the flue gas temperature rises during ignition by this amount, ignition was successful and the control unit switches to *Firebed forming*¹ respectively *Load operation*.

6.3.3.2 Limit temperature

Range: 50 - 150 °C
Set value: ca. 70 - 90 °C; the larger the system, the lower the value

Limit temperature for ignition

It is fundamentally decided with the ignition limit temperature whether there is still sufficient residual glow in order to switch directly to load operation after an operation break.

If the flue gas temperature is above that value, then there is no ignition and switches directly to the load operation.

If the flue gas temperature is below the value, then, depending on the selected operation type, it reacts as follows:

Continuous mode:

The boiler switches to *Load operation* respectively *Firebed forming*² and builds up a firebed. The flue gas temperature must rise within the *Fill guard rise time* by the *Fill guard temperature rise* value. If this is not the case then an ignition process with reduced *Ignition infeed* is carried out.

Ignition mode / Boiler mode:

The boiler switches to the *ignition process* operating condition and runs through this completely.

6.3.3.3 Ignition duration

Range: 0 - 60 minutes
Set value: ca. 20 minutes

Runtime of ignition setup

The ignition process is considered as successful, when *Temperature rise* is reached within *Ignition duration*. Then the system switches to *Firebed forming*³ respectively *Load operation*.

- ¹ depending on equipment
- ² depending on equipment
- ³ depending on equipment

If the flue gas temperature rise is not reached before the end of the *Ignition duration*, a second ignition process with reduced infeed is carried out.

6.3.3.4 Pulse count

Range: 1 - 10
Set value: ca. 2

Number of primary blower pulses during the ignition phase

The *Ignition duration* can be divided into numerous sections ("pulses"). During a pulse the primary blower performance is increased from a base value to a maximum value (in order to ignite glows in the fuel) and then lowered back to the base value (in order to allow a flame to form).

Base value of all pulses: **Primary blower low**

Max. value of first pulse: **Primary blower high 1**

Max. value of last pulse: **Primary blower high 2**

The maximum values of the intermediate pulses are calculated linearly from the **Primary blower high 1** and **Primary blower high 2** values.

Additionally, a defined amount of fuel is added after every pulse (see section "6.3.3.7 Supply cycle").

6.3.3.5 Pre-heating

Range: 0 - 10 minutes
Set value: ca. 4 minutes

Pre-heat time of ignition setup

To speed up the ignition process the ignition setup is preheated with the primary blower switched off.

6.3.3.6 Ignition infeed

Range: 0 - 250 seconds
Set value: 25 - 100 seconds⁴

One-time infeed before ignition

At the beginning of each ignition process fuel is transported into the combustion chamber for the time set here. The ignition infeed must be long enough, to just cover the ignition setup completely. More fuel should not be used, since this may lead to an increased production of smoke during ignition.

If a second ignition process is required (see section "6.3.3.3 Ignition duration"), fuel is fed again, but a significant smaller amount.

- ⁴ depending on the rpm of the infeed motor and the filling level of the infeed auger (see section "6.3.7 Stoker emptying" on page 20)

6.3.3.7 Supply cycle

Range: 1 - 5 seconds
Set value: ca. 3 seconds

Supply cycle in ignition process

After every primary blower pulse fuel is briefly added to ensure that there is unburnt material in the scope of the ignition setup again.

This is where the duration of the first supply cycle is set. The duration of a follow-up cycle increases by the set value, e.g. 2s,4s,6s... / 3s,6s,9s... / ...

6.3.3.8 Primary blower low

Range: 0 - 50 %
Set value: ca. 25 %

Lower primary blower performance in ignition process

The performance of the primary blower is varied during the ignition process (pulse). Here the minimum value is set.

6.3.3.9 Primary blower high 1

Range: 0 - 100 %
Set value: ca. 40 %

Upper primary blower performance in ignition process at first pulse

The performance of the primary blower is varied during the ignition process (pulse). Here the maximum value of the first pulse is set. The value of the last pulse is respectively set in **Primary blower high 2**. Values for intermediate pulses are automatically calculated. This allows the primary blower performance to increase with proceeding ignition duration.

6.3.3.10 Primary blower high 2

Range: 0 - 100 %
Set value: ca. 50 %

Upper primary blower performance in ignition process at last pulse

The performance of the primary blower is varied during the ignition process (pulse). Here the maximum value of the last pulse is set. The value of the first pulse is respectively set in **Primary blower high 1**. Values for intermediate pulses are automatically calculated. This allows the primary blower performance to increase with increasing ignition duration.

6.3.3.11 Secondary blower

Range: 0 - 50 %
Set value: ca. 5 %

Performance of the secondary blower during the ignition process

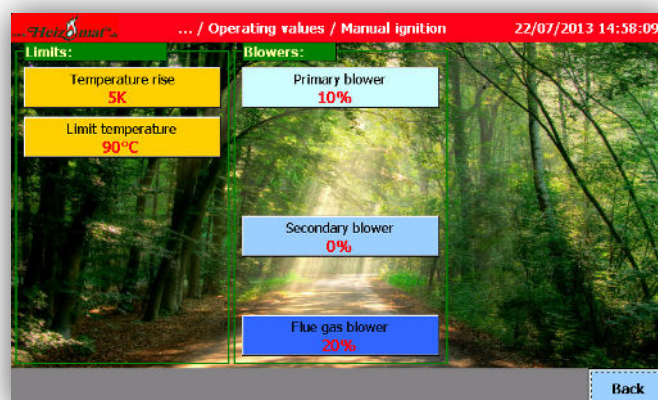
6.3.3.12 Flue gas blower¹

Range: 0 - 100 %
Set value: ca. 50 %

Performance of the flue gas blower during the ignition process.

The flue gas blower has to create the necessary vacuum in the combustion chamber. Higher settings for primary and secondary blower require higher flue gas blower settings.

6.3.4 Manual ignition



If the system is not equipped with an automatic ignition setup² then the *manual ignition* operating condition is used to ignite the fire.

The one-time fuel feed-in (Ignition infeed) must take place manually by manual operation of the feeding system (see also section "4.7 Ignition" on page 8). The flame has to be ignited manually afterwards (e.g. with a lighter and cardboard and, depending on the boiler size, possibly with several logs).

6.3.4.1 Temperature rise

Range: 1 - 10 kelvin
Set value: 3 - 8 kelvin; the larger the system, the lower the value

Temperature rise during manual ignition

If the flue gas temperature rises during manual ignition

¹ depending on equipment

² Without automatic ignition setup, the system can only be operated in the 'Continuous mode' operation type.

by this amount, ignition was successful and the control unit switches to *Firebed forming*¹ respectively *Load operation*.

6.3.4.2 Limit temperature

Range: 50 - 150 °C
Set value: ca. 70 - 90 °C; the larger the system, the lower the value

Limit temperature for ignition

It is fundamentally decided with the limit temperature whether there is still sufficient residual glow in order to switch directly to load operation after an operation break.

If the flue gas temperature is above that value, then no ignition is required and switches directly to the load operation.

If the flue gas temperature is below that value, the boiler switches to *Load operation* respectively *Firebed forming*² and builds up a firebed. The flue gas-temperature must rise within the **Fill guard rise time** by the **Fill guard temperature rise** value. If this is not the case, there is a switch to the *manual ignition* operating condition.

6.3.4.3 Primary blower

Range: 0 - 100 %
Set value: ca. 10 %

Performance of the primary blower at the beginning of manual ignition

During manual ignition the blower performance can be manually readjusted (see section “4.7.2 without automatic ignition setup” on page 9).

6.3.4.4 Secondary blower

Range: 0 - 100 %
Set value: 0 %

Performance of the secondary blower at the beginning of manual ignition

During manual ignition the blower performance can be manually readjusted (see section “4.7.2 without automatic ignition setup” on page 9).

6.3.4.5 Flue gas blower³

Range: 0 - 100 %
Set value: ca. 20 %

Performance of the flue gas blower at the beginning of manual ignition

During manual ignition the blower performance can be manually readjusted (see section “4.7.2 without automatic ignition setup” on page 9).

6.3.5 Deashing



6.3.5.1 Register cleaning⁴

Off: Register cleaning is switched off

On: Normal operation type in heating operation

6.3.5.2 Deashing

Off: Deashing is switched off

On: Normal operation type in heating operation

6.3.5.3 Delay⁵

Range: 0 - 5 seconds
Set value: ca. 1 second

Switch-on difference between deashing across auger / inclined auger and the deashing or register cleaning motor

¹ depending on equipment
² depending on equipment

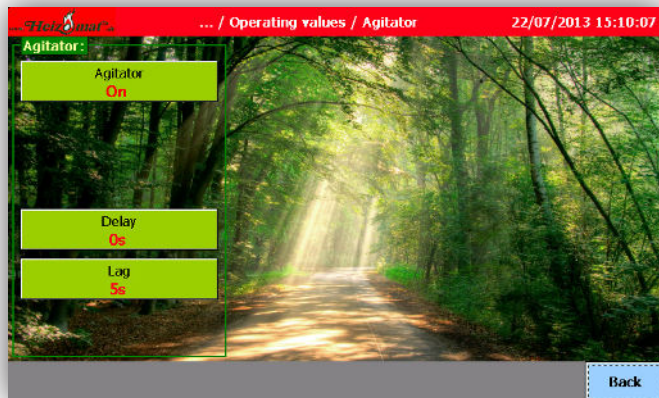
³ depending on equipment
⁴ depending on equipment
⁵ depending on equipment

6.3.6 Agitator¹

Depending on configuration, the agitator is cycled or operated depending on the discharger.

cycled:

An agitator cycle takes place in every cycle of the discharge auger.



discharger dependent:

An agitator cycle takes place if the discharge auger has been active for a definable length of time.



6.3.6.1 Agitator

Off: The agitator motor can herewith be switched off, e.g. if there is a blockage in the drop-in shaft above the rotary valve.

On: Normal operation of the agitator motor

6.3.6.2 Delay

Range: 0 - 10 seconds
Set value: 0 seconds

If the agitator shall be switched on with a delay towards the discharger, then the desired value must be entered here (e.g. with overhead discharger or very free flowing fuel like pellets).

¹ depending on equipment

6.3.6.3 Lag

Range: 0 - 120 seconds
Set value: ca. 0 - 30 seconds

Lag of the agitator motor

In order to ensure an even filling of the discharge auger, the agitator continues to run after every combustion cycle for the set time period.

6.3.6.4 Cycle

Range: 0 - 250 seconds
Set value: depending on existing system

Runtime of the agitator motor

6.3.6.5 Break

Range: 0 - 250 seconds
Set value: depending on existing system

Runtime of the next transport auger

The agitator motor is stopped until the next transport auger has been requested for the set time period. Then an agitator cycle takes place.

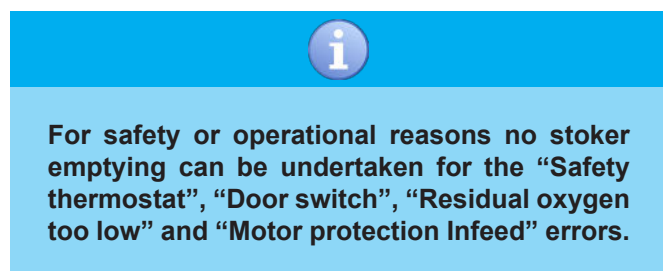
6.3.7 Stoker emptying



6.3.7.1 Stoker emptying at



Here you can select the errors in which the stoker is emptied to prevent a burn-back. To simplify the entry, you can use the 'Select/Delete all' buttons.



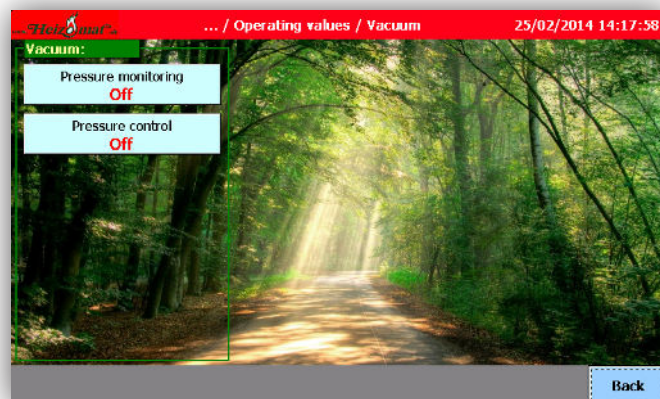
6.3.7.2 Duration

Range: 3 - 60 minutes
Set value: ca. 15 minutes

Duration of stoker emptying in case of error for avoiding backfire

In the case of an error selected under **Stoker emptying at** (see above), the infeed motor continues to cycle for the set time period. The settings of the lowest load stage are used.

6.3.8 Vacuum¹



6.3.8.1 Pressure monitoring

Off: No pressure monitoring of the combustion chamber

On: The pressure in the combustion chamber is monitored. If the vacuum in the combustion chamber is too low, the system switches to "error"!

6.3.8.2 Pressure control

Off: No pressure control of the combustion chamber

On: The pressure control controls the vacuum in the combustion chamber via the flue gas blower. If there is insufficient vacuum, the system switches to "error"!

6.3.9 Return temp. monitoring²



¹ depending on equipment

² depending on equipment

6.3.9.1 Return temp. monitoring

Off: Monitoring of the return temperature can here-with be switched off.

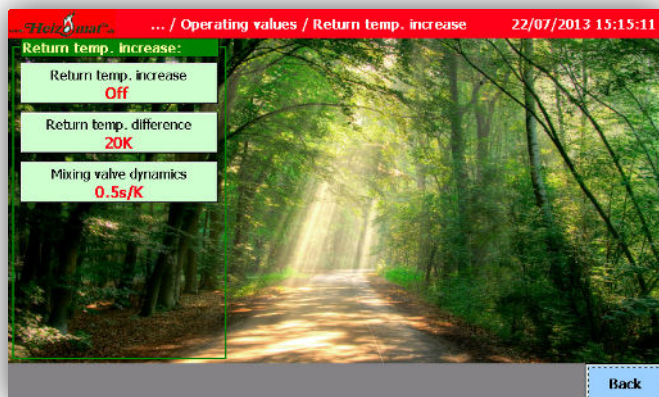
On: The return temperature is monitored in minute cycles. If an adjustable temperature decrease (see below) is exceeded, the control unit switches to load operation ¹.

6.3.9.2 Return temp. decrease

Range: 1 - 30 kelvin
Set value: ca. 5 kelvin

If the return temperature falls within one minute by this value, the control unit switches to load operation ².

6.3.10 Return temp. increase ³



6.3.10.1 Return temp. increase

Off: The return temp. increase is switched off. The mixing valve closes.

On: The return temperature is controlled via the mixing valve.

6.3.10.2 Return temp. difference

Range: 5 - 50 kelvin
Set value: ca. 20 kelvin

Desired return temperature difference to the set boiler temperature

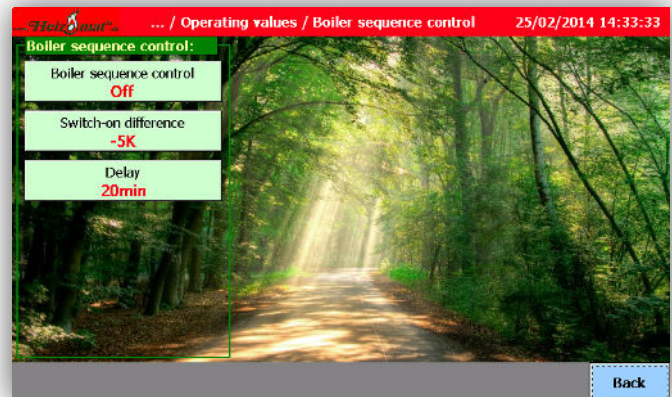
The mixing valve is controlled according to this setting.

6.3.10.3 Mixing valve dynamics

Range: 0,1 - 3,0 seconds/kelvin
Set value: ca. 0,5 seconds/kelvin

Factor for the time intervals which the mixing valve deals with in deviation. The higher the value, the longer the mixing valve opens/closes without interruption.

6.3.11 Boiler sequence control ⁴



6.3.11.1 Boiler sequence control

Off: Boiler sequence control is switched off. The secondary heat generator doesn't get a release signal.

On: Boiler sequence control is switched on. The secondary heat generator gets a release signal if required.

6.3.11.2 Switch-on difference

Range: -15 - 0 kelvin
Set value: ca. -5 kelvin

Switch-on temperature difference to the set boiler temperature

If the reference sensor temperature ⁵ is below the set temperature by the value set here, the supplemental boiler will be switched on after the time set in **Delay**. The supplemental boiler will be switched off again, if the reference sensor temperature reaches the boiler set temperature.

6.3.11.3 Delay

Range: 10 - 360 minutes
Set value: ca. 20 minutes

¹ only if boiler temp. smaller than set temp. + spread

² only if boiler temp. smaller than set temp. + spread

³ depending on equipment

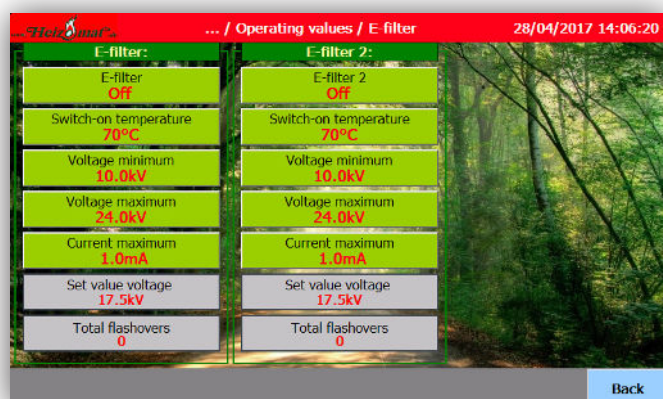
⁴ depending on equipment

⁵ boiler temperature or buffer temperature 1, 2

If the reference sensor temperature ¹ is below the set temperature by the value set in **Switch-on difference**, the supplemental boiler will be switched on after the time entered here.

The supplemental boiler will be switched off again, if the reference sensor temperature reaches the boiler set temperature.

6.3.12 E-filter ²



On the electrode of the E-filter a voltage of up to 30kV is applied!

Before switching on please observe the safety and installation instructions, which you can find enclosed to the filter insert!

6.3.12.1 E-filter

Off: The E-filter is switched off.

On: The E-filter is switched on.

6.3.12.2 Switch-on temperature

Range: 60 - 120 °C
Set value: ca. 90 °C

Switch-on temperature

Filter is switched on if the system is in load stage operation and the flue gas temperature is above the here set value.

6.3.12.3 Voltage minimum

Range: 5 - 30 kV
Set value: ca. 15 kV

Minimum admissible voltage for cleaning

The control automatically identifies occurring flashovers, and automatically regulates the voltage of the filter between the two limit values **minimal voltage** and **maximum voltage** depending on the frequency of the flashovers.

6.3.12.4 Voltage maximum

Range: 10 - 30 kV
Set value: ca. 20 kV

Maximum voltage of the cleaning electrode

The control automatically identifies occurring flashovers, and automatically regulates the voltage of the filter between the two limit values **minimal voltage** and **maximum voltage** depending on the frequency of the flashovers.

6.3.12.5 Current maximum

Range: 0.0 - 1.0 mA
Set value: ca. 1.0 mA

Here the maximum current can be restricted as needed.

The maximum current is automatically adjusted to the output of the high voltage generator. If the filter should be switched off due to flashovers, the amperage can be reduced here again, to avoid the switching off of the high voltage generator.

6.3.12.6 Set value voltage

Display of the calculated set value

6.3.12.7 Total flashovers

Counter of the occurred flashovers

¹ boiler temperature or buffer temperature 1, 2

² depending on equipment

6.3.13 Network



In this window the Ethernet addresses are set in the PLC (i.e. not those of the touch panel)!



The IP address of the PLC is preset to 192.168.0.249. If possible, do not change this setting, if your network configuration allows it. A changed IP address results in an extension of the start process of the touch panel by approx. 1 minute.

Grey fields are blocked. Should your network configuration make changes in such fields necessary then changes on a system level are required. Please contact your Heizomat dealer for this.

The Ethernet addresses of the touch panel are preset as follows:

IP address: 192.168.0.248

Subnet mask: 255.255.255.0

Default gateway: 192.168.0.1

The addresses can only be changed on a system level. Please also contact your Heizomat dealer for this.



After changing the settings and confirming with “OK” the ‘Please wait’ window will first appear. After successful address change on the side of the PLC you will automatically return to the “Operating values” window.

IP address

Enter the IP address under which the PLC should be contactable in your network. The IP address must be unique within a network.



If you are using ModbusTCP, the address entered here is decisive.

However, for remote access via Sm@rtServer the IP address of the touch panel must be used.

Subnet mask

Here the subnet mask must be entered for the network in which the display and PLC are located.

Default gateway

If the network is connected to another network via a router, then the address of the respective default gateway is to be entered into this field.

6.3.14 Alarm

You have the opportunity to transmit error messages via SMS and/or e-mail.

6.3.14.1 SMS¹

GSM-modem



Typically the GSM-modem is located to the right of the control system on the lower DIN rail in the control box. In special cases, the GSM-modem can be built in elsewhere in the control box should there be space issues.



There must be a functioning SIM-card in the GSM-modem!

To make sure that no online connection costs will come up it is urgently recommended to make a contract which explicitly excludes mobile services.

**For such costs no liabilities can be assumed!
The antenna must have sufficient signal!**

The GSM-modem has 3 LEDs which provide information about the current operating state:

- STATUS
- QUALITY
- CONNECT

The LEDs have different flash-frequencies:

- Slow flashing: 1x per second
- Fast flashing: 4x per second

The different meanings of the LEDs are shown in the table below:

LED	State	Meaning
All LEDs together	Fast sequential flashing	Device start-up
	Fast synchronous flashing of all LEDs	Error
STATUS	Slow flashing	Waiting for PIN input
	Fast flashing	PIN-error / SIM-error
	ON	Device is operational
QUALITY	Slow consistent flashing	Dial-up into GSM network
	1 flash followed by a pause	Insufficient signal
	2 flashes followed by a pause	Weak signal
	3 flashes followed by a pause	Good signal
	ON	Excellent signal
	OFF	Waiting for PIN
CONNECT	Consistent flashing	Terminal mode activated



During normal operation the LED “STATUS” is switched off. When the LED is switched on permanently, there is the risk that connection costs occur (depending on the mobile contract)!



If the “STATUS” LED is flashing fast, the SIM-card has either not been recognised, or it is PUK-locked (Pin Unlock Key) due to wrong PIN input.

For SMS transmission, it is essential that the modem is set to terminal-mode. The “CONNECT” LED must be consistently flashing in 2-second intervals.

¹ depending on equipment

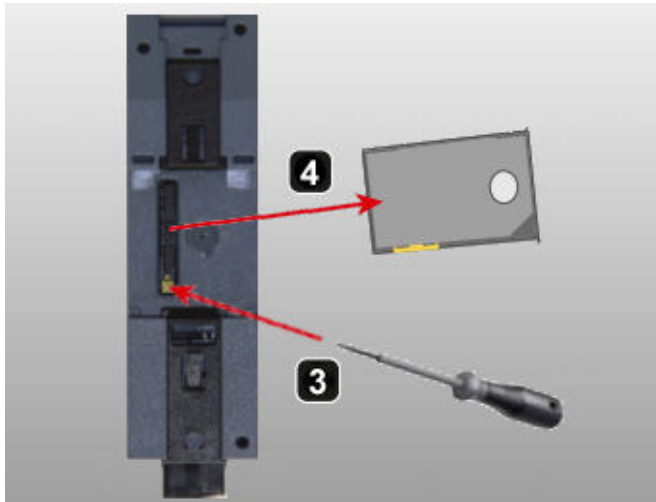
Inserting the SIM-card



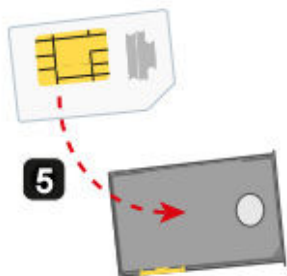
Do not insert or remove the SIM-card while the GSM-modem is operational!

When inserting the SIM-card, the following steps must be followed:

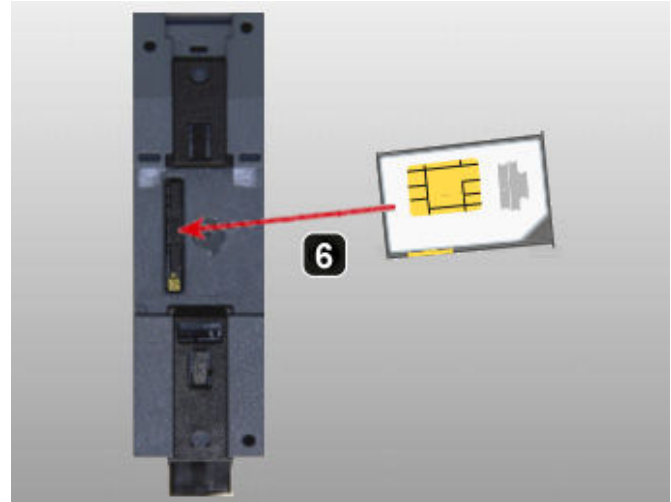
1. Switch off the power supply.
2. Using a screwdriver, unlatch the DIN rail clamp at the bottom of the device and remove the modem from the DIN rail.
3. Unlatch the SIM-card carriage, located on the bottom side of the modem, by applying light pressure to the yellow release button.
4. Remove the SIM-card carriage from the housing.



5. Place the SIM-card in the SIM-card carriage as displayed in the below image.



6. Insert the SIM-card carriage back into the housing until it locks into place.



7. Secure the modem back onto the DIN rail.
8. Switch the power supply back on.

SMS Alarm

... / Alarm / SMS		09/12/2014 15:19:53
SMS: Alarm: <input checked="" type="checkbox"/> On upon warning: <input type="checkbox"/> Off		
Test-SMS: <input type="button" value="send"/>		
Status: done		
Call numbers:		
1. Call number:	+441 701 23456 789	
2. Call number:	+441 5198765432	
3. Call number:	+441 601 3572468	
4. Call number:		
5. Call number:		
Alarm: <input checked="" type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> Off		
<input type="button" value="SIM card"/>		<input type="button" value="OK"/> <input type="button" value="Back"/>

SMS

Here you can set whether or not a SMS is to be sent in the case of an error. In the case of "Alarm: On" one minute after the occurrence of an error or fault a SMS is sent to the activated call number(s) with the system type, location and description as well as the error text. If you additionally activate "upon warning:" then warnings are also sent via SMS.



No liability is accepted for costs occurring due to the use of this function as well as the correct delivery of the SMS.

Test-SMS

Upon pressing the “send” button a test message is sent to the activated call number(s).



The button is only working when “Alarm” and at least one call number is activated.

Call numbers / Alarm

Enter the call numbers of up to five mobile phones which are to be notified in the case of an error here.



Instead of the first ‘0’ the respective country code is to be entered. (For UK: „+44”) Otherwise no alarm acknowledgement is possible.

All activated participants in the ‘alarm’ field are alarmed in order.

You can change the order by pressing the text “X. call number” next to the call number to be moved. Arrow buttons are shown with which you can move the selected call number to the required position. You can leave the move mode by pressing the OK button shown.

As soon as an SMS was sent the recipient can acknowledge the alarm by sending a reply SMS with the content “ACK”. If the acknowledgment does not take place within five minutes then the next participant is alarmed. As soon as a participant acknowledges, or after alarming of the last participant, the alarm process is cancelled.

Status

Information regarding the current alarm status is shown in the status line.

If applicable, error messages will appear here. In such a case, check the modem’s status LEDs against the above table and review the connection from the modem to the controller and antenna.

SIM card



Settings are only required in this window upon the initial operation of the GSM modem or after replacing the SIM card.

After changing the settings and confirming with “OK” the ‘Please wait’ window will first appear. After successful modem configuration you will automatically return to the “SMS” window. If applicable, error messages will appear in the status field, however, these will disappear again after a short while.

In the case of an error, the “SIM-card” window will reappear and the status field will be updated accordingly. In such a case, please check the modem’s status-LEDs against the above table.

PIN

The two fields “PIN” and “PIN repeat” are available for PIN entry. Enter the PIN of the SIM card in the GSM modem into both fields.

If applicable, incorrect PIN entries or information regarding the status of the SIM-card will appear in the status field.



Should the inserted SIM-card still not have received a valid PIN:

Please ensure that the entered PIN is correct! For technical reasons, an incorrect PIN will immediately lock the SIM-card. The SIM-card can only be unlocked again using a PUK (Pin Unlocking Key)! Should the respective PUK not be available, the SIM-card will be rendered useless!



If the inserted SIM-card already had a valid PIN input, the entered PIN will be saved but will be ignored by the modem.

Provider

By pressing the list field you will receive a selection list of various German providers.

Set your own provider here (not just your own network operator). If, for example, you have an O2 contract via Debitel, then the O2 SMS exchange will naturally also work. However, potential free SMS included in your contract are only properly entered if you also use the Debitel SMS exchange for the O2 network.

Should your provider not be included in the list then you will have the option of manually adding the right SMSC call number by selecting "<Other>".

6.3.14.2 E-mail



For emailing, an e-mail account on a mail-server is required. Such an account is already set up as a Heizomat account (heizococontrol@heizoinfo.de). If no changes are made, this account is used for all emailing purposes!

Heizomat assures that any information accumulated on the account, will not be shared with third-parties, nor used for advertising purposes or similar.

Should you desire to use a personal e-mail account, please let our service department assist you in adjusting the necessary settings. The given instructions and settings must be adhered to and recorded, as these settings cannot be automatically retrieved following a software update.



The SMTP-server (outgoing mail server) of your e-mail provider should support authenticated access via port 587!

Some providers also allow e-mail transmission via port 25. Access via this port is done without authentication and often unencrypted. That's why the use is not recommended. This port is locked by many providers to prevent spam.

According to the current state, the panel does not support e-mail transmission via port 465.

If necessary, you have to create a new e-mail account that supports e-mail transmission via port 587!



For e-mail alerts to work with a personal account, settings must be adjusted in the control panel of the touch-panel! Please contact your Heizomat dealer if you would like to use this function and have the following information from your e-mail provider ready:

- **Name of the SMTP server (outgoing mail server)** you want to use for sending the e-mails
- **Port number** (Preferably port 587 is used.)
- **Sender name which shall be displayed in the e-mail** (The indication of the sender name is not supported by all providers.)
- **E-mail address (e-mail account) you want to use for sending the e-mails**
- **Does the server require authentication?** (This is normally the case if the delivery is done via port 587.)
- **User name for the e-mail account** (In most cases, the e-mail address is also the user name.)
- **Password for the e-mail account**
- **Does the server require a secure connection (SSL/TLS encryption)?** (This is normally the case if the delivery is done via port 587.)

Usually the providers have this information available on their websites. You can also find the information in the account adjustments of your e-mail software on your computer/laptop.

Test-e-mail

Upon pressing the “send” button a test message is sent to the activated address(es).



The button is only working when “Alarm” and at least one e-mail address is activated.

E-mail-addresses / Alarm

Enter the e-mail addresses of up to five persons who are to be notified in the case of an error here.

All activated addresses in the “Alarm” field are alarmed at the same time.

E-mail

Here you can set whether or not an e-mail is to be sent in the case of an error. In the case of “Alarm: On” one minute after the occurrence of an error or fault an e-mail is sent to the activated address(es) with the system type, location and description as well as the error text.

If you additionally activate “upon warning:” then warnings are also sent via e-mail.

6.3.15 Date & Time

6.3.15.1 Date & Time

Enter the current date or time into the respective fields and save the entries with the “Apply” button. The changed date/time should then appear in the top right of the title bar.

If you would also like to make changes to the time zone setting it is recommended that you do this before setting the date/time because the time zone setting changes the date/time setting again.

6.3.15.2 Time zone

If you would like an automatic time change to summer/winter time, activate the respective button.

Upon pressing the list field a dropdown list of all time zones is displayed. Select the time zone for your location here.

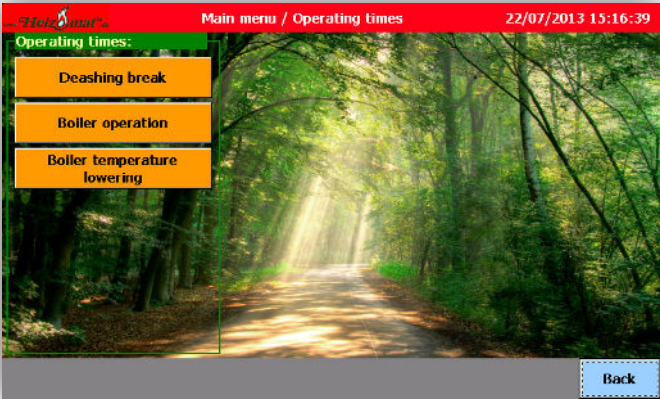
Save your changes with “Apply”. The newly calculated date/time should then appear in the top right of the title bar.

6.3.16 Buzzer

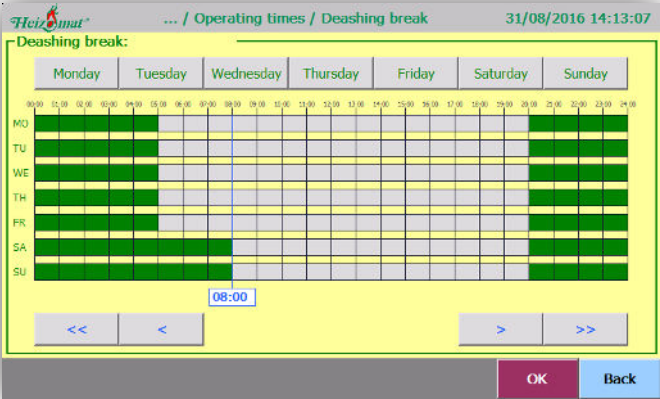
Here you have the opportunity to have errors/faults and/or warnings to be signalled acoustically, by activating the respective button.

If the buzzer is active, the “Buzzer off” button is shown in the function menu of the home screen. Generally, the buzzer falls silent upon accepting the error/warning. In a few exceptional circumstances, however, the buzzer remains active even after acceptance. The “Buzzer off” button can be used to silence it. The buzzer remains deactivated until there is no further error/warning.

6.4 Operating times



6.4.1 Deashing break



This window allows for the entry of times for when the automatic ash and register cleaning are disabled. This function is primarily designed to avoid night-time disturbances from the noise created by these operations. Three intervals can be programmed per day.

For details regarding the operation of the timers, please see chapter “9 Timers” on page 60.

6.4.2 Boiler operation

In this window you can define when and whether the system is to heat during operation alongside a solar heating system or similar.

For details regarding the operation of the timers, please see chapter “9 Timers” on page 60.



A high-performance, automatic ignition setup and a flue gas blower is absolutely required for this!

Frequent cooling down of the boiler system can significantly reduce the life cycle. We recommend a continuous, constant boiler temperature of 70 - 75 °C, even for preparing warm water.

The operation type must be set to “Boiler mode” to use this function.

6.4.3 Boiler temperature lowering¹

In this window, you can determine time intervals in which, for setting the boiler target temperature, instead of using the normal target value, the value stored in the **Lowered boiler temperature** parameter is used.

For details regarding the operation of the timers, please see chapter “9 Timers” on page 60.

¹ depending on equipment

6.5 Fuel



Dear customer,
here you can adjust the control-unit to other fuels!

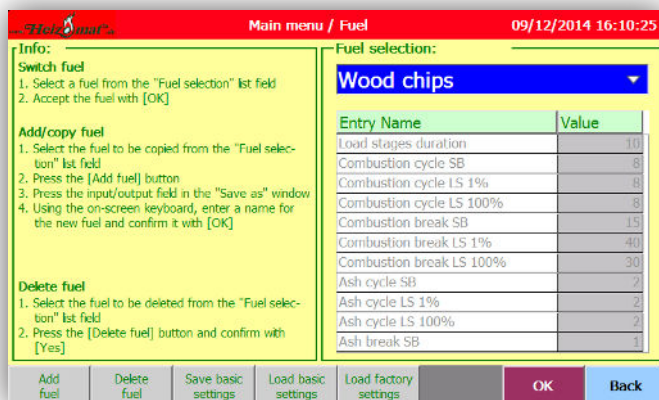
However, we emphatically point out that we can only guarantee the emission values with the correct use of fuel groups 4 and 5 as well as 6 and 7 according to 1.BimschV (German Emission Control Ordinance) in its current version.

Should you wish the settings for other fuels or want to carry them out yourself, the emission values for your Heizomat boiler can only be guaranteed if the fuel adheres to the EN 17225-4 standard (wood chip class P45/A1/M30).

After changing the set values it is absolutely recommended to check the setting with your Heizomat dealer and to be fine tuned with an emissions measuring device.

Corresponding further information on fuel quality can be found in the manual for the Heizomat boiler.

In any case, we recommend that you contact your Heizomat dealer for fuel changes.



The currently set fuel is shown in the “Fuel selection” list field. “Wood chips” is preset ex-factory. In the table below all fuel parameters are shown with the appropriate set value. Use the scroll bar on the edge of the table to check the current set values, if necessary.

6.5.1 Fuel selection

Upon pressing the list field, you will receive a dropdown list with all existing fuels. Select the required fuel from this list. Now the set values of the selected fuel appear in the table.

After confirming with “OK” the selected fuel is loaded into the control-unit.



It must be ensured that the selected fuel and the set values stored for it correspond to the actual material used!

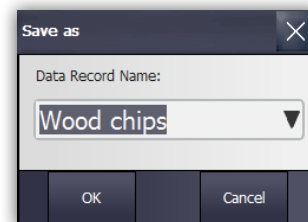
DANGER OF OVERHEATING!
DANGER OF DEFLAGRATION!
DANGER OF ACCIDENT!

6.5.2 Add fuel

First select the fuel from the “Fuel selection” list field for which the settings are to be used as a basis for the new fuel (e.g. “Wood chips”).

Press the “Add fuel” button.

Then the “Save as” window is displayed:



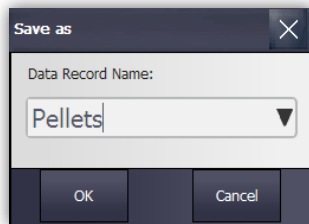
Then touch the fuel text with a grey background and enter the description for the new fuel (e.g. “Pellets”).



Due to technical restrictions long fuel names can't be processed correctly. The name must therefore not be longer than 30 characters! If possible, the name should not exceed 20 characters, since otherwise it can't be displayed completely.



Avoid pressing the arrow button! If numerous fuels are already added they open a dropdown list of the existing fuels. If you mark a fuel in it, there is a danger that you will accidentally overwrite it!



Now press the “OK” button in the “Save as” window. The new fuel now has the set values of the original fuel (e.g. “Wood chips”) added to it and appears in the “Fuel selection” list field.

After confirming with “OK” the new selected fuel is loaded into the control-unit.

Before you can operate the system with the new fuel the operating parameters must be adjusted to ensure the system runs reliably!

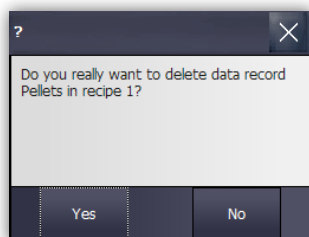


It is urgently recommended to have the settings implemented by an expert for an optimum operation of the system. Please contact your Heizomat representative in this regard.

6.5.3 Delete fuel

First select the fuel that you would like to remove, including the associated set values, from the “Fuel selection” list field and touch the “Delete fuel” button.

A safety query will appear:



If you answer “Yes” to the query the selected fuel is irrevocably deleted!

The “Fuel selection” list field is then empty. Before you can continue with “OK”, you have to select the required fuel from the list field.



If only one fuel is available then it cannot be deleted.

The same applies to fuels for which a factory setting dataset has been recorded in the installer area. In this case, you will receive a corresponding warning message.

6.5.4 Rename fuel

The renaming of a fuel occurs in two steps:

1. First select the fuel to be renamed from the “Fuel selection” list field and add a fuel with the new description.
2. Select the fuel with the original description from the “Fuel selection” list field and delete it.

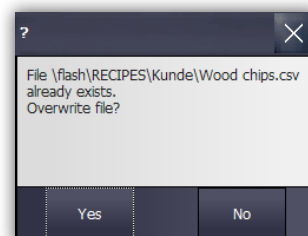
6.5.5 Save basic settings

If you have adjusted the operating parameters to your fuel and the system runs reliably, you can save the current settings. You will then have the opportunity at a later stage to switch back to these settings (see next section).



It is urgently recommended to have the settings implemented by an expert for an optimum operation of the system. Please contact your Heizomat representative in this regard.

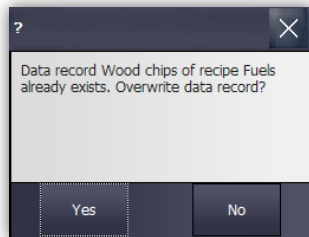
If there is already basic setting data available for the fuel, after touching the “Save basic settings” button the following safety query appears:



If you confirm “Yes” here then the current set values of the fuel selected in the “Fuel selection” list field are saved as basic values. Previously saved basic values are lost!

6.5.6 Load basic settings

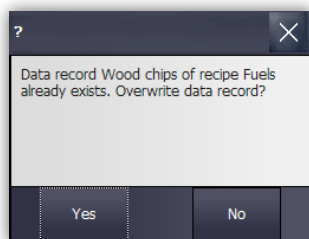
If basic setting data is available for the fuel shown in the “Fuel selection” list field, then a safety query appears after touching the “Load basic settings” button:



If you answer “Yes” to the query then all set values of the selected fuel are reset to the saved basic values (see previous section). The previous set values are lost!

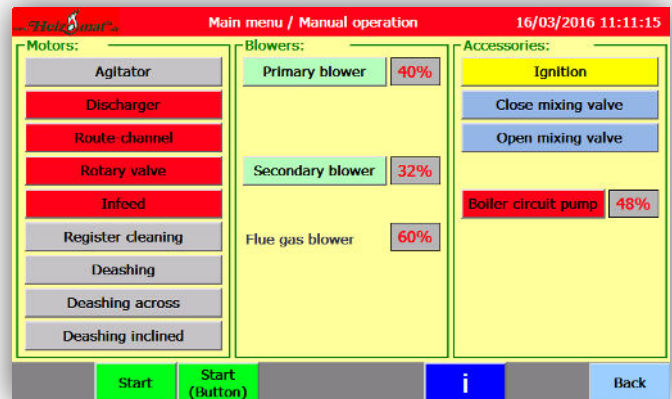
6.5.7 Load factory settings

If factory setting data is available for the fuel shown in the “Fuel selection” list field, then a safety query appears after touching the “Load factory settings” button:



If you answer “Yes” to the query then all set values of the selected fuel are reset to the factory setting data saved in the installer area. The previous set values are lost!

6.6 Manual operation



While the “Manual operation” window is open, normal operation is interrupted! Initially all systems are stopped, with exception to the flue gas blower and boiler circuit pump, Normal operation will only be resumed after exiting the window through pressing the “Back” button!



Always close all openings of the system!

DANGER OF ACCIDENT!

Motors

By activating the button the respective motor is selected. To avoid blockages, associated in-feed or de-ashing motors, are automatically activated. Therefore, the discharger motor can only be operated together with in-feed and rotary valve. In case of a blockade of the rotary valve this can also be switched on only with the in-feed auger.

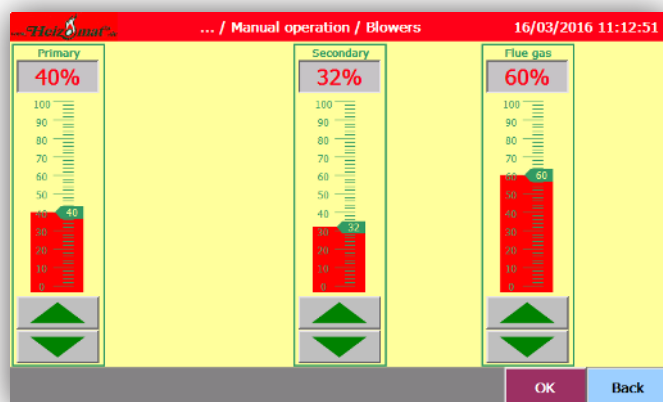
Blowers

By activating the button the respective blower is selected.



For safety reasons, there is no button available for the flue gas blower. However, should the blower need to be switched off, this is possible through setting the performance value (see below) to 0%.

Next to the buttons there are output fields with the respectively current performance values. Upon touching the output fields the following window to set the blower performance opens:



The performance value is set to the required percentage using the arrow keys or through entering the value directly using the input-/output fields. To confirm changes, press "OK".

Accessories¹

By activating the "Ignition" button, the ignition setup can also be operated outside the ignition process.

In the case of manual mixing valve operation the return temperature regulation/increase is interrupted and the mixing valve operates according to the activated button².

When a speed controlled pump is used for buffer charging, an output field for controlling the output appears beside the button for activating the pump. Here you can set the desired pump output similarly to the blowers (see above).

Start button

After pressing this button it is faded out and the "Stop" button appears. The selected systems now run until the "Stop" button is pressed.

Start button (push-button)

As long as this button is pressed, the selected systems will continue running.

i button

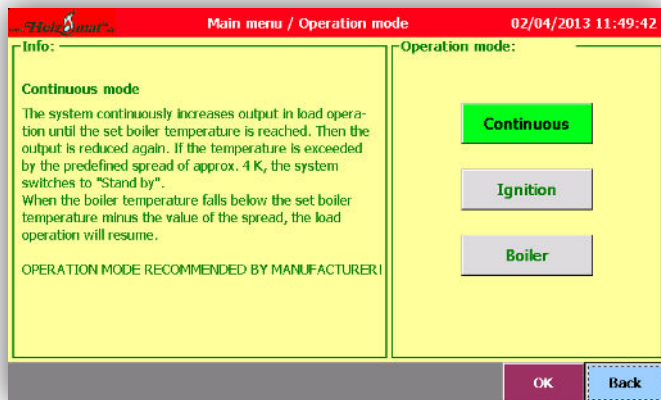
You can display the home screen with the i-button in order to check how the system is reacting to manual operation.

This is faded out again by pressing the i-button in the home screen.

¹ depending on equipment

² Close mixing valve = mixing valve return temp. decreases
Open mixing valve = mixing valve return temp. increases

6.7 Operation mode



The system can be operated in three different operation modes:

6.7.1 Continuous mode

The system increases the output until the target temperature has been reached. Upon reaching the target temperature, the output is reduced. Should the temperature still be exceeded by the pre-defined spread of approx. 4K, then it is switched to the *Stand by* operating condition until the target temperature falls below by the spread and the heat-up phase begins again.



Continuous operation is the manufacturer recommended operation type!



The “Boiler release” input is available in the controller box by the terminal block. By connecting an external, potential-free switch contact you have the opportunity to set the operating condition. By opening the contact you can switch the system to the “Stand by” operating condition. If necessary, the performance is reduced before-hand.



The “Stand by” operating condition created by the “Boiler release” input can only be escaped by closing the contact. The contact should therefore only be opened temporarily as the boiler set temperature is no longer being controlled and the boiler will consequently cool down too much.

Frequent cooling of the boiler system can significantly reduce the life cycle. We recommend a continuous, constant boiler temperature of 70-75 °C.

6.7.2 Ignition mode

The “Ignition mode” differs from the “Continuous mode”. It does not switch to the *Stand by* condition after exceeding the target temperature plus spread. Instead the fire in the combustion chamber is extinguished.

There must be another ignition before beginning a new heat-up phase. The ignition process starts after falling below the set temperature less than the predefined spread of approximately 4 K. The Heizomat boiler system is equipped with an automatic ignition system therefore¹. The glow-bar is installed at the end of the stoker, respectively in the primary air jet(s).



In order to operate the system with an ignition setup, several points are to be observed:

A flue gas blower is absolutely required!

Only use dry fuel (20-30% water content)!

After a longer operating phase it is absolutely necessary for the area around the glow-bar and the air pipe to be thoroughly cleaned, as ash and cinders can cover the glow-bar and therefore the high temperature of the glow-bar cannot reach the fuel.

¹ depending on equipment



Heating the system with a cold flue can only be carried out according to the included “Short instructions for firing-up boiler when both boiler and flue are cold”. A cold start of the system after a longer operation break must always take place by hand and never with the automatic ignition.



The “Boiler release” input is available in the controller box by the terminal block. By connecting an external, potential-free switch contact you have the opportunity to set the operating condition. By opening the contact you can switch the system to the “Ignition mode break” operating condition. If necessary, the performance is reduced before-hand.



In the “Ignition mode break” operating condition the fire is extinguished in the combustion chamber and the boiler cools down.

The “Ignition mode break” operating condition created by the “Boiler release” input can only be escaped by closing the contact.

Frequent cooling of the boiler system can significantly reduce the life cycle. We recommend a continuous, constant boiler temperature of 70-75 °C, even for preparing warm water.

6.7.3 Boiler mode

This operation type is effectively a time-controlled ignition mode. To use the function, respective time intervals have to be stored (see section “6.4 Operating times” on page 31).

Within the time intervals, the “Boiler mode” operating type is equates to the “Ignition mode” operating type. Outside the intervals, the system is switched to the “Boiler mode break” operating condition and the fire in the combustion chamber is extinguished.

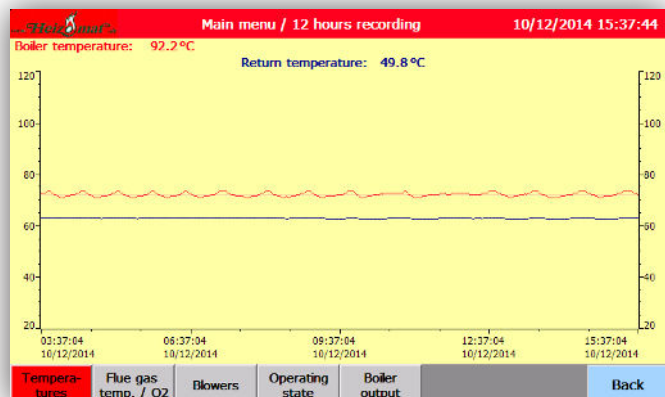


In the “Boiler mode break” operating condition the fire is extinguished in the combustion chamber and the boiler cools down.

Frequent cooling of the boiler system can significantly reduce the life cycle. We recommend a continuous, constant boiler temperature of 70-75 °C, even for preparing warm water.

6.8 12 hours recording

The control-unit permanently records the most important boiler data in the background. This allows recordings over the span of the last 12 hours to be viewed.



In the function menu you can choose between different diagrams:

Temperatures

This diagram shows boiler and return temperature(s)¹.

Flue gas temp. / O2

This diagram shows the process of the flue gas temperature and the residual oxygen. The scale for oxygen is on the left edge and that for the flue gas temperature is on the right.

Blowers

This diagram shows the blower values and the process of the vacuum².

Operating state

This diagram shows the different operating conditions of the system.
The additional i-button shows the legend of the diagram.

Boiler output³

This diagram shows the process of the boiler output.

Combustion chamber temperatures⁴

In this chart the trends of the combustion chamber temperatures are shown.

E-filter⁵

In this chart the trends of the voltage and the amperage are shown.



Dotted lines identify target values.

The recording covers the last 12 hours. Older values are automatically overwritten.

The 12 hours recording is not permanently stored, i.e. after restarting the system, recording will start anew!

6.9 Recording sd card

The control-unit permanently records the most important boiler data in the background on a SD-card. This allows recordings over the span of the last 5 months to be viewed.



The data saved on the card is very extensive. Hence, retrieving the data takes considerable time. It can take up to one minute to fully display the recorded diagrams.

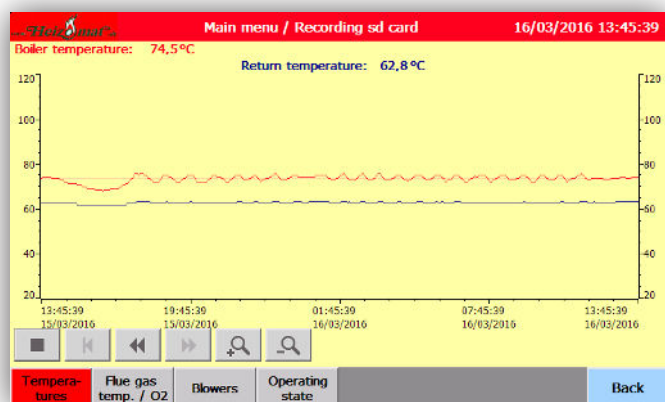
¹ depending on equipment

² depending on equipment

³ depending on equipment

⁴ depending on equipment

⁵ depending on equipment



By using the function menu, it is possible to choose from different diagrams (see section “6.8 12 hours recording”).

In the individual diagrams, the following navigation buttons are available:

Button	Function
	No function
	Skips forwards to the end of the recording
	Moves backwards half the width of the diagram
	Moves forwards half the width of the diagram
	Halves the time period displayed (“enlarge”)
	Doubles the time period displayed (“reduce”)



Dotted lines mark target values.

While the diagram is displayed, the recording process continues in the background. However, the displayed diagrams are not updated.

The recording spans over a maximum period of 5 months. Older data is automatically overwritten.

6.10 Reports

No.	Time	Date	Status	Text
Warning wa	201 07:48:42	24/07/2014	CG	Motor protection Deashing
Warning wa	201 07:48:51	24/07/2014	C	Motor protection Deashing
Interruption	101 07:43:28	04/07/2014	CG	Drop-in shaft
Error	62 07:50:42	11/06/2014	CGA	Flue gas temperature did not rise
Error	62 13:59:43	10/06/2014	CG	Flue gas temperature did not rise
Error	62 13:59:38	10/06/2014	C	Flue gas temperature did not rise
Warning	400 13:59:38	21/05/2014	CG	Fill guard
Warning	400 13:49:39	21/05/2014	C	Fill guard
Warning	902 13:19:24	10/05/2014	CG	Caution: Residual oxygen is above 13%. Don't start exhaust measurin...
Warning	900 13:19:24	10/05/2014	CG	Maximum boiler temperature - Switch on consumers!
Warning	902 12:36:20	10/05/2014	C	Caution: Residual oxygen is above 13%. Don't start exhaust measurin...
Warning	900 12:36:20	10/05/2014	C	Maximum boiler temperature - Switch on consumers!
Warning	400 16:21:48	19/04/2014	CG	Fill guard
Warning	400 16:19:53	19/04/2014	C	Fill guard
Error	10 16:14:30	30/03/2014	CGA	Rotary valve blocked
Error	10 16:08:08	30/03/2014	CG	Rotary valve blocked
Warning	300 16:08:07	30/03/2014	CG	Blockade rotary valve
Error	10 16:08:06	30/03/2014	C	Rotary valve blocked
Warning	300 16:07:30	30/03/2014	C	Blockade rotary valve
Error	40 15:44:00	20/03/2014	CGA	Boiler overheated / sensor break

This window shows a history of the last occurring error messages with message type, time, date, condition and message text.

More information on message types can be found in the chapter “Error messages”.

An alarm assumes various alarm states in Runtime. The alarm states are made up of the following events:

Coming (C): The condition for triggering an alarm is satisfied. The alarm is displayed.

Going (G): The condition for triggering an alarm is no longer satisfied. The alarm is no longer displayed.

Acknowledge (A): The operator acknowledges the alarm.

The following table shows the alarm states for alarms that do not have to be acknowledged:

Display	Status	Description
C	Coming	The condition for an alarm is satisfied.
CG	Going	The condition for an alarm is no longer satisfied.

The following table shows the alarm states for alarms that have to be acknowledged:

Display	Status	Description
C	Coming	The condition for an alarm is satisfied.
CG	Going, not acknowledged	The condition for an alarm is no longer satisfied. The operator has not acknowledged the alarm.
CGA	Going, subsequently acknowledged	The condition for an alarm is no longer satisfied. The operator has acknowledged the alarm after this time.

Display	Status	Description
CA	Coming, acknowledged	The condition for an alarm is satisfied. The operator has acknowledged the alarm.
CAG	Going, but acknowledged first	The condition for an alarm is no longer satisfied. The operator acknowledged the alarm while the condition was still satisfied.



Use the scroll bar to display older messages.

The number of saved messages is limited to 500. Older messages are automatically overwritten.

6.11 Operating hours

Motors:		Device/Accessories:		Operating conditions:	
Discharger:	691 h	Device:	4321 h	Load operation:	
Rotary valve:	989 h	Ignition:	3 h	1 - 20 %:	1561 h
Infeed:	989 h			20 - 40 %:	610 h
Deashing:	11 h			40 - 60 %:	473 h
Register cleaning:	3 h			60 - 80 %:	285 h
Deashing across:	18 h			80 - 100 %:	534 h
				Stand by:	771 h

This window creates an overview of the accrued operating hours of the individual systems and of the dwell period in the various load areas.



In order to protect the flash memory, the operating hours are only saved once a day at 06:00 a.m.
In the case of powercuts, accrued times can be lost.

6.12 System

System:	
Process number:	VG-
Type:	HSK-RA 60
Location:	91710 Gunzenhausen
Designation:	Bloos
Software PLC:	PLC D-01.07 170320
Software HMI:	TP700 D-01.07 170320

Type

The selection of the boiler type is password-protected and is set ex-factory.

Location

Enter the location of the system here.

Designation

This field serves to differentiate numerous systems in the same location. If necessary, you can enter a designation for the respective boiler here.



If you use the SMS or E-mail alarm function, the content of the type, location and designation fields appear in the header of the alarm message.

Software

The programme version for the control-unit (PLC) and touch panel (HMI) are permanently stored in the two software fields.

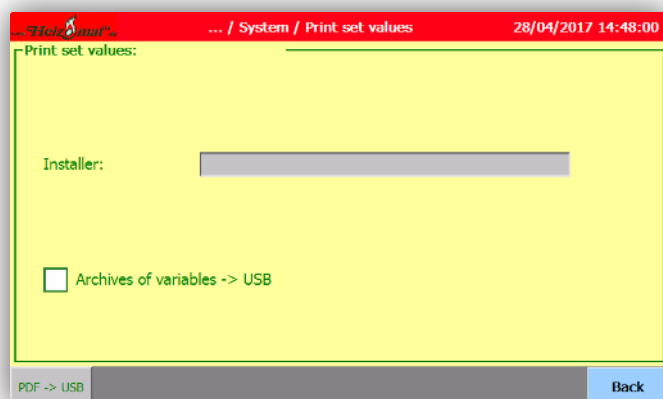
6.12.1 Software components

The "Software components" button additionally provides information about the version of runtime software used. This information could be significant in the case of a service.

6.12.2 Print set values

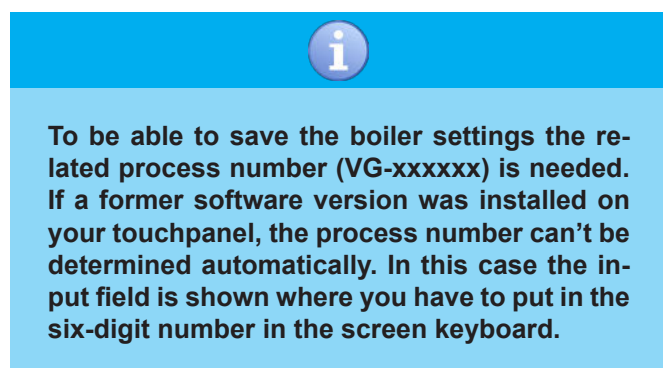
This button is meant for factory customer services to save the boiler setting data and the archives of variables. Data is stored on USB memory stick in a PDF respectively CSV file. Naturally, you can also use this function to save your settings and, if necessary, later print them.

After pressing the button the following window appears:



Here the name of the service engineer is entered. In addition to the boiler settings, the archives of variables will be saved, if the option “Archives of variables -> USB” is activated.

If a USB memory stick is connected, the save process begins after pressing the “PDF -> USB” button. The “Please wait ...” window is displayed until the process is completed.



After completion of the saving process, you can remove the stick. There is now a PDF file on this with the current boiler setting data in the following format:

„VG-ProcessNumber__DD_MM_YYYY__hh_mm_ss.pdf”

To view this file you require a PDF-viewer (e.g. „Adobe Reader”).

If the option “Archives of variables -> USB” was activated, the USB stick will also contain several CSV-files. With these files, all changes of the settings can be re-traced with date and time.

A CSV-file can be opened by a spreadsheet software like “Microsoft Excel” or “OpenOffice Calc”.

6.13 Function menu



6.13.1 Installer

This area is intended for the factory customer service and is protected by an access code!

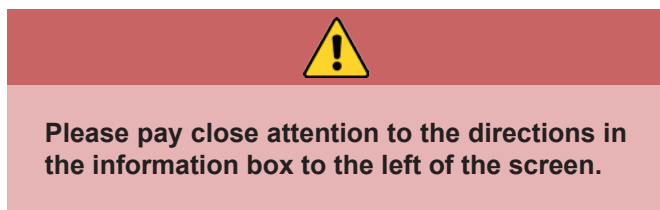
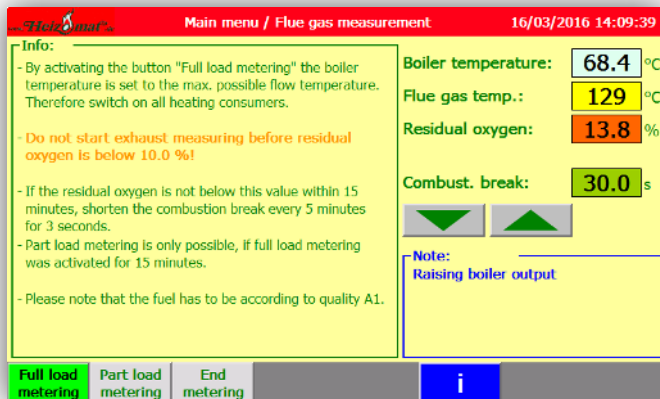


6.13.2 Language

The language of the display texts can be switched depending on the use location.

6.13.3 Chimney sweep

Upon pressing this button, the “Flue gas measurement” window opens to complete flue gas measurement through an authorised person.



Choose the necessary performance level for measuring (Full load / Part load metering) from the function menu at the bottom of the screen.

After selecting “Full load metering”, the boiler’s target temperature will be set to the maximum possible value. Additionally, the deashing and the register cleaning¹ is stopped. This ensures for the emissions metering that the system is in load operation and a de-ashing process does not bias the metering result.

A message will automatically be displayed on the screen, which refers to the increased target temperature and the heat distribution requirements. Sufficient heat consumption must be activated, in order to prevent the target temperature from being reached very quickly and the system switching to the *Stand-by* operating mode. It is possible that a further message will show, that the remaining oxygen content is out-with the suitable range.

On the right-hand side of the window the most important boiler data is shown, in regards to the testing. Should the remaining oxygen content be too high in the exhaust fumes, it is possible to reduce the combustion break through using the arrow keys.

Please pay close attention to the “Note” field as it displays useful information for successfully measuring exhaust gases.

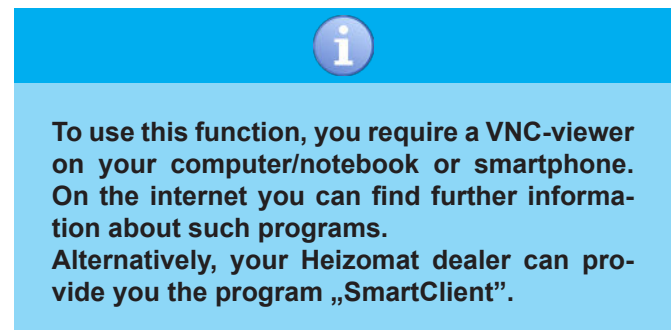
Using the “i” button, one can temporarily switch to the home screen to view more detailed information regarding the system’s operating condition.

As long as the chimney-sweep mode is activated, the “Back” button will be hidden. Press the “End metering”

button to confirm termination of the chimney-sweep mode. Subsequently, the “Back” button will appear again, with which you will be able to return to the main menu.

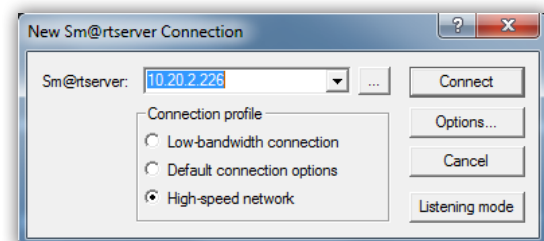
6.13.4 Sm@rtServer

The Sm@rtServer is installed on the touch panel. Activate or deactivate this function with the button of the same name. The Sm@rtServer allows the remote observation of your system via Ethernet or via the intranet/internet. In this, the current window of the touch panel is shown on your PC/laptop or smartphone.

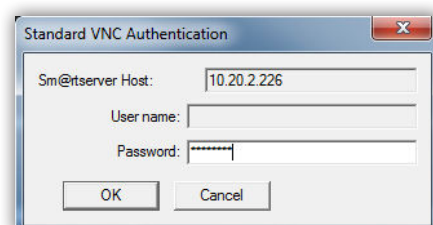


The following description refers to the use of the program “SmartClient”. The operation of other VNC-viewers can slightly differ.

Start the VNC-viewer and establish a connection to the touch panel by entering its IP-address and then click “Connect”.



Now you are asked to enter a password:



Enter “heizomat” and click “OK”.

The connection is now established and the current window of the touch panel is displayed.

¹ depending on equipment

Open the login window by pressing the button „Main menu” in the home screen (see also chapter “5 Login” on page 10).



Select “Remote access” to navigate through the menus via VNC-viewer and check in this way settings, operating condition, messages etc. from a distance.



Via remote access it is possible to change the boiler temperature set point. All the other parameters are locked for security reasons.

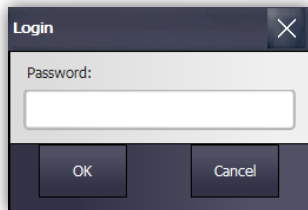


**If “Direct access” is selected, the VNC-connection will be disconnected! After 3 minutes it’s possible to log in again.
If you deactivate the Sm@rtServer in the function menu, which is only possible on-site, the VNC-connection will also be disconnected. Repeated remote access isn’t possible anymore!**

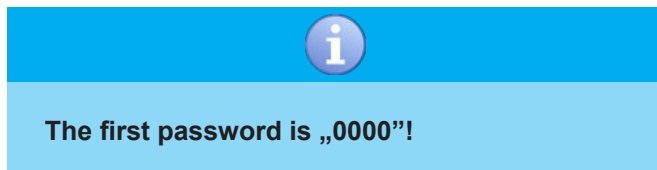
6.13.5 Password protection

To prevent unauthorized access to the system you have the possibility to protect it by a password. Just press the key- button.

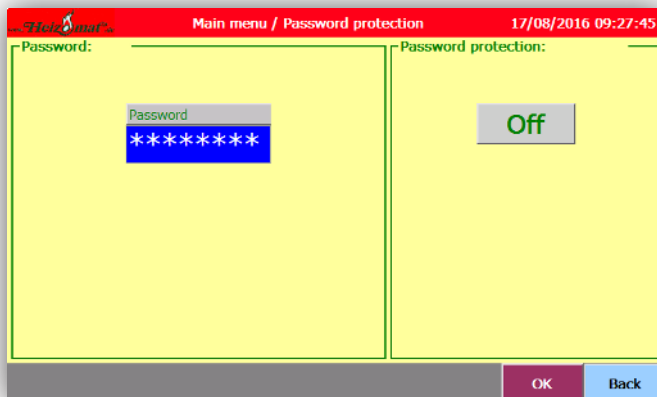
Even when the password protection is deactivated, this button is protected:



Please enter your password and press "OK".



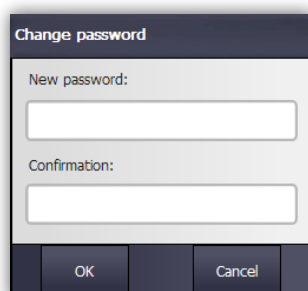
Now you get to the window "Password protection":



6.13.5.1 Password

Touch the upper edge of the blue box to change the password.

Following window shows up:



Enter your new password and repeat it in the field "Confirmation".

When you press "OK" the old password is deleted and the new one is valid.

6.13.5.2 Password protection

With this button you activate or deactivate the password protection for the system. If it is activated, you have to enter the password to exit the home screen.



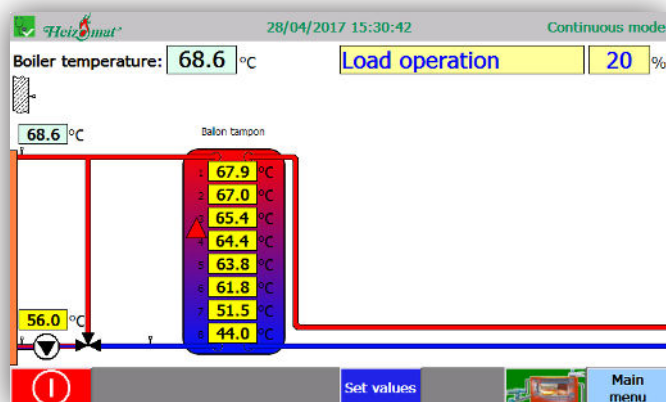
The password protection only prevents from leaving the home screen!

Please make always sure, that you get back to the home screen before you leave the plant, to prevent unauthorized access. After getting back to the home screen it takes 5 minutes until the password protection will be activated!

7 Buffer management¹

7.1 Buffer home screen

In the buffer management home screen the current state of the buffer tank is shown:



Depending on equipment, temperatures of up to eight sensors are displayed. You count the sensors from the top to the bottom.

Symbols on the left side of the buffer indicate the operating condition:

▲ The buffer is being charged.

▼ The buffer is being discharged.

When the boiler circuit pump is running, the pump icon is animated. Should the pump be speed controlled, the output percentage is shown beside the icon.

By touching the depicted buffer tank, the respective operating values will appear (see section “7.2.2 Operating values buffer” on page 46).

By pressing the button “Main menu”, the buffer management and system manager main menu will appear (see section “7.2 Buffer and system manager main menu”).

7.1.1 Emergency stop button



The emergency stop button has the same function as it has in the boiler settings home screen: The system switches to *Maintenance with FGB* and the flue gas blower stays on the highest level. In order to avoid back-fire, the stoker is idled for an adjustable period of time (see section “6.3.7 Stoker emptying” on page 20). If you press the button again, then the system switches to *Maintenance*. With the exception of the boiler circuit pump, all systems of the boiler are stopped in this operating condition (even the flue gas blower)! The system manager (heating circuits, DHW tank and solar system) is not affected by this button.

7.1.2 System manager button²



By pressing this button, the system manager home-screen will appear (see chapter “8 System manager” on page 49).

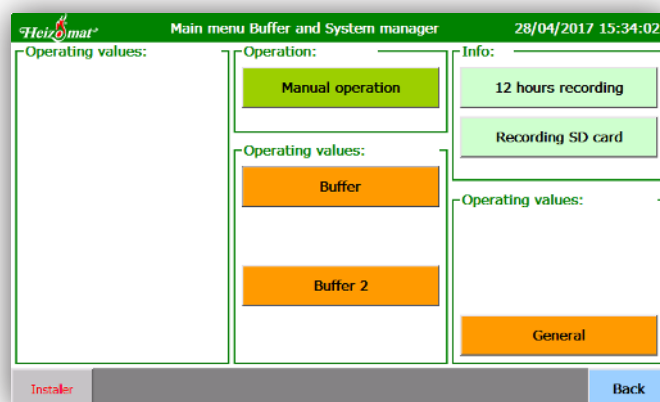
7.1.3 Boiler button



By pressing this button you get back into the boiler settings home screen (see chapter 4 on page 7).

7.2 Buffer and system manager main menu

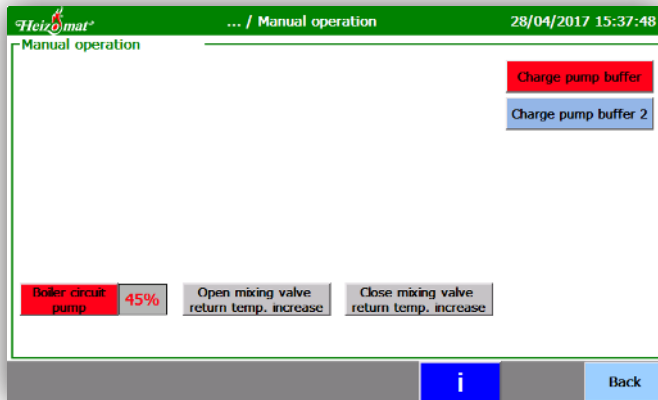
The following menu items can be selected:



¹ depending on equipment

² depending on equipment

7.2.1 Manual operation



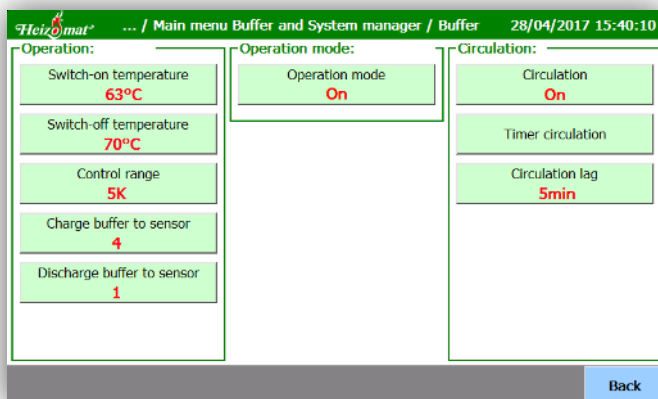
Should the manual operation window be selected, the pumps continue running at current settings and the mixers remain static.

By pressing the respective buttons, the pumps can be switched off and on. If variable speed pumps¹ are in use, an input/output field will appear beside the button, showing the current operating level. This field can be used to set the rpm (output) of the pump.

Mixers can be opened and closed².

The manual operation is primarily designed to enable the installer to review the direction of rotation of the mixers and the correct function of the pumps.

7.2.2 Operating values buffer



¹ depending on equipment

² Close mixer = Return temperature decreases
Open mixer = Return temperature increases

7.2.2.1 Switch-on temperature

Range: 40 - 95 °C³

Set value: ca. 63 °C

Switch-on temperature for buffer charging

When the temperature at the sensor set in **Discharge buffer to sensor** falls below the value set here, buffer charging is switched on.

Example:

- Discharge buffer to sensor 2
- Switch-on temperature 60°C

If the temperature at sensor 2 falls below 60°C, the buffer will be charged, i.e. the boiler circuit pump will be switched on resp. runs at full speed.

7.2.2.2 Switch-off temperature

Range: 60 - 95 °C⁴

Set value: ca. 70 °C

Switch-off temperature for buffer charging

When all buffer sensors set in **Charge buffer to sensor** have reached this temperature, buffer charging is switched off.

7.2.2.3 Control range

Range: 1 - 30 kelvin

Set value: ca. 15 kelvin

Control range of the boiler-circuit pump

The output for the variable-speed pump is regulated linearly within the control range between 0 and 10V.

If the temperature of the sensor set in **Discharge buffer to sensor** falls below the **Switch-on temperature**, the pump increases rpm continuously with increasing difference to the **Switch-on temperature**.

The pump will start to reduce rpm, when the temperature of the coldest sensor in the active area⁵ reaches the control range below the **Switch-off temperature**. The pump will be stopped, when all sensors in the active area⁶ have reached the **Switch-off temperature**.

³ Standard range; higher temperature depending on equipment

⁴ Standard range; higher temperature depending on equipment

⁵ the sensors set in **Charge buffer to sensor**

⁶ the sensors set in **Charge buffer to sensor**

7.2.2.4 Charge buffer to sensor

Range: 1 - 8¹
 Set value: Depending on heat source and heat demand

Buffer charging to sensor

The buffer is only charged to the sensor set here. This gives the opportunity to use the buffer tank for a second heat source.

7.2.2.5 Discharge buffer to sensor

Range: 1 - 3
 Set value: Depending on heat source and heat demand

Buffer discharging to sensor

The buffer is only discharged to the sensor set here.

7.2.2.6 Operation mode

Off:
 No buffer charging. The pump is deactivated.
 NO FREEZE PROTECTION



Frost protection:
 No buffer charging.
 Is the outside temperature below 3°C the pump is activated for 5 minutes every two hours.
 Is the outside temperature below 0°C the pump is activated for 5 minutes every hour.



On:
 Buffer charged as needed.
 During the charging breaks the frost protection is activated.



7.2.2.7 Circulation

If the buffer has a built-in heat exchanger for the domestic hot water preparation, a circulation pump can be used for supplying hot water.

Off: No circulation

On: The circulation pump can be controlled using the **timer** for the circulation.

In addition, the circulation pump can be switched on for the duration of the circulation lag through the use of a **push-button**.

Furthermore, the circulation can be controlled by applying a **return temperature sensor**:
 If the sensor is connected (automatic detection)

and it detects the temperature to be 10 kelvin below the uppermost buffer temperature, the pump will be switched on for the duration of the circulation lag. Additionally, the timer must be engaged to release this function.

7.2.2.8 Timer circulation

Using the timer, the circulation pump can be switched on/off. Three power-on intervals can be programmed per day.

For details regarding the operation of the timers, please see chapter "9 Timers" on page 60.

7.2.2.9 Circulation lag

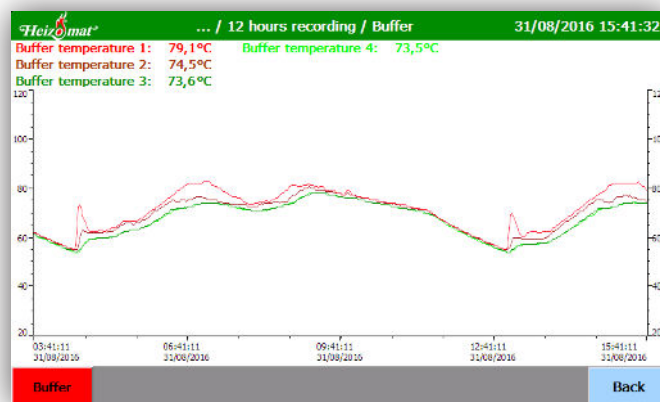
Range: 1 - 30 minutes

Circulation lag

If the circulation is either switched on through an external button or a return temperature sensor, the circulation pump runs according to the here set lag.

7.2.3 12 hours recording

The control-unit permanently records the temperatures of the buffer sensors in the background. This allows recordings over the span of the last 12 hours to be viewed.



The recording covers the last 12 hours. Older values are automatically overwritten.

The 12-hours recording is not permanently stored, i.e. after a system restart, the recording begins anew!

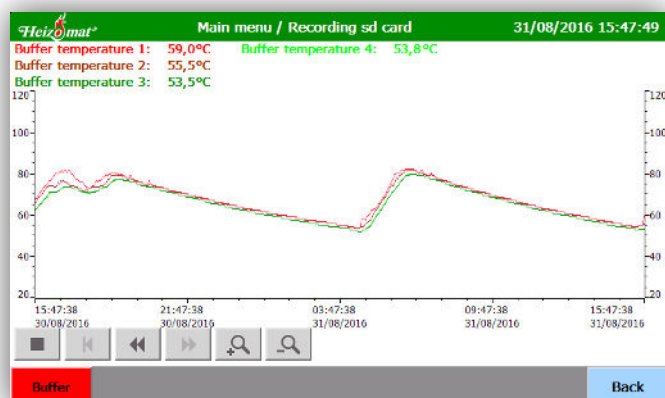
¹ depending on equipment

7.2.4 Recording sd card








The control-unit permanently records the temperatures of the buffer sensors in the background. This allows recordings over the span of the last 5 months to be viewed.



The data saved on the card is very extensive. Hence, retrieving the data takes considerable time. It can take up to one minute to fully display the recorded diagrams.



Following navigation buttons are available:

Button	Function
 	No function
	Skips forwards to the end of the recording
	Moves backwards half the width of the diagram
	Moves forwards half the width of the diagram
	Halves the time period displayed ("enlarge")
	Doubles the time period displayed ("reduce")

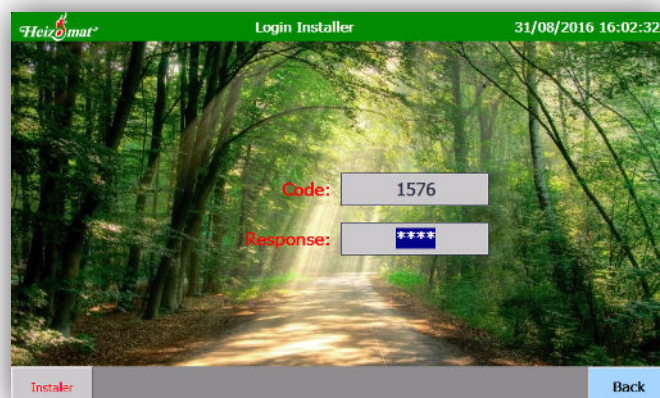


While the diagram is displayed, the recording process continues in the background. However, the displayed diagrams are not updated.

The recording spans over a maximum period of 5 months. Older data is automatically overwritten.

7.2.5 Installer

This area is intended for the factory customer service and is protected by an access code!



8 System manager¹

In its basic version, the system manager includes the control of two heating circuits and the DHW preparation. Optionally, the control of an additional heating circuit and a solar hot water preparation is available.

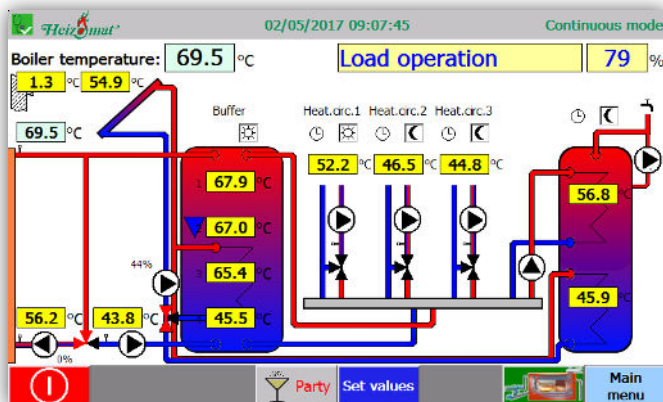
An alternative option is the control of additional four heating circuits and a solar hot water preparation.

The system manager home screen, depending on the required functions, shows the buffer with a maximum of three heating circuits or displays the buffer and heating circuits on separate screens.

In order to keep the images clear, only the functions chosen by the installer during configuration of the system are depicted.

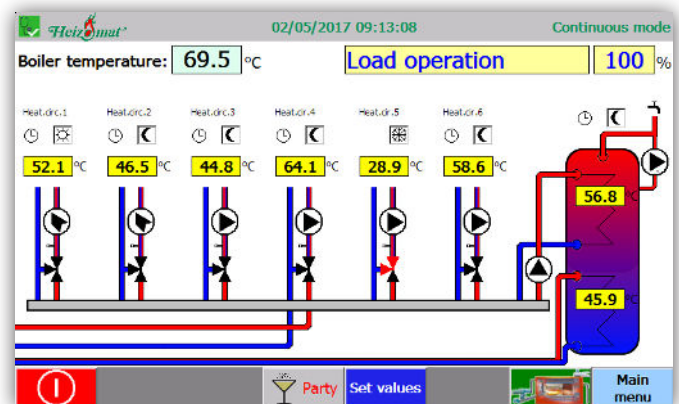
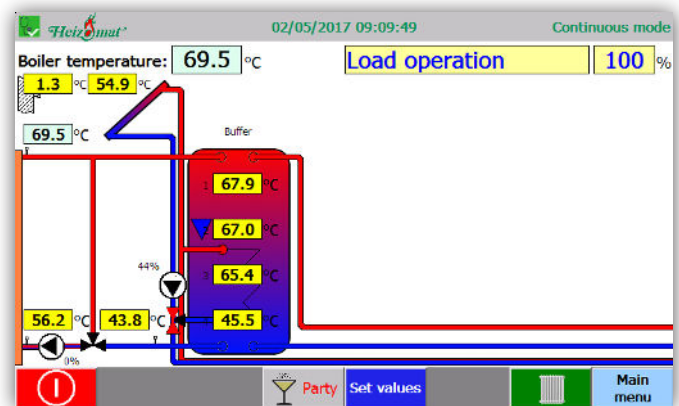
8.1 System manager home-screen

The home-screen of the system manager displays the current conditions of the buffer tank, heating circuits, DHW tank and the solar system:



Touching the buffer tank, a heating circuit or the DHW tank, takes you directly to the operating values of the respective system.

If more than three heating circuits are configured, the home-screen of the system manager will be split into two windows:



To switch from the boiler home-screen to the buffer home-screen, press the buffer tank button.

To switch from the buffer home-screen to the heating circuits home-screen, press the heating circuits button.

To return to the boiler home-screen from the heating circuits home-screen, press the boiler button.

2. Buffer tank

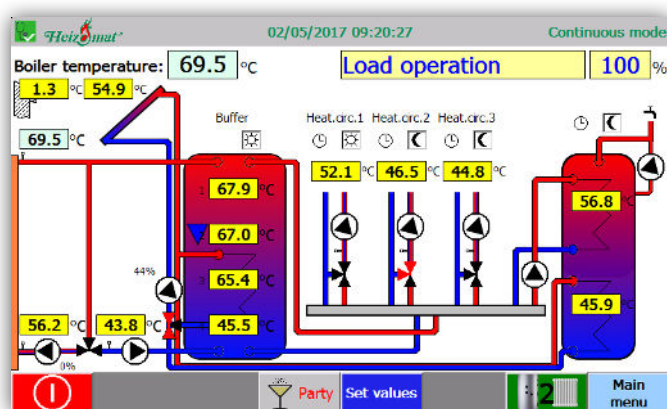
If two buffer tanks are configured, the heating circuits 1-3 are attributed to buffer tank 1. The heating circuits 4-6 are attributed to buffer tank 2.

Additionally there is the possibility to connect a DHW tank to both heating circuit distributors.

A maybe existing circulation can be configured either on buffer tank 1, or DHW tank 1 or DHW tank 2.

The buffer tanks together with the particular heating circuits are displayed in separate windows:

¹ depending on equipment



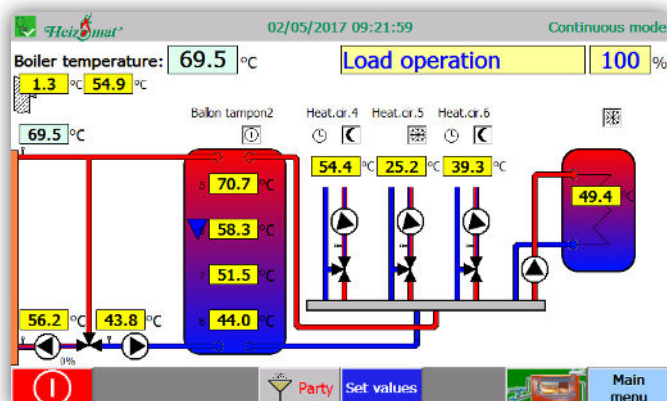
8.1.2 Party button



By pressing this button, the party function will be activated for the set time (see section “8.2.8.1 Party duration” on page 57) and the button will turn green.

During the party mode, both the heating circuits and DHW preparation will operate according to the “Set temperature day”.

The party mode is cancelled by pressing the button again.



8.1.3 Set values button



While the set values button is pressed, the current target values of the return temperature increase, the buffer management the heating circuits and DHW are displayed. By releasing the button, the target values will stop being displayed.

Starting from the basic window of the boiler you can get to the basic window of buffer 1 by pushing the buffer heating circuit button 1.

From the basic window of buffer 1 you can change to the basic window of buffer 2 by pushing the buffer heating circuit button 2.

Finally you can change from the basic window of buffer 2 back to the basic window of the boiler by pushing the boiler button.

If the screen is not touched for three minutes, the display will automatically return to the boiler home-screen.

8.1.1 Emergency stop button



When pressing this button, the system will switch to *Maintenance with FGB* and the flue gas blower (FGB) will continue to operate at the value set for the highest load stage (100%). To prevent burn-back, the stoker will continue to cycle for the set time (see section “6.3.7 Stoker emptying” on page 20).

When pressing the button again, the system will switch to *Maintenance*. In such a case all boiler functions, except for the boiler circuit pump, will be stopped (including the FGB)!

This button has no effect on the system manager (heating circuits, DHW tank and solar system).

8.1.4 Boiler button

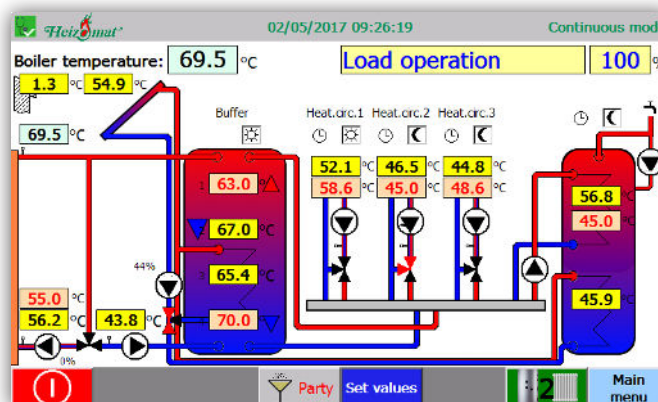


Press this button to return to the boiler home-screen (see chapter 4 on page 7).

8.1.5 Main-menu button

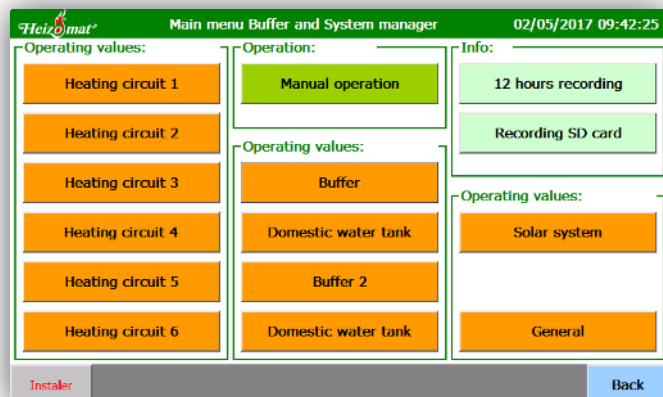


Press this button to enter the main menu of the buffer management and the system manager (see section “8.2 Buffer and system manager main menu”).

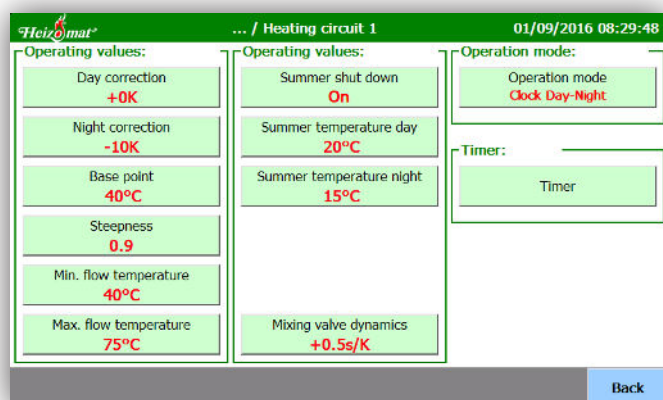


8.2 Buffer and system manager main menu

You can choose from the following menus:¹



8.2.1 Operating values of heating circuits 1-6



8.2.1.1 Day correction

Range: -5 - 45 kelvin

Calibration of the flow temperature in the operation mode "Day"

In operation mode "Day" the flow temperature of the heating circuit, which is depending on the outside temperature, is increased or reduced for the here adjusted value.

8.2.1.2 Night correction

Range: -20 - 30 kelvin

Calibration of the flow temperature in the operation mode "Night"

In operation mode "Night" flow temperature of the heat-

¹ depending on equipment

ing circuit, which is depending on the outside temperature, is increased or reduced for the here adjusted value.

8.2.1.3 Base point

Range: 10 - 70 °C

Base point of heating curve

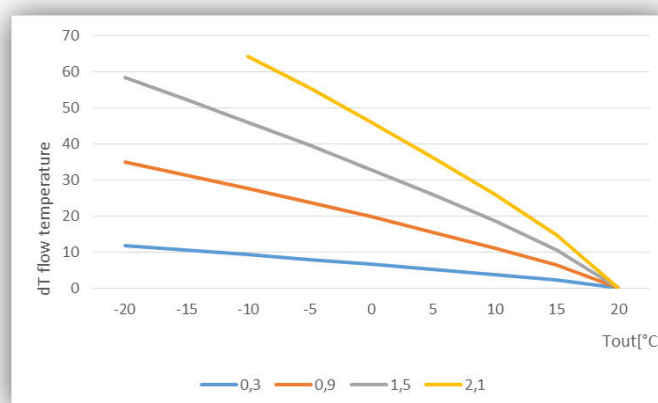
The base point determines the flow temperature of the heating circuit for an outside temperature of 20 °C. If the outside temperature drops below 20 °C, the flow temperature increases depending on the steepness.

8.2.1.4 Steepness

Range: 0,3 - 2,1

Steepness of the heating curve

The greater the steepness, the higher the flow temperature on cold outside temperatures.



The **set temperature** of the heating circuit is determined by the **base point** setting **plus** the outside temperature depending value **dt flow temperature**.

8.2.1.5 Min. flow temperature

Range: 20 - 60 °C

Minimum flow temperature

Here the minimum flow temperature for the heating circuit is set, which shouldn't be undercut during activated regulation (in operation mode "Day" or "Night"). This value is independent from the outside temperature.

8.2.1.6 Max. flow temperature

Range: 30 - 95 °C

Maximum flow temperature

Here the maximum flow temperature for the heating circuit is set, which shouldn't be exceeded during activated

regulation (in operation mode "Day" or "Night").
This value is independent from the outside temperature.

8.2.1.7 Summer shut down

Off: The heating circuit remains activated also on high outside temperatures.

On: The heating circuit is switched off, when in operation mode "Day" the **Summer temperature day** respectively in operation mode "Night" the **Summer temperature night** is exceeded.

8.2.1.8 Summer temperature day

Range: 0 - 40 °C

Summer temperature day

The heating circuit is switched off ¹, when the outside temperature exceeds the here set temperature during the operation mode "Day".

8.2.1.9 Summer temperature night

Range: 0 - 40 °C

Summer temperature night

The heating circuit is switched off ², when the outside temperature exceeds the here set temperature during the operation mode "Night".

8.2.1.10 Mixing valve dynamics

Range: 0,1 - 3,0 seconds/kelvin

Set value: ca. 0,5 seconds/kelvin

Mixing valve dynamics

Factor for the time intervals which the mixing valve deals with in deviation. The greater the value, the longer the mixing valve opens/closes without interruption.

8.2.1.11 Operation mode

Off

Pump is switched off, mixing valve closes.



Frost protection

When the outside temperature is below 3 °C the pump is switched on.

The set temperature for the mixing valve is 10 °C.



Day

The pump is switched on.

The set temperature is calculated depending on the



outside temperature (**Base point** and **Steepness**) and raised by the value of the **Day correction**.

Night

The pump is switched on.

The set temperature is calculated depending on the outside temperature (**Base point** and **Steepness**) and reduced by the value of the **Night correction**.



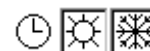
Clock Day-Night

Automatic switchover of the operation modes "Day" and "Night" through the timer of the heating circuit.



Clock Day-Frost prot.

Automatic switchover of the operation modes "Day" and "Frost protection" through the timer of the heating circuit.

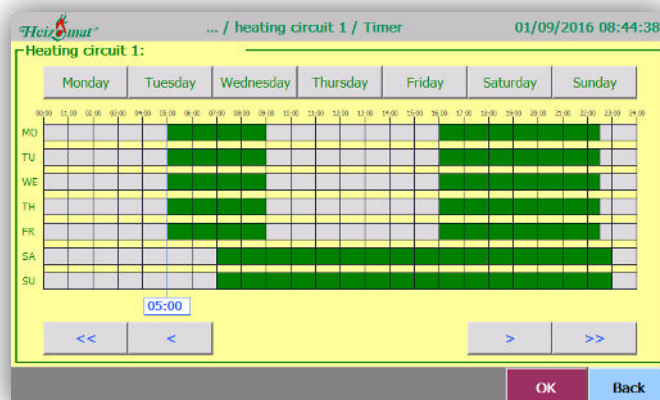


8.2.1.12 Timer

In the operation mode "Clock Day-Night" or "Clock Day-Frost prot.", the operation mode of the heating circuit is switched dependent on the timer settings.

Each heating circuit can be controlled by its designated timer.

Up to three intervals can be programmed per day.

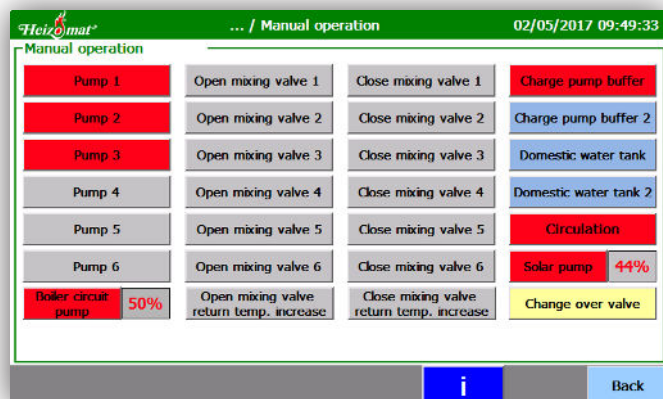


Please see chapter "9 Timers" on page 60 for details on setting the timer.

¹ The pump is switched off and the mixing valve closes.

² The pump is switched off and the mixing valve closes.

8.2.2 Manual operation



If the manual operation window is opened, the pumps continue running at current settings and the mixers remain static.

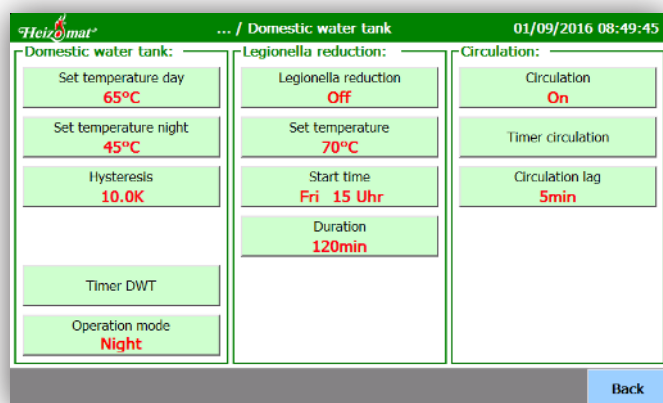
By touching the respective buttons, the pumps can be switched off and on and the rpms can be altered. Mixers can be opened and closed.

The manual operation is primarily designed to enable the installer to review the direction of rotation of the mixers and the correct function of the pumps.

8.2.3 Operating values of the buffer tank

see section "7.2.2 Operating values buffer" on page 46.

8.2.4 Operating values of the domestic water tank



8.2.4.1 Set temperature day

Range: 40 - 95 °C¹

Set temperature of the boiler in operation mode "Day"

The charging pump for the domestic water tank is switched off, when the domestic water tank temperature exceeds the set temperature.

The charging pump is switched on again, when the temperature falls below the set temperature minus **Hysteresis**.

Additionally, the buffer temperature at the uppermost sensor (respectively the boiler temperature, if no buffer is installed) has to be 3 K higher than the temperature of the domestic water tank, so that the DWT charge pump can be switched on. The charge pump will be switched off as soon as the temperature difference drops to below 1 K.

8.2.4.2 Set temperature night

Range: 30 - 95 °C²

Set temperature of the boiler in operation mode "Night"

The charging pump for the domestic water tank is switched off, when the domestic water tank temperature exceeds the set temperature.

The charging pump is switched on again, when the temperature falls below the set temperature minus **Hysteresis**.

Additionally, the buffer temperature at the uppermost sensor (respectively the boiler temperature, if no buffer is installed) has to be 3 K higher than the temperature of the domestic water tank, so that the DWT charge pump can be switched on. The charge pump will be switched off as soon as the temperature difference drops to below 1 K.

8.2.4.3 Hysteresis

Range: 2,0 - 20,0 kelvin

Hysteresis of the domestic water tank temperature

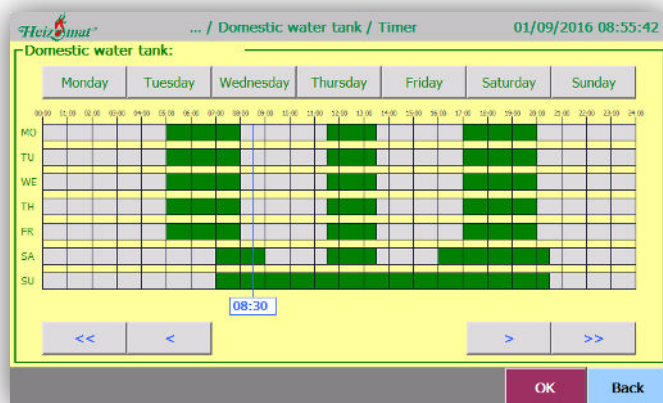
If the domestic water tank is already charged, its temperature has to drop below the set temperature minus **Hysteresis**, before the tank is charged again.

¹ Upper limit is the set boiler target temperature
² Upper limit is the set boiler target temperature

8.2.4.4 Timer

In the operation mode “Clock Day-Night” or “Clock Day-Frost prot.”, the operation mode of the DHW tank is switched dependent on the timer settings.

Up to three intervals can be programmed per day.



Please see chapter “9 Timers” on page 60 for details on setting the timer.

8.2.4.5 Operation mode

Off

Pump is switched off.



Frost protection

Set temperature for the domestic water tank is 10°C. The hysteresis is restricted to 5K, so that the pump is switched on at the latest at 5°C.



Day

The domestic water tank temperature is regulated to **Set temperature day**.



Night

The domestic water tank temperature is regulated to **Set temperature night**.



Clock Day-Night

Automatic switchover of the operation modes “Day” and “Night” through the timer of the domestic water tank.

Clock Day-Frost prot.

Automatic switchover of the operation modes “Day” and “Frost protection” through the timer of the domestic water tank.



8.2.4.6 Legionella reduction

Off: No legionella reduction takes place.

On: Legionella reduction operates weekly.

8.2.4.7 Set temperature legionella reduction

Range: 65 - 95 °C¹

Set temperature of the domestic water tank during legionella reduction

Here the set temperature for the domestic water tank is adjusted, which is valid for the legionella reduction.

8.2.4.8 Start time legionella reduction

Start time for weekly legionella reduction

From this time the flow temperature will be raised for the set **Duration**.

If a circulation is existing, the circulation pump is running during the legionella reduction.

8.2.4.9 Duration legionella reduction

Range: 30 - 240 minutes

Duration of legionella reduction

Here the duration of the weekly legionella reduction is set.

8.2.4.10 Circulation

Off: No circulation

On: The circulation pump can be controlled using the **timer** for the circulation.

In addition, the circulation pump can be switched on for the duration of the circulation lag through the use of a **push-button**.

Furthermore, the circulation can be controlled by applying a **return temperature sensor**: If the sensor is connected (automatic detection) and it detects the temperature to be 10 Kelvin below the DHW tank temperature, the pump will be switched on for the duration of the circulation lag. Additionally, the timer must be engaged to release this function.

¹ Upper limit is the set boiler target temperature

8.2.4.11 Timer circulation

Using the timer, the circulation pump can be switched on/off. Three power-on intervals can be programmed per day.

For details regarding the operation of the timers, please see chapter "9 Timers" on page 60.

8.2.4.12 Circulation lag

Range: 1 - 30 minutes

Circulation lag

If the circulation is either switched on through an external button or a return temperature sensor, the circulation pump runs according the here set lag.

8.2.5 Operating values of the solar system

The screenshot shows the 'Heizomat' interface for the 'Solar system'. It displays a list of operating values on the left and a larger area for 'Operating values' on the right. The values are as follows:

Parameter	Value
Switch-on difference	6.0K
Switch-off difference	2.0K
Control range	15.0K
Minimum speed	30%
Set temperature buffer	70°C
Set temperature DWT	70°C

A 'Back' button is visible at the bottom right of the interface.

8.2.5.1 Switch-on difference

Range: 1,0 - 20,0 kelvin
Set value: ca. 6,0 kelvin

Switch-on difference

If the differential temperature between the collector sensor and the lowest buffer sensor respectively the lowest domestic water tank sensor raises above the here adjusted value, the solar pump is switched on.

A controlled solar pump first runs on 100 % output for 10 seconds, then regulates down to the parameter **Minimum speed**.

8.2.5.2 Switch-off difference

Range: 0,5 - 19,5 kelvin
Set value: ca. 2,0 kelvin

Switch-off difference

If the differential temperature between the collector sensor and the lowest buffer sensor respectively the lowest domestic water tank sensor falls below the here adjusted value, the solar pump is switched off.

8.2.5.3 Control range¹

Range: 1,5 - 30,0 kelvin
Set value: ca. 10,0 kelvin

Control range of solar pump

If the differential temperature between the collector sensor and the lowest buffer sensor respectively the lowest domestic water tank sensor raises above the **Switch-on difference**, the speed of the solar pump increases with raising differential temperature.

The speed reaches 100 %, when the temperature difference reaches the value of the **Control range** plus the **Switch-on difference**.

8.2.5.4 Minimum speed²

Range: 1 - 100 %
Set value: ca. 30 %

Minimum speed of solar pump

If the differential temperature between the collector sensor and the lowest buffer sensor respectively the lowest domestic water tank sensor raises above the **Switch-on difference**, the solar pump is switched on.

A controlled solar pump first runs on 100 % output for 10 seconds, then regulates down to the here set minimum speed.

The minimum speed is kept until the **Switch-off difference**, even when the differential temperature sinks.

¹ only for control pumps

² only for control pumps

8.2.5.5 Set temperature buffer¹

Range: 5 - 95 °C
Set value: ca. 60 °C

Set temperature of the buffer

The domestic water tank is preferentially charged to the set temperature. Afterwards the buffer will be charged. When the buffer also reaches the here set temperature, the charging switches between buffer and domestic water tank every 15 minutes, to distribute the heat evenly between buffer and domestic water tank.

8.2.5.6 Set temperature DWT²

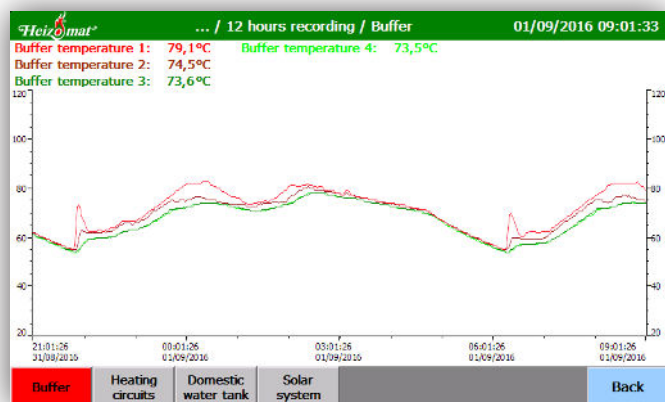
Range: 5 - 95 °C
Set value: ca. 60 °C

Set temperature of the domestic water tank

The domestic water tank is preferentially charged to the set temperature. Afterwards the buffer will be charged. When the buffer also reaches the **Set temperature buffer**, the charging switches between buffer and domestic water tank every 15 minutes, to distribute the heat evenly between buffer and domestic water tank.

8.2.6 12 hours recording

The control-unit permanently records the temperatures of the heating system in the background. This allows recordings over the span of the last 12 hours to be viewed.



Depending on the available equipment, it is possible to switch between diagrams using the function menu:

Buffer

This diagram shows temperature variations of the buffer sensors.

¹ only if equipped with DHW/buffer charge switch-over
² only if equipped with DHW/buffer charge switch-over

Heating circuits

This diagram displays the variation of the flow temperature of the various heating circuits, as well as the outdoor temperature.

Domestic water tank

This diagram displays the variation of the DHW temperature.

Solar system

This diagram displays the variation of the solar collector sensor and the lower DHW sensor.



The recording covers the last 12 hours. Older values are automatically overwritten.

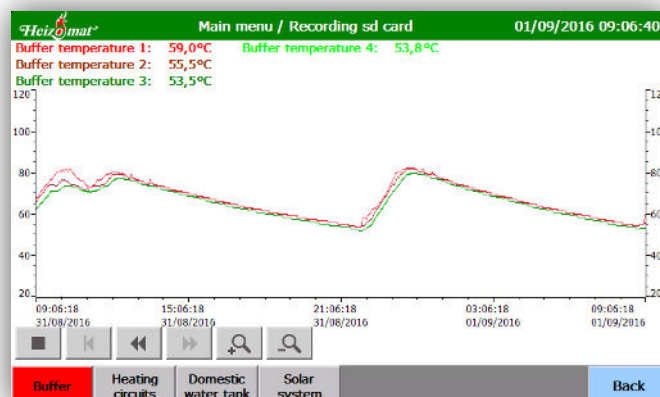
The 12-hours recording is not permanently stored, i.e. after a system restart, the recording begins anew!

8.2.7 Recording sd card

The control-unit permanently records the temperatures of the heating system in the background on a SD-card. This allows recordings over the span of the last 5 months to be viewed.









The data saved on the card is very extensive. Hence, retrieving the data takes considerable time. It can take up to one minute to fully display the recorded diagrams.



By using the function menu, it is possible to choose from different diagrams (see section “8.2.6 12 hours recording”).

Following navigation buttons are available::

Button	Function
	No function
	Skips forwards to the end of the recording
	Moves backwards half the width of the diagram
	Moves forwards half the width of the diagram
	Halves the time period displayed (“enlarge”)
	Doubles the time period displayed (“reduce”)



While the diagram is displayed, the recording process continues in the background. However, the displayed diagrams are not updated.

The recording spans over a maximum period of 5 months. Older data is automatically overwritten.

8.2.8 General operating values

Displays parameters required for all functions of the system manager.

8.2.8.1 Party duration

Range: 1 - 12 hours

Duration of party-mode

When the party button in the system manager home screen is pushed, the mode of the heating circuits and the domestic water tank is set on “Day” for the here adjusted duration.

Another pushing of the button deactivates the party mode.

8.2.8.2 Average outside temperature

Bereich: 1 - 72 hours

Average outside temperature

The outside temperature is averaged for the duration here set and is used to calculate the flow temperature of the heating circuits an the summer shut down.

8.2.8.3 External increase set temperature

Bereich: 60 - 90 °C

External increase of the set temperature

By using the digital inputs **Ext. increase of set temp.**, the set temperature of the corresponding heating circuit can be raised to the here indicated temperature. This set temperature is independent of the outside temperature. This function is used for example to heat up a domestic water tank, which is located behind the heating circuit.

The set boiler temperature is raised when the digital input is bridged.

8.2.9 General functions

8.2.9.1 Pump seizure prevention

Every day at 11am the pump seizure prevention is activated:

Independent of the operation mode of the heating circuits or the DHW tank, pumps that had not been running within the previous 24 hours, will be switched on for a short time.

8.2.9.2 Sensor monitoring

Outdoor temperature sensor

The outdoor temperature sensor is monitored for breakage and short-circuiting:

Should the sensor value exceed 55 °C, breakage will be assumed.

Should the sensor value fall below -35 °C, short-circuiting will be assumed.

In both cases, the outdoor temperature will be set to -5 °C and a warning is generated until rectified.

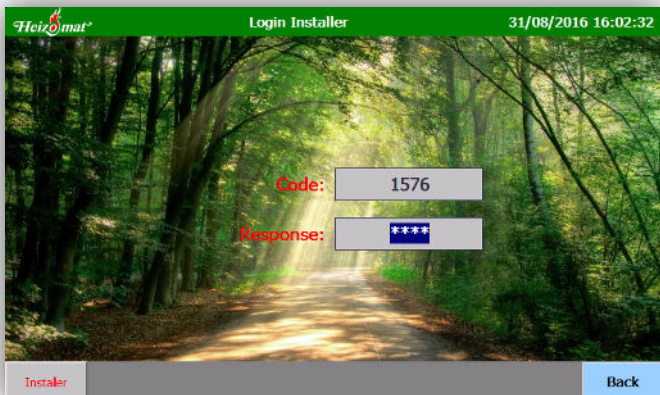
Heating circuit- and DHW temperature sensors

The heating circuit- and DHW temperature sensors are monitored for breakage and short-circuiting.

In case of an error, a warning is generated.

8.2.10 Installer

This area is intended for the factory customer service and is protected by an access code!



Heiromat Login Installer 31/08/2016 16:02:32

Code: 1576

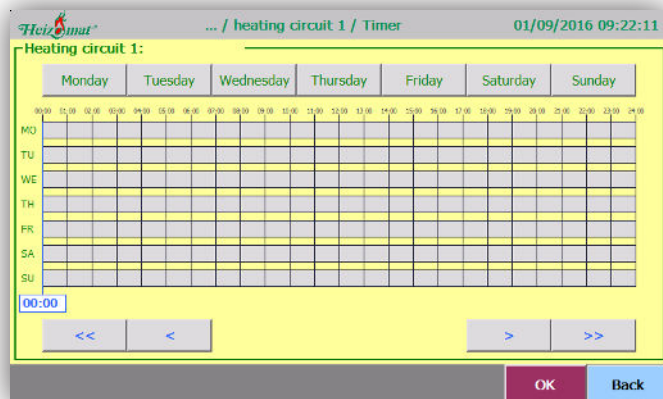
Response: ****

Installer Back

9 Timers

When a timer window is opened, the already programmed time intervals for the respective weekdays are highlighted in green.

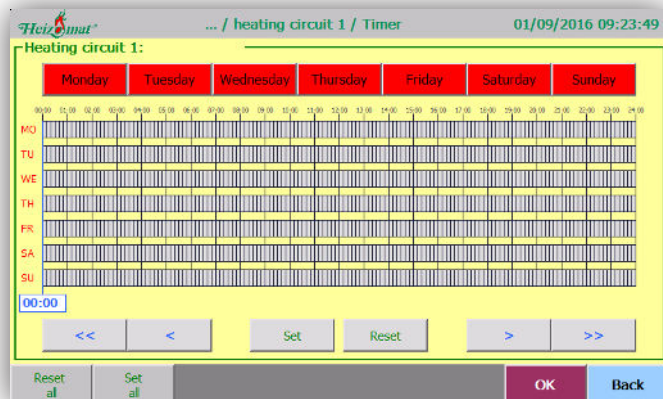
When new, no times are programmed and no intervals are highlighted.



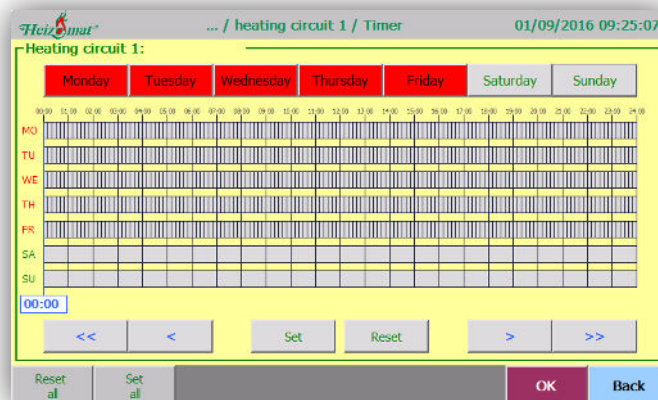
Highlight a weekday to be changed (for example Monday).

All weekdays with identical settings will now be highlighted in red.

As no weekdays are programmed when new, all weekdays will be displayed in red.



The weekdays to remain unchanged can be deselected, so that only days to be changed to identical settings remain highlighted in red (for example Monday to Friday).



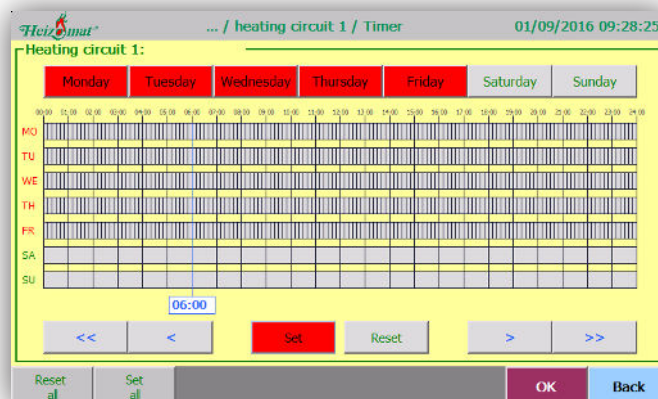
Using the buttons



move the cursor **00:00** to the position where the first time interval is to begin (for example 6am).

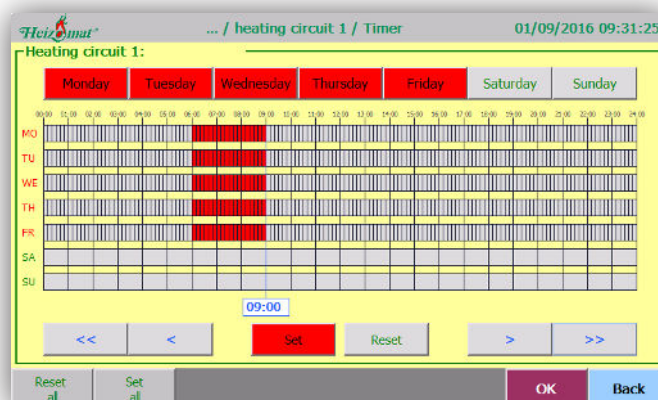
The buttons with a single arrow move the time by 10 minutes, while the double arrow buttons move the time by 1 hour increments.

Press the **Set** button.



Move the cursor to the position where the first time interval is to end (for example 9am).

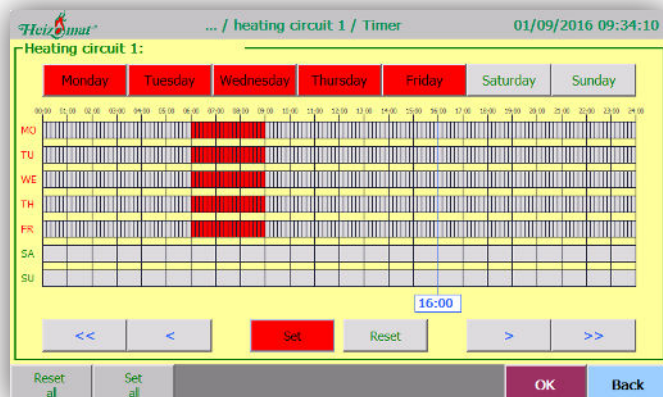
The area selected by using the cursor is highlighted in red and therefore set for all selected weekdays.



Press the **Set** button again to deactivate.

Move the cursor to the position where the second time interval is to begin (for example 4pm).

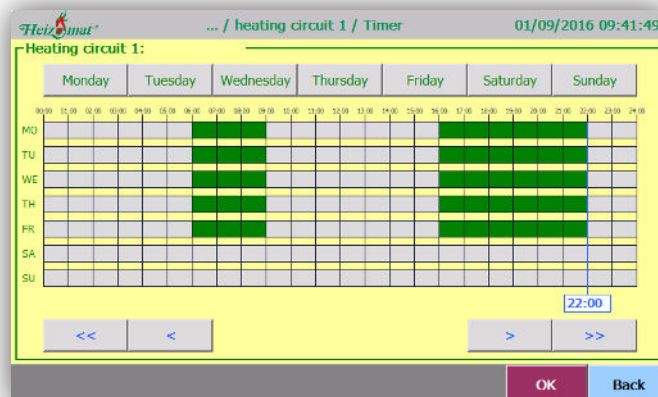
Press the **Set** button.



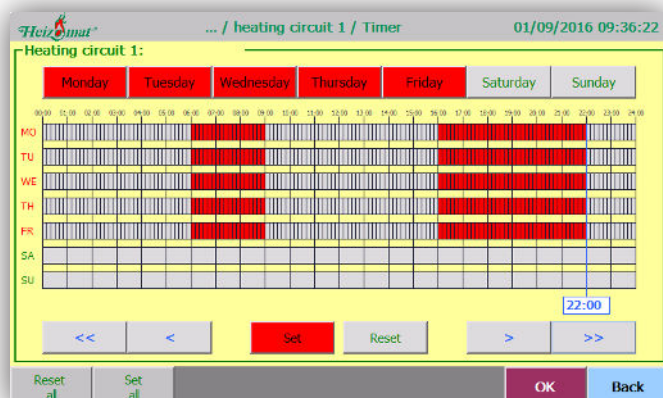
Once all desired intervals have been set and you wish to store your selection, press the “OK” button.

OK

The saved time intervals are now highlighted in green.



Move the cursor to the position where the second time interval is to end (for example 10pm).
The selected interval is highlighted in red again.



Should you not wish to save the selection, press the “Back” button instead of the “OK” button.

Back

Should you wish to program additional weekdays (for example Saturday and Sunday), start again by selecting the weekdays.

In the same way, you can program up to three intervals per weekday.

To reverse the setting of an interval, use the **Reset** button analogously.

In certain circumstances, programming can be simplified by initially resetting or setting all intervals. To facilitate, the two buttons



are available.

10 Modbus TCP

A Modbus TCP server runs on your control-unit as standard. This serves for the remote monitoring of the system to incorporate the system into the building control.

A so-called Modbus TCP client is required on the client side for access. The access occurs via port 502.

All important condition parameters can be read out via the 'Read holding registers' function (function code 03).

The boiler target temperature can be changed via the 'Write single register' function (function code 06).

The data is updated every 10 seconds on the server side.

Overview of the registers and supported function codes:

Function code	Address	Register content																
03	00000	Errors 1																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
			Boiler overheated / sensor break	Water shortage	Safety thermostat	Rotary valve blocked	Mot. protect. Deashing inclined	Mot. protect. Deashing across	Mot. protect. Deashing	Mot. protect. Register cleaning	Mot. protect. Infeed	Mot. protect. Rotary valve	Mot. protect. Route-channel	Mot. protect. Discharger				Mot. protect. Agitator
03	00001	Errors 2																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
			Gate valve not closed	Gate valve not open	Flue gas blower 2: Timeout RS485	Flue gas blower 2: Error	Gate valve not open or not closed	Residual oxygen too low	Contactor infeed hanging	External error	Ash bin full	Ash drop-in shaft	Flue gas temperature did not rise	Fill guard	Not ignited	Flue gas blower 1: Timeout RS485	Flue gas blower 1: Error	Boiler too cold / sensor short circuit
03	00002	Malfunctions																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
															Vacuum too low	Silo hatch	Drop-in shaft	Door switch

Function code	Address	Register content																
03	00003	Warnings																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
			Mot. protect. Deashing inclined	Mot. protect. Deashing across	Mot. protect. Register cleaning	Boiler temperature not reached	Agitator overload	External warning	Ash bin full	Ash drop-in shaft			Fill guard	Check return temp. sensor	Check return temp. sensor mixing valve	Check flue gas sensor	Cover open	Blockade rotary valve
03	00004	Warnings with compulsory acknowledgement																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
															Mot. protect. Deashing inclined	Mot. protect. Deashing across	Mot. protect. Deashing	Mot. protect. Register cleaning
03	00005	Blower warnings (Primary 1, Primary 2)																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
						Primary blower 2: Error	Primary blower 2: Timeout RS485	FC primary blower 2: Motor current over limit	FC primary blower 2: Motor overload	FC primary blower 2: Converter overload				Primary blower: Error	Primary blower: Timeout RS485	FC primary blower: Motor current over limit	FC primary blower: Motor overload	FC primary blower: Converter overload

Function code	Address	Register content	
03	00009	Wert	Operating condition
		0	Maintenance
		1	Start
		2	End start
		10	Manual ignition
		12	Ignition start
		13	Ignition infeed
		14	Pre-heating
		15	Ignition process
		16	ignited
		17	not ignited
		20	Firebed forming
		30	Load operation
		38	Part load
		39	Full load
		40	Stand by
		41	SB ID fan advance
		42	SB cycle
		43	Blower lag
		44	Blower lag FGT
		50	Ignition mode Break
		60	Boiler mode Break
		101	Maintenance with FGB
03	00010	Output load operation in %	
03	00011	Boiler temperature in °C	
03	00012	Flue gas temperature in °C	
03	00013	Return temperature in °C	
03	00014	Return temperature mixing valve in °C	
03	00015	Residual oxygen in %	
03	00016	Performance primary blower 1 in %	
03	00017	Performance primary blower 2 in %	
03	00018	Performance primary blower 3 in %	
03	00019	Performance secondary blower 1 in %	
03	00020	Performance secondary blower 2 in %	
03	00021	Performance flue gas blower 1 in %	
03	00022	Vacuum in Pa	
03	00023	Infeed cycle in sec	
03	00024	Infeed break in sec	
03	00025	Deashing cycle in sec	
03	00026	Deashing break in min	
03	00027	Register cleaning cycle in sec	
03	00028	Register cleaning break in min	
03	00029	Performance flue gas blower 2 in %	

Function code	Address	Register content																
03	00030	Blower warnings (Flue gas blower 2)																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
														Flue gas blower 2: Error	Flue gas blower 2: Timeout RS485	FC flue gas blower 2: Motor current over limit	FC flue gas blower 2: Motor overload	FC flue gas blower 2: Converter overload
03	00031	Errors 3																
		Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
										Secondary blower 2: Error	Secondary blower: Error	Primary blower 3: Error	Primary blower 2: Error	Primary blower: Error	Silo hatch	Drop-in shaft	Malfunction main contactor 2	Malfunction main contactor 1
03 / 06	00040	Set boiler temperature in °C																
03	00050	Boiler circuit pump performance in %																
03	00051	Number of buffer sensors																
03	00052	Buffer temperature 1 (top) in °C																
03	00053	Buffer temperature 2 in °C																
03	00054	Buffer temperature 3 in °C																
03	00055	Buffer temperature 4 in °C																
03	00056	Buffer temperature 5 in °C																
03	00057	Buffer temperature 6 in °C																
03	00058	Buffer temperature 7 in °C																
03	00059	Buffer temperature 8 in °C																

11 Basic settings

11.1 Systems up to 100 kW

The information in the tables are guidelines and can change depending on fuel and flue draught!

		Wood chips					
		Boiler output			<= 60 kW		
					75 - 100 kW		
		Motor rotation speed	16	7,8	rpm	16	7,8
Load operation	Material	Duration	10	10	min	10	10
		Combustion cycle SB	8	8	s	8	8
		Combustion cycle LS 1%	8	8	s	8	8
		Combustion cycle LS 100%	8	8	s	8	8
		Combustion break SB	20	15	min	20	15
		Combustion break LS 1%	70	40	s	55	40
		Combustion break LS 100%	45	30	s	35	20
	Deashing	Ash cycle SB	2	2	s	2	2
		Ash cycle LS 1%	2	2	s	2	2
		Ash cycle LS 100%	2	2	s	2	2
		Ash break SB	1	1	h	1	1
		Ash break LS 1%	15	15	min	15	15
		Ash break LS 100%	10	10	min	10	10
	Blowers	Primary blower SB	10	10	%	10	10
		Primary blower LS 1%	20	20	%	20	20
		Primary blower LS 100%	30	30	%	30	30
		Secondary blower SB	20	20	%	20	20
		Secondary blower LS 1%	20	20	%	20	20
		Secondary blower LS 100%	30	30	%	30	30
		Flue gas blower SB	30	30	%	30	30
		Flue gas blower LS 1%	40	40	%	30	30
		Flue gas blower LS 100%	60	60	%	60	60
	Register	Register cycle SB	3	3	s	3	3
		Register cycle LS 1%	3	3	s	3	3
		Register cycle LS 100%	3	3	s	3	3
		Register break SB	6	6	h	6	6
		Register break LS 1%	90	90	min	90	90
	Vacuum	Vacuum SB	20	20	Pa	20	20
		Vacuum LS 1%	25	25	Pa	25	25
		Vacuum LS 100%	40	40	Pa	40	40
Fired forming	Material	Duration FF	10	10	min	10	10
		Combustion cycle FF 1%	8	8	s	8	8
		Combustion cycle FF 100%	8	8	s	8	8
		Combustion break FF 1%	70	50	s	60	40
		Combustion break FF 100%	40	40	s	35	30
	Deashing	Ash cycle FF 1%	2	2	s	2	2
		Ash cycle FF 100%	2	2	s	2	2
		Ash break FF 1%	4	4	min	4	4
		Ash break FF 100%	4	4	min	4	4
	Blowers	Primary blower FF 1%	30	30	%	30	30
		Primary blower FF 100%	30	30	%	30	30
		Secondary blower FF 1%	10	10	%	10	10
		Secondary blower FF 100%	20	20	%	20	20
		Flue gas blower FF 1%	30	30	%	30	30
		Flue gas blower FF 100%	40	40	%	40	40
	Vac.	Vacuum FF 1%	20	20	Pa	20	20
		Vacuum FF 100%	25	25	Pa	25	25
Ignition	Material / General	Temperature rise	5	5	K	5	5
		Limit temperature	90	90	°C	90	90
		Ignition duration	20	20	min	20	20
		Pulse count	2	2		2	2
		Pre-heating	4	4	min	4	4
		Ignition infeed	35	50	s	35	50
		Supply cycle	3	3	s	3	3
	Blowers	Primary blower low	25	25	%	25	25
		Primary blower high 1	40	40	%	40	40
		Primary blower high 2	50	50	%	50	50
		Secondary blower	5	5	%	5	5
		Flue gas blower	50	50	%	50	50

		Pellets					
		Boiler output			<= 60 kW		
					75 - 100 kW		
		Motor rotation speed	16	7,8	rpm	16	7,8
Load operation	Material	Duration	10	10	min	10	10
		Combustion cycle SB	5	6	s	5	6
		Combustion cycle LS 1%	5	6	s	5	6
		Combustion cycle LS 100%	5	6	s	5	6
		Combustion break SB	30	20	min	30	20
		Combustion break LS 1%	90	70	s	80	60
		Combustion break LS 100%	60	60	s	50	50
	Deashing	Ash cycle SB	2	2	s	2	2
		Ash cycle LS 1%	2	2	s	2	2
		Ash cycle LS 100%	2	2	s	2	2
		Ash break SB	1	1	h	1	1
		Ash break LS 1%	25	25	min	25	25
		Ash break LS 100%	15	15	min	15	15
	Blowers	Primary blower SB	15	15	%	15	15
		Primary blower LS 1%	20	20	%	20	20
		Primary blower LS 100%	30	30	%	30	30
		Secondary blower SB	20	20	%	20	20
		Secondary blower LS 1%	20	20	%	20	20
		Secondary blower LS 100%	30	30	%	30	30
		Flue gas blower SB	30	30	%	30	30
		Flue gas blower LS 1%	40	40	%	40	40
		Flue gas blower LS 100%	60	60	%	60	60
	Register	Register cycle SB	3	3	s	3	3
		Register cycle LS 1%	3	3	s	3	3
		Register cycle LS 100%	3	3	s	3	3
		Register break SB	6	6	h	6	6
		Register break LS 1%	90	90	min	90	90
	Vacuum	Vacuum SB	20	20	Pa	20	20
		Vacuum LS 1%	25	25	Pa	25	25
		Vacuum LS 100%	40	40	Pa	40	40
Fired forming	Material	Duration FF	10	10	min	10	10
		Combustion cycle FF 1%	5	6	s	5	6
		Combustion cycle FF 100%	5	6	s	5	6
		Combustion break FF 1%	80	60	s	70	50
		Combustion break FF 100%	60	50	s	50	40
	Deashing	Ash cycle FF 1%	2	2	s	2	2
		Ash cycle FF 100%	2	2	s	2	2
		Ash break FF 1%	4	4	min	4	4
		Ash break FF 100%	4	4	min	4	4
	Blowers	Primary blower FF 1%	30	30	%	30	30
		Primary blower FF 100%	30	30	%	30	30
		Secondary blower FF 1%	10	10	%	10	10
		Secondary blower FF 100%	20	20	%	20	20
		Flue gas blower FF 1%	30	30	%	30	30
		Flue gas blower FF 100%	40	40	%	40	40
	Vac.	Vacuum FF 1%	20	20	Pa	20	20
		Vacuum FF 100%	25	25	Pa	25	25
Ignition	Material / General	Temperature rise	5	5	K	5	5
		Limit temperature	90	90	°C	90	90
		Ignition duration	20	20	min	20	20
		Pulse count	2	2		2	2
		Pre-heating	4	4	min	4	4
		Ignition infeed	30	40	s	35	50
		Supply cycle	2	2	s	2	2
	Blowers	Primary blower low	25	25	%	25	25
		Primary blower high 1	40	40	%	40	40
		Primary blower high 2	50	50	%	50	50
		Secondary blower	5	5	%	5	5
		Flue gas blower	50	50	%	50	50

		Sawdust						
		Boiler output		<= 60 kW			75 - 100 kW	
		Motor rotation speed	16	7,8	rpm	16	7,8	rpm
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	9	9	s	10	10	s
		Combustion cycle LS 1%	9	9	s	10	10	s
		Combustion cycle LS 100%	9	9	s	10	10	s
		Combustion break SB	20	15	min	20	15	min
		Combustion break LS 1%	50	35	s	40	30	s
		Combustion break LS 100%	30	20	s	25	15	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	15	15	min	15	15	min
		Ash break LS 100%	10	10	min	10	10	min
	Blowers	Primary blower SB	10	10	%	10	10	%
		Primary blower LS 1%	20	20	%	20	20	%
		Primary blower LS 100%	30	30	%	30	30	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
		Flue gas blower LS 100%	60	60	%	60	60	%
	Register	Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
		Register break LS 100%	60	60	min	60	60	min
	Vacuum	Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%		40	40	Pa	40	40	Pa	
Fired forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	9	9	s	10	10	s
		Combustion cycle FF 100%	9	9	s	10	10	s
		Combustion break FF 1%	70	50	s	60	40	s
		Combustion break FF 100%	40	40	s	35	30	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
		Flue gas blower FF 100%	40	40	%	40	40	%
	Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa
		Vacuum FF 100%	25	25	Pa	25	25	Pa
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	35	50	s	35	50	s
		Supply cycle	3	3	s	3	3	s
	Blowers	Primary blower low	25	25	%	25	25	%
		Primary blower high 1	40	40	%	40	40	%
		Primary blower high 2	50	50	%	50	50	%
	Secondary blower	5	5	%	5	5	%	
	Flue gas blower	50	50	%	50	50	%	

		Wood shavings						
		Boiler output		<= 60 kW		75 - 100 kW		
		Motor rotation speed		16	7,8	rpm	16	7,8
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	10	10	s	12	12	s
		Combustion cycle LS 1%	10	10	s	12	12	s
		Combustion cycle LS 100%	10	10	s	12	12	s
		Combustion break SB	15	10	min	15	10	min
		Combustion break LS 1%	40	25	s	35	20	s
		Combustion break LS 100%	25	15	s	20	10	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	15	15	min	15	15	min
		Ash break LS 100%	10	10	min	10	10	min
	Blowers	Primary blower SB	10	10	%	10	10	%
		Primary blower LS 1%	15	15	%	15	15	%
		Primary blower LS 100%	20	20	%	20	20	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
		Flue gas blower LS 100%	60	60	%	60	60	%
	Register	Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
		Register break LS 100%	60	60	min	60	60	min
	Vacuum	Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%		40	40	Pa	40	40	Pa	
Firedbed forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	10	10	s	12	12	s
		Combustion cycle FF 100%	10	10	s	12	12	s
		Combustion break FF 1%	50	40	s	40	30	s
		Combustion break FF 100%	30	25	s	25	20	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
		Flue gas blower FF 100%	40	40	%	40	40	%
	Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa
		Vacuum FF 100%	25	25	Pa	25	25	Pa
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	40	70	s	40	70	s
		Supply cycle	3	3	s	3	3	s
	Blowers	Primary blower low	25	25	%	25	25	%
		Primary blower high 1	40	40	%	40	40	%
		Primary blower high 2	50	50	%	50	50	%
	Secondary blower	5	5	%	5	5	%	
	Flue gas blower	50	50	%	50	50	%	

11.2 Systems above 100 kW

		Wood chips						
		Boiler output		150 - 300 kW			> 300 kW	
		Motor rotation speed		34	16	rpm	34	16
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	8	8	s	8	8	s
		Combustion cycle LS 1%	8	8	s	8	8	s
		Combustion cycle LS 100%	8	8	s	8	8	s
		Combustion break SB	20	15	min	20	15	min
		Combustion break LS 1%	70	40	s	55	40	s
		Combustion break LS 100%	45	30	s	35	20	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	15	15	min	15	15	min
		Ash break LS 100%	10	10	min	10	10	min
	Blowers	Primary blower SB	10	10	%	10	10	%
		Primary blower LS 1%	20	20	%	20	20	%
		Primary blower LS 100%	30	30	%	30	30	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
		Flue gas blower LS 100%	60	60	%	60	60	%
	Register	Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
		Register break LS 100%	60	60	min	60	60	min
	Vacuum	Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%		40	40	Pa	40	40	Pa	
Fired forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	8	8	s	8	8	s
		Combustion cycle FF 100%	8	8	s	8	8	s
		Combustion break FF 1%	70	50	s	60	40	s
		Combustion break FF 100%	40	40	s	35	30	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
Flue gas blower FF 100%		40	40	%	40	40	%	
Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa	
	Vacuum FF 100%	25	25	Pa	25	25	Pa	
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	35	50	s	35	50	s
		Supply cycle	3	3	s	3	3	s
		Blowers	Primary blower low	25	25	%	25	25
	Primary blower high 1		40	40	%	40	40	%
	Primary blower high 2		50	50	%	50	50	%
	Secondary blower		5	5	%	5	5	%
Flue gas blower	50	50	%	50	50	%		

		Pellets						
		Boiler output		150 - 300 kW			> 300 kW	
		Motor rotation speed		34	16	rpm	34	16
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	5	6	s	5	6	s
		Combustion cycle LS 1%	5	6	s	5	6	s
		Combustion cycle LS 100%	5	6	s	5	6	s
		Combustion break SB	30	20	min	30	20	min
		Combustion break LS 1%	90	60	s	80	50	s
		Combustion break LS 100%	60	40	s	50	30	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	25	25	min	25	25	min
		Ash break LS 100%	15	15	min	15	15	min
	Blowers	Primary blower SB	15	15	%	15	15	%
		Primary blower LS 1%	20	20	%	20	20	%
		Primary blower LS 100%	30	30	%	30	30	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
	Register	Flue gas blower LS 100%	60	60	%	60	60	%
		Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
	Vacuum	Register break LS 100%	60	60	min	60	60	min
		Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%	40	40	Pa	40	40	Pa		
Fired forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	5	6	s	5	6	s
		Combustion cycle FF 100%	5	6	s	5	6	s
		Combustion break FF 1%	80	60	s	70	50	s
		Combustion break FF 100%	60	50	s	50	40	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
Flue gas blower FF 100%		40	40	%	40	40	%	
Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa	
	Vacuum FF 100%	25	25	Pa	25	25	Pa	
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	30	40	s	35	50	s
		Supply cycle	2	2	s	2	2	s
	Blowers	Primary blower low	25	25	%	25	25	%
		Primary blower high 1	40	40	%	40	40	%
		Primary blower high 2	50	50	%	50	50	%
		Secondary blower	5	5	%	5	5	%
Flue gas blower	50	50	%	50	50	%		

		Sawdust						
		Boiler output		150 - 300 kW			> 300 kW	
		Motor rotation speed		34	16	rpm	34	16
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	9	9	s	10	10	s
		Combustion cycle LS 1%	9	9	s	10	10	s
		Combustion cycle LS 100%	9	9	s	10	10	s
		Combustion break SB	20	15	min	20	15	min
		Combustion break LS 1%	50	35	s	40	30	s
		Combustion break LS 100%	30	20	s	25	15	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	15	15	min	15	15	min
		Ash break LS 100%	10	10	min	10	10	min
	Blowers	Primary blower SB	10	10	%	10	10	%
		Primary blower LS 1%	20	20	%	20	20	%
		Primary blower LS 100%	30	30	%	30	30	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
	Register	Flue gas blower LS 100%	60	60	%	60	60	%
		Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
	Vacuum	Register break LS 100%	60	60	min	60	60	min
		Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%	40	40	Pa	40	40	Pa		
Fired bed forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	9	9	s	10	10	s
		Combustion cycle FF 100%	9	9	s	10	10	s
		Combustion break FF 1%	70	50	s	60	40	s
		Combustion break FF 100%	40	40	s	35	30	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
Flue gas blower FF 100%		40	40	%	40	40	%	
Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa	
	Vacuum FF 100%	25	25	Pa	25	25	Pa	
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	35	50	s	35	50	s
		Supply cycle	3	3	s	3	3	s
	Blowers	Primary blower low	25	25	%	25	25	%
		Primary blower high 1	40	40	%	40	40	%
		Primary blower high 2	50	50	%	50	50	%
		Secondary blower	5	5	%	5	5	%
		Flue gas blower	50	50	%	50	50	%

		Wood shavings						
		Boiler output		150 - 300 kW		> 300 kW		
		Motor rotation speed		34	16	rpm	34	16
Load operation	Material	Duration	10	10	min	10	10	min
		Combustion cycle SB	10	10	s	12	12	s
		Combustion cycle LS 1%	10	10	s	12	12	s
		Combustion cycle LS 100%	10	10	s	12	12	s
		Combustion break SB	15	10	min	15	10	min
		Combustion break LS 1%	40	25	s	35	20	s
		Combustion break LS 100%	25	15	s	20	10	s
	Deashing	Ash cycle SB	2	2	s	2	2	s
		Ash cycle LS 1%	2	2	s	2	2	s
		Ash cycle LS 100%	2	2	s	2	2	s
		Ash break SB	1	1	h	1	1	h
		Ash break LS 1%	15	15	min	15	15	min
		Ash break LS 100%	10	10	min	10	10	min
	Blowers	Primary blower SB	10	10	%	10	10	%
		Primary blower LS 1%	15	15	%	15	15	%
		Primary blower LS 100%	20	20	%	20	20	%
		Secondary blower SB	20	20	%	20	20	%
		Secondary blower LS 1%	20	20	%	20	20	%
		Secondary blower LS 100%	30	30	%	30	30	%
		Flue gas blower SB	30	30	%	30	30	%
		Flue gas blower LS 1%	40	40	%	40	40	%
	Register	Flue gas blower LS 100%	60	60	%	60	60	%
		Register cycle SB	3	3	s	3	3	s
		Register cycle LS 1%	3	3	s	3	3	s
		Register cycle LS 100%	3	3	s	3	3	s
		Register break SB	6	6	h	6	6	h
		Register break LS 1%	90	90	min	90	90	min
	Vacuum	Register break LS 100%	60	60	min	60	60	min
		Vacuum SB	20	20	Pa	20	20	Pa
		Vacuum LS 1%	25	25	Pa	25	25	Pa
Vacuum LS 100%	40	40	Pa	40	40	Pa		
Fired bed forming	Material	Duration FF	10	10	min	10	10	min
		Combustion cycle FF 1%	10	10	s	12	12	s
		Combustion cycle FF 100%	10	10	s	12	12	s
		Combustion break FF 1%	50	40	s	40	30	s
		Combustion break FF 100%	30	25	s	25	20	s
	Deashing	Ash cycle FF 1%	2	2	s	2	2	s
		Ash cycle FF 100%	2	2	s	2	2	s
		Ash break FF 1%	4	4	min	4	4	min
		Ash break FF 100%	4	4	min	4	4	min
	Blowers	Primary blower FF 1%	30	30	%	30	30	%
		Primary blower FF 100%	30	30	%	30	30	%
		Secondary blower FF 1%	10	10	%	10	10	%
		Secondary blower FF 100%	20	20	%	20	20	%
		Flue gas blower FF 1%	30	30	%	30	30	%
		Flue gas blower FF 100%	40	40	%	40	40	%
	Vac.	Vacuum FF 1%	20	20	Pa	20	20	Pa
		Vacuum FF 100%	25	25	Pa	25	25	Pa
Ignition	Material / General	Temperature rise	5	5	K	5	5	K
		Limit temperature	90	90	°C	90	90	°C
		Ignition duration	20	20	min	20	20	min
		Pulse count	2	2		2	2	
		Pre-heating	4	4	min	4	4	min
		Ignition infeed	40	70	s	40	70	s
		Supply cycle	3	3	s	3	3	s
	Blowers	Primary blower low	25	25	%	25	25	%
		Primary blower high 1	40	40	%	40	40	%
		Primary blower high 2	50	50	%	50	50	%
		Secondary blower	5	5	%	5	5	%
		Flue gas blower	50	50	%	50	50	%

12 Error messages

Error messages are shown on the operator-unit in the message window. The message window appears automatically as soon as a new unacknowledged message is pending.

Reports				
	No.	Time	Date	Text
Error	5	10:32:16	17/08/2016	Safety thermostat
Warning wA	201	10:31:48	17/08/2016	Motor protection Deashing
Interruption	100	10:31:13	17/08/2016	Door switch
Warning	321	10:23:34	17/08/2016	Ash bin full
Info	900	10:09:43	17/08/2016	Maximum boiler temperature - Switch on consumers!

The button to acknowledge messages with an acknowledgement requirement is located in the bottom right-hand corner. You can acknowledge such a message by first marking it, so that it has a blue background, and then touching the button. If the condition for triggering the message is no longer applicable, the message disappears from the message window.

Together with the message window, the so-called message indicator is displayed on the right screen edge:



The number shown represents the current number of pending messages.

The message indicator can have two conditions:

Flashing: At least one unacknowledged message is pending.

Static: The messages are acknowledged, but at least one of which has not yet gone.

By touching the message indicator, the message window is closed or opened again.



Always disconnect the system from the power grid and protect against inadvertent re-powering during error correction!

MAJOR RISK OF ACCIDENT!

12.1 Infos



An info is provided solely for information purposes and therefore has no impact on the operation of the system.

If an info is selected in the message window, the acknowledgment button has no function.

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Caution: Residual oxygen is above 13%. Don't start exhaust measuring before the residual oxygen is below 13%!	Flue gas metering mode was activated and the boiler is not yet long enough in load operation	Wait until the residual oxygen has fallen
	Insufficient fuel in the combustion chamber	Increase fuel amount by reducing the combustion break
	To much secondary air	Reduce secondary blower performance
	Too little primary air	Increase primary blower performance
Max. boiler temperature - Switch on consumers!	Flue gas metering mode was activated	Press 'End metering' button

12.2 Warnings



A warning does not stop the operation, but can limit it. For example, the “Fill guard” warning prevents fuel feed-in.

If a warning is marked in the message window then the acknowledgement button does not have a function.

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Agitator overload	Agitators were outstretched during silo filling	Operate system until there is clearance; If necessary, briefly cycle agitators manually until the agitators have pulled out of the wood chips
	Agitator blocked by foreign bodies	Eliminate blockade
Ash bin full (see also appendix “Ash errors” on page 81)	Ash bin is full	Empty ash bin and reattach
	Wire break	Check wiring to the endswitch
Ash drop-in shaft (see also appendix “Ash errors” on page 81)	Ash drop in shaft cover opened	Eliminate blockade in the drop in shaft and close the drop in shaft cover
	Wire break	Check wiring to the ash drop in shaft cover
Blockade rotary valve	see 'Rotary valve blocked' fault	see 'Rotary valve blocked' fault
Boiler temperature not reached	Generated heat energy too low	Slightly increase fuel amount or improve fuel quality
	Consumption too high	Switch off consumer or switch on additional heat generator
Check flue gas sensor	Flue gas temperature over 350°C	Reduce fuel amount or primary blower performance
	Flue gas temperature below 1°C	Pull the sensor from the thermowell and warm up to over 1°C by hand (if a cold boiler room is used)
	Flue gas temperature sensor defective or wire break or short circuit	Replace flue gas temperature sensor; check wiring
	Flue draught too high	Measure flue draught; install flue draught regulator; set flue draught requirement according to technical datasheet on flue draught regulator
	Too much primary air with too dry fuel	Reduce primary blower performance
Check return temp. sensor	Return temperature more than 4°C above max. boiler temperature	Let boiler cool down; switch on consumers
	Return temperature below 1°C	Pull the sensor from the thermowell and warm up to over 1°C by hand (if a cold boiler room is used)
	Return temperature sensor defective or wire break or short circuit	Replace return temperature sensor; check wiring to sensor

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Check return temp. sensor mixing valve	Mixer return temperature more than 4°C above max. boiler temperature	Let boiler cool down; switch on consumers
	Mixer return temperature below 1°C	Pull the sensor from the thermowell and warm up to over 1°C by hand (if a cold boiler room is used)
	Mixer return temperature sensor defective or wire break or short circuit	Replace mixer return temperature sensor; check wiring to sensor
Cover open (see also appendix "Ash errors" on page 81)	Cladding-door was opened	Close door; if necessary, reset the press key on the cover
	Wire break	Check wiring to the press key
External warning	External device has reported error	Eliminate external error
	Wire break	Check wiring to the external device
FC flue gas blower: Converter overload	Ventilation insufficient or ambient temperature too high; wrong motor power set	Inform customer service if it occurs repeatedly
FC flue gas blower: Motor current over limit	Short circuit / short circuit to earth in motor cable or motor; Motor overloaded or rotation prevented; wrong motor parameters set	Inform customer service if it occurs repeatedly
FC flue gas blower: Motor overload	Rotation prevented; Bearing or motor defective	Inform customer service if it occurs repeatedly
FC primary blower: Converter overload	Ventilation insufficient or ambient temperature too high; wrong motor power set	Inform customer service if it occurs repeatedly
FC primary blower: Motor current over limit	Short circuit / short circuit to earth in motor cable or motor; Motor overloaded or rotation prevented; wrong motor parameters set	Inform customer service if it occurs repeatedly
FC primary blower: Motor overload	Rotation prevented; Bearing or motor defective	Inform customer service if it occurs repeatedly
FC secondary blower: Converter overload	Ventilation insufficient or ambient temperature too high; wrong motor power set	Inform customer service if it occurs repeatedly
FC secondary blower: Motor current over limit	Short circuit / short circuit to earth in motor cable or motor; Motor overloaded or rotation prevented; wrong motor parameters set	Inform customer service if it occurs repeatedly
FC secondary blower: Motor overload	Rotation prevented; Bearing or motor defective	Inform customer service if it occurs repeatedly
Fill guard	see 'Fill guard' error	see 'Fill guard' error
Flue gas blower: Error	Fuse in PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Flue gas blower: Timeout RS485	Bus connection to blower module or frequency-converter faulty/interrupted; Switch setting of the rotary coding switch to the blower module incorrect; Blower module or frequency-converter failed	Inform customer service if it occurs repeatedly
Motor protection Deashing across, Motor protection Deashing inclined, Motor protection Register cleaning (see also appendix "Ash errors" on page 81)	Blockade in the respective feed system	Eliminate blockade
	Motor defective	Have an expert (in-house electrician) check the motor; replace the drive motor, if necessary
	Current phase missing	Check if there is sufficient power from the motor to the mains in on all phases
	Current monitoring relay level I ^A too low	Correct level (nominal current according to name plate)
Primary blower: Error	Fuse in PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service
Primary blower: Timeout RS485	Bus connection to blower module or frequency-converter faulty/interrupted; Switch setting of the rotary coding switch to the blower module incorrect; Blower module or frequency-converter failed	Inform customer service if it occurs repeatedly
Secondary blower: Error	Fuse in the PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service
Secondary blower: Timeout RS485	Bus connection to blower module or frequency-converter faulty/interrupted; Switch setting of the rotary coding switch to the blower module incorrect; Blower module or frequency-converter failed	Inform customer service if it occurs repeatedly

12.3 Warnings with acknowledgement requirement



A warning with acknowledgement requirement does not stop the operation, but does limit it. Such a warning in connection to the de-ashing motors leads to switching off of the de-ashing system.

After eliminating the cause of error, the respective message has to be marked in the message window and the acknowledgement button must be pressed.

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Motor protection Deashing, Motor protection Deashing across, Motor protection Deashing inclined, Motor protection Register cleaning (see also appendix "Ash errors" on page 81)	Blockade in the respective feed system	Eliminate blockade
	Motor defective	Have an expert (in-house electrician) check the motor; replace the drive motor, if necessary
	Current phase missing	Check if there is sufficient power from the motor to the mains in on all phases
	Current monitoring relay level I ^A too low	Correct level (nominal current according to name plate)

12.4 Interruptions



One minute after occurrence of the fault the potential-free failure-signal-contact is closed. If the contact has the required supply power, you can run a signal light or horn from it, for example.

In the case of an interruption, first the stoker is emptied, if necessary (see section "6.3.7 Stoker emptying" on page 20), which is signalled by the 'Emptying stoker!' info text in the home screen. Operation then stops. All motors, with the exception of the flue gas blower, are switched off.

After eliminating the cause of error, the message automatically disappears from the message window and the operation continues. The acknowledgement button is for interruptions without a function.

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Door switch	Combustion chamber door open	Close combustion chamber door; if necessary, adjust door contact switch
	Wire break	Check wiring to the door contact switch
Drop-in shaft	Drop in shaft cover opened	Eliminate blockade in the drop in shaft and close the drop in shaft cover
	Wire break	Check wiring to the drop in shaft contact
Silo hatch	Silo opened	Close silo
	Wire break	Check wiring to the silo-hatch contact

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Vacuum too low	Insufficient flue draught	Increase performance of the flue gas blower or reduce performance of primary/secondary blower; install flue gas blower, if necessary
	Combustion chamber door open	Close combustion chamber door
	Pressure pipe leaky	Check/seal pressure pipe
	Wire break / short circuit	Check wiring to the pressure-sensor
	Pressure-sensor failed	Check power supply to the pressure-sensor; replace pressure-sensor, if necessary

12.5 Errors



One minute after occurrence of the fault the potential-free failure-signal-contact is closed. If the contact has the required supply power, you can run a signal light or horn from it, for example.

In the case of an error, first the stoker is emptied, if necessary (see section “6.3.7 Stoker emptying” on page 20), which is signalled by the ‘Emptying stoker!’ info text in the home screen. Operation then stops. All motors, with the exception of the flue gas blower, are switched off.

After eliminating the cause of error the respective message has to be marked in the message window and the acknowledgement button must be pressed. In order to restart operation, the Start button in the home screen must be pressed for 3 seconds.

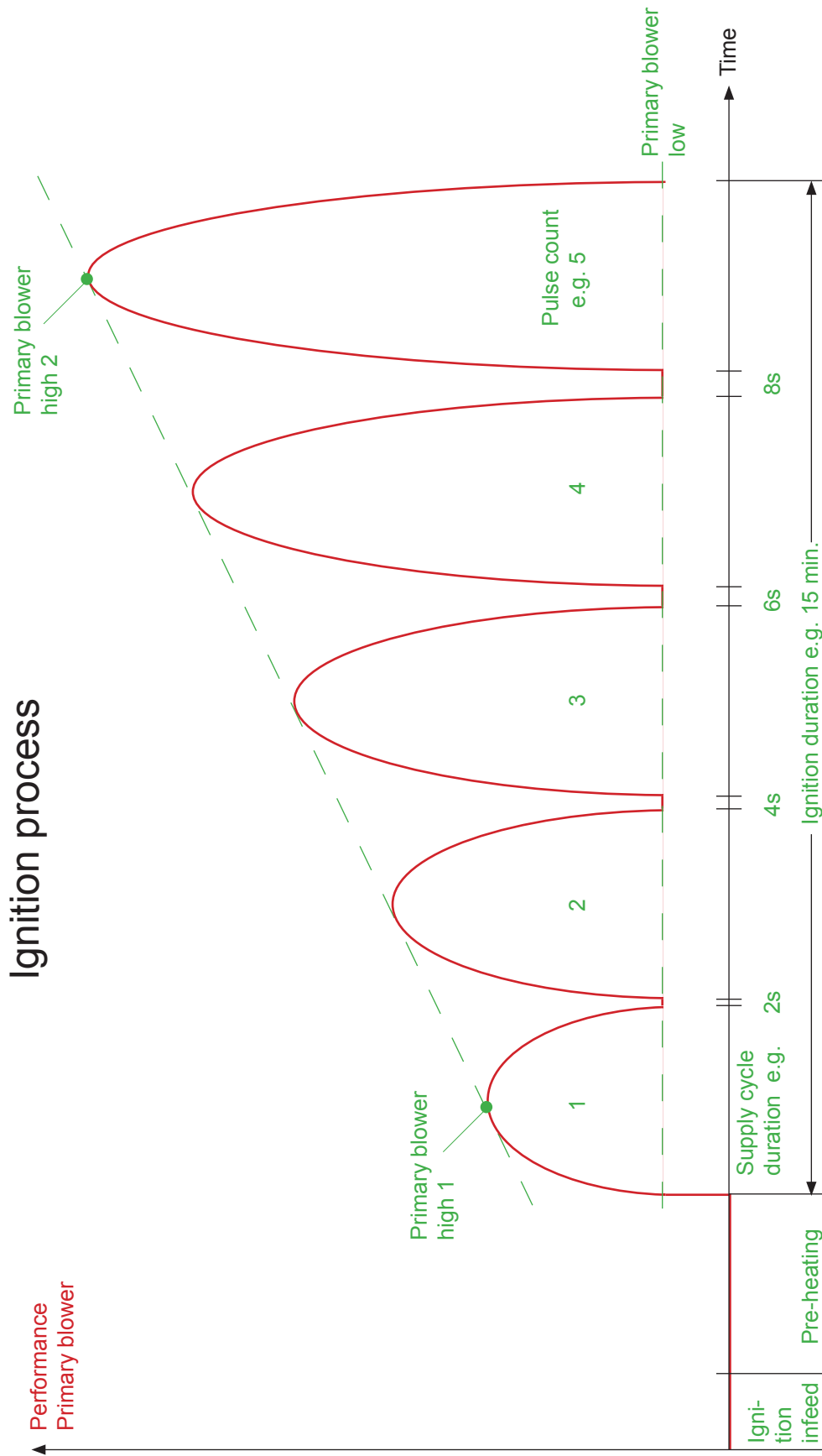
<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Ash bin full (see also appendix “Ash errors” on page 81)	Ash bin is full	Empty ash bin and reattach
	Wire break	Check wiring to the endswitch
Ash drop-in shaft (see also appendix “Ash errors” on page 81)	Ash drop in shaft cover opened	Eliminate blockade in the ash drop in shaft and close the ash drop in shaft cover
	Wire break	Check wiring to the ash drop in shaft contact
Boiler overheated / sensor break	Boiler-temperature more than 4°C above max. boiler temperature	Let boiler cool down; switch on consumers
	Boiler-temperature sensor defective or wire break	Replace boiler-temperature sensor; check wiring to sensor
Boiler too cold / sensor short circuit	Boiler-temperature below 0°C	Pull the sensor from the thermowell and warm up to over 0°C by hand (if a cold boiler room is used)
	Boiler-temperature sensor defective or short circuit	Replace boiler-temperature sensor; check wiring to sensor
Contactor infeed hanging	Contactor for in-feed motor stuck	Have customer service replace contactor
Drop-in shaft	Drop-in shaft cover opened for more than 10 seconds	Eliminate blockade in the drop in shaft and close the drop in shaft cover
	Wire break	Check wiring to the drop in shaft contact

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
External error	External device has reported error	Eliminate external error
	Wire break	Check wiring to the external device
Fill guard	Fill guard temperature was not reached in time	Increase fuel amount or quality
	Extinguish fire in the combustion chamber	Ignite new fire (see initial heating)
	Flue draught too high	Very high flue draught cools down the sensor; have the flue draught metered by the master chimney sweep; if necessary, set flue draught regulator and draught requirement according to technical datasheet
	Fill guard temperature is set too high	Adjust fill guard temperature to the boiler target temperature (approx. 10°C below boiler target temperature)
	Empty silo	Fill silo
Flue gas blower: Error	Fuse in PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service
Flue gas blower: Timeout RS485	Bus connection to blower module or frequency-converter faulty/interrupted; Switch setting of the rotary coding switch to the blower module incorrect; Blower module or frequency-converter failed	Inform customer service if it occurs repeatedly
Flue gas temperature did not rise	Fire could not be ignited	Check fuel, if necessary, use dry fuel
	Flame too small to increase the flue gas temperature	Increase ignition in-feed time; heat by hand
Gate valve not closed	Slide gate valve is blocked	Eliminate blockade
	Failure of the compressed air supply	Check compressed air generator, cables and valves
	Wire break	Check wiring to the endswitches on the slide gate valve
Gate valve not open	Slide gate valve is blocked	Eliminate blockade
	Failure of the compressed air supply	Check compressed air generator, cables and valves
	Wire break	Check wiring to the endswitches on the slide gate valve
Malfunction main contactor	Main contactor defective	Have customer service replace main contactor

<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Mot. protect. Agitator, Mot. protect. Discharger, Mot. protect. Infeed, Mot. protect. Rotary valve, Mot. protect. Route-channel	Blockade in the respective feed system	Eliminate blockade
	Motor defective	Have an expert check the motor; replace the drive motor, if necessary
	Current phase missing	Check if there is sufficient power from the motor to the mains in on all phases
Mot. protect. Deashing, Mot. protect. Deashing across, Mot. protect. Deashing inclined, Mot. protect. Register cleaning (see also appendix "Ash errors" on page 81)	Blockade in the respective feed system	Eliminate blockade
	Motor defective	Have an expert (in-house electrician) check the motor; replace the drive motor, if necessary
	Current phase missing	Check if there is sufficient power from the motor to the mains in on all phases
	Current monitoring relay level I ^A too low	Correct level (nominal current according to name plate)
Not ignited	Flue gas temperature did not sufficiently rise during the ignition process	Adjust ignition parameters; check/clean ignition equipment; heat up manually, if necessary; remove excess fuel from the combustion chamber – beware of residual glow!
Primary blower: Error	Fuse in PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service
Residual oxygen too low	Too much fuel in the combustion chamber	Reduce fuel amount by extending the combustion break
	Very dry fuel	Reduce primary blower performance
	Too much primary air	Reduce primary blower performance
	Too little secondary air	Increase secondary blower performance
Rotary valve blocked	There is a foreign body in the rotary valve	Eliminate foreign body (open drop in shaft cover and search the area of the lock with a torch)
	Sensor outside of the magnet area	Correct sensor position to the magnet head on the drive gear (max. 2 mm gap to the magnet pen)
	Sensor defective or wire break	Check or replace sensor; check wiring to sensor
	Test time for motor set incorrectly	Correct test time (discuss with the factory customer service)
	Current monitoring relay level I ^A too low	Correct level (nominal current according to name plate)
Safety thermostat	Boiler overheated	Allow boiler to cool to below 60°C and reseal safety thermostat (unscrew black cap and press button)
	Wire break	Check wiring to the safety thermostat

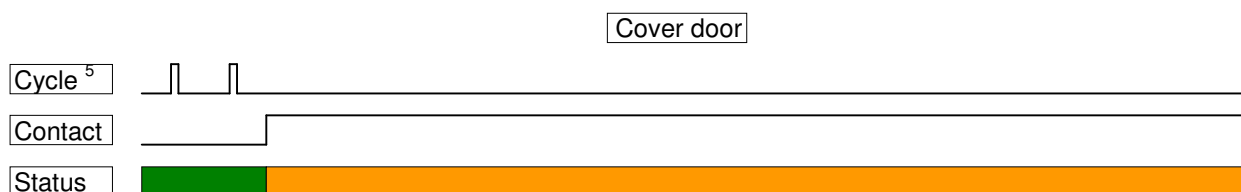
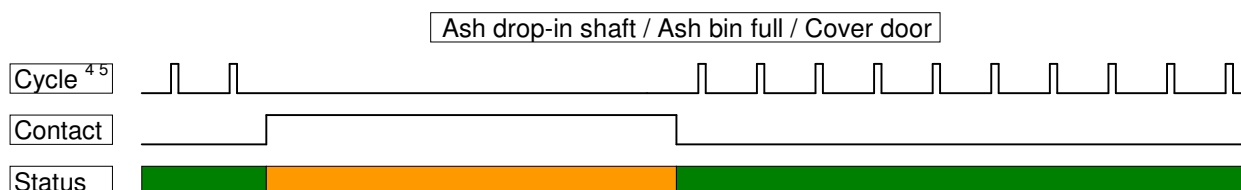
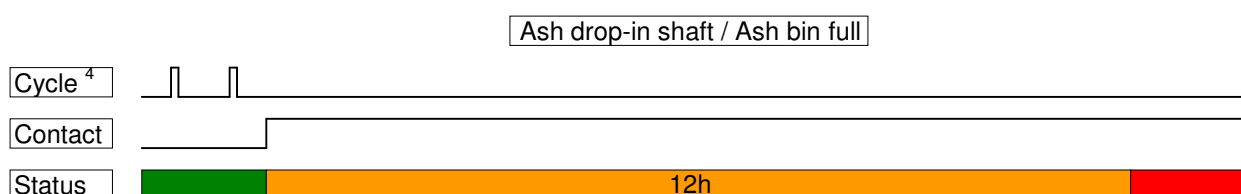
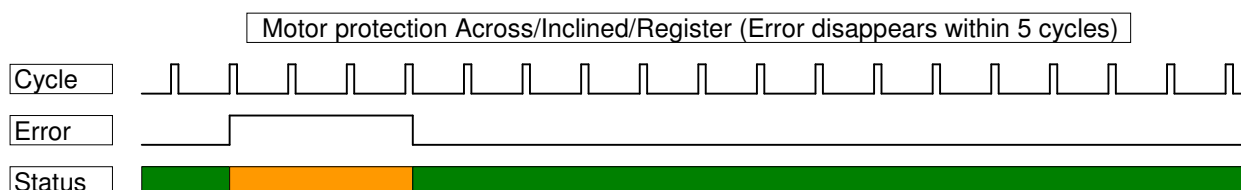
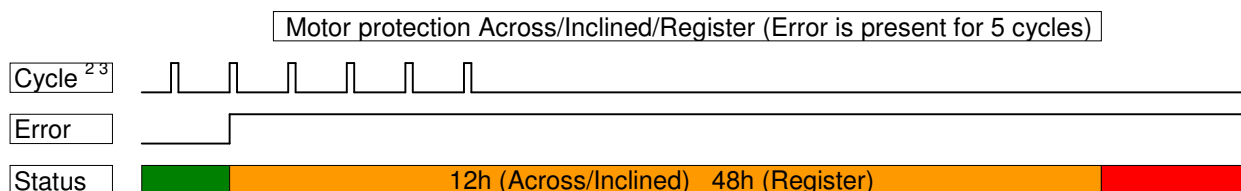
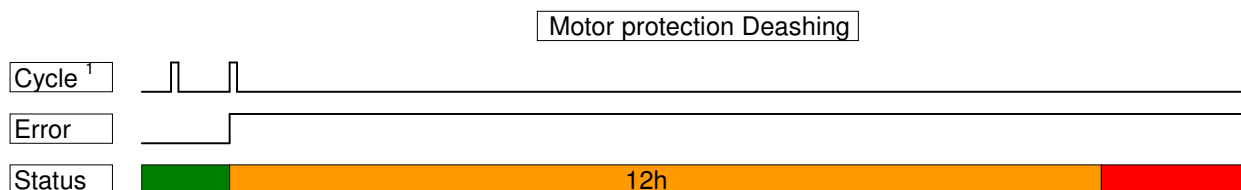
<u>Report text</u>	<u>Possible causes</u>	<u>Error correction</u>
Secondary blower: Error	Fuse in PH1 blower module defective	Have customer service replace fuse
	Frequency-converter switched off due to an error	Acknowledge error by pressing the 'FN' push-button on the frequency-converter; if necessary, make note of error key and inform customer service
	Motor cable wire break	Check wiring to blower; inform customer service
Silo hatch	Silo opened for more than 10 seconds	Close silo
	Wire break	Check wiring to the silo-hatch contact
Water shortage	Water-deficit	Fill up water in the heating system and release water-deficit covering
	No water-deficit cover attached	Install water-deficit cover or use cable bridge included
	Wire break	Check wiring to the water-deficit cover

13 Appendix 1 Ignition process



After the ignition duration has completed, a second ignition process takes place with an eighth of the ignition infeed. During the ignition infeed and the pre-heating, the secondary blower is switched off. The supply cycle increases with every blower pulse by the respective set value.

14 Appendix 2 Ash errors



= Normal operation
 = Warning
 = Error

¹ Motor protection Deashing stops only the deashing motor, register cleaning continues

² Motor protection Across/Inclined stops all deashing motors

³ Motor protection Register stops only the register cleaning, deashing continues

⁴ Ash drop-in shaft or Ash bin full stops all deashing motors

⁵ Cover open stops only the register cleaning, deashing continues

15 Summary

We hope that you have thoroughly read and understood this manual. If you do not understand any part of the manual, we would be very thankful for your feedback.

We wish you much enjoyment with your Heizomat boiler system.

Our partner:



Gerätebau- Energiesysteme GmbH
Maicha 21

91710 Gunzenhausen

Tel.: +49 (0)9836 9797 - 0

Fax: +49 (0)9836 9797 - 97

info@heizomat.de

www.heizomat.de

