24/02/2015
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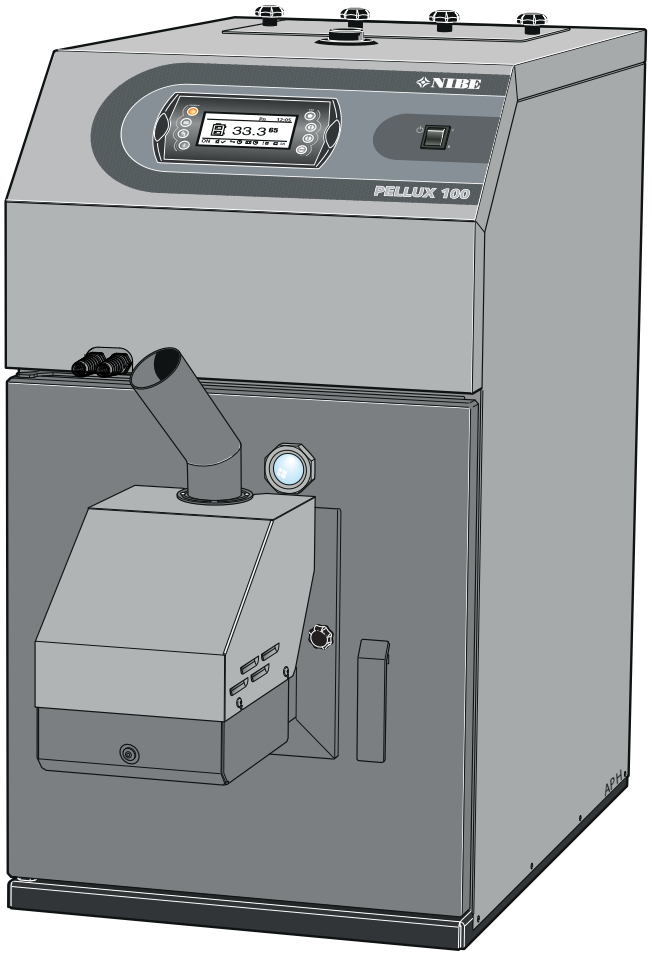
# INSTALLATION & OPERATING MANUAL

# PELLUX 100/20
# PELLUX 100/30



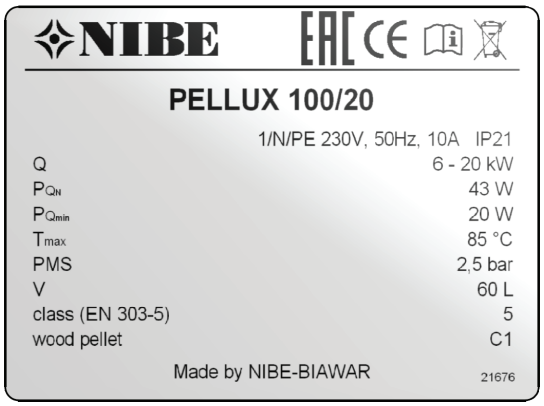

NIBE

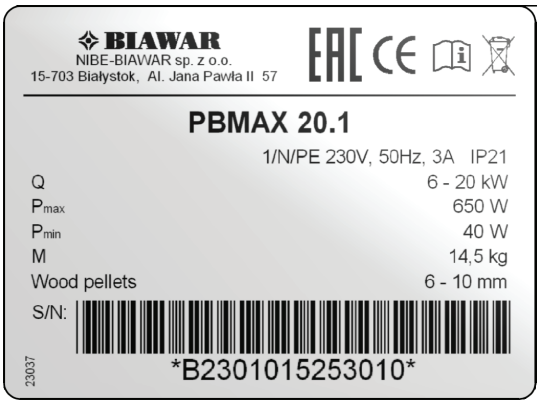
# Information for the User

We recommend the following steps after the consumption of 300 kg of pellets:

1. Check both ash pans and the combustion chamber. Empty the ash from them and clean, if necessary.
2. Check the burner grate. If you find ash or deposits there, clean the grate (including air holes).
3. Check the bottom of the pellet tray. If dust has accumulated there clean it.
4. Remove the cleanout top cover, remove the turbulators and clean them (repeat this step every month).
5. Use only high quality wood pellets of a diameter from 6 to 10 mm and a maximum length of 30 mm.

**Dataplates are located on the right side of the boiler and under the cover of the front panel, also on the right side of the burner.**




| Symbol | Description |
|---|---|
| PELLUX 100/20 | Type of boiler |
| IP 21 | Degree of protection |
| Q | Range of electric power |
| $P_{QN}$ | Power consumption at nominal power |
| $P_{Qmin}$ | Power consumption at minimum power |
| $T_{max}$ | The maximum operating temperature |
| PMS | Maximum working pressure |
| V | Water storage capacity |
| class (EN 303-5) | Boiler class according to the EN 303-5 |
| wood pellet | Basic fuel |
| CE | The CE marking |
| | Sign electro recycling - waste |
| | Sign indicating the need to read the manufacturer's information |

| Symbol | Description |
|---|---|
| PBMAX 20.1 | Type of burner |
| IP 21 | Degree of protection |
| Q | Power Rating |
| $P_{max}$ | Maximal electrical power |
| $P_{min}$ | Minimal electrical power |
| $T_{max}$ | The maximum operating temperature |
| M | Weight |
| wood pellets | The required pellet size |
| B2162014015001 | Serial number |
| CE | The CE marking |
| | Sign electro recycling - waste |
| | Sign indicating the need to read the manufacturer's information |

### "The Clean Air Act 1993 and Smoke Control Areas"

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

**The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been "authorised" in Regulations and that appliances used to burn solid fuel in those areas (other than "authorised" fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.**
**Further information on the requirements of the Clean Air Act can be found here : http://smokecontrol.defra.gov.uk/**
**Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements.**

**Pellux 100/20 and Pellux 100/30 have been recommended as suitable for use in smoke control areas when burning wood pellets.**

*The product is not intended for use by persons with reduced physical fitness/mental efficiency or without experience and knowledge, if they are not supervised or instructed by a person responsible for their safety. Operation of the product by children is strictly prohibited.*
*We reserve the right to make product design changes and changes in the manual.*

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## General

Thank you for your confidence in us and our product, we also congratulate you on your choice of the PELLUX 100 boiler. It is a high quality universal boiler, designed and manufactured by:

NIBE Energy Systems Limited
Unit 3c, Broom Business Park, Bridge Way
S41 9QG Chesterfield
Tel: +44 (0)845 095 1200
Fax: +44 (0)845 095 1201

In order to achieve the highest efficiency and safe working conditions, please read this Installation & Operating Manual carefully and comply with the recommendations and observations contained in it.

The PELLUX 100 boiler is designed to operate in open or closed systems. Please note that the system has to be protected in accordance with the applicable regulations. For the boilers operating in an open and closed systems, protection of the system must be in accordance with local regulations. PELLUX 100 boiler's can be used in residential single and multi-family buildings, guest houses, department stores, etc.

The PELLUX 100 boiler fitted with PBMAX burner is a device with high energy efficiency, up to 92 %, a significant functionality and modern design. The design of the product refers to the long tradition and experience of the Swedish company NIBE in the production of solid fuel fired boilers.

The basic boiler fuel is a modern, eco-friendly fuel in the form of wood pellets. A burner used in the unit ensures minimum pellet consumption in relation to the thermal power received, resulting in fuel-efficient and comfort operation of the boiler.

The PELLUX 100 boiler has a compact design and operational solutions adapted to streamline its operation. With the enhanced electronic control, you can control many parameters of the unit, adjusting it to different installation conditions and individual needs.

This Manual applies to the PELLUX 100/20 boiler with the PBMAX 20 burner and the PELLUX 100/30 boiler with the PBMAX 30 burner.

**ATTENTION**

***PELLUX 100 boiler may only be installed by competent and qualified personnel, in accordance with applicable regulations, standards and manufacturer's recommendations. Failure to follow these instructions may void your warranty.***

**ATTENTION**

***Use only original spare parts and accessories. NIBE takes no responsibility for damages resulting from the use of parts from other manufacturers.***

# Installation

## Intended Use

PELLUX 100 boiler is designed to heat homes and small buildings.

## Product Description

The boiler is designed to burn wood pellets.

Vertical convection system and the system of automatic soot removal from the combustion tubes facilitate its cleaning. This ensures a high and equal level of energy efficiency. A large ash box facilitates the daily maintaining of cleanliness and extends the time between subsequent ash removals.

Burner installed in the PELLUX 100 boiler is provided with automatic fuel feeding system. The boiler regulator is responsible for the process of the fuel supply and the burner operation. Thanks to its modular design, it is possible to expand the control system.

The system can be expanded up to: 16 heating circuits, including 2 circuits for the hot water treatment, heating system control with heat accumulation tank – a buffer and control of the solar heating system operating with the boiler.

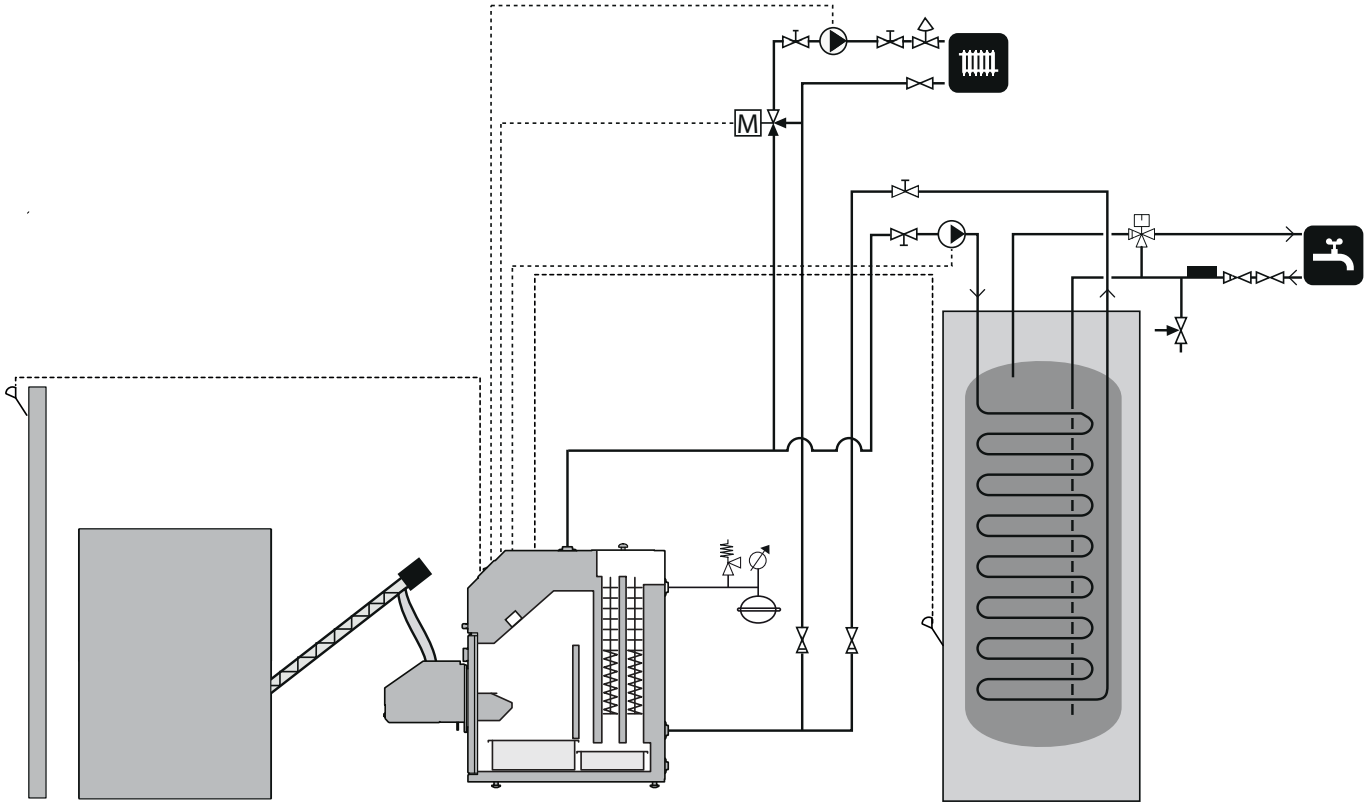
## Heating

The heating medium is discharged to the heating system through a nozzle located on the top of the boiler via a 3-way valve. The three-way valve mixes the heating medium flowing from the boiler with a colder medium returning from the instalation, which maintains the preset temperature in the instalation.

## Hot Utility Water Treatment

The boiler allows connection of an external hot water heat exchanger, and an external circulating pump of the hot water system.

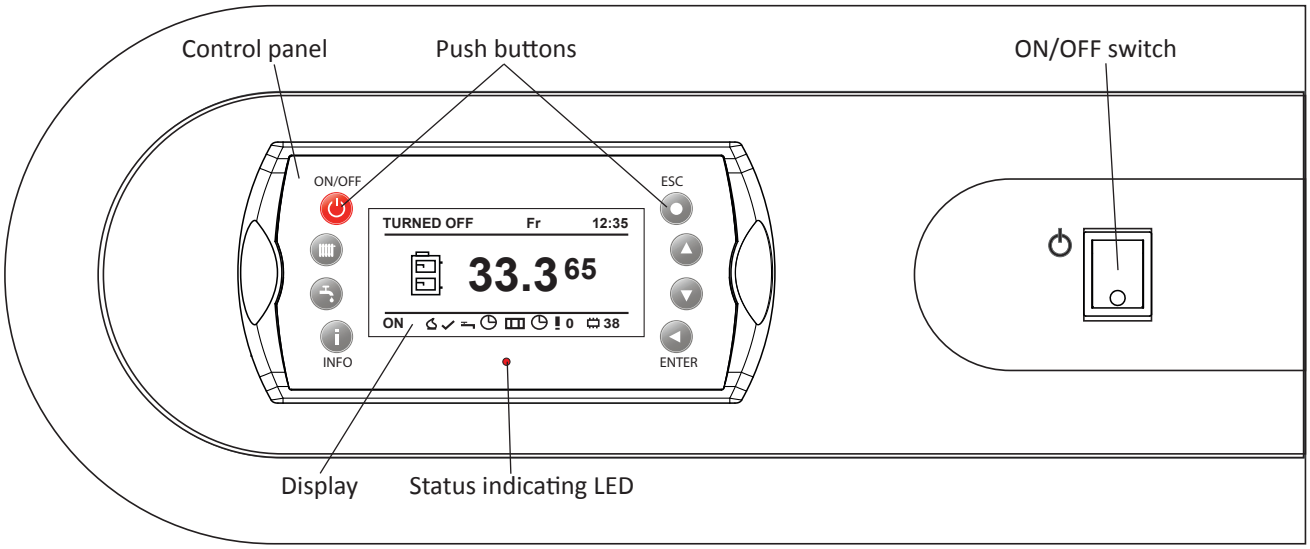
## System Diagram




**ATTENTION**

***This is a schematic representation only. The actual diagram of the system should be developed by an individual qualified to do so, in compliance with all standards and regulations.***

## Control Panel




Two types of menu are available in the unit: a simple menu and Home menu.

**Simple menu** – allows quick access to the basic control panel features. You can access the simple menu by pushing the UP or DOWN buttons on the main display.

**Home menu** – allows access to all control panel functionalities. You can access the Home menu by pushing the ENTER button on the Home screen.

You can return to the Home screen from any screen by pushing the ESC button several times.

### Control Panel Features

**Status Indicating LED**

| | |
|---|---|
| *Green LED lights on* | Control panel switched OFF |
| *Green LED flashes* | Control panel switched ON, burner switched ON |
| *Orange LED lights on* | Control panel switched ON, burner switched ON |
| *Orange LED flashes* | Burner works |
| *Red LED lights on* | An alarm exists, which requires acknowledgment |
| *Red LED flashes* | Indicates an active alarm |

**ON/OFF.** To switch the control panel ON or OFF, press and hold the ON/OFF button for at least 3 sec.

**Heating.** Quick access to the complete configuration of the central heating settings.

**Hot Water.** Quick access to the complete configuration of the hot utility water settings.

**INFO.** It displays navigation data and descriptions of the controlled parameters. Opens alarm list if any active alarms exists.

**ESC.** Return a level up in the menu; skipping a parameter change.

**Up.** Navigating the menus, increasing the value of the parameter being edited. On the Home display, entering the simple menu.

**Down.** Navigating the menus, decreasing the value of the parameter being edited. On the Home display, entering the simple menu.

**ENTER.** Accessing menus. Acceptance of changes in the value of the parameter being edited. Alarm acknowledgement.

## Start-Up and Shutdown

The burner is fully automatic, i.e. it automatically ignites and extinguishes, and does not require manual start-up and adjustment during operation. The process of firing pellets in the PBMAX burner is initiated by the boiler. For more information about the settings, see the section **Boiler Regulator Settings** on page 23.

**Start-Up**

Before the first start-up of the burner (or if you run out of fuel), fill the auger with pellets. Fill the dispenser with pellets, and then connect the feeder power cable to the wall outlet, or run the Simple menu function FEED FUEL. Complete filling of the feeder tube takes about 10 - 30 minutes (depending on the feeder model). When the pellets reach the feeder outlet, leave the feeder running for approximately 2 minutes in order to optimize the feeder tube filling and ensure uniform fuel supply. During the filling, let the pellets fall into a container (e.g. a bucket) so that you can throw them back into the dispenser. Then shift the plug into the burner socket and install the corrugated hose between the feeder and the burner (securing it with a hose clamp).

**1.** Push the ON/OFF switch to start the boiler.
**2.** In order to start the burner, push and hold the ON/OFF button for 3 seconds.
**3.** Before turning the burner ON, two-step grate and heat exchanger cleaning process takes place. (The default settings allows for adjustments in the range of 1-5.) Display of the control panel shows the status of CLEANING. The heat exchanger is cleaned for 30 seconds during the grate cleaning process.
**4.** Ignition process starts after the completion of the cleaning process.

**A** The FIRING UP command is displayed on the control panel display.
**B** The pellet is supplied to the burner for a preset time (70-80 sec by default, editable).
**C** The heater and air blower are switched ON.
**D** A photocell detects the flame and switches the electric heater OFF.
**E** Ignition process starts. Control panel display indicates the INCANDESCING command. This procedure takes approx 5 mins within which the air blower speed increases gradually.
**F** At the end of the start-up procedure, the boiler shifts to the preset program (threshold or modulating operation).

**ATTENTION**

***The standard ignition process takes approx. 5 min. If within that time the photocell does not detect a flame the igniter retries this process 5 times. When the fire still cannot be detected after 5 attempts, the fire alarm procedure is initiated (No. 2 - No flame or fuel) and the ignition process is interrupted.***

**Shutdown**

**1.** In order to shutdown the burner, do the following: push and hold down the ON/OFF button for 3 sec.
**2.** The control panel display indicates TURNED OFF.
**3.** The pellet feeder stops.
**4.** The air blower operates until the no-flame status detection.

**ATTENTION**

***The burner may still operate after switching the Control Panel OFF (damping a fire), depending on the previous status. Do not interrupt this condition. If the unit is to be disconnected from mains, wait until the fire extinguishing process ends and the burner status shifts to TURNED OFF.***

You can also switch off only the burner alone, without switching the heating system OFF. In order to do this, proceed as follows:

**1.** Enter the BURNER menu, and select SETTINGS option.
**2.** Select the **Burner on** option and set it to **NO**.

The shutdown sequence is initiated immediately. The boiler regulator still controls the heating system circulating pumps.

# Control Panel

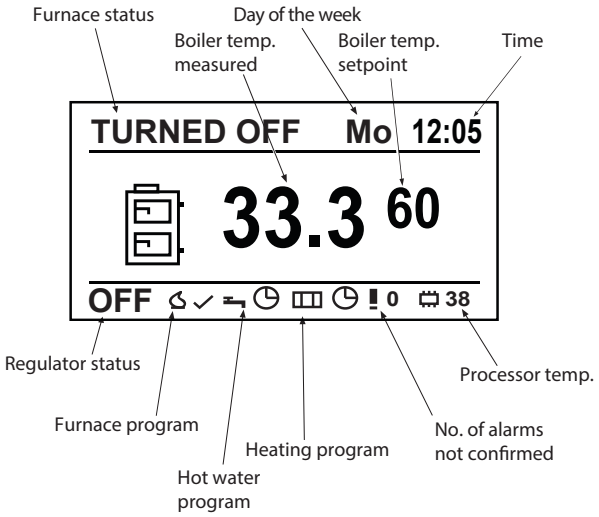
## Control

### General

The boiler Control Panel is a state-of-the-art microprocessor that controls not only the boiler but also the central heating and hot utility water systems.

The device controls the combustion process by feeding the required amount of air and fuel. Thanks to the use of solid state relays, the air blower output is continuously adjustable and thanks to the advanced operating algorithm and the possibility of control of many parameters, the system can be easily adjusted to the needs of the heating system.

### LCD Display




The Home screen is displayed during normal operation of the PELLUX 100 boiler, where you can see the furnace status, temperature setpoint and measured temperature. Also, date and time, regulator status, current boiler mode of operation, number of alarms and processor temperature are displayed here.

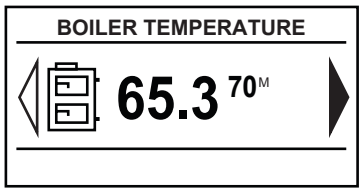
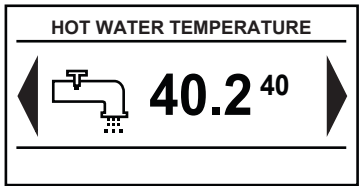
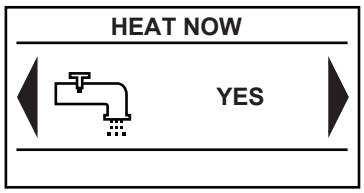
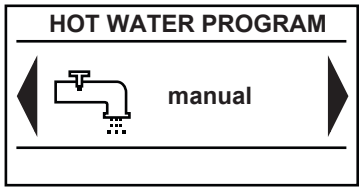
### Furnace statuses

| Status | Description |
|---|---|
| TURNED OFF | Burner does not operate. Operation is not allowed. |
| CLEANING | Blowing of burner with strong jet air and sliding the grate out. |
| FIRING UP | Fuel ignition. Administering an initial dose of fuel, start of lighter and blower. |
| INCANDESCING | After detecting the flame ignition phase, air blower speed is increased in order to heat the furnace up. |
| POWER 1 | Stage 1 of the burning operation (MIN power). |
| POWER 2 | Stage 2 of the burning operation (MAX power). |
| MODULATION | Burner operates with power modulation (power range). |
| BURNING OFF | Damping of the furnace. Air blower operates until complete disappearance of the flame. |
| STOP | Burner does not operate but its operation is allowed. The required boiler temp has been achieved. |

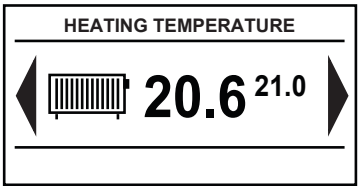
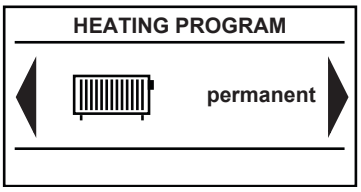
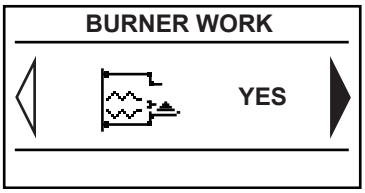
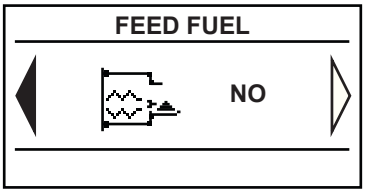
## Simple Menu

| | | |
|---|---|---|
| Main Menu | BOILER TEMPERATURE | BOILER TEMPERATURE |
| | HOT WATER TEMPERATURE | HOT WATER TEMPERATURE |
| | HEAT NOW | HEAT NOW -YES/NO |
| | HOT WATER PROGRAM | HOT WATER PROGRAM - time/manual/turn off |
| | HEATING TEMPERATURE | HEATING TEMPERATURE |
| | HEATING PROGRAM | HEATING PROGRAM - time/permanent/turn off/econom. |
| | BURNER WORK | BURNER WORK - YES/NO |
| | FEED FUEL | FEED FUEL - YES/NO |

Navigation through the simple menu by clicking on UP and DOWN arrows. Value of any selected menu or submenu item can be edited by pushing ENTER button.

| Menu | Description |
|---|---|
|  | Displays the current furnace temp (large fonts) and furnace temp setpoint (small fonts). 'M' means operation in manual mode. 'A' means operation in the boiler auto temp mode.<br>After pushing ENTER, you can access the boiler setpoint setting. |
|  | Displays current hot water temp (large fonts) and temperature setpoint (small fonts).<br>After pushing ENTER, you can access the hot utility water temp setpoint setting.<br><br>This menu applies to the hot utility water circuit No. 1.<br>**ATTENTION**<br>***Temperature is only displayed when a temp sensor is connected and the hot utility water circuit activated in the menu settings.*** |
|  | Heats up hot water to the comfort temp once regardless of the program selected.<br>This menu applies to the hot utility water circuit No. 1. |
|  | Hot water program No. 1:<br>a) Time – acc. to the preset time intervals<br>b) Manual – comfort temperature is maintained regardless of time intervals<br>c) Turn off – heating OFF<br>This menu applies to the hot utility water circuit No. 1. |

# Control Panel

| Menu | Description |
|---|---|
|  | Displays current temp in room No. 1 (large fonts) and setpoint value (small fonts). After pushing ENTER, you can access the settings of the room temp setpoint<br>This menu applies to the central heating circuit No. 1. |
|  | Program for heating circuit No. 1:<br>a) Time – according to the preset time intervals<br>b) Permanent – comfort temperature is maintained regardless of time intervals<br>c) Turn off – heating OFF<br>d) Economy – temperature setpoint outside the heating period<br>This menu applies to the central heating circuit No. 1. |
|  | Burner operation allowed. If this option is deactivated, the Control Panel controls the heating system, but does not fire the burner (even when temperature drops below the values, which would ignite the burner under normal operation conditions) |
|  | Manual activation of the fuel feeder from the dispenser.<br>This feature is useful when running out of fuel from the dispenser, or at the first start-up.<br>After refilling the dispenser with fuel, start the FEED FUEL option until the fuel starts to discharge from the feeder tube to the burner |

# Heating

## General

The internal temperature is dependent on several factors.

- The sun rays and heat emitted by humans and domestic appliances are sufficient to maintain the proper temperature in the house for a warmer part of the year.
- When it gets colder outside, the heating system should be turned on. The lower the outdoor temperature the higher the temperature of radiators (if an outside temperature sensor and mixing valve are installed.)

After entering the operating parameters of the system from the control panel, the boiler starts automatic operation providing optimal and comfortable conditions of use.

## Basic Modes of Operation of the Boiler

Controlling of heat production is based on the read out of indications of two temperature sensors, external and internal (for the room temp). Both are optional and available as accessories.

**Outside Temperature Sensor**

The boiler heats the water to the desired temperature when the outside temperature drops to a preset value. This is done automatically on the basis of information obtained from the external sensor, and the sensor on the lines supplying the radiators (a sensor behind the mixer, one per circuit.)

The temperature sensor (installed on the outside North/ North-West facing wall of the house) detects the temperature variations, which makes the boiler able to respond automatically to the drops in outside temperature before the rooms in the house cool down.

**Room Temperature Sensor (Option)**

This sensor measures the temperature in the room and balances the flow temperature. If the temperature exceeds or falls below the setpoint, the flow temperature is reduced or increased by the mixing valve accordingly.

**Manual control of the boiler working temperature (system without mixing valve)**

The user can set the boiler to operate at a preset temperature, which translates directly to the temperature of radiators.

## Setting the Automatic Control of the Heating System

In order to preset various temperatures, enter the CENTRAL HEATING menu. You can select the desired values in the SETTINGS and SERVICE tabs. For more detailed information, see the **Boiler Regulator Settings** on page 23.

**ATTENTION**

***Wait a day between successive settings to allow the temperature to stabilize.***

## Basic Parameters for Auto Control of the Heating System

Flow temperature of floor heating should be dependent on the material of the floor. For floors made of wood, you can increase the flow temperature. Adhere to the manufacturer's recommendations.

## Adjustment of the Factory Set Parameters

If the temperature setpoints in the rooms cannot be obtained, adjustment of the preset parameters may be required.

## Manual Temperature Change in the Rooms

In order to change the room temperature temporarily or permanently, select **Comfortable temp**, or **Programme**, or **Economical temp** options in the CENTRAL HEATING/C.H. SELECT/SETTINGS/ submenu (only if the room temp sensor is installed, which is optional.)

**ATTENTION**

***Temperature increase in the room can be limited by a thermostat installed on the radiator or in underfloor heating. In such a situation, you should increase its setpoint.***

# Maintenance and Troubleshooting

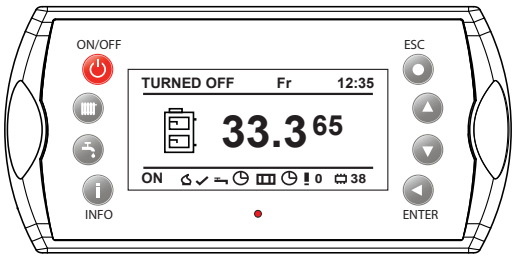
## General

### Alarm

The LED indicator light will light continuously red, if an alarm which has not been acknowledged is present.

The LED indicator light will flash red, if an alarm which has been acknowledged is still present.

In order to check the alarm, enter the ALARMS menu, where you can see the alarm code and description. For the table with the alarm codes and descriptions, see page 44.




### Burner

In order to ensure the economical and ecological operation of the system, the burner should be always optimized. Inspection and regulation should be carried out before each heating season by a specialist in this field.

### Circulating Pump

Even if the circulating pump is OFF for a longer period of time, the computer controlling the boiler will run it twice a day for 3 minutes. This is to prevent jamming of the pump when starting the heating system.

### Soot and Ash Removal

Clean the chimney regularly at the intervals described in the relevant fire regulations. The frequency of cleaning of the boiler depends on the mode of its operation and requires monitoring.

**ATTENTION**

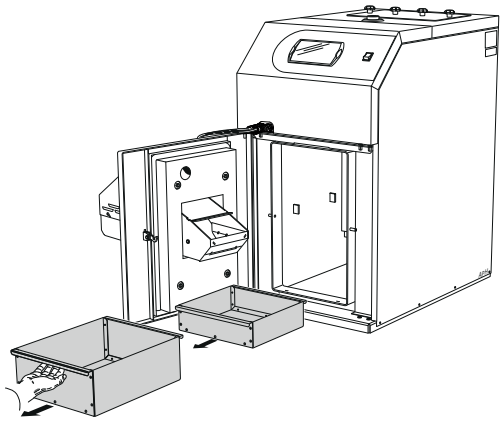
***Always disconnect the power supply when performing servicing or maintenance of the boiler and burner.***

The boiler features an automatic removal of soot from the flues (smoke tubes), which facilitates maintaining cleanliness and efficiency of the boiler during its operation. In order to achieve an optimal level of energy efficiency of the work of the modern and properly adjusted pellet burner, remove soot regularly from the other boiler surfaces exposed to the flame (recommended: every 7 days). Clean the furnace chamber of the boiler, flue gas turbulators and flues at least once a month. It's the user's responsibility to perform these operations and is not covered by warranty services.

If the chimney draught regulator is installed, close it before cleaning. This is to prevent the spread of soot into the boiler-room during cleaning. After cleaning, open the regulator again. For detailed information, see **Cleaning** on page 58.

**ATTENTION**

***When you open the door of the combustion chamber, the burner supply is automatically cut off. In order to restart the burner, close the door carefully.***



Soot box and ash box are located under the combustion chamber. Empty them at least once a month.

**ATTENTION**

***You can only begin cleaning after damping a fire and after the furnace temperature drops to the ambient temp Use the adequate personal protective equipment when cleaning.***

## Failure Causes and Corrective Measures

In the event of malfunction or breakdown, please check the following points.

**ATTENTION**

***Boiler must be filled with water during start-up!***

**Low temperature in the rooms**

- Faulty set/installed mixing valve
- Boiler's temperature limiter has tripped. This may have tripped during transportation
- Air in the boiler or radiator system
- Shut-off valve in the heating system closed
- Circulating pump switched OFF or jammed. For more information, see **Emergency start of the circulating pump** on page 13.
- Burner failure
- Circuit breaker tripped
- Max. flow temperature set too low
- Boiler is not switched ON
- Burner could be switched OFF by an external controller

**High temperature in the rooms**

- Heating automation settings incorrect

**Resetting of temperature limiters in the burner and boiler (STB)**

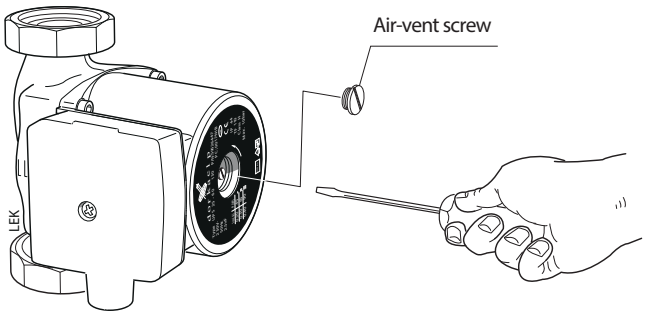
The unit has two temperature limiters installed. One of them is installed in the boiler and the other in the burner.

The temperature limiter in the burner (which should not be confused with the STB in the boiler) cuts off supply to the boiler and feeder when the temperature rises to 90 °C +/-5 °C.

The temperature limiter in the boiler (STB) cuts off supply to the feeder and air blower and activates alarm when the temperature rises to 99 °C -10 °C.

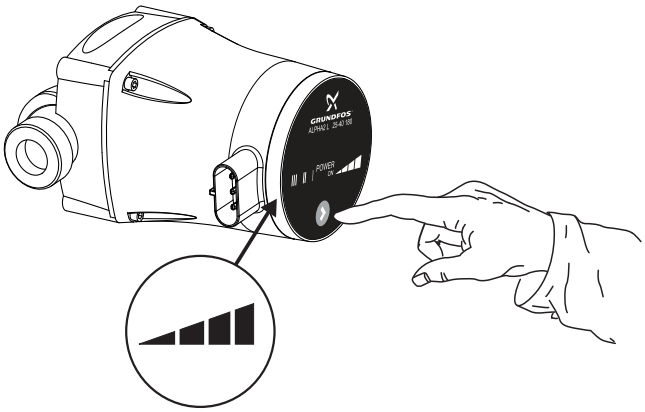
Before the burner and pellet feeder can be restarted, you have to switch the temperature limiters ON manually. For more details, see page 57.

**Emergency start of the circulating pump**




- Stop the circulating pump
- Remove the air-vent screw. There can be a water leakage from the pump
- Using a screwdriver, rotate the pump vanes by hand
- Screw venting screw back into place
- Start the pump and check if it operates correctly

Usually, it is easier to start the pump when it is switched ON. If you carry out the test with the circulating pump ON, be prepared to the screwdriver jamming in the pump impeller vanes.



If it is an electronic circulating pump and there is not any automatic regulator of the return temp in the system installed, switch the auto mode in the pump OFF, which will prolong the life of the boiler.

**Low temperature of the hot utility water**

- Abnormally large hot water usage
- Wrong setpoint of the mixing valve
- Shut-off valves at the heat exchanger throttled or fully closed
- Boiler's temperature limiter has tripped, this can occur during transportation
- Circulating pump set to lower speed or switched OFF
- Too large flow of the hot utility water
- Burner failure
- Burner could be switched OFF by an external controller
- Circuit breaker tripped
- Boiler is switched OFF
- Incorrect parameters set in the controller settings
- Shut-off valve in the cold water supply line to the heat exchanger throttled or closed
- Too low hot water temp setpoint

**ATTENTION**

***Tripping of the STB temperature limiter is a warning. If the situation repeats, call the installer.***

# General Information for Installers

## Location of the Boiler

The boiler should be installed in accordance with local regulations. Installation of the boiler and pellet feeder on an even and levelled concrete foundation with a height of at least 5 cm and the edges protected by steel kerbs is recommended.

The boiler-room should have adequate air exchange. Correctly designed and constructed supply and exhaust ducts should be made in the room. Boiler room must have air intake of an accumulative 200 $cm^2$

Ventilation ducts shall be made of non-combustible materials. Adequate lighting, as far as possible covered by natural light, should be ensured, but also the artificial lighting installation should be provided.

The floor must not be flammable or must otherwise be covered by a 0.7 mm thick steel sheet that extends 0.5 m out from the boiler in each direction

## Chimney – Requirements

**ATTENTION**

***Ensure that the chimney cleaning is carried out in accordance with the procedures in force. If doubt, please contact a chimney sweep.***

Chimney with the appropriate draught and with the right dimensions is a primary condition for the proper functioning of the boiler. To a large extent, the productivity and efficiency of work depends on it. The boiler may only be connected to the chimney with the appropriate draught (see **Specifications** page 68). It is important that the flue diameter (cross section) and height are such, that no overpressure could be created in the boiler and in the flue.

The PELLUX 100 boiler has a flue (circular cross section) with an outside diameter of Ø133 mm. Flue must be tightly connected (e.g. by means of a connection made of adequately thick sheet) to the flue pipe. The connection should be made with a slope towards the boiler (recommended) or in a straight boiler-chimney line. Do not reduce the diameter of the connection. Any bends and elbows increase the resistance of flue gas flow, which may cause improper operation of the boiler.

**ATTENTION**

***Before installing, the flue pipe has to be tested and approved by a chimney sweep.***

## Pellet – Requirements

The PBMAX 20/PBMAX 30 burners installed in the boiler are designed to burn high quality wood pellets of 6-10 mm diameter and maximum moisture of 10 %, according to ISO 17225-2. We recommended Class A1 pellets. When using pellets of poorer quality, the boiler and the burner have to be cleaned more frequently.
Use of any other fuels in the burner is prohibited.

Pellets must be stored in a dry and clean place.

**ATTENTION**

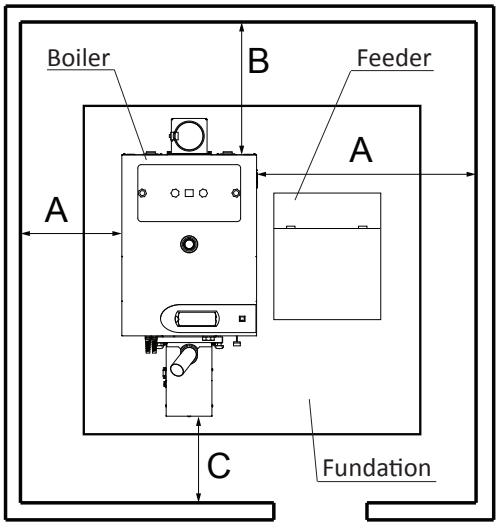
***It is recommended to use high quality fuel, coming from reliable sources. Fuel should have adequate moisture and not contain mechanical impurities (e.g. sand, stones, metal chips, etc.), which may deteriorate the combustion process and cause failure of the unit.***

**ATTENTION**

***NIBE shall not be liable for any malfunction and improper combustion resulting from the use of improper fuel.***

## Distance to Walls

Set the boiler while maintaining the minimum distances to the walls. When installing the unit, pay special attention to a convenient access to the boiler, burner and chimney during maintenance, cleaning and servicing.




Minimum distances to the building walls, PELLUX 100/20, PELLUX 100/30.

| Dimension | Distance [m] |
|---|---|
| A | 0,2 |
| B | 0,5 |
| C | 1,5 |

**ATTENTION**

***There is a risk of carbon monoxide poisoning, when the boiler is installed in a not-adequately ventilated room.***

## Installation

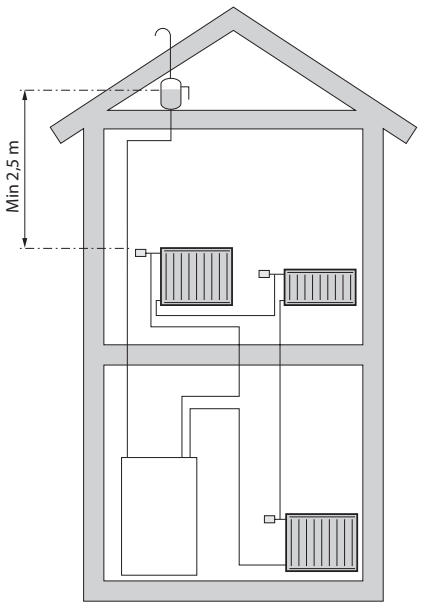
Comply with the applicable laws when installing the boiler.

The heating system and the boiler-room shall be made in accordance with local regulations.

The heating system of the closed layout shall meet the requirements of local regulations and shall be fitted with the system safety devices, such as:

- safety valve with the inlet and outlet pipe
- diaphragm expansion vessel
- expansion pipe
- protection of the heat source against exceeding the allowable temperature of the system water
- accessories: measuring and control devices, indicating at least the temperature of the system water inflow and pressure in the system; fittings for automatic venting of the expansion pipe; blowdown fittings that allow draining of the expansion vessel water tank.

If the system has the open expansion vessel installed, then, the difference in height between the highest positioned radiator and the expansion vessel shall not be less than 2.5 m.



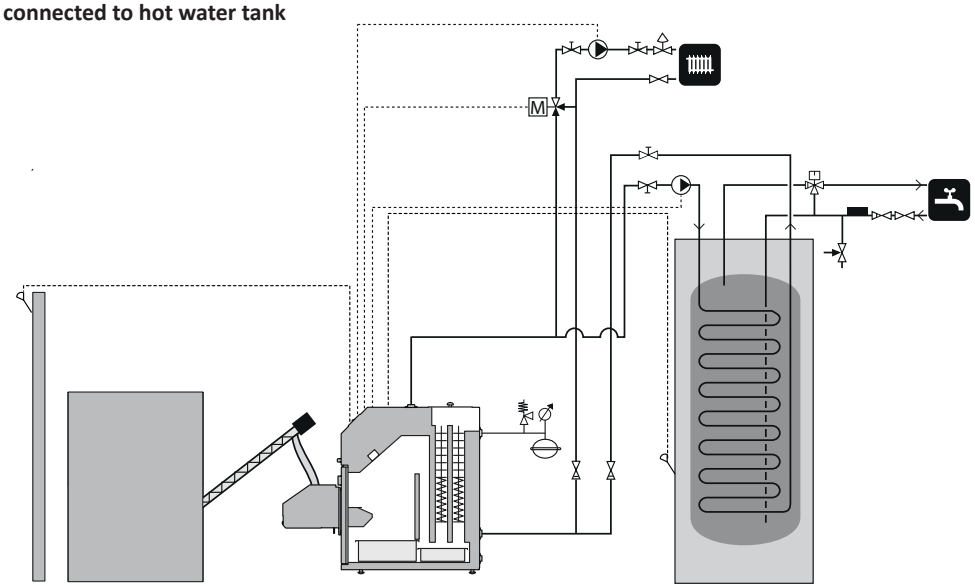

**ATTENTION**

***Before connecting the boiler, flush the system to remove small debris that can damage the boiler or pump.***

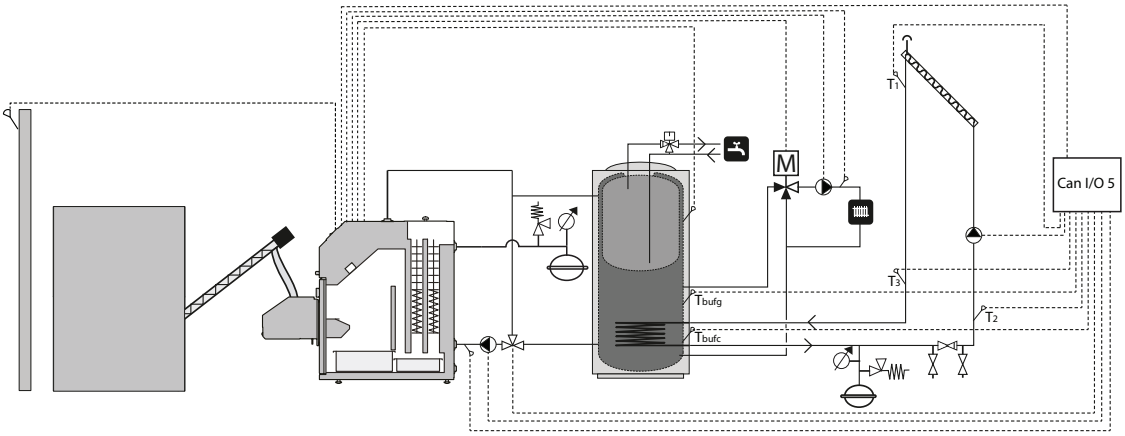
## Connection to the System

The following diagrams show the connection of the PELLUX 100 boiler with hot utility water exchanger, multivalent vessel, solar heating system, and a cascade of boilers.

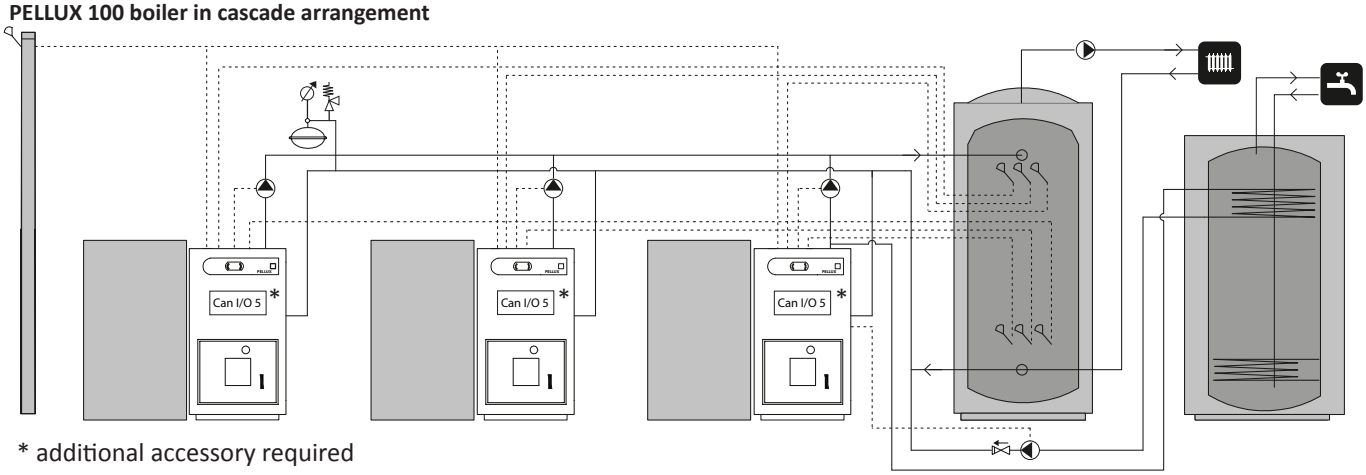
**PELLUX 100 boiler connected to hot water tank**



**PELLUX 100 boiler with multivalent vessel and solar heating system**




**PELLUX 100 boiler in cascade arrangement**




* additional accessory required

**ATTENTION**

***These are schematic representations only. The actual diagrams of the system should be developed by an individual qualified to do so, in compliance with all standards and regulations.***

# Electrical Connections

## Connection

The boiler is equipped with a regulator that controls the burner and circulating pumps. Electrical connection of external devices shall be made by an appropriately authorized and qualified electrician. Outputs suppying external devices shall be connected in accordance with the relevant indications.

- Power supply: 1/N/PE 230 V 50 Hz
- Outputs to external devices: 230 V/50Hz

For the detailed wiring diagram, see page 60.

**ATTENTION**

***Only an appropriately authorized and qualified electrician may connect the electrical installation and perform its servicing. The electrical installation and cable routing must be done in accordance with applicable regulations.***

**ATTENTION**

***No other electrical equipment may be connected to the boiler power supply line.***

## Internal Overvoltage Protection

Automatic controller of the heating system, pump, burner and the system of supply for these devices are internally protected by a 10 A miniature circuit breaker (MCB).

## Control Panel Connection

**ATTENTION**

***Power supply of the heating system must be disconnected when connecting the control panel.***

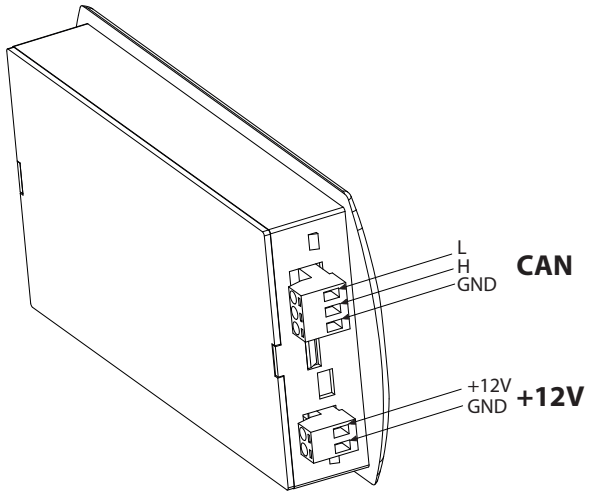
Connect the sensors and actuators to the controller, as required for the correct boiler operation, according to the individual configuration. Some adjustments in the system are required before the boiler start-up. For more details, see **Boiler Regulator Settings** on page 23.

Connection of additional accessories sometimes requires installation of additional modules.

Connection is to be made through additional CAN communication modules, allowing installation of additional accessories, such as:

- up to 16 heating circuits
- two hot utility water treatment circuits
- buffer tank
- solar heating system
- exhaust fan
- Lambda probe
- GSM module
- Internet module
- room temperature sensor
- external temperature sensor
- wireless room temperature sensor

Connect the control panel to the CAN communication module and power supply in accordance with the following diagram.




**ATTENTION**

***Connection may only be performed with power supply disconnected and only by an individual appropriately authorized to do it.***

**ATTENTION**

***Always remember to install the termination at the end of each CAN communication path. This is required even when connecting a single communication module.***

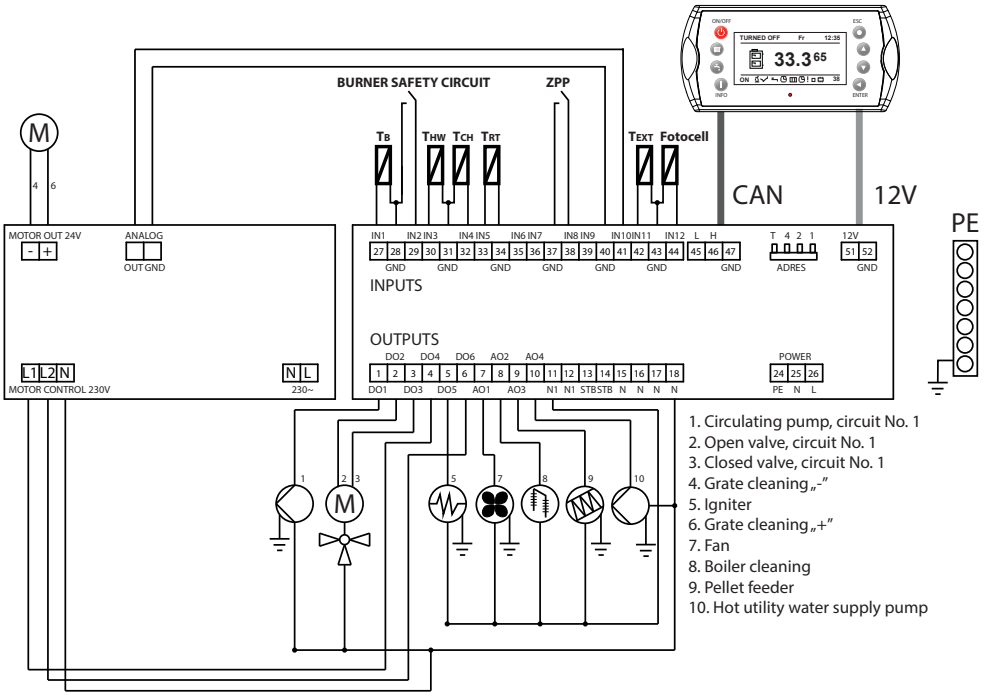
# Electrical Connections

## Direct Connection of Devices

The diagram below shows connection of module No. 6 and module for cleaning the grate to the control panel as well as the accessories that do not require any additional modules.

**ATTENTION**

***Never connect the PE conductor with neutral conductor (N).***




| Item | Description | Designation |
|---|---|---|
| TB | Boiler temp sensor | IN1, GND |
| Burner safety circuit | Safety circuit (open door, burner overheating, wrong installation) | IN2, GND |
| THW | Hot utility water sensor | IN3, GND |
| TCH | Central heating sensor | IN4, GND |
| TRT | Room temp sensor | IN5, GND |
| TEXT | External temp sensor | IN11, GND |
| Foto | Brightness sensor in the burner | IN12, GND |
| ZPP | External control; burner operation allowed when closed | IN8, GND |
| GND | Electronic earth for the connection of sensors | GND |
| 1 - CO 1 pump | Central heating circulating pump | DO1, N |
| 2 – Opening of the CO 1 mixing valve | Opening of the central heating mixing valve | DO2, N |
| 3 - Closing of the CO 1 mixing valve | Closing of the central heating mixing valve | DO3, N |
| 4 – Cleaning of the + - grate | Grate cleaning control to the module | DO4, N |
| 5 - Igniter | Igniter control | DO5, N |
| 6 - Cleaning of the + - grate | Grate cleaning control | DO6, N |
| 7 – Air blower | Burner air blower | AO1, N1 |
| 8 – Cleaning of heat exchanger | Cleaning of heat exchanger | AO2, N |
| 9 – Dispenser feeder | Dispenser feeder, e.g. control of the feeder gear-motor | AO3, N1 |
| 10 – Hot utility water pump No. 1 | Hot utility water circulating pump (circuit No. 1) | AO4, N |
| STB | Boiler temperature limiter (STB) | -- |
| N | Neutral permanent | -- |
| N1 | Neutral, switching contact (by STB) | |
| PE | Protective earth | |

## Burner Connection

Connect the boiler's power supply cable to the socket in the burner.

## External Temp Sensor Connection

Install the external temperature sensor on the external wall from the north, or north-west side in such a way that the morning sun does not affect the temperature read outs. The sensor is connected to the CAN communication module with two-wire conductor. Minimum area of the conductor is 0.4 $mm^2$, and length max 50 m.

## Heating Medium Temp Sensor

The boiler is supplied with temperature sensor. Connect it to the Cam communication module and install on the central heating circuit, directly behind the mixing valve. The sensor must tightly fit to the circut and be well insulated.

## External Control

**Burner**

Operation of the burner can be stopped by an external signal (heat pump, external control system, etc.) from a non-potential relay connected to the CAN communication module, input No. IN8. For the wiring diagram, see page 18.

**External circulating pump output**

External circulating pump (e.g. hot utlity water pump) is connected to the CAN communication module. Operation of the pump depends upon output values from the boiler controller. For the wiring diagram, see page 18.

**3-way valve with actuator output**

Connect the 3-way valve for the heating medium temperature control to the CAN communication module. This valve operates basing on the values entered on the control panel. For the wiring diagram, see page 18.

## Tables of the Sensor Resistances

**Internal temperature sensor, CTP-02 (room)**

| Temperature (°C) | Resistance (kΩ) |
|---|---|
| 0 | 32.56 |
| 10 | 19.87 |
| 20 | 12.49 |
| 30 | 8.06 |
| 40 | 5.33 |
| 50 | 3.6 |
| 60 | 2.49 |
| 70 | 1.75 |
| 80 | 1.26 |
| 90 | 0.91 |
| 100 | 0.68 |

**Outdoor temperature sensor, CTZ-01**

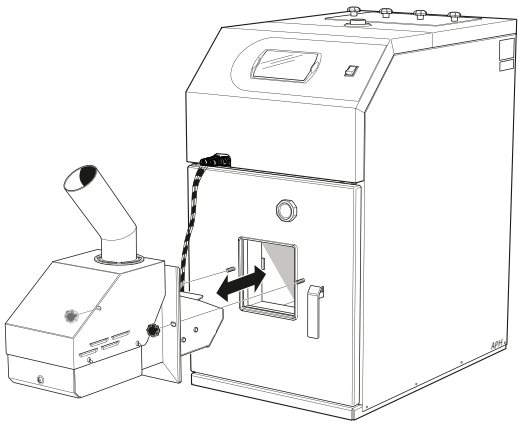
| Temperature (°C) | Resistance Min. (kΩ) | Resistance Nom. (kΩ) | Resistance Max. (kΩ) |
|---|---|---|---|
| -40 | 329.927 | 345.275 | 361.300 |
| -30 | 173.153 | 180.031 | 187.164 |
| -20 | 95.009 | 98.187 | 101.460 |
| -10 | 54.247 | 55.745 | 57.278 |
| 0 | 32.101 | 32.813 | 33.537 |
| 10 | 19.621 | 19.956 | 20.296 |
| 20 | 12.351 | 12.504 | 12.657 |
| 25 | 9.900 | 10.000 | 10.100 |
| 30 | 7.952 | 8.050 | 8.148 |
| 40 | 5.227 | 5.314 | 5.401 |
| 50 | 3.517 | 3.589 | 3.662 |
| 60 | 2.418 | 2.476 | 2.536 |
| 70 | 1.695 | 1.743 | 1.791 |
| 80 | 1.211 | 1.249 | 1.288 |
| 90 | 0.881 | 0.911 | 0.943 |
| 100 | 0.651 | 0.675 | 0.701 |
| 110 | 0.488 | 0.508 | 0.529 |
| 120 | 0.372 | 0.388 | 0.405 |

**Internal boiler temperature sensor, CT2a**

| Temperature (°C) | Resistance Min. (kΩ) | Resistance Nom. (kΩ) | Resistance Max. (kΩ) |
|---|---|---|---|
| -40 | 329.927 | 345.275 | 361.300 |
| -30 | 173.153 | 180.031 | 187.164 |
| -20 | 95.009 | 98.187 | 101.460 |
| -10 | 54.247 | 55.745 | 57.278 |
| 0 | 32.101 | 32.813 | 33.537 |
| 10 | 19.621 | 19.956 | 20.296 |
| 20 | 12.351 | 12.504 | 12.657 |
| 25 | 9.900 | 10.000 | 10.100 |
| 30 | 7.952 | 8.050 | 8.148 |
| 40 | 5.227 | 5.314 | 5.401 |
| 50 | 3.517 | 3.589 | 3.662 |
| 60 | 2.418 | 2.476 | 2.536 |
| 70 | 1.695 | 1.743 | 1.791 |
| 80 | 1.211 | 1.249 | 1.288 |
| 90 | 0.881 | 0.911 | 0.943 |
| 100 | 0.651 | 0.675 | 0.701 |
| 110 | 0.488 | 0.508 | 0.529 |
| 120 | 0.372 | 0.388 | 0.405 |
| 130 | 0.306 | 0.321 | 0.346 |
| 140 | 0.237 | 0.259 | 0.271 |
| 150 | 0.153 | 0.177 | 0.194 |

## Boiler Installation

### Burner



PBMAX burner is to be installed in the boiler door mounting opening. Install the burner using the knobs provided with the burner. After installation, ensure that the burner tightly fits to the boiler door.

**ATTENTION**

***In case of improper installation of the burner, the burner safety circuit alarm can be activated.***

After installing the burner, do the following:

**1.** Install the corrugated hose on the burner feed pipe and secure it with a hose clamp.

**2.** Connect the electrical cables from the boiler to the burner and from the pellet feeder to the burner.

**3.** Switch the boiler regulator and ensure that the burner safety circuit alarm is not displayed. Otherwise, check if the connection is correct and acknowledge the alarm.

### Fuel Dispenser and Feeding Screw (Auger)

The pellet feeder supplies the burner with fuel coming from the external fuel dispenser. Install the auger at an angle of 45 ° +/- 5°. During its operation, the auger installed should supply approx. 10-11 kg/h of pellets for PELLUX 100/20 and 12-13 kg/h for PELLUX 100/30.

The pellet dispenser and feeder are available as optional accessories. The recommended models are as follows:

- ZP350 kit + PP12/PPL12 and ZP600 + PP15/PPL15 (pellet dispenser with auger)
- PP15 & PP25 augers (1.5 m & 2.5 m)

that are dedicated to the PELLUX 100 boiler.

**ATTENTION**

***To connect the burner with the pellet feeder only use self-extinguishing corrugated hose provided. Using charging lines of other type is not permitted!***

**ATTENTION**

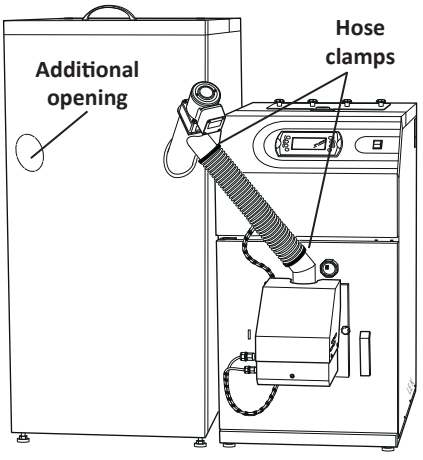
***We recommend disconnecting the feeder pipe from the burner before each opening of the boiler door.***

1. Set the fuel dispenser in a convenient place near the boiler and remove the plug for the feeder pipe.
2. Install the pellet feeder in the fuel dispenser opening.
3. Secure the feeder pipe with clamps.
4. Adjust the length of the flexible hose. the hose must not have any kinks in order to ensure free falling of the pellets and avoid collection of sawdust.
5. Secure the flexible hose to the burner and fuel dispenser with hose clamps.
6. Before the first start-up of the burner (or if you run out of fuel). Fill the dispenser with pellets, and then connect the feeder power cable to the wall outlet, or run the function Feed fuel. Complete filling of the feeder tube takes about 10 - 30 minutes (depending on the feeder model).
7. When the pellets reach the feeder outlet, left the feeder running for approx. 2 minutes in order to optimize the feeder tube filling and ensure uniform fuel supply. During the filling, let the pellets fall into a container (e.g. a bucket) so that you can throw them back into the dispenser.
8. Then shift the plug into the burner socket and install corrugated hose between the feeder and the burner (securing it with a hose clamp).

### Other Types of Fuel Dispensers

The fuel dispenser should have a cover installed protecting the pellets against moisture and the feeder components against possible mechanical damage (e.g. due to entering ahard object that might damage the feeder).

For the correct connection, see the drawing below.




**ATTENTION**

***FUEL: PBMAX burner is installed in the boiler, is suitable only for burning high quality pellets, of 6 - 10 mm diameter, 30 mm of length, and max 10% humidity. We recommend DIN PLUS/EN A1 Pellet- according to BS-EN 14961-2.***

## Draught Regulator

**ATTENTION**

***The chimney draught should be at least 18 Pa (20 kW) and 22 Pa (30 kW). If such parameters cannot be ensured, disassemble a couple of turbulators or use an exhaust fan.***

The chimney draught depends upon its diameter, height, building location, wind conditions, external temperature, boiler power output, flue gas temperature and soot accumulation in the chimney.

Most boilers operated currently are connected to older types of chimneys. Sometimes, their diameters and insulation are not adequate for the new types of fuel.

Large fluctuations in draught can cause some disturbances in the boiler combustion chamber operating conditions. In order to minimize these deviations and the risk of damage caused by condensation in the chimney, we recommend the installation of a draught regulator in the boiler flue.

**Draught regulator installation**

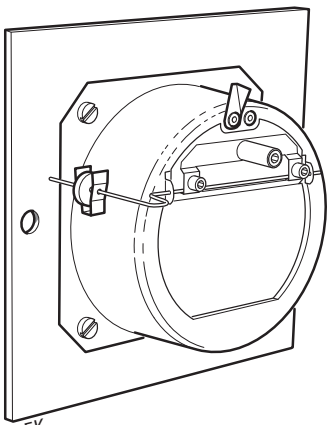
Design of the draught regulator allows its installation in the flues in any orientation: vertical, horizontal or inclined. The controllers are installed on an adapter plate that replaces the existing cleanout.

**Draught control**

Adjust draught with the throttle opened by holding the clip with a weight and shifting it along the guide. Each shifting of the weight of 2 mm corresponds to 1 Pa. These are approximate values and you should measure them with a micro pressure gauge.

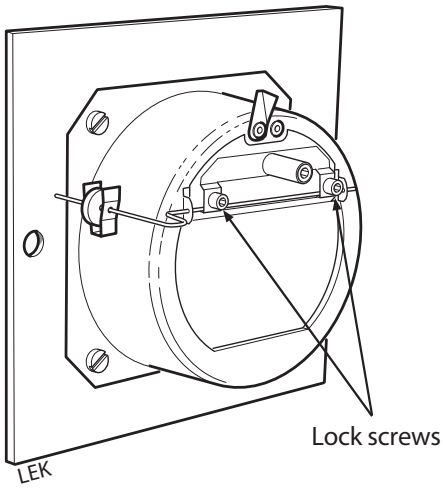
By default, the controller is set to 10 Pa.

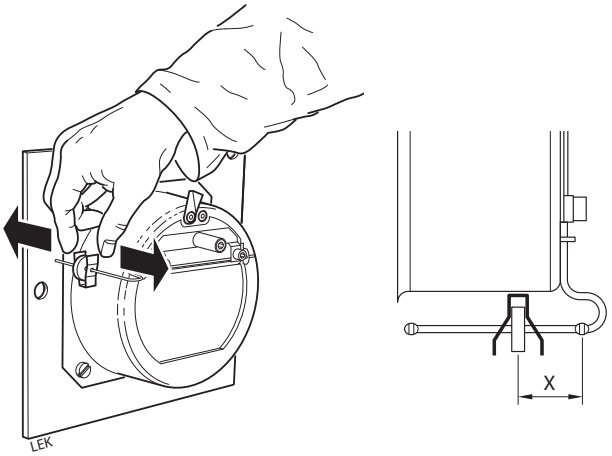
Correct adjustment should ensure smooth and even opening of the throttle when the boiler is switched OFF.



**Swing axle adjustment**

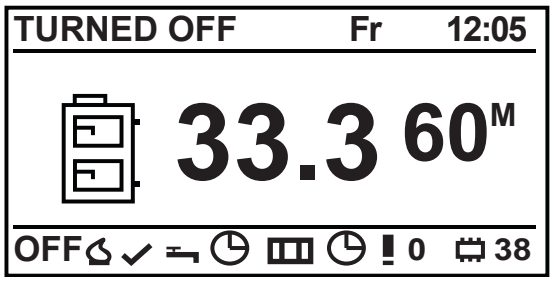
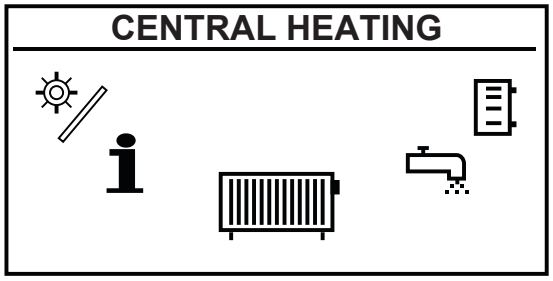
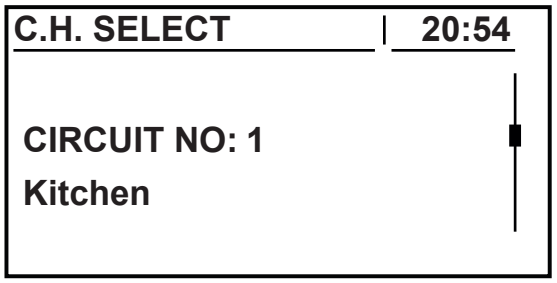
After the installation, slightly loosen two lock screws and turn the swing axle so, that it would be in horizontal position after closing the draught regulator. Retighten the lock screws.



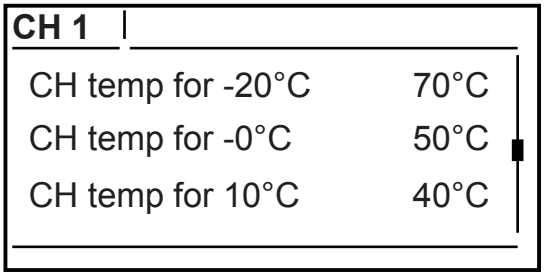
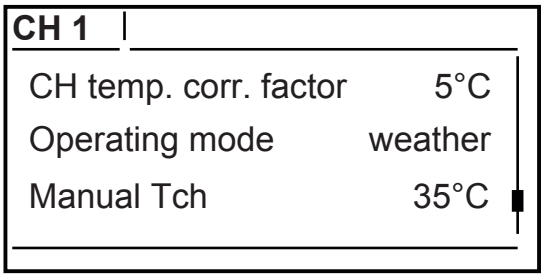
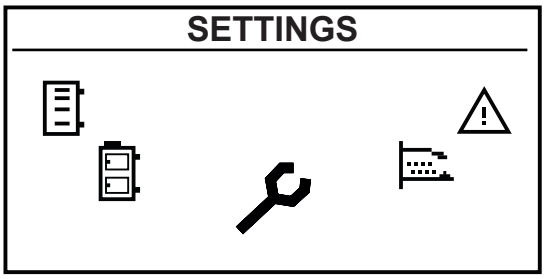
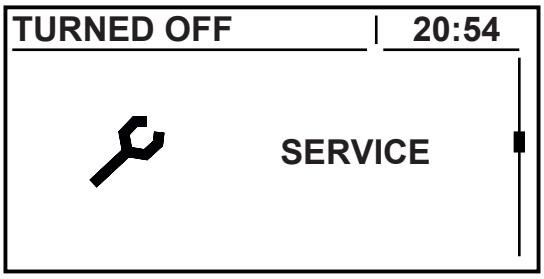
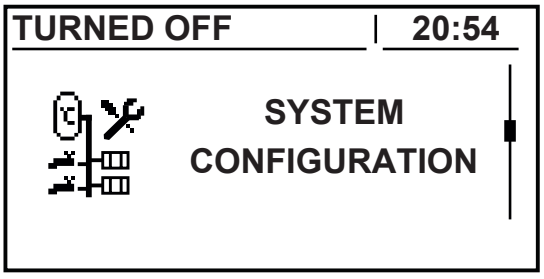
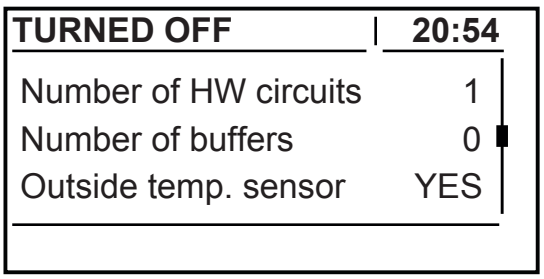



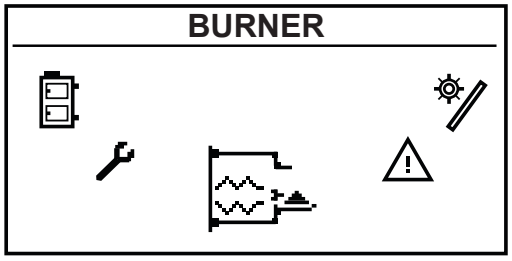
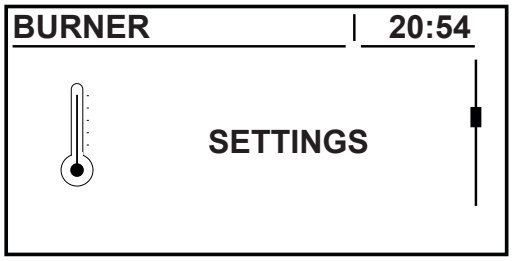
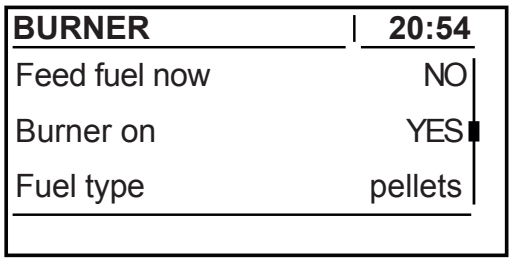
## Boiler Regulator Settings

The first boiler start-up requires enabling some features and entering some parameters. E.g. heating temperature sensor should be activated and the flow temperature set.

| Step | Menu |
|---|---|
| **1.** Push ENTER on the Home screen to enter the Home menu. |  |
| **2.** The Home menu contains the CENTRAL HEATING option. Open it by pressing ENTER. |  |
| **3.** By means of UP and DOWN arrows, select the desired section.<br>**4.** After selecting the desired section, open with ENTER. |  |
| **5.** By means of UP and DOWN arrows select the SERVICE option.<br>**6.** Open the SERVICE option by pressing ENTER.<br><br>The SERVICE menu is password-protected.<br>The password consists of the boiler temperature setpoint and the letters EST (e.g. If the boiler tempearture is preset to 70 °C, then the password is: 70EST).<br>For more details on using password, see page 26. |  |

## Boiler Installation

| Step | Menu |
|---|---|
| **7.** By means of UP and DOWN arrows, select the following:<br>• **MIN Tch pump**, press ENTER and set the lowest possible flow temp (+20 °C)<br>• **CH temp for -20 °C**, default: 70 °C, press ENTER and set the flow temp at the external temp equal to -20 °C<br>• **CH temp for 0 °C**, default: 50 °C, press ENTER and set the flow temp at the external temp equal to -0 °C<br>• **CH temp for 10 °C**, default: 40 °C, and set the flow temp at the external temp equal to +10 °C<br>• **CH temp corr. factor**, press ENTER and set the flow temp change value, when the external temp increments in 1 °C intervals<br>• **Operating mode**, press ENTER and select **weather** if the system operates with the external temp sensor<br>• **CH temp sensor**, press ENTER and select YES if the system contains the flow temp sensor<br>• **Permanent pump**, press ENTER and select YES if the system is controlled by an external temp sensor and flow temp sensor<br>Accept all above settings by pressing ENTER. |  <br>  |
| **8.** Press ESC repeatedly until you reach the Home menu.<br>**9.** By means of UP and DOWN arrows, select SETTINGS.<br>**10.** Press ENTER in order to open the SETTINGS submenu. |  |
| **11.** By means of UP and DOWN arrows, select SERVICE.<br>**12.** Press ENTER in order to open the SERVICE submenu.<br>The password consists of the boiler temperature setpoint and the letters EST (e.g. If the boiler tempearture is preset to 70 °C, then the password is: 70EST).<br>For more details on using password, see page 26. |  |
| **13.** By means of UP and DOWN arrows, select SYSTEM CONFIGURATION.<br>**14.** Press ENTER in order to open the SYSTEM CONFIGURATION submenu. |  |
| **15.** By means of UP and DOWN arrows, select **Outside temp sensor.**<br>**16.** Press ENTER in order to open the **Outside temp sensor** option.<br>**17.** Set the **Outside temp sensor** to **YES.** |  |

| Step | Menu |
|---|---|
| **18.** Ensure that the burner is installed. Using UP and DOWN arrows, select BURNER.<br>**19.** Open this option by pressing ENTER. |  |
| **20.** Using UP and DOWN arrows, select SETTINGS.<br>**21.** Open this option by pressing ENTER. |  |
| **22.** Set the BURNER to **YES**. |  |

These are the minimum settings that are to be entered in order to begin safe operation of the boiler.
Depending on the accessories connected to the boiler, some other parameters require to be set and activated in the controller, such as number of heating circuits, number of hot utility water treatment circuits, buffer tank, solar units etc.

### Burner Deafult Settings

Set the following parameters in the BURNER/SERVICE menu.

| Menu | 20 kW | 30 kW |
|---|---|---|
| Air MIN (30%) | 9 | |
| Air MAX (100%) | 40 | |
| Feeding MAX (100%) | 7,6 | 10,2 |
| Power MIN (FL2) | 30 | |
| Power MAX (FL2) | 100 | |
| Modulation type | FL2 | FL2 |
| Photo threshold | 50 | 50 |
| Test fuel mass | 11,3 kg | 13,5 kg |
| Fuel calorific value | 5,3 | |
| Oxygen MIN (30%) | 13 | |
| Oxygen MAX (100%) | 8 | |
| Fuel pre-dose | 70 s | 100 s |
| Cleaning period | 180 minutes | |
| Cleaning cycles | 2 | |

# Servicing

## Service Menu

**ATTENTION**

***Only authorized personnel may use the service menu!***

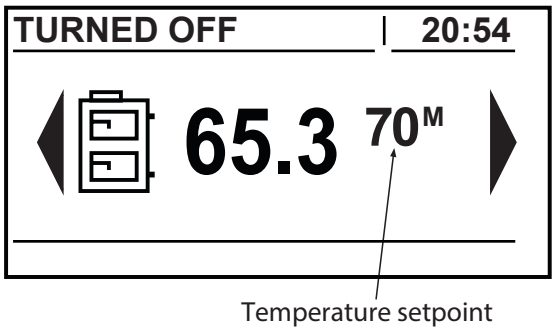
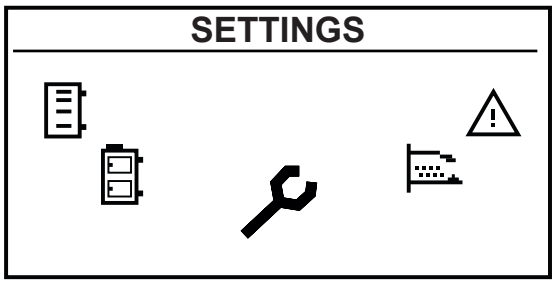
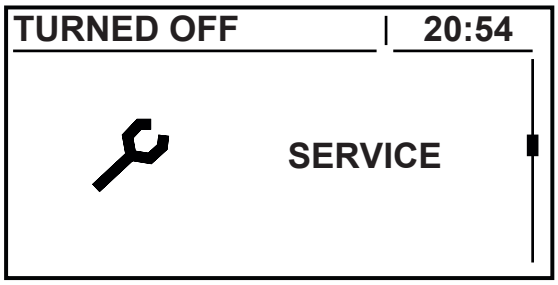
Service menu is password-protected. The password consists of the boiler temperature setpoint and the letters EST. If it's in manual mode (letter M next to temperature) You can read the temperature setpoint from the control panel display. It is displayed in small digits next to the current boiler temperature.
If it's in auto mode (letter A next to temperature) Go to BOILER/SETTINGS/**Boiler temp set** to check the temperature that has been set.

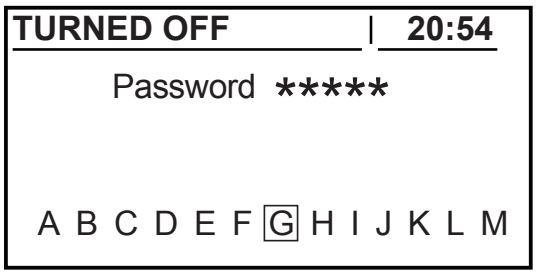
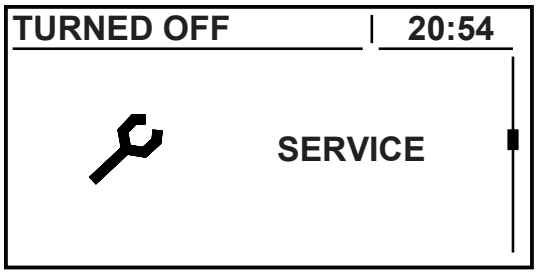
Example: If the boiler tempearture is preset to 70 °C, then the password is: 70EST.
The password is only required in the service menu. After approx. 10 min from pressing any button, the servicing password is cancelled and you have to enter it again when accessing the SERVICE menu.

Example of entering a password in the service menu:

**ATTENTION**

***In the auto mode, check the temperature setpoint (for the password) in the BOILER/SETTINGS/Boiler temp set menu.***

| Step | Menu |
|---|---|
| **1.** Begin from checking the temp setpoint on the Home screen. The temperature must be 'manual' (M).<br>**2.** The temperature setpoint is displayed in small digits; here, it is 70 °C (default: 65 °C.)<br>**3.** Press ENTER to open the Home menu.<br>**4.** Use the UP and DOWN arrows to select the desired menu section. |  |
| **5.** After selecting the desired menu section, e.g. SETTINGS, press ENTER to open the desired section of the submenu.<br>**6.** Use the UP and DOWN arrows to select the SERVICE section. |  |
| **7.** Open the submenu by pressing ENTER. |  |

| | |
|---|---|
| **8.** Using the UP and DOWN arrows, enter the password and confirm it with ENTER.<br>(Password = boiler temperature setpoint + EST. Password example: 70EST.) |  |
| **9.** After you enter the correct password, the SETTINGS/SERVICE screen is displayed.<br>**10.** Press ENTER and open a tab. |  |

For the detailed information on menus and their contents, see **Extended Menu** on page 33.

You can navigate the menu using the UP and DOWN arrows.

**Home Menu**

| | |
|---|---|
| Main menu | CENTRAL HEATING |
| | HOT WATER* |
| | BUFFER* |
| | BOILER |
| | SETTINGS |
| | BURNER |
| | ALARMS |
| | SOLAR* |
| | INFO |

*Optional accessories required

# Servicing

## Heating

| | | | |
|---|---|---|---|
| CENTRAL HEATING | C.H. SELECT | STATE | State overview |
| | | SETTINGS | Comfortable temp |
| | | | Programme |
| | | | Economical temp |
| | | TIME PROG. | Time programme settings |
| | | SERVICE | Password |
| | | | Comf. MAX pump temp |
| | | | Econ. MAX pump temp |
| | | | MIN Tch pump |
| | | | Source |
| | | | Temperature MAX |
| | | | Mixer time |
| | | | Hot water priority |
| | | | Pump test |
| | | | Mixer test |
| | | | Circ. name |
| | | | CH temp for -20 °C |
| | | | CH temp for 0 °C |
| | | | CH temp for 10 °C |
| | | | CH temp corr. factor |
| | | | Operating mode |
| | | | Manual Tch |
| | | | Room temp sensor |
| | | | CH temp sensor |
| | | | Permanent pump |

## Utility Water

| | | | |
|---|---|---|---|
| HOT WATER* | H.W. SELECT | STATE | State overview |
| | | SETTINGS | Comfortable temp |
| | | | Programme |
| | | | Heat now |
| | | | Hysteresis |
| | | | Economical temp |
| | | TIME PROG. | Time programme settings |
| | | SERVICE | Password |
| | | | Source delta |
| | | | Source |
| | | | Temperature MAX |
| | | | Delta MIN temp |
| | | | Pump test |
| | | | Circ. name |

## Buffer

| | | | |
|---|---|---|---|
| BUFFER* | BUFFER 1 | STATE | State overview |
| | | SETTINGS | Upper set temperature |
| | | | Lower set temperature |
| | | | Programme |
| | | TIME PROG. | Time programme settings |
| | | SERVICE | Password |
| | | | Minimal pump temp |
| | | | Auto upper temp |

*This feature requires optional accessory and activation

# Servicing

## Boiler

| | | |
|---|---|---|
| BOILER | STATE | State overview |
| | SETTINGS | Boiler temp set |
| | SERVICE | Password |
| | | MIN pump temp |
| | | Mode |
| | | Hysteresis |
| | | MIN return temp |
| | | Return mixer time |
| | | Boiler pump test |
| | | Return mixer test |
| | | Heat Ex. clean begin t. |
| | | Heat Ex. clean end time |
| | | HeatEx. clean. out.test |

## Settings

| | | | |
|---|---|---|---|
| SETTINGS | TIME AND DATA | Time and date settings | |
| | LANGUAGE | Choice of language | |
| | GENERAL SETTINGS | Alarm buzzer | |
| | SERVICE | Password | |
| | | MODULES CONFIGURATION | Module 0 |
| | | | Module 1 |
| | | | Module 2 |
| | | | Module 3 |
| | | | Module 4 |
| | | | Module 5 |
| | | | Module 6 |
| | | | Module 7 |
| | | | Module Lambda |
| | | SYSTEM CONFIGURATION | Number of CH circuits |
| | | | Number of HW circuits |
| | | | Number of buffers |
| | | | Outside temp sensor |
| | | | Return temp sensor |
| | | | Solars |
| | | | Blower control |
| | | | Blower with Hall |
| | | RESTORE FACTORY SETTINGS | Save changes? |

## Burner

| BURNER | STATE | State overview |
|---|---|---|
| | SETTINGS | Feed fuel now |
| | | Burner on |
| | | Fuel type |
| | SERVICE | Password |
| | | Air MIN (30%) |
| | | Air MAX (100%) |
| | | Feeding MAX (100%) |
| | | Power MIN (FL2) |
| | | Power MAX (FL2) |
| | | Modulation type |
| | | Photo threshold |
| | | Igniter test |
| | | Storage feeder test |
| | | Blower test |
| | | Test fuel mass |
| | | Fuel calorific value |
| | | Lambda control |
| | | Oxygen MIN (30%) |
| | | Oxygen MAX (100%) |
| | | Fuel pre-dose |
| | | Cleaning period |
| | | Cleaning cycles |
| | | Exhaust fan |
| | | Grid cleaning test |
| | | Grid silent cleaning |

# Servicing

## Alarm

| | |
|---|---|
| Alarms | Alarms list (displays 20 most recent alarms) |

## Solar

| | | |
|---|---|---|
| SOLAR* | STATE | State overview |
| | SETTINGS | Turn on delta |
| | | Turn off delta |
| | SERVICE | Password |
| | | Schematic |
| | | Flow [l/min] |
| | | Fluid specific heat |
| | | MAX HW temp |
| | | Solar alarm temp MAX |
| | | Solar alarm temp min |
| | | Solar pump test |

*This feature requires optional accessory and activation

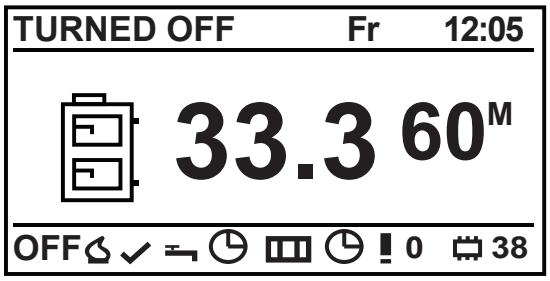
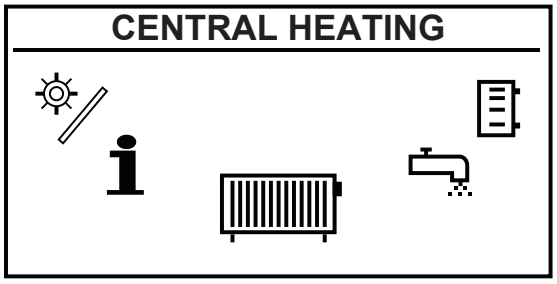
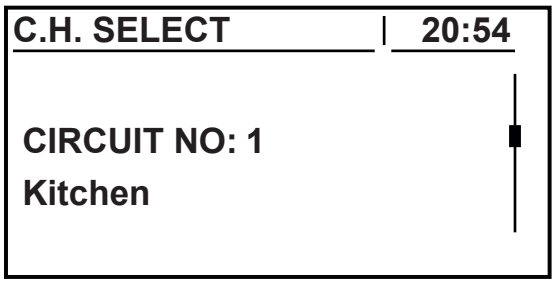
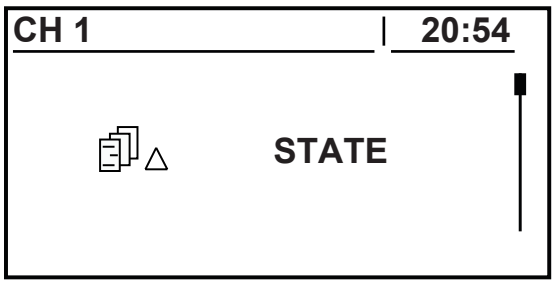
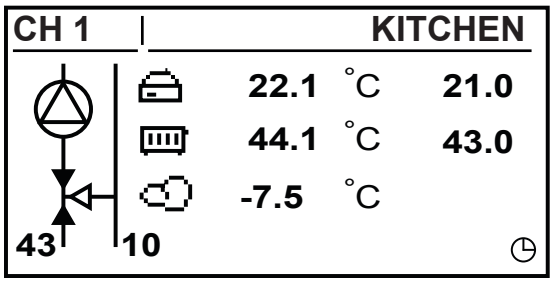
## Info

| | |
|---|---|
| INFO | Information on the current software version |

## Extended Menu

### Heating

Open the CENTRAL HEATING menu to check or change the heating parameters.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Use UP and DOWN arrows to select the CENTRAL HEATING submenu in the menu. |  |
| **3.** Press ENTER to open the CENTRAL HEATING submenu. |  |
| **4.** Use UP and DOWN arrows to select the desired section.<br>**5.** Press ENTER to open the submenu of the section selected. |  |
| **6.** Here, you can select various options by means of the UP and DOWN arrows.<br>**7.** Confirm your selection by pressing ENTER; here, it is the STATE submenu. |  |
| **8.** You can check the following parameters:<br>• Circuit number (on pic **CH 1**) and name (on pic **KITCHEN**)<br>• Measured (on pic **22.1 °C**) and preset (on pic **21.0**) temperatures for a room/section<br>• Measured (on pic **44.1 °C**) and preset (on pic **43.0**) temperatures for radiators.<br>• Measured external temperature (on pic **-7.5 °C**)<br>• Time of operation of the mixing valve (on pic **10**)<br>• Heat source temperature setpoint (on pic **43**)<br>• Indication of operation of the mixing valve<br>• Indication of operation of the central heating system pump |  |

# Servicing

**Heating Settings**

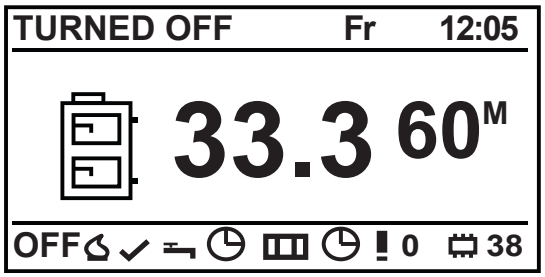
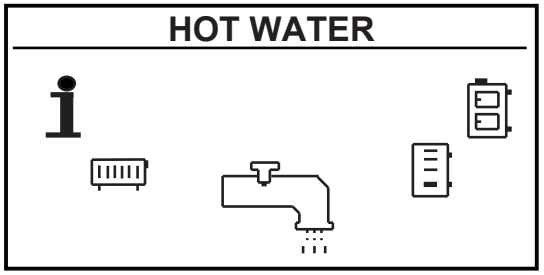
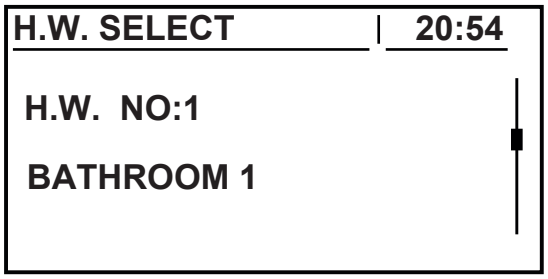
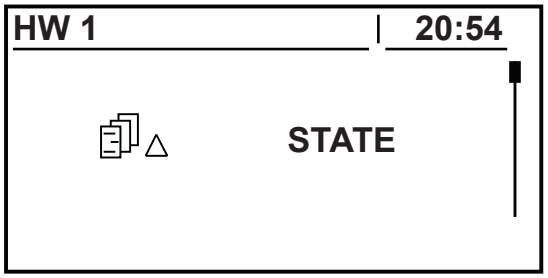
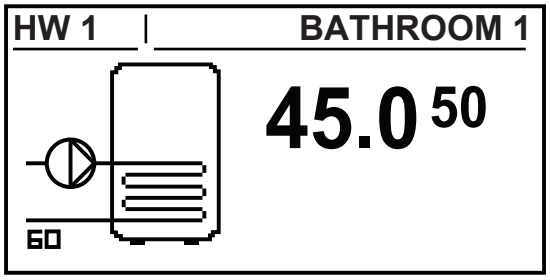
| Feature | Description |
|---|---|
| Comfortable temp | Temperature setpoint in the room within the heating period. |
| Programme | **1.** Time – operation acc. to the preset time intervals.<br>**2.** Permanent – the setpoint comfort temperature is maintained all the time, regardless of the set time intervals.<br>**3.** Turn off – switches the heating OFF.<br>**4.** Econom. – economic temperature is maintained in the rooms all the time. |
| Economical temp | Desired temperature in the room outside the period of heating. |

**Service Heating Settings**

| Feature | Description |
|---|---|
| Comf. MAX pump temp | Maximum external temperature at which the circulating pump operates in the comfort temp mode. |
| Econ. MAX pump temp | Maximum external temperature at which the circulating pump operates in the economic temp mode. |
| MIN Tch pump | Minimum calculated central heating temp at which the CH circulating pump can operate. |
| Source | Specifies the source of power for the central heating circuit. |
| Temperature MAX | Maximum calculated temp for the CH system. |
| Mixer time | Time of full opening of the mixing valve. |
| Hot water priority | Hot utility water priority for a given CH circuit. When heating HUW, the CH pump does not operate. |
| Pump test | Starts the circulating pump regardless of other settings. |
| Mixer test | Activates the mixing valve actuator regardless of other settings. |
| Circ. name | Gives a name for the central heating circuit. |
| CH temp for -20 °C | Point on the heating curve for the external temp equal to -20 °C. |
| CH temp for 0 °C | Point on the heating curve for the external temp equal to 0 °C. |
| CH temp for 10 °C | Point on the heating curve for the external temp equal to 10 °C. |
| CH temp corr. factor | Central heating temp setpoint correction in relation to the room temp setpoint per each 1°C. Example: if the correction factor is set to 6 °C, the temp setpoint for a room is 20 °C, and temp measured in the room is 20.5 °C, then the CH calculated temp will be decreased of 3 °C. |
| Operating mode | Sets mode of the CH temperature presetting;<br>manual – the CH temp is set manually;<br>weather – the CH temp is calculated from the heating curve. |
| Manual Tch | CH temperature setpoint when the mode of operation is set to Manual. |
| Room temp sensor | Indicates whether the internal sensor is used in the system. |
| CH temp sensor | Indicates whether the central heating sensor is used in the system. |
| Permanent pump | Yes – the pump starts after the room temp setpoint is reached. The CH calculated temp is decreased (only if the internal and CH sensors are used).<br>No – the pump stops after the room temp setpoint is reached. |

**Utility Water**

In order to check the hot utility water parameters, open the HOT WATER submenu.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the HOT WATER section in the extended menu. |  |
| **3.** Press ENTER to open the HOT WATER submenu. |  |
| **4.** Using the UP and DOWN arrows, select the desired section.<br>**5.** Press ENTER to open the section selected. |  |
| **6.** In this menu, you can select various options using the UP and DOWN arrows.<br>**7.** Confirm your selection by pressing ENTER; here, the STATE submenu has been selected. |  |
| **8.** You can check the following parameters:<br>• Circuit number (on pic **HW 1**) and name (**BATHROOM 1**)<br>• Hot utility water temperature setpoint (on pic **50**)<br>• Hot utility water measured temperature (on pic **45**)<br>• Heat source temperature setpoint (on pic **60**)<br>• Indication of operation of the hot utility water circulating pump (operating when symbol is flashing). |  |

# Servicing

**Hot Utility Water Settings**

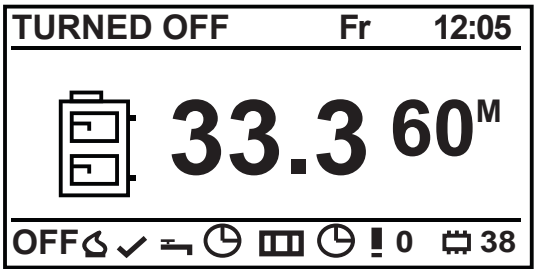
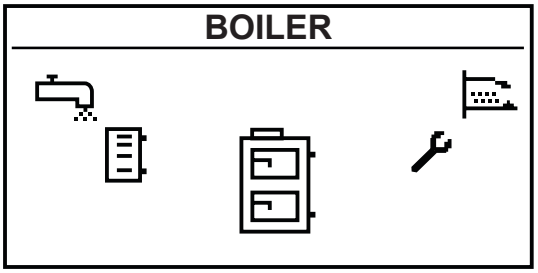
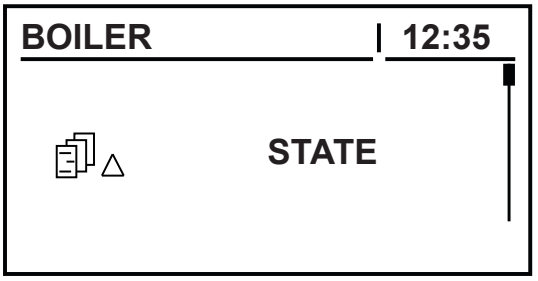
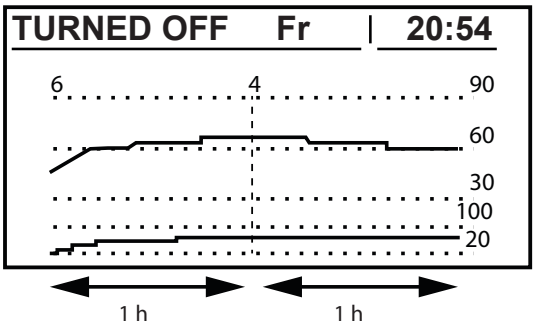
| Feature | Description |
|---|---|
| Comfortable temp | Hot utility water temp setpoint within the heating period. |
| Programme | **1.** Time - operation acc. to the preset time intervals.<br>**2.** Manual - the setpoint comfort temperature is maintained all the time, regardless of the set time intervals.<br>**3.** Turn off – switches the heating OFF. |
| Heat now | Heats up hot water once up to the comfort temp regardless of the program selected. |
| Hysteresis | Value of which the HUW temp can decrease. |
| Economical temp | HUW temp setpoint outside the heating period. |

**Hot Utility Water Service Settings**

| Feature | Description |
|---|---|
| Source delta | Source temp increase in relation to the HUW temp setpoint throughout heating period. Mode of operation. |
| Source | Sets the HUW heating source. |
| Temperature MAX | Maximum hot utility water temperature. |
| Delta MIN temp | Minimum temp difference between the source and HUW at which pumps can operate. |
| Pump test | Starts the circulating pump regardless of other settings. |
| Circ. name | Gives a name to the HUW circuit. |

**Boiler**

Boiler operation statistics for the last 24 hours.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the BOILER section in the extended menu. |  |
| **3.** Press ENTER to open the BOILER submenu. |  |
| **4.** In this menu, you can select various options using the UP and DOWN arrows.<br>**5.** Confirm your selection by pressing ENTER; here, the STATE submenu has been selected. |  |
| **6.** You can check the following parameters:<br>• Operating status (last 24 h)<br>• No. of hours<br>• Boiler temp within the last two hours<br>• % of the burner power<br>• Average power |  |

# Servicing

**Boiler Settings**

| Feature | Description |
|---|---|
| Boiler temp set | The heating medium temp, which will be maintained by the regulator. This menu is only active in the continuous mode of operation. |

**Boiler service settings**

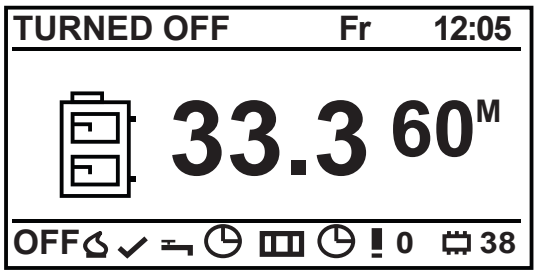
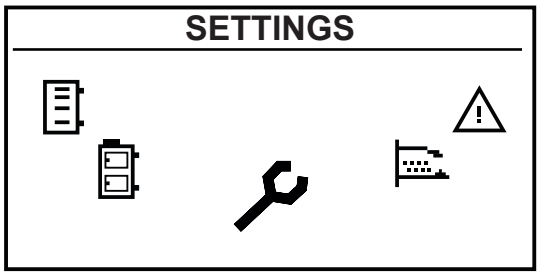
| Feature | Description |
|---|---|
| MIN pump temp | Temp above which the regulator can start pumps. |
| Mode | **1.** Auto – the temp set in auto mode.<br>**2.** Permanent – the temp is maintained all the time/ preset by the user. |
| Hysteresis | The boiler temp has to decrease of this value from the temp setpoint in order to start the burner. |
| MIN return temp | Minimum temp of the heating medium returning to the boiler.* |
| Return mixer time | Sets time of full opening of the return mixing valve. |
| Boiler pump test | Starts the boiler pump regardless of other conditions. |
| Return mixer test | Manual activation of the return mixing valve actuator regardless of other conditions. |
| Heat Ex. clean begin t. | Sets time of the heat exchanger cleaning. |
| Heat Ex. clean end time | |
| HeatEx. clean. out. test | Manual start of the test cleaning of the heat exchanger. |

* Optional accessories required

**Settings**

To check and set the following items:

- Date and time
- Language
- Alarm buzzer
- Connection of new accessories

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the SETTINGS section in the extended menu |  |
| **3.** Press ENTER to open the SETTINGS submenu and select the desired item. |  |

# Servicing

## Service Settings

### Configuration of Modules

This menu allows configuration of the CAN bus.

**ATTENTION**

***You have to configure the modules before entering any new settings. For the configuration details, see page 46.***

In this menu, check the modules connected to the CAN.

| Module | Description |
|---|---|
| Module No. 0 | 3 heating circuits No. 2, 3 & 4.<br>External temp sensor. |
| Module No. 1 | 3 heating circuits No. 5, 6 & 7. |
| Module No. 2 | 3 heating circuits No. 8, 9 & 10. |
| Module No. 3 | 3 heating circuits No. 11, 12 & 13. |
| Module No. 4 | 3 heating circuits No. 14, 15 & 16. |
| Module No. 5 | Buffer.<br>Solar panels.<br>CWU No. 2.<br>Return temp sensor.<br>External temp sensor. |
| Module No. 6 | Main boiler module. |
| Module No. 7 | Additional exhaust fan module. |
| Lambda module | Lambda probe module. |

### System Configuration

This menu allows configuration of the heating system (hydraulic). Setting options depend upon number of the extension modules set.

| Feature | Description |
|---|---|
| Number of CH circuits | Sets No. of CH circuits in the heating system. |
| Number of HW circuits | Sets No. of HUW circuits in the heating system. |
| Number of buffers | Sets No. of buffers in the heating system (Module No. 5). |
| Outside temp sensor | Specifies whether the external temp sensor is installed in the system (Module No. 0). |
| Return temp sensor | Specifies whether the return temp sensor is installed in the system (Module No. 5). |
| Solars | Specifies whether solar panels are installed in the system (Module No. 5). |

### Restoring the Factory Settings

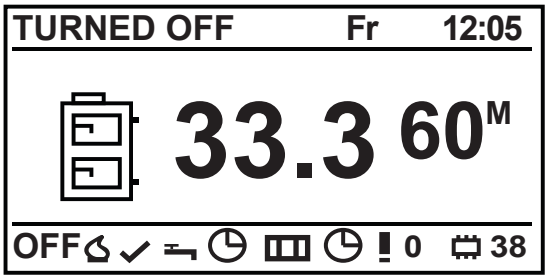
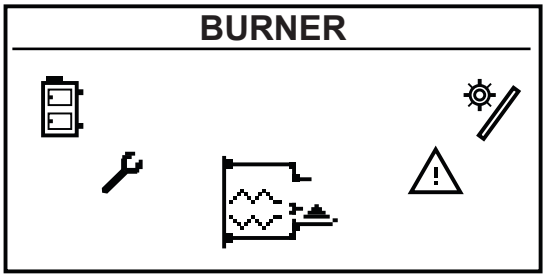
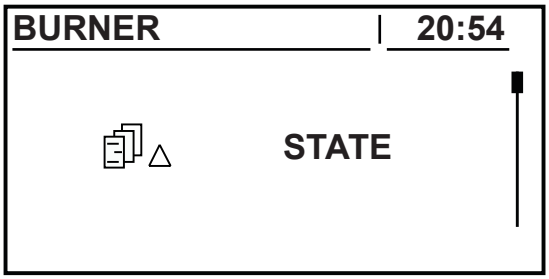
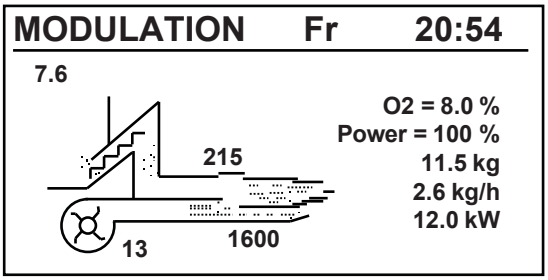
This option allows you to restore the factory settings of the regulator.

**ATTENTION**

***All factory settings will be restored, which can cause malfunctioning of the system. New configuration of the regulator settings may be required after restoring the factory settings.***

**Burner**

Open the BURNER submenu in order to check or change the burner operating parameters.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the BURNER section in the extended menu. |  |
| **3.** Press ENTER to open the BURNER submenu and select the desired item. |  |
| **4.** In this menu, you can select various options using the UP and DOWN arrows.<br>**5.** Confirm your selection by pressing ENTER; here, the STATE submenu has been selected. |  |
| **6.** You can check the following parameters:<br>• Burner operating status (in the pic **TURNED OFF**)<br>• % of the current burner power (in the pic **Power=100 %**)<br>• Total fuel consumption (in the pic **11.5 kg**)<br>• Current fuel consumption (in the pic **2.6 kg/h**)<br>• Current burner power in kW (in the pic **12.0 kW**)<br>• Oxygen content in the flue gas (in the pic **O2=8.0 %**)<br>• Brightness of flame (in the pic **215**)<br>• Air blower power (in the pic **13**)<br>• Time of refilling the fuel dispenser in 20 sec. cycle (in the pic **7.6**)<br>• Fan speed (in thepic **1600**)<br>• Day of the week and time (in the pic **Fr 20:54**) |  |

# Servicing

**Burner Settings**

| Feature | Description |
|---|---|
| Feed fuel now | Activates continuous fuel feeding, regardless of settings. |
| Burner on | Allows the regulator to start the burner. |
| Fuel type | Sets the type of fuel used. |

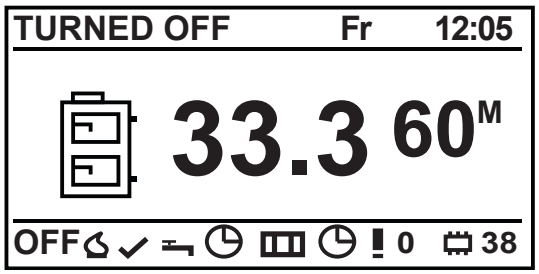
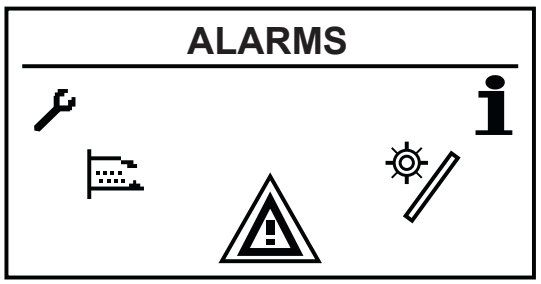
**Burner Service Settings**

| Feature | Description |
|---|---|
| Air MIN (30%) | Minimum amount of air at modulation, if the burner power is 30 % or at power threshold 1. |
| Air MAX (100%) | Maximum amount of air at modulation, if the burner power is 100 % or at power threshold 2. |
| Feeding MAX (100%) | Maximum time of fuel feeding at modulation, if the burner power is 100 %, per each 20 sec. |
| Power MIN (FL2) | Minimum burner power at modulation (power 1). |
| Power MAX (FL2) | Minimum burner power at modulation (power 2). |
| Modulation type | Burner mode of operation, modulated power (Fuzzy Logic 2) or two power stages (in steps). Power 2 outside the hysteresis and power 1 within the hysteresis. |
| Photo threshold | Brightness in the burner above which the regulator considers that the flame exists. |
| Igniter test* | Starts the igniter for testing. |
| Heater feeder test* (function not available) | Starts the fuel feeder for testing. |
| Storage feeder test* | Starts the dispenser feeder for testing. |
| Blower test* | Starts the air blower for testing. |
| Test fuel mass | Amount of the fuel fed by the dispenser feeder during normal operation for 1 hour. |
| Fuel calorific value | Calorific value of the fuel used (kWh/kg.) |
| Lambda control | Sets whether the regulator should consider oxygen content from the Lambda probe in the control process. |
| Oxygen MIN (30%) | Oxygen setpoint at min burner power, 30 %. |
| Oxygen MAX (100%) | Oxygen setpoint at max burner power, 100 %. |
| Fuel pre-dose | Time of fuel feeding during the ignition process. |
| Cleaning period | Intervals between the subsequent burner cleaning. |
| Cleaning cycles | No. of the burner cleaning cycles. |
| Exhaust fan** | Exhaust fan settings. |
| Grid cleaning test | Activation of the grate cleaning test. |
| Grid silent cleaning | Grate cleaning only during cleaning of the exchanger. |

* Testing of the devices in the BURNER menu is only allowed when the regulator is in OFF mode.
** The exhaust fan has to be connected to the additional module (Module No. 7).

**Alarms**

This menu contains the history of up to twenty alarms that occured during the controller operation.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the ALARMS section in the extended menu. |  |
| **3.** Press ENTER to open the ALARMS submenu.<br>**4.** Using the UP and DOWN arrows, select the alarm No.<br>**5.** Press Enter to confirm the selected alarm. |  |

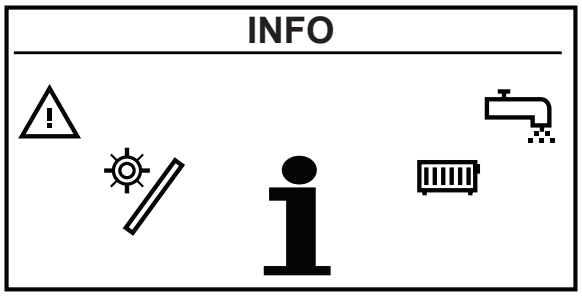
# Servicing

## Alarm Codes

| Main alarms | | |
|---|---|---|
| **Code** | **Brief description** | **Possible cause** |
| 1 | Processor overheating. | Repeated overheating of the boiler.<br>Boiler door has been opened during the boiler operation.<br>Poor chimney draught.<br>Improper setting of the oxygen dose for firing at MIN and MAX power. |
| 2 | No fire/fuel. | Ran out of fuel. Photocell failure. Too low, or too high fuel dose.<br>Extinction of flame. |
| 3 | Burner safety circuit. | Burner temp reached the max value.<br>Boiler door has been opened during the boiler operation.<br>Poorly mounted burner. Contaminated burner Poor chimney draught.<br>Improper setting of the oxygen dose for firing. |
| 4 | Boiler sensor shorting. | Sensor failure.<br>Sensor cable broken. |
| 5 | Break at boiler sensor. | Sensor failure.<br>Sensor cable broken. |
| 6 | Burner sensor shorting. | Sensor failure.<br>Sensor cable broken. |
| 7 | Break at burner sensor. | Sensor failure.<br>Sensor cable broken. |
| 8 | Boiler overheating. | Boiler temp has exceeded the max value. |
| 9 | Processor reset. | Controller probably damaged!<br>Power loss possible. Circulation pumps demage. Lack of heat reception. |
| 10 | STB. | -- |
| 11 | Communication with Module No. 0. | Problem with CAN bus or power supply. |
| 12 | Communication with Module No. 1. | Problem with CAN bus or power supply. |
| 13 | Communication with Module No. 2. | Problem with CAN bus or power supply. |
| 14 | Communication with Module No. 3. | Problem with CAN bus or power supply. |
| 15 | Communication with Module No. 4. | Problem with CAN bus or power supply. |
| 16 | Communication with Module No. 5. | Problem with CAN bus or power supply. |
| 17 | Communication with Module No. 6. | Problem with CAN bus or power supply. |
| 18 | Communication with Module No. 7. | Problem with CAN bus or power supply. |
| 19 | HUW sensor shorting. | HUW sensor failure.<br>Sensor cable broken. |
| 20 | Break at HUW sensor | HUW sensor failure.<br>Sensor cable broken. |
| 21 | Room temp sensor shorting. | Room temp sensor failure.<br>Sensor cable broken. |
| 22 | Break at room temp sensor. | Room temp sensor failure.<br>Sensor cable broken. |
| 23 | Fire damping error. | Pellets accumulated in the flexible hose or burner. Feeder failure. |
| 24 | Communication with Lambda module. | Problem with CAN bus or power supply. |
| 25 | Overheating of solar panels. | Pump or power cord failure. |
| 26 | Freezing of solar panels. | Pump or power cord failure. |
| 37 | Grate cleaning error. | Burner may not close or open the grate, which can be cuased by contaminated grate or loose screws. Grate cleaning modul damege. |
| 38 | Air blower error. | Air blower damaged, connection issues, power loss. |
| 249 | Temperature limiter (STB). | Boiler overheating. Reset the STB manually. Circulation pumps demage. Lack of heat reception. |

**Info**

This menu contains information on the unit, which may be useful for the user, such as the controller software version.



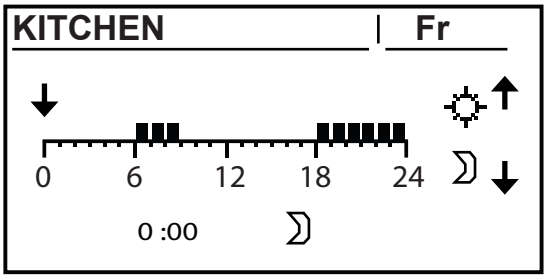

**Setting Date and Time**

The control panel contains a calendar and clock that allow setting of various time-based features.
The controller has a battery (CR2032) installed that supplies the clock in case of current decay.

## Example of Time Programming

**ATTENTION**

***The comfort and economic temperatures may differ from the temperatures set for various circuits. Therefore, to ensure the correct functioning of the schedule, set a schedule for the comfort and economic temperatures.***




**1.** Press ENTER in the Home menu.
**2.** Using the UP and DOWN arrows, select the CENTRAL HEATING submenu.
**3.** Press ENTER to open it.
**4.** Using the UP and DOWN arrows, select the C.H SELECT submenu.
**5.** Press ENTER to open it.
**6.** Using the UP and DOWN arrows, select the desired circuit (here: Kitchen).
**7.** Press ENTER to open it.
**8.** Using the UP and DOWN arrows, select the TIME PROG. submenu.
**9.** Press ENTER to open it.
**10.** Names of weekdays start flashing.
**11.** Using the UP and DOWN arrows, select the desired weekday to be programmed.
**12.** Confirm your selection with ENTER.
**13.** Indicator above the time axis starts flashing.
**14.** Use the UP arrow to select time when the boiler starts heating + indicator jumps to the next time.
**15.** Use the DOWN arrow to select time when the boiler stops heating + indicator jumps to the next time.
**16.** After the completion of programming the selected day, confirm your settings with ENTER.
**17.** After the confirmation or rejection of new settings, the name of the weekday starts flashing again.
**18.** Select the next weekday to be programmed with the UP and DOWN arrows.
**19.** In order to program all weekdays, repeat the steps from 6 to 18 above.

# Servicing

## Connection of Optional Accessories

### Connection of modules

All optional accessories need to be connected through additional modules. Seven additional communication modules are required to connect all optional accessories available for the PELLUX 100 boiler.

Modules No. 0 - 4 are used for the heating circuits. Various accessories can be connected to the Module No. 5, such as solar panels, buffer, return temp sensor or external hot utility water circulating pump.

Module No. 6 is a standard module, which is always installed in the boiler in order to ensure direct connection with various features of the unit.

The Lambda module is factory set to control the Lambda sensor only.

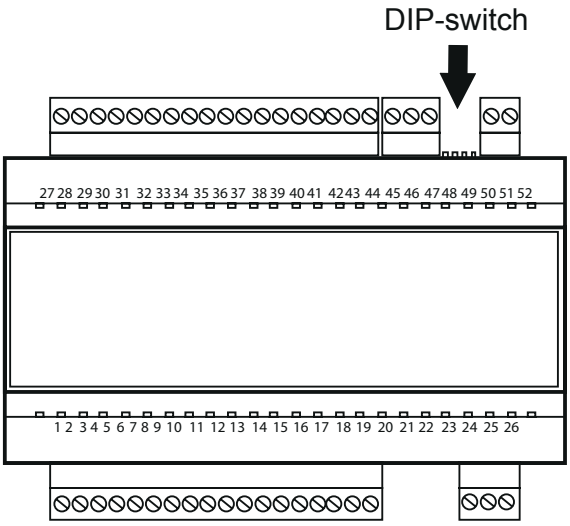
Individual optional accessories are connected to the proper modules and then, via the CAN bus, to the Module No. 6 and boiler regulator.

Modules No. 0-5 should be installed in a separate box near the boiler. Module No. 6 is inside the boiler.

**ATTENTION**

***Only one module may be installed inside the boiler. All the remaining modules should be installed in a separate box with the separate power supply.***

In order to connect a module to an optional accessory, you should assign it a new address using a DIP-switch (this does not apply to the jumper in the Lambda module) to allow the boiler to control the new device or use information provided by it.




The switches are numbered from 1 to 4. The switches No. 1, 2 and 3 assign a unique number for the module (i.e. address). Switch No. 4 is a termination ending the address. Value of switch No. 1 is 1, of switch No. 2 is 2, and of switch No. 3 is 4. For example, if you wish to address Module No. 5, turn DIP-switches 1 and 3 ON and turn the DIP-switch 2 OFF.

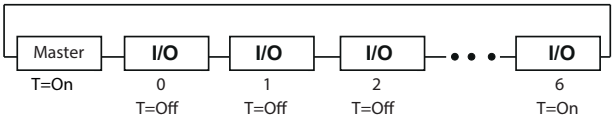

Example: for Module No. 5

| Switch No. (value) | | | Module No. | Description |
|---|---|---|---|---|
| 1 (**1**) | 2 (**2**) | 3 (**4**) | | |
| OFF | OFF | OFF | Module No. 0 | 3 heating modules No. 2, 3 & 4 |
| ON | OFF | OFF | Module No. 1 | 3 heating modules No. 5, 6 & 7 |
| OFF | ON | OFF | Module No. 2 | 3 heating modules No. 8, 9 & 10 |
| ON | ON | OFF | Module No. 3 | 3 heating modules No. 11, 12 & 13 |
| OFF | OFF | ON | Module No. 4 | 3 heating modules No. 14, 15 & 16 |
| ON | OFF | ON | Module No. 5 | Buffer, solar panels & HUW No. 2. Return temp sensor |
| OFF | ON | ON | Module No. 6 (standard module) | Primary boiler module installed inside the boiler. External temp sensor |
| ON | ON | ON | Module No. 7 | Auxiliary boiler module |
| | | | Lambda module | Lambda probe module |

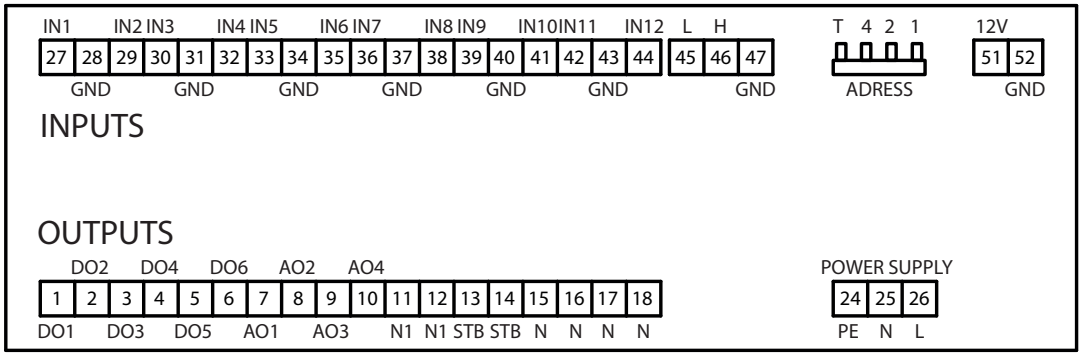
**ATTENTION**

***DIP-switch No. 4 is a termination!***

The system requires to have two termination switches switched ON. One in the control panel, and one in the farthest modul, or accessory that is installed. The Lambda module, and internet module has a terminating jumper and does not require a DIP-switch.




**Connection of Various Modules**




Modules No. 0 - 4 are connected in the same way, but support various circuits.
Module No. 0 – full control of 3 heating circuits with circulating pump and mixing valve; heating circuits No. 2, 3 & 4 – measurement of the external temperature
Module No. 1 – full control of 3 heating circuits with circulating pump and mixing valve; circuits No. 5, 6 & 7
Module No. 2 – full control of 3 heating circuits with circulating pump and mixing valve; circuits No. 8, 9 & 10.
Module No. 3 – full control of 3 heating circuits with circulating pump and mixing valve; circuits No. 11, 12 & 13.
Module No. 4 – full control of 3 heating circuits with circulating pump and mixing valve; circuits No. 14, 15 & 16.

| No. | INPUT signal | No. | OUTPUT signal |
|---|---|---|---|
| 27 | IN1 - CH temp sensor, circuits # 2, 5 & 8.* | 1 | DO1 - opening of CH mixing valve, circuits # 2, 5 & 8.* |
| 28 | GND. | 2 | DO2 - closing of CH mixing valve, circuits # 2, 5 & 8.* |
| 29 | IN2 - room temp sensor, circuits # 2, 5 & 8* | 3 | DO3 - opening of CH mixing valve, circuits # 3, 6 & 9.* |
| 30 | IN3 - CH temp sensor, circuits # 3, 6 & 9.* | 4 | DO4 - closing of CH mixing valve, circuits # 3, 6 & 9.* |
| 31 | GND. | 5 | DO5 - opening of CH mixing valve, circuits # 4, 7 & 10.* |
| 32 | IN4 - room temp sensor, circuit # 3.* | 6 | DO6 - closing of CH mixing valve, circuits # 4, 7 & 10.* |
| 33 | IN5 - CH temp sensor, circuits # 4, 7 & 10. | 7 | AO1 - CH pump output, circuits # 2, 5 & 8.* |
| 34 | GND. | 8 | AO2 - CH pump output, circuits # 3, 6 & 9.* |
| 35 | IN6 - room temp sensor, circuits # 4, 7 & 10.* | 9 | AO3 - CH pump output, circuits # 4, 7 & 10.* |
| 36 | IN7 - spare. | 10 | AO4 - spare. |
| 37 | GND. | | |
| 38 | IN8 - spare. | | |
| 39 | IN9 - spare. | | |
| 40 | GND. | | |
| 41 | IN10 - spare. | | |
| 42 | IN11 - Tzew – external temp sensor (only in Module # 0, comm for all CH circuits). | | |
| 43 | GND. | | |
| 44 | IN12 - spare. | | |

* One circuit No. is per one extension module, e.g. circuit No. 2 is if for Module No. 0, circuit No. 5 is for Module No. 1, etc.

## Servicing

Module No. 5 is for the pump supplying the heat buffer – the pump that controls the mixing in the boiler together with mixing valve, maintaining the minimum temperature of the boiler return water – control of solar panels – control of the hot utility water pump.

| No. | INPUT signal | No. | OUTPUT signal |
|---|---|---|---|
| 27 | IN1 – HUW sensor, circuit # 2. | 1 | DO1 – opening of return mixing valve (increases return flow from the boiler). |
| 28 | GND. | 2 | DO2 – closing of return mixing valve (decreases return flow from the boiler and increases return flow temp). |
| 29 | IN2 – upper buffer temp sensor. | 3 | DO3 – spare. |
| 30 | IN3 – lower buffer temp sensor | 4 | DO4 – spare. |
| 31 | GDN. | 5 | DO5 – solar panel mixing valve, LHS. |
| 32 | IN4 – boiler return temp sensor | 6 | DO6 – solar panel mixing valve, RHS. |
| 33 | IN5 – spare | 7 | AO1 – HUW pump output, circuit No. 2. |
| 34 | GND. | 8 | AO2 – boiler pump output (buffer). |
| 35 | IN6 – T1 solar panel sensor | 9 | AO3 – spare. |
| 36 | IN7 – T2 solar panel sensor | 10 | AO4 – solar panel No. 1 output. Solar panel pump. |
| 37 | GND. | | |
| 38 | IN8 – T3 solar panel sensor | | |
| 39 | IN9 – T4 solar panel sensor | | |
| 40 | GND. | | |
| 41 | IN10 – spare | | |
| 42 | IN11 – spare | | |
| 43 | GND. | | |
| 44 | IN12 – spare | | |

The Lambda module is already preset. By default, its termination is OFF (jumper installed). Connect the Lambda probe in the 'plug and play' manner.

**ATTENTION**

***Remember, in all additional modules always use dedicated temperature sensors or equivalent sensors. Table with sensor resistances You will find at page 19***

**Activation of the optional acessories**

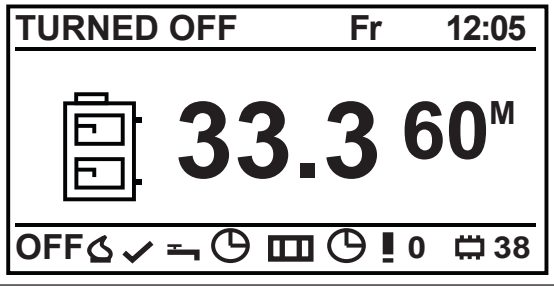
You can activate each of the optional accessories connected from the control panel.

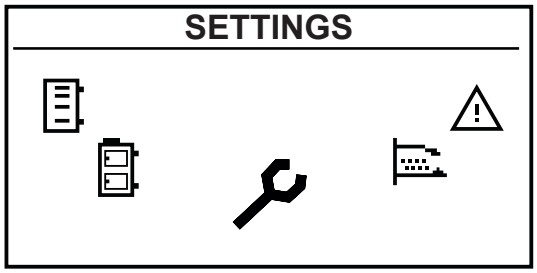
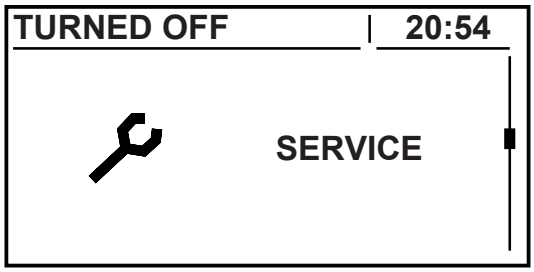
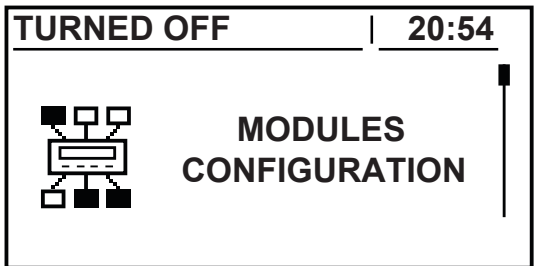
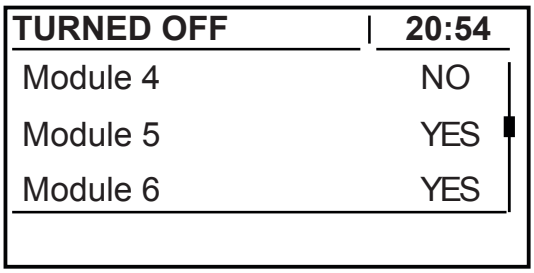
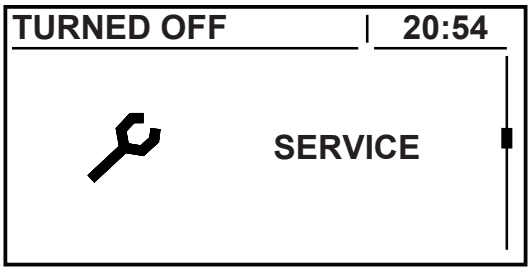
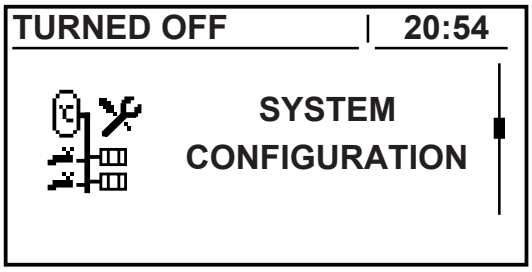
**Buffer**

**ATTENTION**

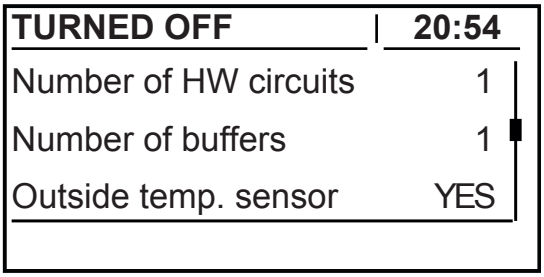
***The buffer tank is available as option. It can be controlled from the control panel when connected to the heating system.***

**Activation of the buffer tank from the control panel**

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the SETTINGS section in the extended menu. |  |

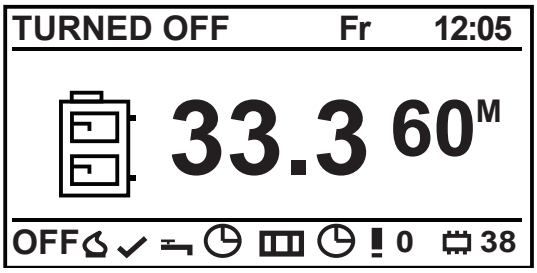
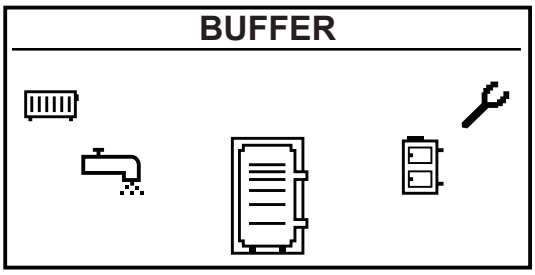
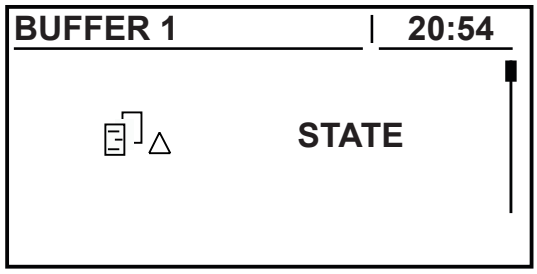
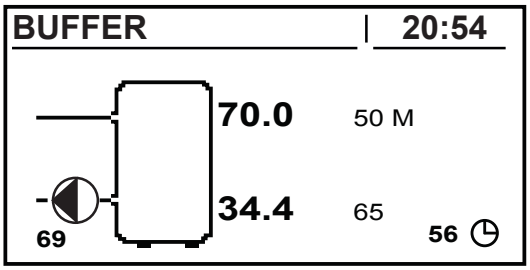
| Step | Menu |
|---|---|
| **3.** Press ENTER to open the SETTINGS submenu.<br>**4.** Using the UP and DOWN arrows, select the SERVICE section in the submenu. |  |
| **5.** Press ENTER to open the SERVICE submenu and log in. For the logging instructions, see page 26. |  |
| **6.** Using the UP and DOWN arrows, select the MODULES CONFIGURATION section in the submenu and open it by pressing ENTER. |  |
| **7.** Using the UP and DOWN arrows, select **Module 5** and set it to **YES**. |  |
| **8.** Press ESC to return to the SERVICE submenu. |  |
| **9.** Using the UP and DOWN arrows, select the SYSTEM CONFIGURATION section in the submenu and open it by pressing ENTER. |  |

## Servicing

| Step | Menu |
|---|---|
| **10.** Using the UP and DOWN arrows, select **Number of buffers** in the submenu and set it to **1**. |  |
| **11.** Now, the buffer tank is active and is controlled by the boiler controller. | |

**Setting and checking the buffer tank parameters**

In order to set and check the buffer tank parameters, open the BUFFER section of the menu.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the BUFFER section in the extended menu. |  |
| **3.** Press ENTER to open the BUFFER submenu and select the desired option. |  |
| **4.** In this submenu, you can select various options with the UP and DOWN arrows.<br>**5.** Confirm your selection with ENTER; here, it is the STATE submenu. |  |
| **6.** You can check the following parameters:<br>• Current and preset buffer tank temperatures in its upper part (on pic **70.0**)<br>• Current and preset buffer tank temperatures in its bottom part (on pic **34.4**)<br>• Buffer tank operating temperature (on pic **50M** and **65**)<br>• Return temperature (on pic **56**)<br>• Heat source temperature (on pic **69**)<br>• Indication of the CH circulating pump operation (operating when symbol is flashing). |  |

**Buffer tank settings**

| Feature | Description |
|---|---|
| Upper set temperature | Charging process begins in the upper part of the buffer tank at this temp |
| Lower set temperature | Charging process ends in the bottom part of the buffer tank at this temp |
| Programme | **1.** Time – operation acc. to the preset time intervals.<br>**2.** Manual – buffer tank is charged regardless of the preset time intervals.<br>**3.** Turn off – buffer tank charging OFF. |

**Buffer tank service settings**

**ATTENTION**

***Service settings of the buffer tank may only be set by a qualified installer. Improper setting may cause damage to the system.***

| Feature | Description |
|---|---|
| Minimal pump temp | Minimum temp in the buffer tank upper part at which the CH circulating pumps may operate. |
| Auto upper temp | Sets whether the upper buffer tank temp (min) is to be set in manual or auto modes. Auto mode sets the temp on the basis of the demand of other consumers of the buffer tank energy. |

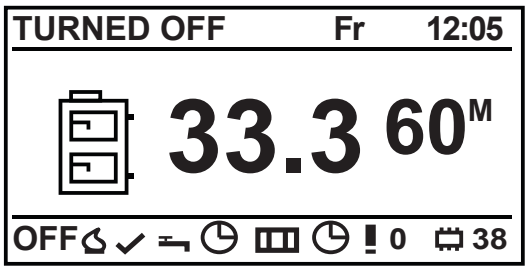
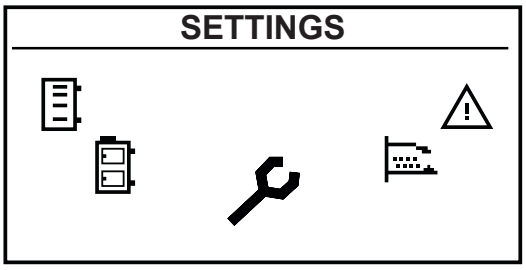
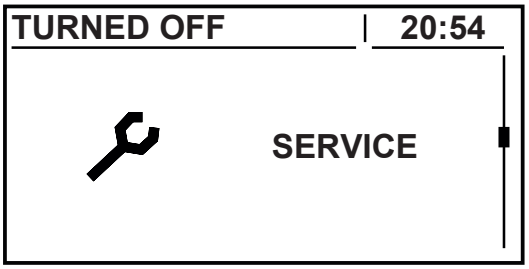
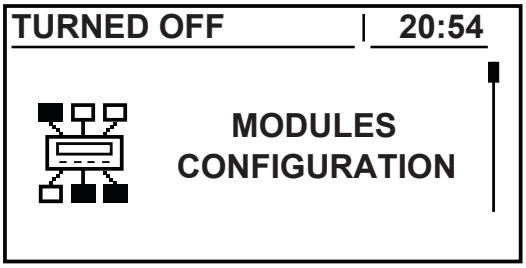
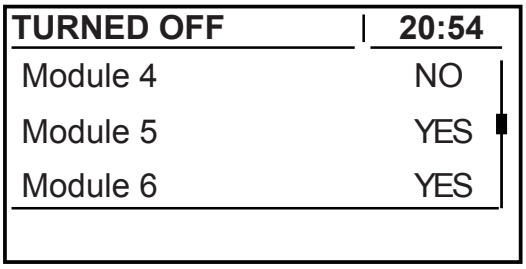
# Servicing

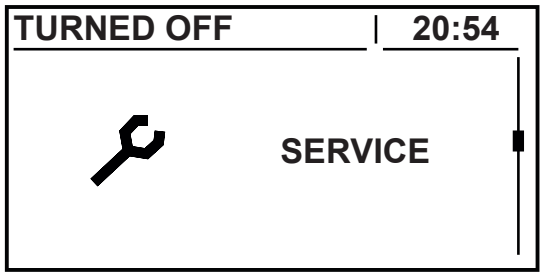
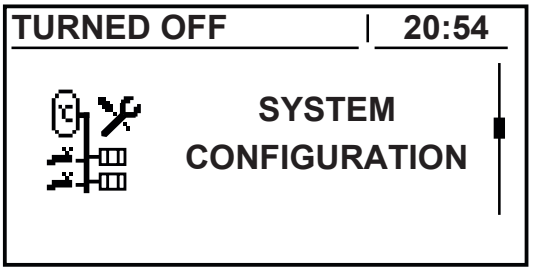
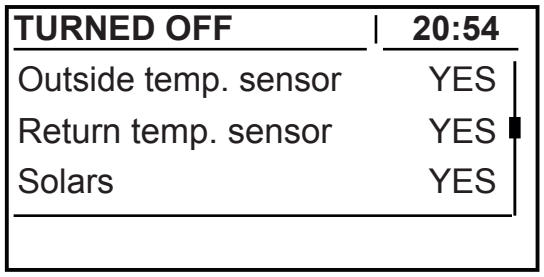
**Solar panels**

**ATTENTION**

***The solar unit is available as an option. The solar panels connected to the boiler automatically can be controlled from the boiler control panel level.***

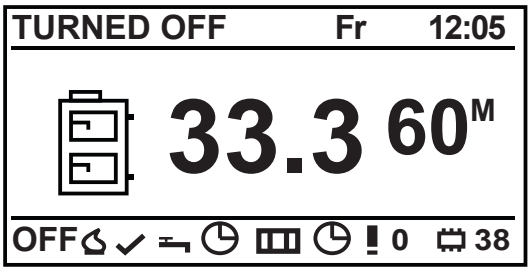
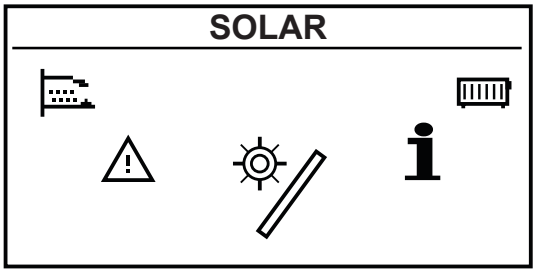
**Solar unit activation**

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the SETTINGS section in the extended menu. |  |
| **3.** Press ENTER to open the SETTINGS submenu.<br>**4.** Using the UP and DOWN arrows, select the SERVICE section in the submenu. |  |
| **5.** Press ENTER to open the SERVICE submenu and log in. For the logging instructions, see page 26. |  |
| **6.** Using the UP and DOWN arrows, select the MODULES CONFIGURATION section in the submenu and open it by pressing ENTER. |  |
| **7.** Using the UP and DOWN arrows, select **Module 5** and set it to **YES**. |  |

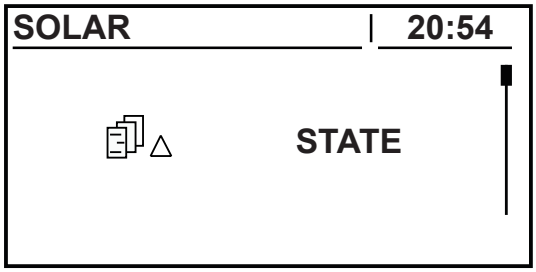
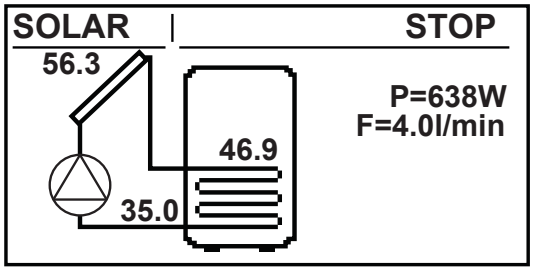
| Step | Menu |
|---|---|
| **8.** Press ESC to return to the SERVICE submenu. |  |
| **9.** Using the UP and DOWN arrows, select the SYSTEM CONFIGURATION section in the submenu and open it by pressing ENTER. |  |
| **10.** Using the UP and DOWN arrows, select **Solars** in the submenu and set it to **YES**. |  |
| **11.** Now the solar unit is active and is controlled by the boiler controller. | |

**Solar unit**

In order to set and check the solar unit parameters, open the SOLAR submenu.

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the SOLAR section in the extended menu. |  |
| **3.** Press ENTER to open the SERVICE submenu and select the desired option. |  |

# Servicing

| Step | Menu |
|---|---|
| **4.** In this submenu, you can select various options with the UP and DOWN arrows.<br>**5.** Confirm your selection with ENTER; here, it is the STATE submenu. |  |
| **6.** You can check the following parameters:<br>• Operating status of the solar panels (on pic **STOP**)<br>• Currently supplied power (on pic **P=638 W**)<br>• Flow rate in l/min (on pic **F=4.0 l/min**)<br>• Temp of the T1 solar panels (on pic **56.3**)<br>• Temp of the T2 solar panels (on pic **46.9**)<br>• Temp of the T3 solar panels (on pic **35.0**)<br>• Pump operation status (operating when symbol is flashing) |  |

**Solar unit settings**

| Features | Description |
|---|---|
| Turn on delta | Temp difference between the solar collector and heated up water required to start the solar pump. |
| Turn off delta | Temp difference between the solar collector and heated up water required to stop the solar pump. |

**Solar unit service parameters**

**ATTENTION**

***Service settings of the solar unit may only be set by a qualified installer. Improper setting may cause damage to the system.***

| Feature | Description |
|---|---|
| Schematic | Specifies type of the solar unit. |
| Flow [l/min] | Fluid flow rate in the solar circuit during the pump operation. This parameter is required to calculate the power of the solar collectors. |
| Fluid specific heat | Specific heat of the fluid used in the solar circuit expressed in kJ/(kg * °C) |
| MAX HW temp | Maximum temp of the water being heated up. |
| Solar alarm temp MAX | Maximum temp of the solar collectors, above which the safety system starts and alarm is generated. |
| Solar alarm temp min | Minimum temp of the solar collectors, below which the safety system starts and alarm is generated. |
| Solar pump test | Starts the solar unit pump, regardless of other settings. |

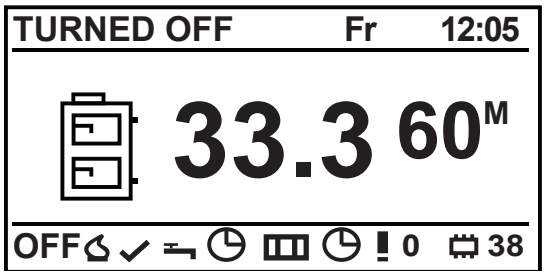
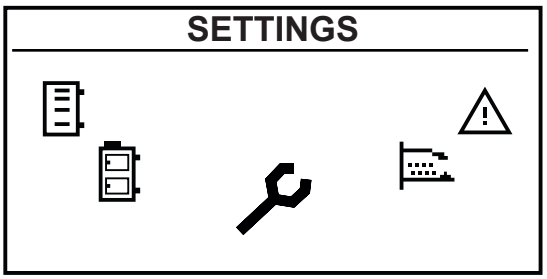
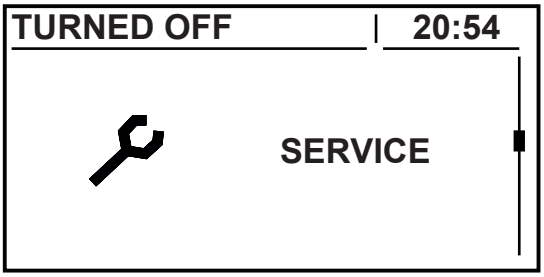
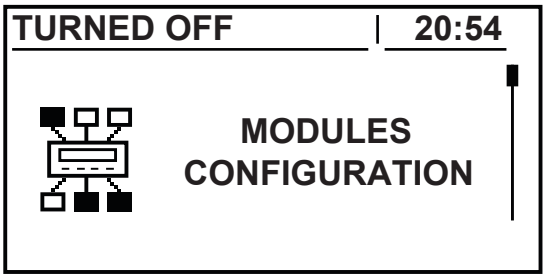
**Settings of the Lambda module**

**ATTENTION**

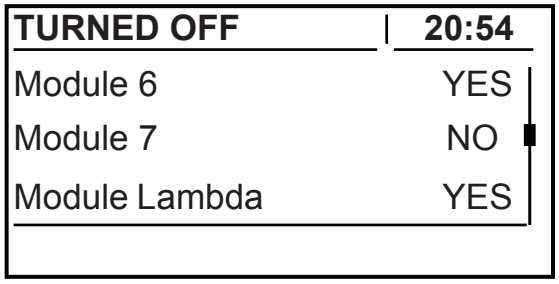
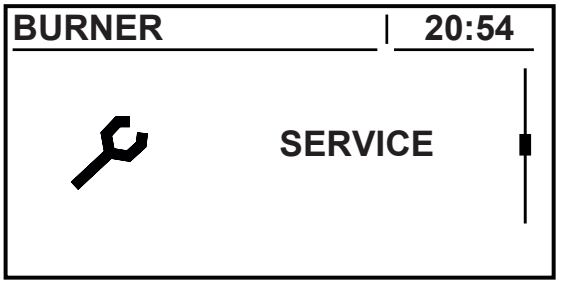
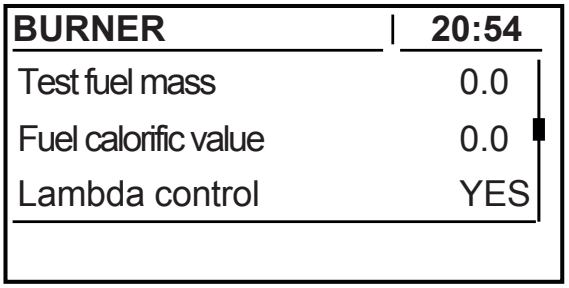
***The Lambda probe module is available as option. The Lambda probe module connected to the boiler automatics can be controlled from the boiler control panel level.***

Some changes in the control panel settings are required after the installation of the Lambda probe module.

**Lambda probe module activation**

| Step | Menu |
|---|---|
| **1.** Press ENTER in the Home menu to open the extended menu.<br>**2.** Using the UP and DOWN arrows, select the SETTINGS section in the extended menu. |  |
| **3.** Press ENTER to open the SETTINGS submenu.<br>**4.** Using the UP and DOWN arrows, select the SERVICE section in the submenu. |  |
| **5.** Press ENTER to open the SERVICE submenu and log in. For the logging instructions, see page 26. |  |
| **6.** Using the UP and DOWN arrows, select the MODULES CONFIGURATION section in the submenu and open it by pressing ENTER. |  |

## Servicing

| Step | Menu |
|---|---|
| **7.** Using the UP and DOWN arrows, select **Module Lambda** in the submenu and set it to **YES**. |  |
| **8.** The, select the BURNER option. Enter the SERVICE submenu. |  |
| **9.** Using the UP and DOWN arrows, select **Lambda control** in the submenu and set it to **YES**. |  |
| **10.** Now, the Lambda probe module is active. | |

**ATTENTION**

***Remember about termination switches.***

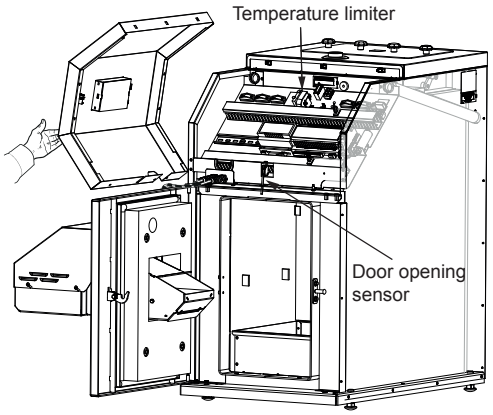
## Boiler (STB) and Burner Temperature Limiters

**Resetting of the boiler temperature limiter (STB)**

**ATTENTION**

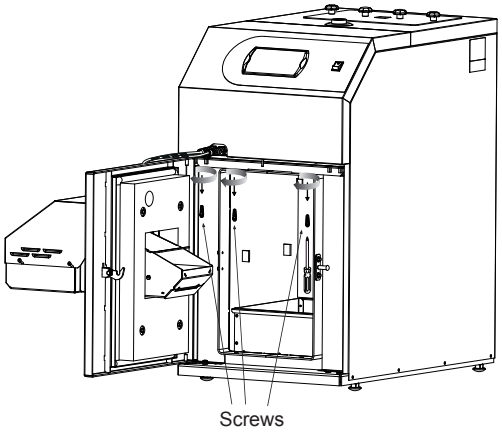
***Tripping of the boiler's temp limiter warns of incorrect operation of the System, which requires investigation.***

**1.** The STB temp limiter and door sensor are available behind the boiler's front panel.

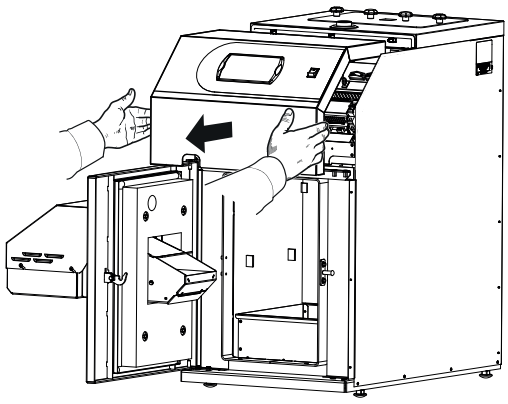



**2.** Disconnect the boiler power supply cables.

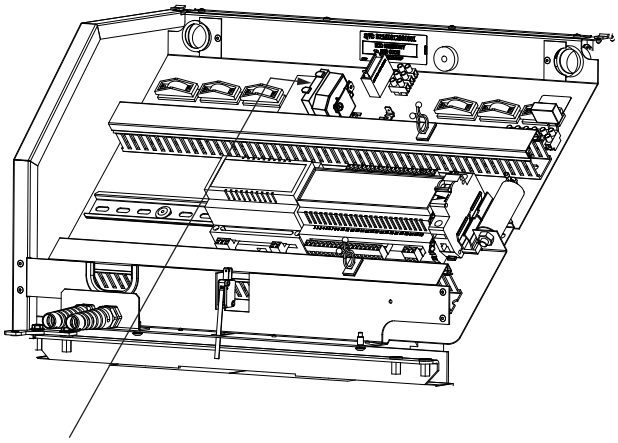
**3.** Open the boiler door and remove two screws retaining the front panel.




**4.** The front panel is installed on clips. Pull it in your direction while taking care of the control panel wiring.



**5.** Push the temperature limiter button on the left side of the thermostat.




**6.** Reinstall the front panel.

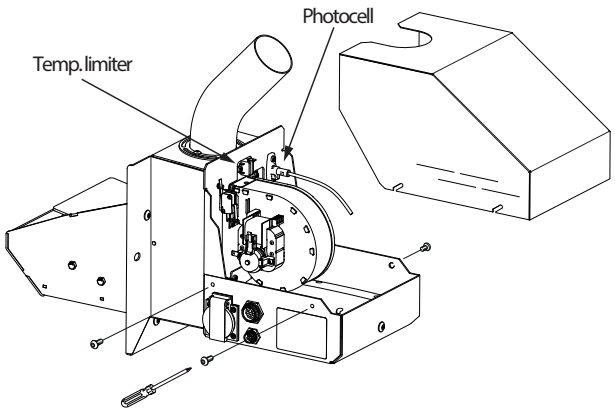
**7.** Thoroughly close the boiler door. The door has a sensor installed, which prevents the boiler starting if the door is ajar.

**8.** Connect the boiler power supply cables.

**9.** Activate the control panel.

**Resetting of the burner temperature limiter**

This temperature limiter is available behind the burner housing.




**1.** Disconnect the burner power supply cables.

**2.** Remove 4 screws fixing the burner housing.

**3.** Push the metal switch on the burner temperature limiter.

**4.** Reinstall the burner housing.

**5.** Connect the power supply cables.

**6.** Activate the control panel.

**ATTENTION**

***You may only reset the STB after the boiler cools down. If the temperature remains high, the STB will not reset. This applies both to the boiler STB and burner temp limiter.***

# Servicing

## Cleaning

**ATTENTION**

***Always disconnect the boiler power supply before its inspection and cleaning!***

Remove soot and ash from the boiler on a regular basis.

**Cleaning procedure**

Before cleaning, ensure that the boiler has cooled down and is disconnected from the mains!

If installed, close the chimney draught regulator. This is to prevent the spread of soot to the boiler-room during cleaning. Don't forget to open the regulator again after cleaning.

The PELLUX 100 boiler cleaning is automatic; however, it also requires regular cleaning by hand.

Automatic cleaning is performed by the motion of the turbulators in the convection section. This motion is forced by the soot removal unit motor. Soot layer deposited on the convection duct walls is scraped down to the soot tray.

Manual cleaning consists of pulling the soot removal brush through the boiler convection ducts (smoke tubes) after having removed the turbulators previously. The flue gas turbulators need to be removed before cleaning the convection ducts (smoke tubes). In order to do it, proceed as follows:

- open the cleanout (by removing the outer knobs and using the inner ones as handles)
- pull away the movable arm under the pair of turbulators in such a way that they remain in their uppermost positions
- remove the flue gas turbulators holding them by the connectors
- after removing the turbulators from the boiler flues, remove any contamination deposited on them

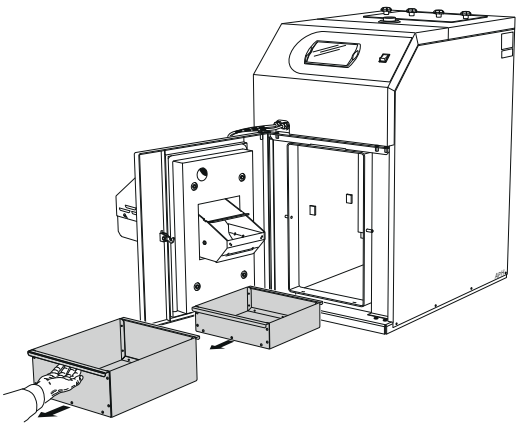
Soot removed from the boiler passes accumulates in the soot tray at the bottom of the boiler, behind the ash pan. In order to empty the soot tray, open the door first, remove and empty the ash pan and finally, remove and empty the soot tray.

After the completion of cleaning, insert the ash pan and soot tray to their original positions and close the door. Reinstall the flue gas turbulators and close the cleanout.

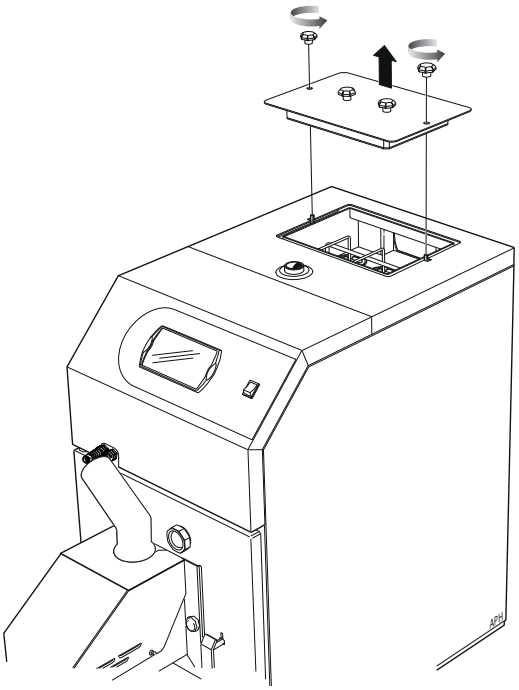
**ATTENTION**

***The ash may still contain smoldering fuel particles. When emptying the ash, wear protective clothing and store the ashes in a nonflammable container.***

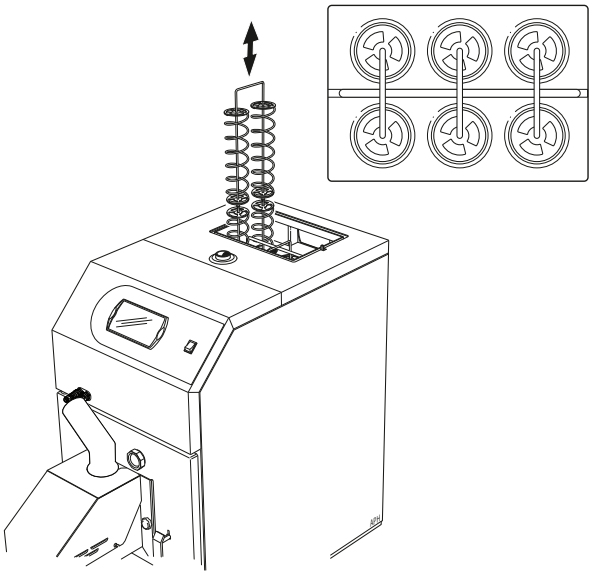
**Removing the trays**



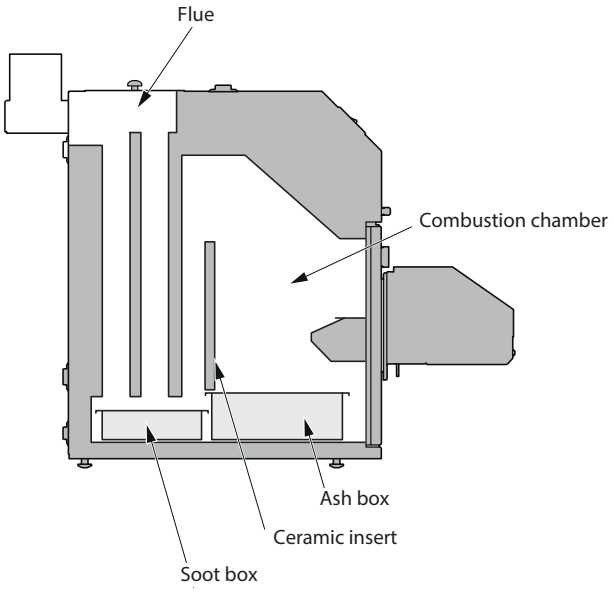
**Disassembly of the flue gas turbulators**



**1.** Open the cleanout by removing the outer knobs
**2.** Pull away the movable arm under the pair of turbulators in such a way that they remain in their uppermost positions
**3.** Remove the flue gas turbulators holding them by the connectors



**Extraction of ash**

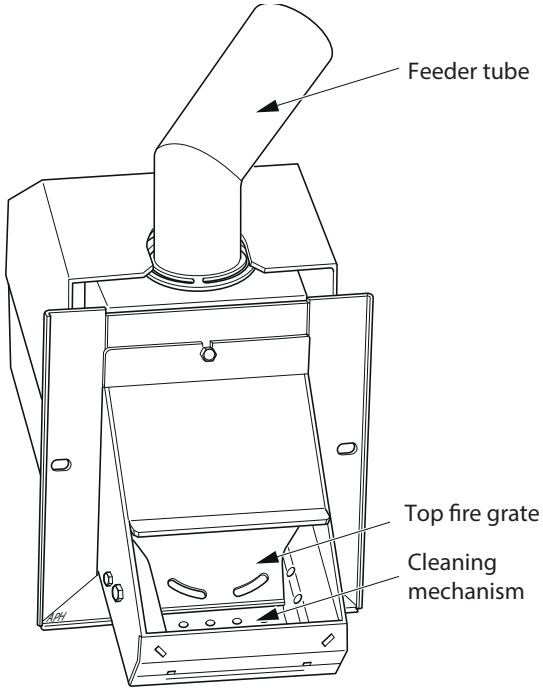



The figure above shows the areas requiring cleaning.

**Cleaning of burner**

In order to clean the burner manually, do the following steps:

- begin the flame extinguishing procedure and wait until it ends up and the text TURNED OFF appears on the regulator
- disconnect the power supply and let the burner cool down in order to avoid burns
- clean the corrugated hose
- clean the feeder tube
- scrape the igniter plate and grate and clean holes in the grate
- remove the ash from the burner and boiler




**Scheduled maintenance**

For user's safety and proper operation of the burner, the device shall be subjected to annual maintenance.

Extinguish the flame and switch the boiler main switch OFF when the grate is in its outer position (i.e. grate is extended) and then:

**1.** Remove the housing (see Fig. on page 57) and clean the flame sensor with a cloth and soft abrasive agent (such as toothpaste)

**2.** Clean the air blower vanes. You can clean them carefully with compressed air

**3.** Remove the grate sides and igniter plate and loosen the pipes of the igniter heating element

**4.** Clean the space behind the igniter plate and the grate

**5.** Reinstall all of the previously removed components

**6.** Remove small particles from the pellet dispenser and feeder

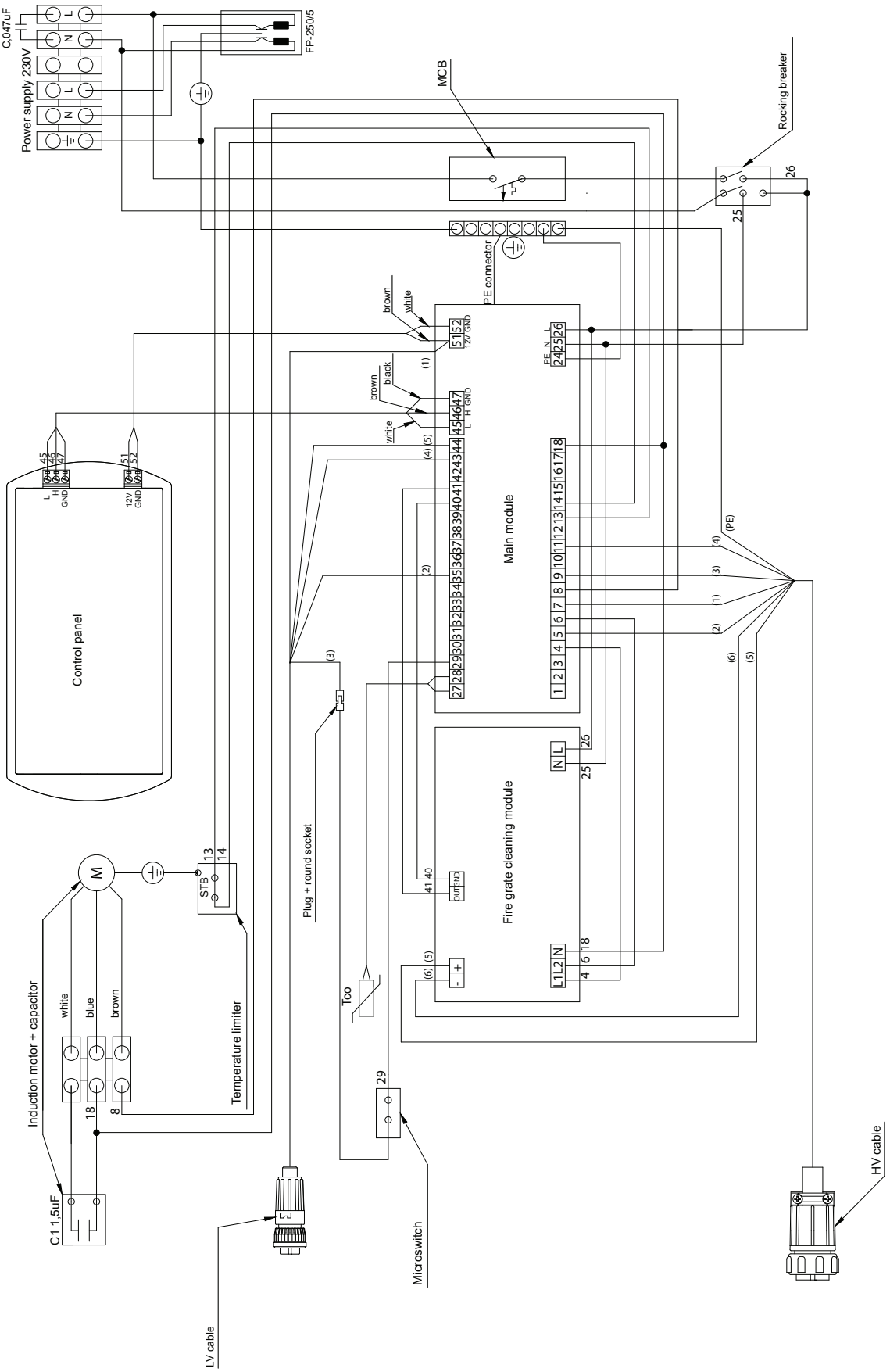
**7.** Check the condition of the corrugated hose

**8.** Start the pellet feeder by inserting the plug into the burner's socket, then go to Simple menu/FEED FUEL and set it to YES. It takes approx. 10-20 min to fill the feeder tube completely.

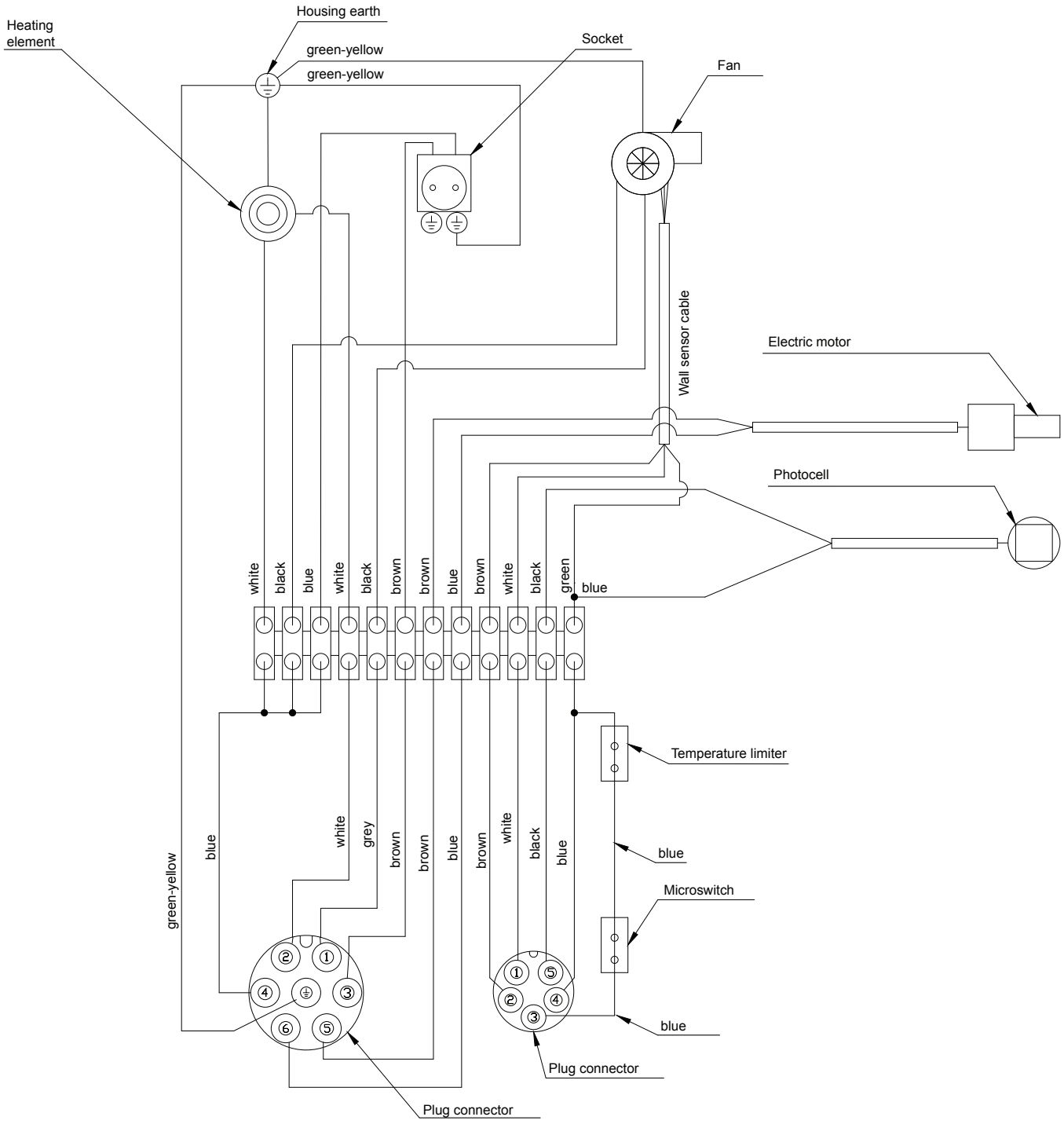
**9.** Adjust the burner

# Wiring Diagrams

## Boiler

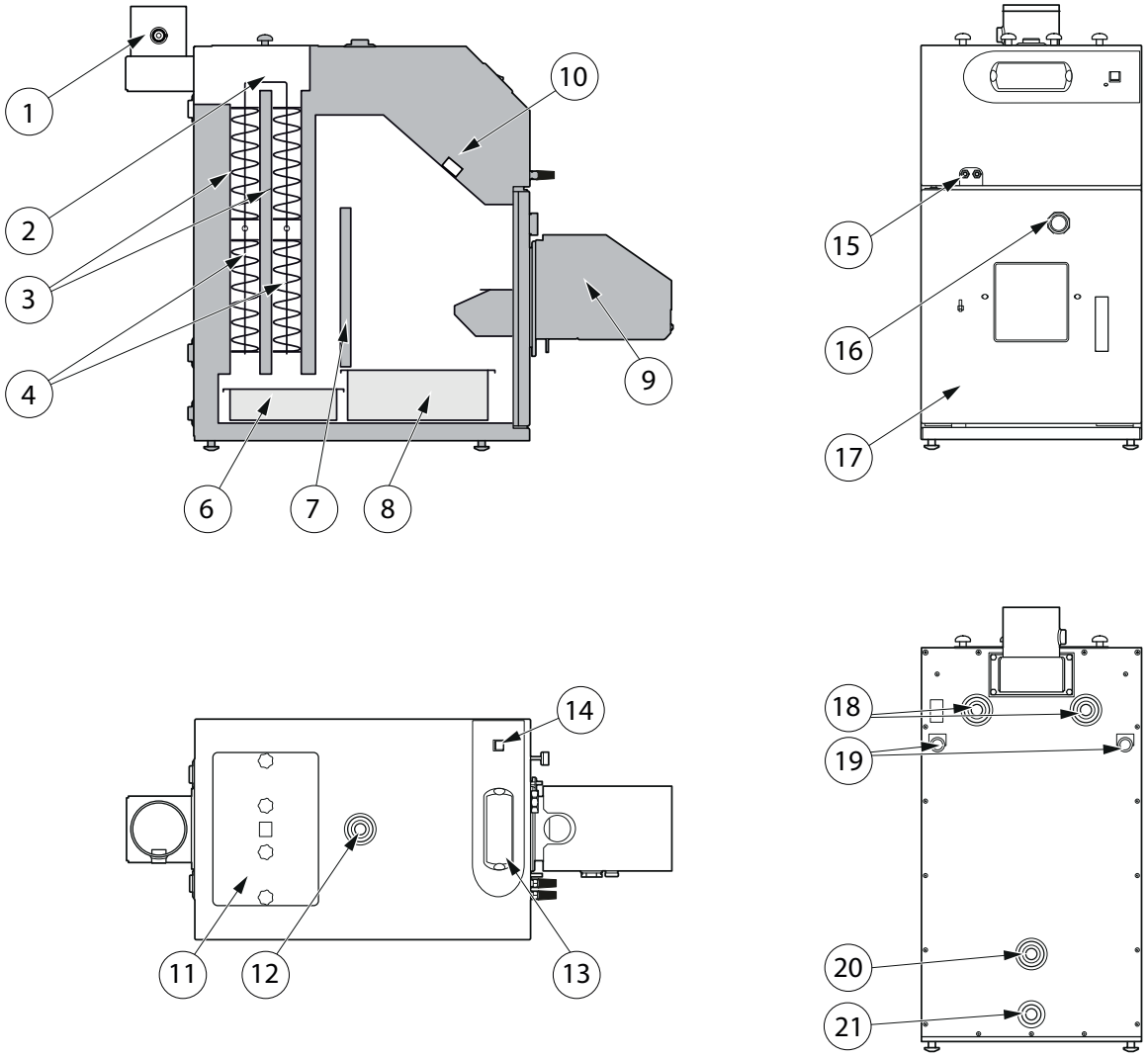


## Burner


Heating element
Housing earth
green-yellow
green-yellow
Socket
Fan
Wall sensor cable
Electric motor
Photocell
white
black
blue
white
black
brown
brown
blue
brown
white
black
green
blue
Temperature limiter
blue
Microswitch
blue
Plug connector
Plug connector
green-yellow
blue
white
grey
brown
brown
blue
brown
white
black
blue

# Location of Components

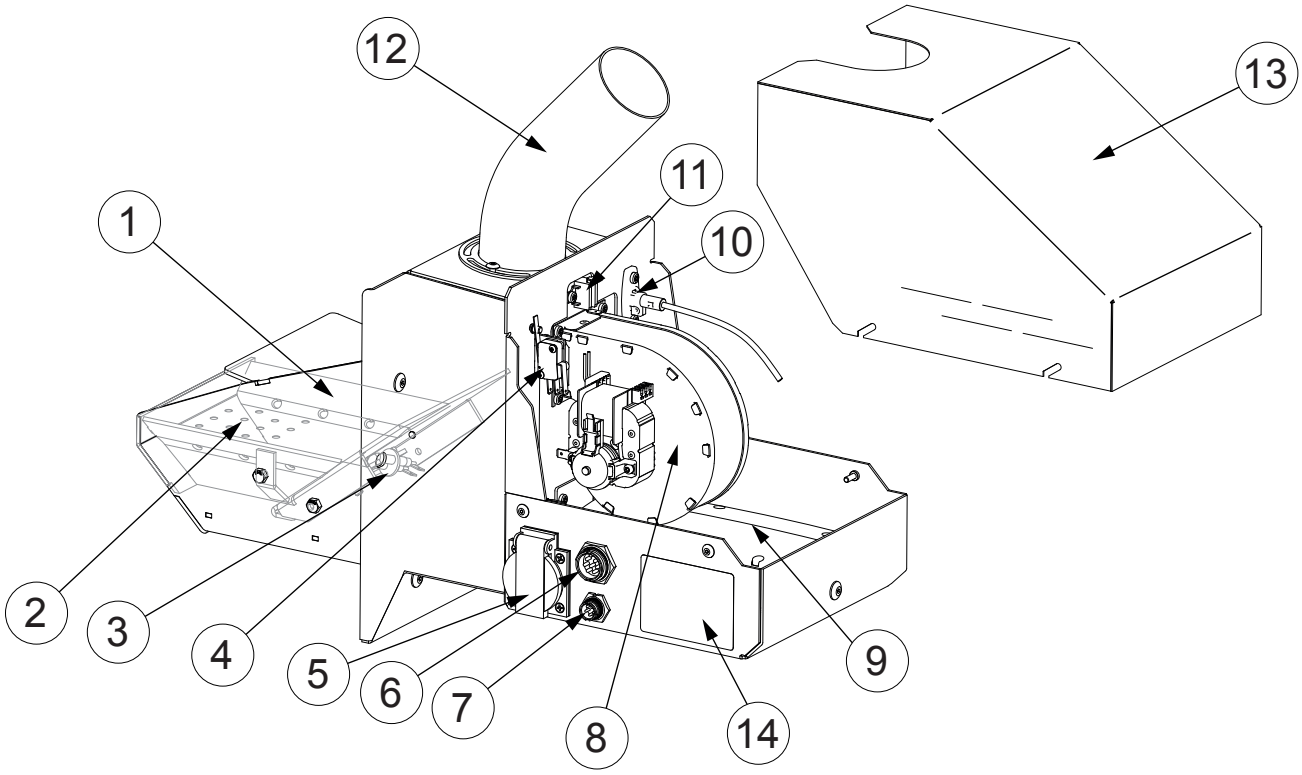
## Boiler




**List of components**

1. Cleanout, male.
2. Smoke tube cleaning mechanism.
3. Convection ducts (smoke tubes).
4. Flue gas turbulators.
6. Soot box.
7. Ceramic insert.
8. Ash box.
9. Burner.
10. Circuit breaker, 10 A.
11. Cleanout cover.
12. CH heating water supply connection.
13. Boiler regulator (operator panel).
14. Main ON/OFF switch.
15. Throttle for burner supply lines.
16. Sight glass for burner flame checks.
17. Boiler door.
18. Auxiliary CH heating water supply connection.
19. Duct for cables, ID 26.
20. CH heating water return connection.
21. Blowdown connection.

## Burner

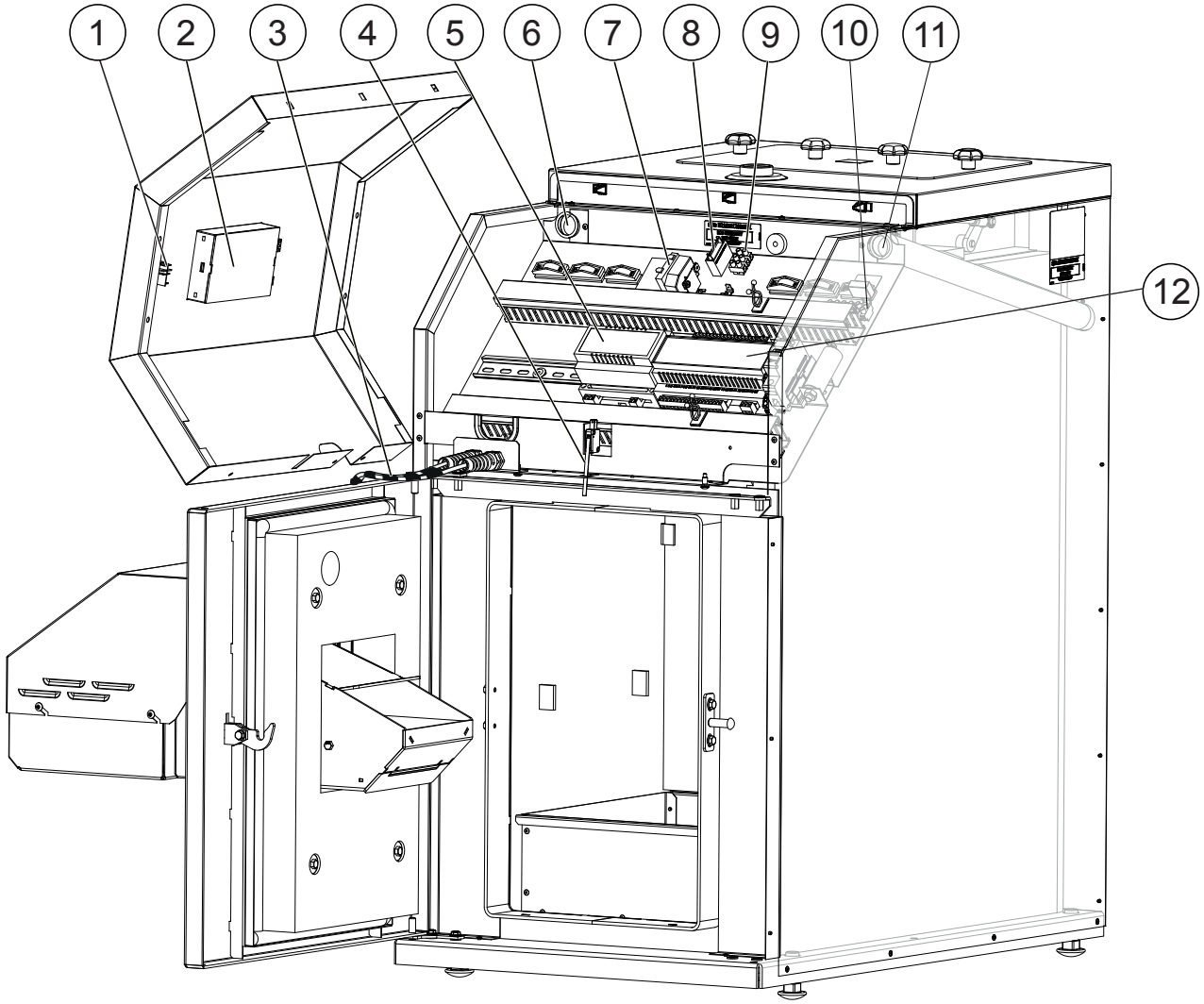



**List of components**

1. Grate
2. Cleaning mechanism
3. Electric heater
4. Switch (protecting against the burner ignition if installed improperly)
5. Power outlet to connect the pellet feeder
6. HV power outlet (burner power supply)
7. LV outlet (burner control)
8. Fan
9. Actuator
10. Photocell
11. Burner temperature limiter
12. Feeder tube
13. Housing

# Location of Components

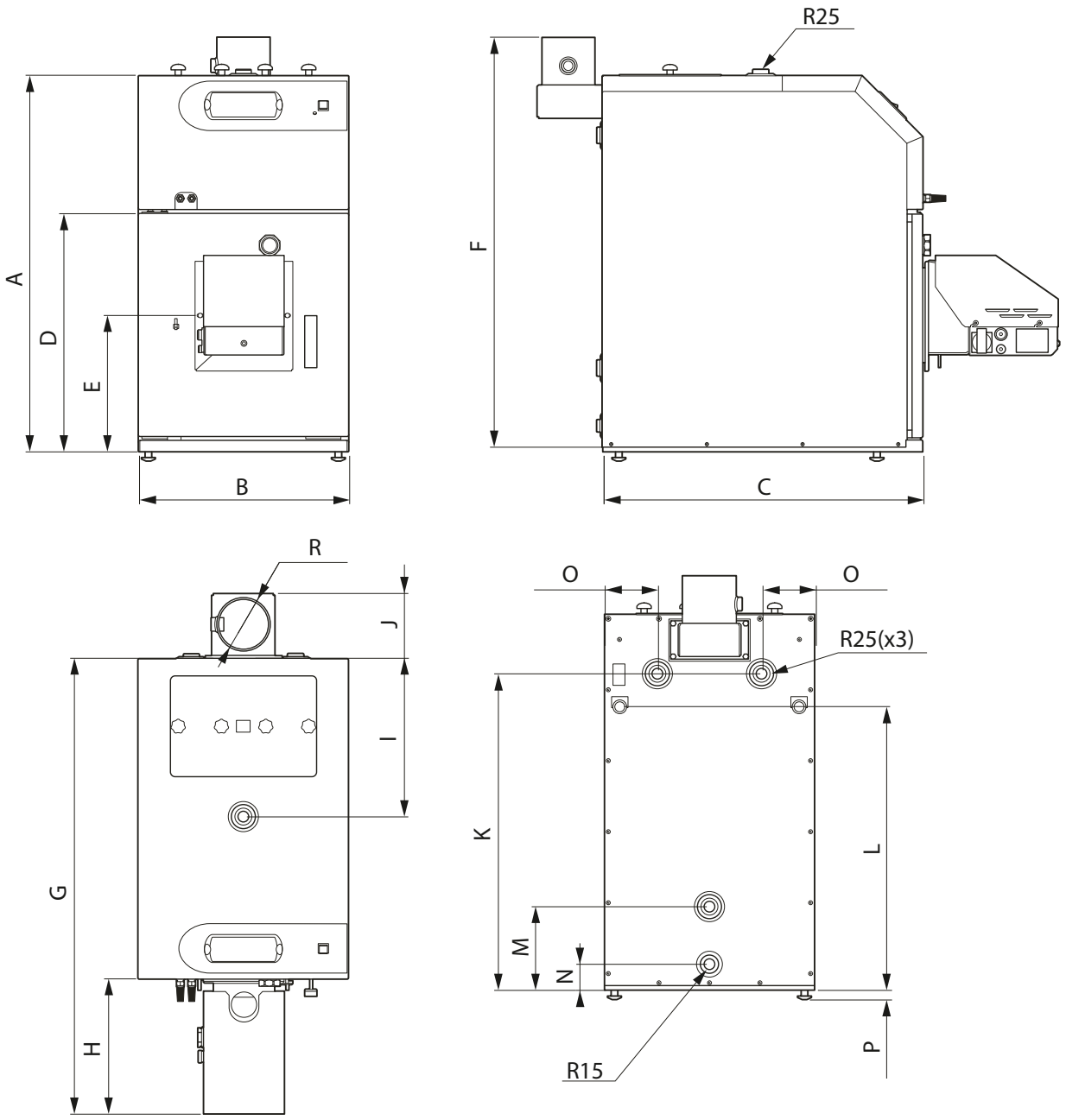
## Electrical Components




**List of electrical components**

1. Main ON/OFF switch
2. Boiler regulator
3. Burner power supply and control cable
4. Door opening sensor
5. Grate cleaning module
6. Duct for electric cables LV
7. Boiler temperature limiter
8. Capacitor
9. Gear-motor connection
10. Boiler power supply connection
11. Duct for electric cables HV
12. Boiler primary module

## Dimensions




| | PELLUX 100/20 | PELLUX 100/30 |
|---|---|---|
| A | 942 mm | |
| B | 526 mm | 597 mm |
| C | 801 mm | |
| D | 595 mm | |
| E | 342 mm | |
| G | 1151 mm | |
| H | 350 mm | |
| I | 296 mm | |

| | PELLUX 100/20 | PELLUX 100/30 |
|---|---|---|
| J | 120 mm | |
| K | 792 mm | |
| L | 710 mm | |
| M | 210 mm | |
| N | 65 mm | |
| O | 133 mm | 128 mm |
| P | 20-40 mm | |
| R | 133 mm ext. | |

# Quick Start Guide

## Standard Start-Up without Oxygen Metering

These are the basic start-up instructions. The unit requires adjustment after the start-up. Perform the flue gas analysis, if access to the chimney is difficult or any operation issues arise (this option is not described here.)

Connect the chimney, without the draught regulator at the beginning, unless there are some problems with differential/strong draught.

- Connect the electrical installation in accordance with the local regulations (with proper earthing and RCD)
- Install the flues in accordance with the regulations in force and proper installation practices, with correctly dimensioned expansion vessel and protecting fittings
- Fill the boiler with water and vent the system well
- IMPORTANT: ensure that the burner is correctly tightened, and in particular its cover, when assembling the boiler

**ATTENTION**

***Due to the requirements of BS EN 303-5 Class 5, the gasket is very strong and you have to tighten it pretty much the first few times. If this is not done, the boiler goes into alarm mode and a code 03 appears i.e. the burner safety circuit. There are three factors that may activate alarm: the door opening sensor, contact between the cover and the burner, or actual burner overheating when the bimetallic sensor at the pipe elbow is switched OFF due to secondary combustion (90 °C).***

- Fuse and boiler ON/OFF switch are switched ON
- Press ENTER once
- Select BOILER using the UP and DOWN arrows
- Press ENTER to access the boiler menu
- Use the UP and DOWN arrows to select SETTINGS
- Press ENTER to access the SETTINGS submenu
- Select the **Boiler temp set** and set it to min 65 °C. Press ENTER twice to confirm your setting (you can decrease the temp to 60 °C in the summer when the boiler is only used to heat up the hot utility water)
- Press ESC twice
- Use the UP and DOWN arrows to select the BURNER option in the submenu and confirm your selection with ENTER
- Go down with the arrow to the SERVICE option and press ENTER
- Enter the passoword (i.e. temp setpoint + letters EST)
- Press ENTER again
- Set Air MIN to 8 (on the right)
- Then, set Air MAX to 35
- Now, you have completed the main settings in the menu
- Return to the Home page by pressing ESC several times
- Switch the red ON/OFF button on the left hand side OFF and hold it for at east 3 sec until the ON text appears in the lower left corner

After circa 15 min of operation: thoroughly check the chimney draught when the inspection window is open and at the lowest power. ATTENTION: the area can be very hot. When you move your hand gently over the sight glass opening, hot air should not blow on your hand when the appliance is on. If there is no draught, hot air escapes to the outside. Draught should be good when no hot air escapes to the outside through the inspection window. To be sure that the draft is good we recommend, however, draught and flue gas temperature measurement.

**ATTENTION**

***We recommend the draught between 20-25 Pa (2.0 -2.5 mm HG) at 100% capacity, as long as the external conditions allow it (depending on the weather conditions). If the sufficient draught cannot be achieved, remove the central set of turbulators and repeat the test. If the problem persists, you should improve conditions in the chimney, e.g. through the installation of an air exhaust fan.***

Flue gas temperature should neither drop below 110 °C nor exceed 200 °C for the most of the boiler operation time. Maintaining the high temperature at the bottom may be difficult, in particular with the older chimneys. This means the lower capacity of the boiler.

## Procedure in the Case of Pellet Jamming

Many customers are struggling with pellet jamming. Jams should generally occur only at a very weak draught or too low ventilation setting.

We have some proposals how to deal with the pellet jamming.

- Pellets are maybe too long. The max length is 35 mm.
- Pellets should have a compact consistency and should not crumble up when it pours through the fingers.
- Do not store pellets in too dry or too wet conditions, since it critically changes its calorific value.
- Remove the ash from burning pellets from the ash pan, auger and flexible hose once or twice a year. Pay attention to avoid the accumulation of ash at the screw feeder motor.
- Length of the flexible hose is min 50 cm. It should be routed so, that pellets might not accumulate inside the hose.
- The screw feeder may not be inclined of more than 45° vertically downwards.
- Adjust the pellets sieve (mainly, by using the short hose provided). You can see the so called, pellets sieve' consisting of 3 layers, when you remove the burner and the cover. In the low models, you can cut the bottom sive away or remove it, but you should set the metering to 80 sec at the beginning (in the BURNER submenu.)
- Select the BURNER/**Fuel pre-dose** option. Then, check whether two semicircular sockets in the plate are covered with pellets at the burner ignition, otherwise, increase pellet metering (up to 100 sec). Remove the pipe elbow from the burner. If the centering plate is in the opening, push it completely to the boiler/burner head so, that it is no longer in the opening.

If all the above conditions are met and pellets are still jamming, you should shift to another type of pellets.

## Check of Settings

- Check the chimney draugt – it should be between 20-25 Pa at 100 % load and approx. 5-10 Pa at 30 % load (manufacturer's requirements are: 18 Pa at 100 % capacity). Boiler may be operated at pressures from 15 -> 45 Pa. This value shall be 5-10 Pa at 100 % load when measured in the inspection opening.
- Too high draught may cause some issues. If this is the case, install a throttle in the chimney/flue.
- Check the flue gas temperature on a regular basis. Consider the values above 200 °C as faulty and as the boiler malfunction. However, it is sometimes necessary, if the chimney conditions are not good enough or installation of the exhaust fan is required. If the temperature is maintained below 110 °C, then high risk of soot formation exists, which forms peeling off overhangs at the final stage.
- Use proper measuring tools for the boiler adjustments or when pellets jamming or other issues occur during the equipment operation. Sometimes, you have to find a compromise since the conditions in chimneys may vary significantly.

## Measuring Parameters without the Exhaust Fan

Parameters at 100 % load:

- Draught 20-25 Pa (possibly 15-45 Pa)
- Temperature 130-180 °C (possibly 110-250 °C)
- CO (carbon monoxide) <500 ppm (it should be maintained below 1500 ppm and max 3000 ppm acc. to the requirements)
- OXYGEN 8-10 %

Parameters at 30 % load:

- Draught approx. 5 Pa (possibly 3-10 Pa)
- Temperature 100-150 °C (possibly 80-200 °C)
- CO (carbon monoxide) <1000 ppm (it should be maintained below 1500 ppm and max 3000 ppm acc. to the requirements)
- OXYGEN 12-15 %

## Measuring Parameters with the Exhaust Fan Installed/Switched ON

Parameters at 100 % load:

- Draught 12-15 Pa (possibly 10-30 Pa)
- Temperature 130-180 °C (possibly 110-250 °C)
- CO (carbon monoxide) <500 ppm (it should be maintained below 1500 ppm and max 3000 ppm acc. to the requirements)
- OXYGEN 8-10 %

Parameters at 30 % load:

- Draught approx. 2-3 Pa (possibly 1-10 Pa)
- Temperature 100-150 °C (possibly 80-200 °C)
- CO (carbon monoxide) <1000 ppm (it should be maintained below 1500 ppm and max 3000 ppm acc. to the requirements)
- OXYGEN 12-15 %

**ATTENTION**

***Never allow overpressure in the boiler. You can check this by opening the inspection opening at the boiler – hot air must not escape from the inspection window.***

# Specifications

## Specifications

CE IP 21

| Type | PELLUX 100/20 | PELLUX 100/30 |
|---|---|---|
| Rated power | 20 kW | 30 kW |
| Net weight | 202 kg | 245 kg |
| Water capacity | 60 l | 70 l |
| Power supply | 230 V NAC 50 Hz | |
| Boiler efficiency | 90 - 92 % | |
| Operating temp max | 85 °C | |
| Return temp min (at the boiler inlet) | 60 °C | |
| Flue gas temp | 80 ÷ 150 °C | |
| Noise level | 48 dB | |
| Outlet | ø133 mm ext. / ø125 mm int. | |
| Pressure max | 0.25 MPa (2.5 bar) | |
| Flue gas draught required | 18 ÷ 20 Pa | 22 ÷ 25 Pa |
| Length of combustion chamber | 320 mm | |
| Degree of protection | IP 21 | |
| Chimney diameter | Ø150 mm | |
| Chimney height (recommended) | 6m | |
| Power consumption in standby mode | 13 W | |
| Power consumption at nominal power | 43 W | 54 W |
| Power consumption at min power | 20 W | 26 W |
| Flue gas mass flow – at rated power | 42 kg/h | 64 kg/h |
| Flue gas mass flow – at min power | 18 kg/h | 28 kg/h |
| Pressure drop at the boiler – Δ10 °C | 2 (1) mbar | 6 (2) mbar |
| Pressure drop at the boiler – Δ20 °C | 6 (3) mbar | 17 (4) mbar |

(1) at Q = 0,8 m3/h, (2) at Q = 1,3 m3/h, (3) at Q = 1,6 m3/h, (4) at Q = 2,5 m3/h

### PBMAX20/30 Burner Specifications

| Type | PBMAX 20 | PBMAX 30 |
|---|---|---|
| Burner capacity | 6 ÷ 20 kW | 9 ÷ 30 kW |
| Fuel | Wood pellets 6 ÷ 10 mm | |
| Power supply | 230V NAC 50 Hz | |
| Electric power | 40 W | |
| Electric power at start-up | 650 W | |
| Degree of protection | IP 21 | |
| Net weight | 14,5 kg | 17 kg |

## PELLUX 100 Boiler Equipment

Ramrod handle (1 pce)
CT2 temperature sensor, L=600 mm (2 pcs)
Chimney connection - vertical / cleanout (1 pce)
User's Manual (1 pce)
PBMAX burner (1 pce)
Side pack kit (envelope)

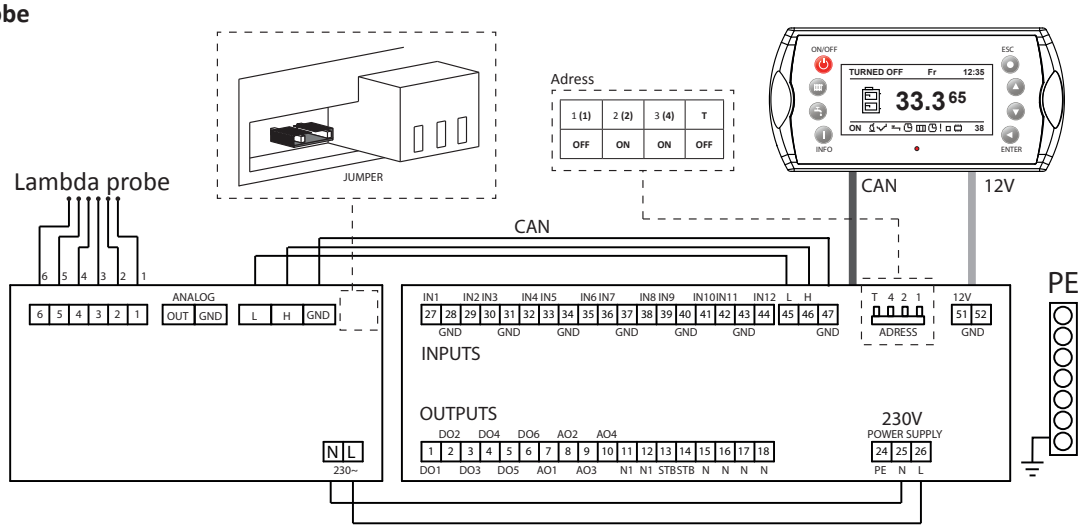
- Draft regulator Tigex (1 pce)
- Round cleaning brush ø68 (1 pce)
- Gasket adapter - draught (1 pce)
- Plug 1/8" (1 pce)
- Draining Valve G15 (1 pce)
- Plug 3/8" (1 pce)
- Wing nut M8 (1 pce)

## Optional Accessories

Pellets dispenser + feeder
ZP350
ZP600
VIDE GSM communications module
Wireless room temperature controller
CAN communications cable, 5.0 m
CAN communications cable, 0.45 m
CTP-02 room temperature controller
CAN 1/0 MC-1 expansion module
ML-2 CAN Lambda probe module assembly
Internet module

# Connection of Modules

### Lambda probe

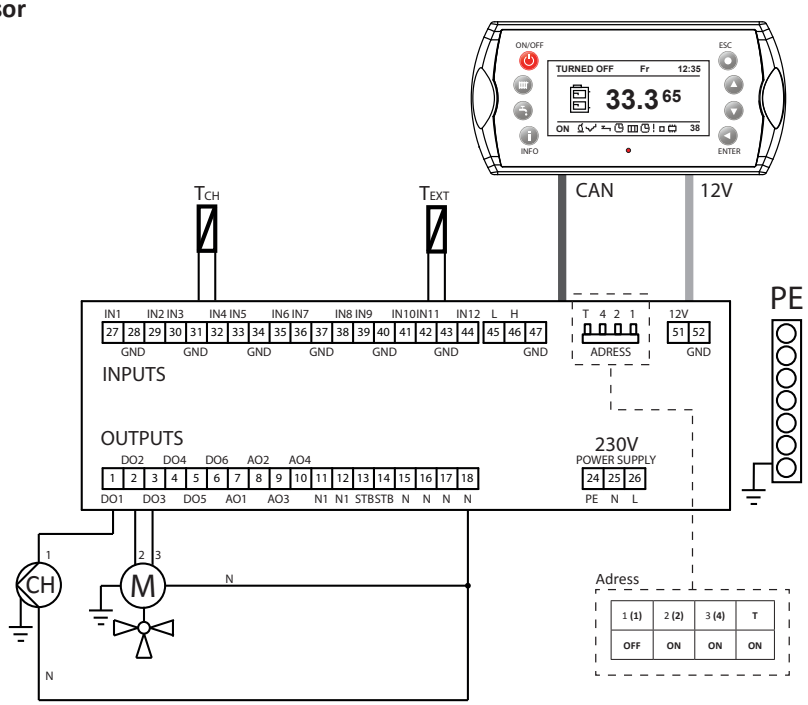



Activation of the Lambda probe module requires the following changes in SETTINGS:

1. Enter the SETTINGS menu and then SERVICE.
2. Open the MODULES CONFIGURATION submenu and set **Module Lambda** to **YES.**
3. Go to the BURNER submenu and select the SERVICE menu item.
4. In the SERVICE submenu, find **Lambda control** and set it to **YES.**
5. In the SERVICE submenu, find **Oxygen MIN (30%)** and set it to **14.0.**
6. In the SERVICE submenu, find **Oxygen MAX (100%)** i and set it to **8.0**.

For the detailed configuration, see page 54.

### Weather Sensor



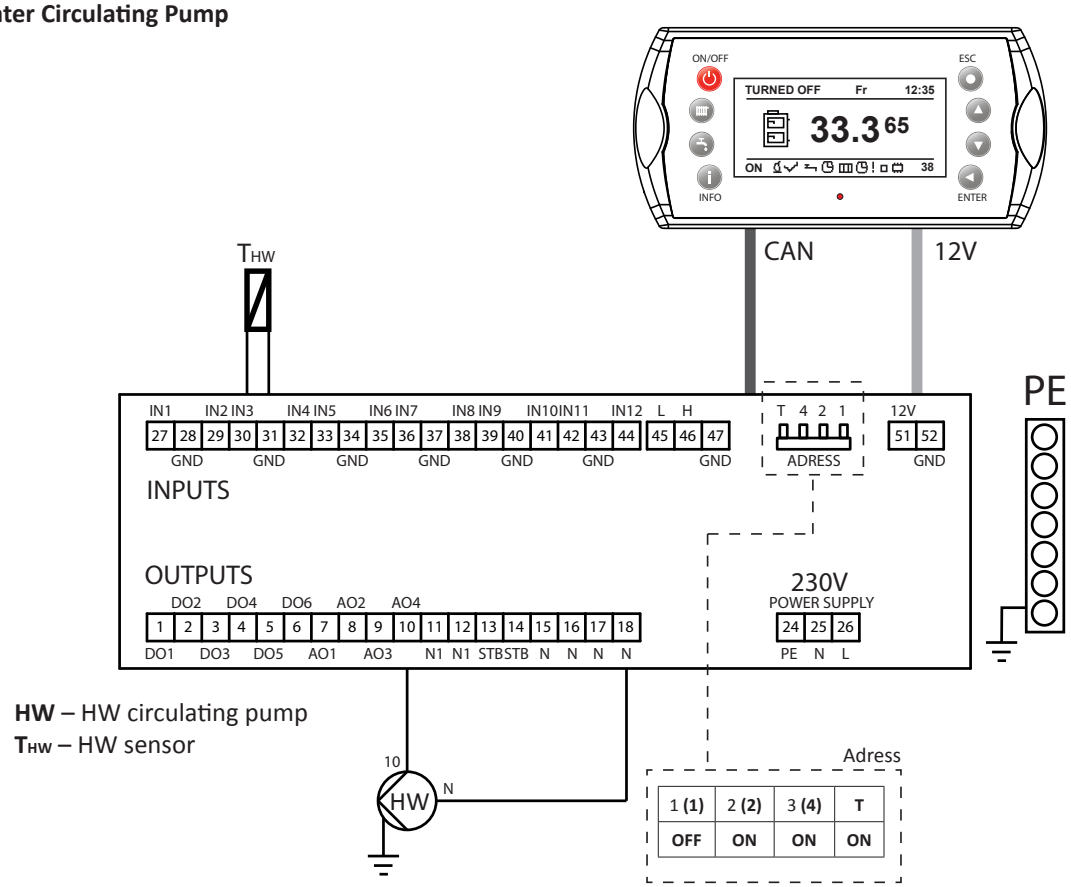

**1.** Central heating circulating pump
**2.** 3-way valve opening
**3.** 3-way valve closing

**TCH –** CH temp sensor
**TEXT –** External temp sensor

Activation of the weather sensor requires the following changes in SETTINGS:

1. Enter the SETTINGS menu and then SERVICE.
2. Open the SYSTEM CONFIGURATION submenu and set **Number of CH circuits** to **1.**
3. Find **Outside temp sensor** and set it to **YES**.
4. Return to the Home menu and open the CENTRAL HEATING submenu.
5. Enter the SERVICE submenu, find **Operating mode** and set it to **weather**.
6. Find **CH temp sensor** and set it to **YES**.

**Hot Water Circulating Pump**



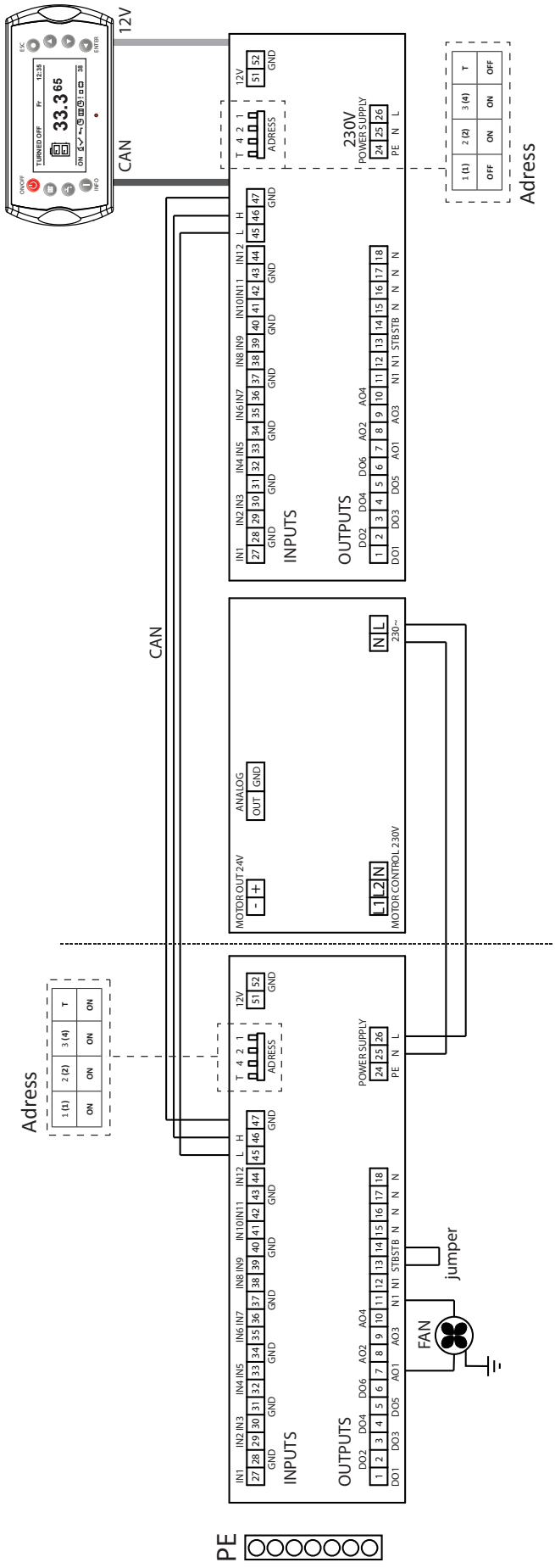

Activation of the HUW circulating pump requires the following changes in SETTINGS:

1. Enter the SETTINGS menu and then SERVICE.
2. Open the SYSTEMS CONFIGURATION submenu and set **Number of HW circuits** to **1.**
3. Return to the Home menu and open the CENTRAL HEATING submenu.
4. In the SERVICE tab, find the **Hot water priority** parameter and set it to **YES.**
5. Return to the Home menu and open the BOILER submenu.
6. In the SETTINGS tab, find the **Boiler temp set** parameter and set min. to **60°C**.

(the boiler temperature setpoint must be of at least 10 °C higher than the hot utility water temperature.)

# Connection of Modules

**Exhaust Fan**



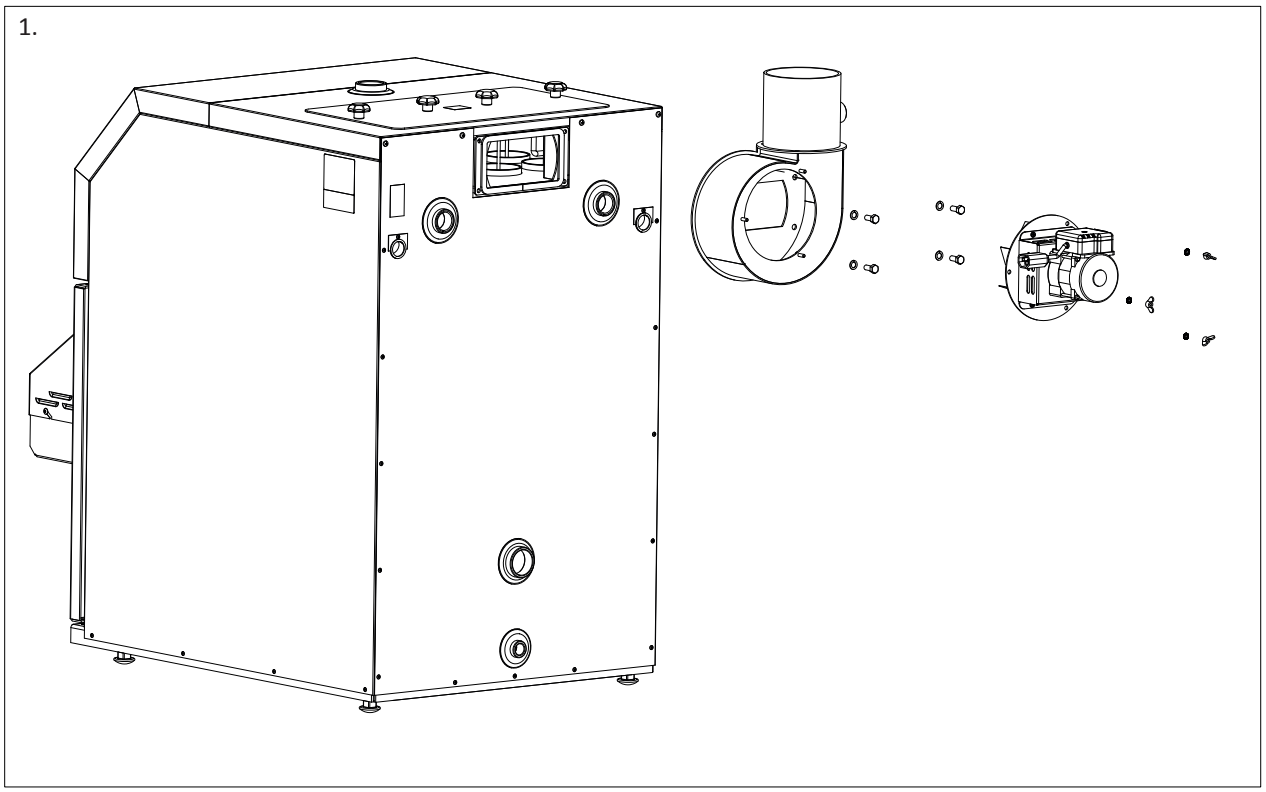

**ATTENTION**

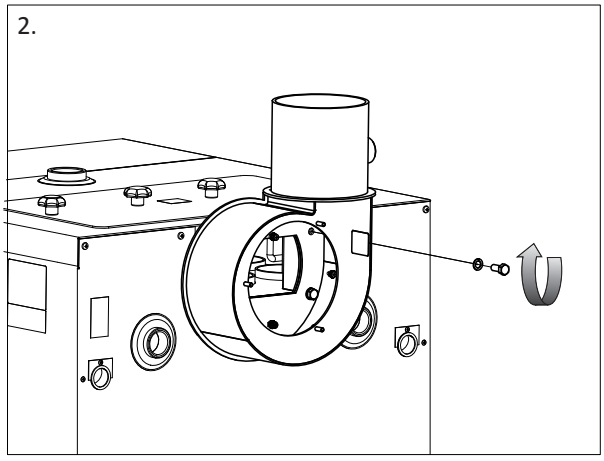
***The fan power should be set to at east 30 %, otherwise, it can be damaged. This does not apply to the integrated air blower at the burner. If the fan modul is the outermost address the DIP-switch with all switches ON.***

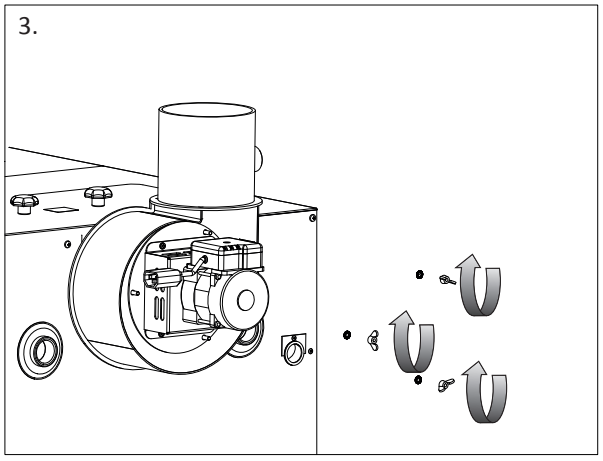
Connect the exhaust fan between outputs No. 7-11.
Activation of the exhaust fan requires the following changes in SETTINGS:

1. Enter the BURNER submenu and then SERVICE.
2. You can set the fan speed in the **Exhaust fan** option

## Installation of the Exhaust Fan




**ATTENTION**

***Check and clean the fan blades on a regular basis. Cleaning interval depends on the degree of contamination.***

# Declaration of conformity

declare under our sole responsibility that the product

- **PELLUX 100/20**
- **PELLUX 100/30**

To which this declaration relates is in conformity is in conformity with requirements of following directives

EC directive on:
Electromagnetic Compatibility (EMC): **2004/108/EC**
Low Voltage Directive (LVD) (LVD): **2006/95/EC**
Pressure Equipment (PED): **97/23/EC**
Machinery Directive (MD): **2006/42/EC**
Restriction of Hazardous Substances (RoHS): **2002/95/EC**.

These pressurized equipments are covered by Article 3 in EU Directive 97/23/ EC. As prescribed in item 3 of this article, the equipments are designed and manufactured in accordance with the sound engineering practice of a member state in order to ensure safe use. Such pressurized equipments must not bear the CE marking referred to in Article 15 in EU Directive 97/23/ EC

The conformity was checked in accordance with the following EN-standards

* EN 60335-1:2012 Household and similar electrical appliances - Safety - Part 1: General requirements
* EN 60335-2-102:2006+A1:2010 …. Safety. Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections
* ISO 12100:2010. Safety of machinery. General principles for design. Risk assessment and risk reduction
* EN 303-5: 2012. Heating boilers for solid fuels... Terminology, requirements, testing and marking
* EN 50366:2003+A1:2006. Household and similar electrical appliances. ... Methods for evaluation and measurement
* EN 55014-1:2012 Electromagnetic compatibility. Requirements for household … Emission
* EN 55014-2:1999 +A1:2004 Electromagnetic compatibility. Requirements … Immunity. ….
* EN 61000-3-2:2007 + A1:2010 + A2:2010 EMC… Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
* EN 61000-3-3:2013 EMC… Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase …..
* PN-EN 62233 2008. Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure
* EN ISO 3834-2:2005 Quality requirements for fusion welding of mattalic material -- ...
* EN ISO 15614-1:2004 + A1:2008 + A2:2012 Welding procedure tests for the arc welding...
* EN ISO 9606-1:2013 Qualification testing of welders -- Fusion welding -- Part 1: Steels
* EN ISO 14732:2013 Welding personnel -- Qualification testing of welding operators and weld setters …
* EN 10204:2004 Metallic products - type of inspection documents...

Markaryd 2014-09-29

Kenneth Magnusson
Quality and Environmental

Manager Peter Jocic´
Product Management Manager

## *Commissioning Report for Biomass Boilers*

| | |
|---|---|
| Name of Instaler | |
| Name of Commissioner:<br>(if Different From Instaler) | |
| Registration ID:<br>(HETAS/MCS etc.) | |
| Registration ID:<br>(HETAS/MCS etc.) | |
| Name of Homeowner: | |
| Address: | |
| Postcode: | |
| Phone:<br>(If available) | |
| Model Identification:<br>☐ Wood Pellet<br>☐ Wood Gasifier | Output:<br>☐ 25kW ☐35 kW<br>☐ 35kW |
| Serial No.: | |

| **Instalation Details** | |
|---|---|
| Date of Completion | _____/_____/_____ |

| **(1)Size of system** | |
|---|---|
| Pre-existing heating system? | ☐ Yes ☐ No |
| Age of Dwelling: | _____ years |
| Buffer storage volume: | _____Litres ($m^3$) |
| Blending valve (Laddomat): | ☐ Yes ☐ No |
| Dwelling floor area: | _____ $m^2$ |
| | |

| **(2) Commission Data (Appliance should be commissioned at 100% firing rate):** | |
|---|---|
| $CO_2$ | _____ % |
| Fuel Gas Temp. | _____°C |
| Is the system for: | ☐ Space heating only<br>☐ Space and hot water heating |
| CO | _____ppm |
| Draught | _____Pa |
| Boiler Combustion Efficiency Test Result | _____ % |

## *Commissioning Report for Biomass Boilers*

| **3) Chimney/Flue** (Refer to TGD Part J) | |
|---|---|
| Diameter (cm) | |
| Height(m) (above roof/eves) | |
| Distance from Adjacent Buildings (m) | |
| Distance from combustible material (cm) | |
| Address: | |

| **Construction:** | |
|---|---|
| Twin Wall: | ☐ Yes ☐ No |
| ☐ Stainless Steel | |
| ☐ Masonry | |
| ☐ Other | |

| **Installation Checklist** |
|---|
| **1. Installation Complete N/A Comments** |
| a) Constructional Hearth complies with Building Regulation Technical Guidance Document: |

| **2. Chimney and appliance flue pipe Complete N/A Comments** |
|---|
| a) Size of flue complies with NIBE requirements: |
| b) Flue outlet position complies with Building Regulation Technical Guidance Document: |
| c) Joints and seams of the flue pipes properly sealed to avoid flue gas leakage in the room: |
| d) Chimney sweeping position / debris collection space adequate: |
| e) Existing chimney swept: |
| f) Chimney visually checked and smoke tested: |

| **3. Controller and Electrical Work Complete N/A Comments** |
|---|
| a) Electrical wiring correctly installed: |
| b) Class 1 electrical equipment is earthed: |
| c) All wiring is supported and routed correctly: |
| d) Temperature sensors installed correctly: |

## *Commissioning Report for Biomass Boilers*

| **4. Boiler and system pipes/vessels Complete N/A Comments** |
|---|
| a) System is sealed: |
| b) System is open vent: |
| c) System pressure has been correctly set at (bar): |
| d) Overflow from safety valve sent to the drainage: |
| e) Pressure relief valve and circulating pump operating correctly: |
| f) No valve between boiler and safety valve: |
| g) Fill and Expansion cistern complies with BS 5449: |
| h) Hot water pipes insulated properly: |
| i) Method of system drainage from lowest point present: |
| j) Can heat from new appliance flow through existing appliance and/or vice versa: |
| k) Safety controls are independent of other systems (e.g. gas or oil boiler) |
| l) System heat dissipation capacity adequate: |

| **5. Commissioning and Handover Complete N/A Comments** |
|---|
| a) Commissioning of Biomass system completed and ready for handover: |
| b) Maintenance instructions and schedules provided to customer/end user: |
| c) Customer/end user has been instructed in correct operation of system: |
| d) System documentation and operating manual supplied to end user: |
| e) Warranty documentation provided to customer: |
| f) End user has been fully informed of correct fuel for system, fuel moisture requirements and relevant storage information: |

| **Other Comments:** | |
|---|---|
| Signed by Commissioning Engineer: | |
| Name in Block Capitals: | |
| Date: | |

# SERVICE RECORD

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record is completed.

**Service Provider**

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

**SERVICE 1** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 2** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 3** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 4** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 5** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 6** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 7** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 8** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 9** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

**SERVICE 10** Date

Engineer Name

Company Name

Telephone Number

Comments

Signature

NIBE Energy Systems Limited
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www.nibe.co.uk

# INITIAL START-UP REPORT

MANUFACTURER'S COPY (PLEASE RETURN)

## CUSTOMER

NAME: .....

STREET & BUILDING No: .....

POSTAL CODE & PLACE: .....

TEL: .....

## INSTALLER

COMPANY: .....

STREET & BUILDING No: .....

POSTAL CODE & PLACE: .....

TEL: .....

## EQUIPMENT AND BUILDING

TYPE OF BURNER: .....

BURNER No.: .....

DATE OF BURNER INSTAL.: .....

DATE OF PURCHASE: .....

BOILER MODEL: .....

BOILER No.: .....

DATE OF BOILER INSTAL.: .....

DATE OF PURCHASE: .....

TYPE OF FEEDER: .....

FEEDER No.: .....

BOILER-ROOM VENTILATION: .....

HEATED AREA: .....

## BOILER PARAMETERS, COMBUSTION PROCESS AND SYSTEM DATA

**PARAMETER SETTINGS**

POWER MAX/MIN [%]: .....

AIR MAX/MIN: .....

BOILER Temp SETPOINT [°C]: .....

HYSTERESIS: .....

FUEL FEEDING TIME [s]: .....

PELLETS DIA.: .....

**CHIMNEY PARAMETERS**

DIAMETER: .....

HEIGHT: .....

INSULATION: .....

HEIGHT ABOVE ROOF RIDGE : .....

**COMBUSTION PARAMETERS** (OPTIONALLY)

FLUE GAS Temp [°C]: .....

$CO_2$: .....

λ: .....

CO ppm : .....

$O_2$: .....

Pa: .....

**SYSTEM**

No. OF CIRCUITS: .....

No. OF HUW CIRCUITS: .....

No. OF MIX. VALVES: .....

RETURN PROTECTION: .....

BUFFER TANK VOL.: .....

**OPTIONAL ACCESSORIES**

LAMBDA MODULE: .....

EXT. Temp SENSOR: .....

ROOM Temp SENSOR: .....

EXPANSION MODULES: .....

OTHER: .....

**DATE OF INITIAL START-UP**

**I ACCEPT THE WARRANTY TERMS & CONDITIONS STATED IN THE OPERATING MANUAL**

**STAMP AND LEGIBLE SIGNATURE OF THE PERSON RESPONSIBLE FOR THE INITIAL START-UP**

**LEGIBLE SIGNATURE OF THE CUSTOMER**

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# PELLUX 100 BOILER COMPLAINT PROTOCOL

**Type of boiler**.....

**Date of purchase**.....

**Date of installation**.....

**Factory No.**

BOILER: .....

BURNER: .....

## Vendor

NAME: .....

ADDRESS: .....

TEL:.....

## Customer

NAME: .....

ADDRESS: .....

TEL.:.....

## Installer

NAME: .....

ADDRESS:.....

TEL.:.....

## Fault description

In the case of complaining, please attach a copy of the Initial Start-Up Report to the Complaint Protocol. In the event of unwarranted service call, the customer agrees to cover the costs of arrival.

**REQUESTOR'S DATE AND SIGNATURE**

**NOTES:**

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