



Combined Boiler MARELI "CB 25/35/48"  
Assembly and exploitation manual



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- “Mareli Systems” expresses its gratitude towards the clients who purchased the manufactured products.
- “Mareli Systems” provides the present manual as an aid to the team, which will install, adjust and maintain the device, as well as to the client which will exploit it.
- “Mareli Systems” requires that the technicians who will carry out the above mentioned procedures have passed a training course on the activities, associated with this product.

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**ATTENTION!** For Your safety, it's necessary to read carefully this manual as well as the exploitation and installation manual of the automated pellet burner before attempting any installation, adjustment and exploitation activities. Also read the installation and exploitation manual of the pellet bunker if the device is provided with one. The non-fulfillment of prescriptions and violation of active regulations and directives may lead to damage and unexpected consequences for which “Mareli Systems” accepts no responsibility.

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## 1. Description and advantages of the Combined Boiler “CB 48 Kw”

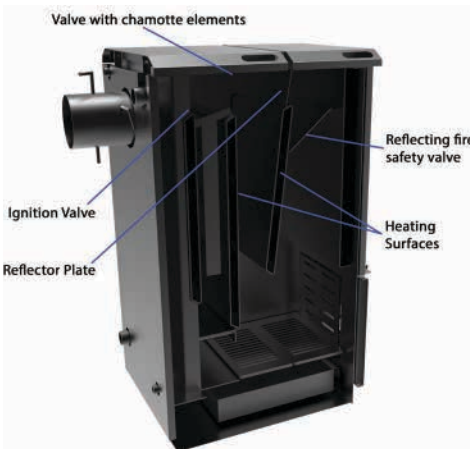
The Combined Boiler of this series are designed to utilize solid fuel (wood, coals). It has a welded steel construction. The resulting heat is absorbed by the heat exchange surface of the boiler body and transmitted the heating system. These boilers used for heating in local heating systems, but also for heating domestic water. Automated pellet burner is part of the system and can utilize the following types of fuel: Wood pellets size 6 and 8 mm Class A;



### The full set consists of:

- Water heating boiler, representing a steel heat exchanger for warming up the heat conductor;
- Automated pellet burner equipped with a control panel;

## 2. Description of the system: water heating boiler heat exchanger



### The system consists of:

- Water heating boiler (the boiler is equipped with two doors depending on the type of fuel that is going to be used);

### The heating boiler consists of:

- Steel body;
- Thermal regulator;
- Door for mounting a burner;
- Thermometer/manometer;

The desired temperature of the boiler water is adjusted with the regulator and is maintained at this maximal value.

The airflow is controlled by a valve (connected to the regulator). At the back there is a compartment that contains the ash residue.

The thermometer/manometer indicates the temperature in the heating boiler and the water pressure.

## The boiler consists of the following elements:

- The heat exchanger comes in a two-door kit which is used depending on the fuel type(available for mounting the pellet burner);
- The heat exchanger is a welded construction made of steel sheet material. In the front lower part there is a furnace chamber and underneath the ash container is placed. The heat exchanger is compact and constructively based on a triple-motion principle, which enables an optimal heat exchange and high efficiency;
- The ceramic elements mounted in the combustion chamber ensure an optimal burning process and a complete combustion of the fuel;
- The ash tray is situated on the bottom of the combustion chamber. There the remaining ash is gathered and it allows for easy cleaning of the device;
- The incoming and outgoing connector for feeding and the unloading water are situated in the rear part of the boiler and represent two terminals with an outer thread G1½ through which the device is connected to the heating system;
- The drainage hole is a terminal with a G1/2 thread upon which an unloading valve is to be mounted;
- The funnel (with an outer diameter of F145) is situated in the upper rear part of the boiler, and leads off the smoke gasses through the chimney;
- The steel heat exchanger is isolated with mineral isolation which reduces the environmental thermal losses;
- The outer decorative walls are made of steel sheet iron and are worked with a high quality colour layer;

Maximal Capacity	kW	24	32	48
Effective Heating	m <sup>3</sup>	Max.500	Max.700	Max.1100
Height H	mm	988	1138	1138
Width W	mm	530	530	580
Depth D	mm	641	675	792
Fume Exhaust Outlet	Φ mm	150	150	180
Weight	kg	215	265	325
Fuel		Pellets/Solid fuel	Pellets/Solid fuel	Pellets/Solid fuel
Chimney Draft	Pa	20	20	20
Volume of the water chamber	litr	62	78	95
Max. working pressure	bar	0,5-2,0	0,5-2,0	0,5-2,0
Working environmental temperature	° C	5° - 40°	5° - 40°	5° - 40°
Efficiency	%	> 92%	> 91%	> 90%
CO Emissions	Mg/m3	<500	<500	<500
Temperature of the flue gas	° C	135	155	170

The water heating boiler is manufactured with a two-door kit (left and right) depending on the fuel that is to going be used.

The door with an air valve is used for solid fuel (wood, coals). The valve is connected to the thermal regulator with a chain and thus controls the boiler temperature. The precise adjustment of the regulator is done on start up of the unit.

The door that is designed for the burner has an opening, in which it is mounted with M6 screws. After the burner is mounted, a steady tightening of the screws must be done so the isolation between the burner's flange and the boiler's door is secured. Basic information about the operation of the boiler:

- The thermal output on which the burner is set;
- The degree of impurity of the boiler's heating surfaces;
- The degree of insulation on the door and the lids of the boiler's combustion chamber (the condition of the insulating ropes)
- The power chimney draft;



## 3. Transport and assembly of the heating boiler

If possible, transport the heating boiler without unwrapping it. Keep it on the pallet to the point of unloading. Unwrap in an ecologically clean manner. Respect, construction and ventilation requirements, especially the active norms for burning devices and storing of burning materials in the room where the unit will be installed. The minimal distances between the wall and the boiler must be at least of 600 mm. The minimal space in front of the boiler must be of 1000 mm. The fireproof surface for assembly as well as the foundation must be even and horizontal. Put fireproof wedges if needed. If the foundation is not even, the side with the connections (the rear side) may be placed 5 mm higher in order to optimize for ventilation and flow.

The foundation must be bigger than the base of the heating boiler. At least 300 mm from the front side and 100 mm from the rest of the sides.

The water heating boiler must be connected to the heating installation and to the chimney, following the respective requirements. For the proper and safe functioning of the boiler a levelling is required so that good airflow is ensured.

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Attention!!! Fire risk due to flammable materials and liquids.

- Make sure no flammable materials and/or liquids are in the vicinity of the heating boiler.
  - Indicate the user of the installation the minimal distances to flammable and non-flammable materials.
- 

### **Installing the heating boiler**

The installation of the heating boiler will be explained here. In details this is:

- Making the connection with the chimney
- Hydraulic connection
- Connecting the feeding/unloading valve
- Connecting the safety heat exchanger
- Filling the heating installation and density check

## 4. Instructions for connecting the air supply and exhaust gases

### **Making the connection with the chimney**

Keep in mind that the connection of the heating boiler to the chimney must be performed with rules of local construction control in mind and the approval of a chimney sweeper.

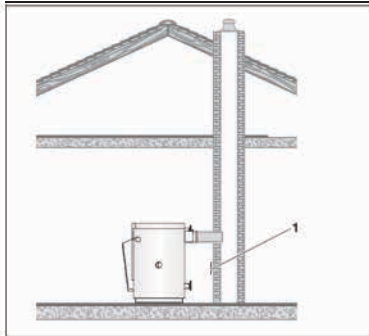
A chimney with a good draft is the main precondition for the proper functioning of the heating boiler. The power and economy are greatly influenced by it. The heating boiler can be connected only to a good draft chimney.

- Install a connection to the exhaust gas with an inspection hole for cleaning.
- If possible, the exhaust gas pipe should be short and inclined from the heating boiler upwards to the chimney.
- Mount very carefully the exhaust gas pipe which stands freely in the chimney and place firmly the orifice.
- Attach additional pipes with length over 2 m. All parts of the exhaust gas pipe must consist of non-flammable materials.

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Attention!!! Suffocation hazard due to lack of oxygen in the installation room.

- Ensure sufficient fresh air supply through holes out.
  - Risk of injury/damage to equipment due to lack of combustion air can lead to tar and noxious gas formation.
  - Ensure sufficient fresh air supply through holes out.
  - Notify the user of the installation that these holes must remain open.
- 



### **Hydraulic joints making**

Instruction!!!

Damaging the installation due to non-isolated joints.

Install the connecting pipes without tension to the boiler joints.

The figure shows the connection of the exhaust gases. 1 – draft stop.

**Info:** For low exhaust gases condensation and prolonged life, we recommend equipping the heating boiler with a device for increasing the backward temperature. This prevents reducing of the temperature of the boiler's water below 65° C (point of combustion irrigation).



## Connecting the safety heat exchanger

In the countries where the EN 303-5 is in force, the heating boiler must be provided with overheating protection. By doing so the maximum water temperature of 100° C won't be exceeded (overheating protection).

The minimal working pressure of the water must be equal to 2 bar (the maximum – to 6,0 bar). There must be an available capacity of at least 11 l/min.

- Connect the safety heat exchanger according to the hydraulic chart with a thermal safety switch (accessories).
- Mount a filter in the flow of cooling water to the thermostatic valve.

## Filling the heating installation and insulation check

Check insulation before putting the installation into operation in order to ensure that no leaks are present. Exercise upon the heating boiler a pressure equal to 1,3 of the allowed working pressure (keep in mind the safety pressure of the safety guard valve).

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Instruction!!! Installation damage due to freezing.

- If the heating installation and the pipe network are not constructed with anti-freezing protection, we recommend filling the installation with liquid with a low freezing point and anti- corrosion and anti-freezing agent.
- **Installation damage due to excessive pressure during the insulation test. Pressure devices, regulators and safety switches may be damaged due to high pressure.**
- Make sure that during the insulation test no pressure devices, the joints to the water tank of which cannot be closed, are mounted.

- Close the connection between the enlarging pot and the system by closing the valve.
- Open the mixing and the stopping valves from the water heated side.
- Connect the tubing to the water valve. Place a hose full of water on to the hose socket of the loading and unloading valve, secure it with a clamp and open the loading and unloading valve.
- Turn the cap of the automated air tighten-er one full spin so the air can be pumped out.
- Slowly fill the heating installation. During this process watch the pressure indication (manometer).
- When the desired working pressure is reached close the water valve and the loading and unloading valve.
- Check the insulation of the connections and the pipes.
- Pump the air out of the heating installation via the air tightening radiator valves.
- If after the air tightening the working pressure decreases additional water must be filled in.
- Release the hose from the loading and unloading valve.

## Ensuring the temperature of return water

For normal operation, the return water temperature should not drop below 55°C. Therefore a thermostatic mixer to raise the temperature of return water must be mounted to the reverse heating pipe.

## Establishing operating pressure

To start you need to establish normal operating pressure

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Instruction!!! Installation damages due to pressure in the material as a consequence of temperature differences.

- Fill the heating installation in cold condition only (the maximum incoming temperature can be 40° C).

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Attention!!! Hazard to life in case of non-observation of the safety prescriptions

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- Set the red arrow to gauge the correct pressure of at least 1 bar overpressure (valid for closed systems). In open systems the maximum water level in expansion tank is 25 m above the bottom of the boiler.
- Add and relief water in the heating network through the loading and unloading valve until the desired working pressure is reached.
- During the filling process make sure the heating installation is air tightened.

## Adjustment of the reducing valve of the exhaust gas pipe

The reduction valve of the exhaust gas pipe must be adjusted according to the exhaust gas installation and the fuel type. In open position (the lever is horizontal to the exhaust gas pipe) a higher temperature of the exhaust gases can occur, but with lower energy conversion efficiency. Inform and explain the adjustment to the user of the unit.

## Servicing the heating installation (for user)

### **5.Functions of the separate elements**

#### **Ignition valve**

The ignition valve of the water heating boiler is placed in an inclined position. By doing so the connection of the heating gas flow is short circuited in order for the hot gases to reach the chimney faster and for a greater chimney draft.

- For this purpose, push the valve lever backwards.

In a normal functioning mode (ignition valve in horizontal position) the hot gas warms the incoming gas flow and this results in better gas efficiency.

- For this purpose, pull the valve lever at the rear side of the heating boiler to a vertical position (after 10-15 minutes).

**Info: An excessive air supply may extinguish the flame due to the excessive forming of gas products from the combustion. In this case a re-adjustment of the air supply is needed.**

#### **Cleaning the heating boiler**

Empty the ash container before it is fully filled in order to ensure air flow from bellow.

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Attention!!! Fire risk due to hot ashes.

- If the ashes are still hot wear protective gloves.
- Empty the ashes in non-flammable pot with lid

#### **Cleaning the heating boiler**

The soot and ash accumulation on the walls deriving from the gas reduce the heat conduction. Precipitation, tar accumulating and condensation depend on the fuel type that is used (for example wood forms greater quantity than coals), chimney's draft and the working mode. We recommend cleaning at least once a week in a cold state of the system.

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Instruction!!! Inefficient operation

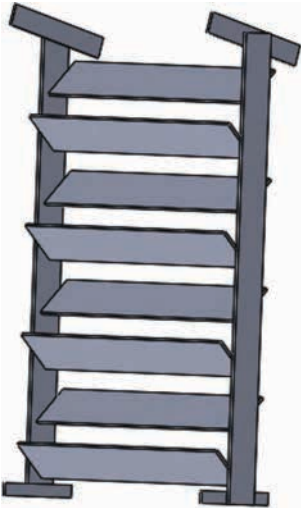
- Due to insufficient cleaning the fuel consumption may increase which may lead to environmental pollution. Clean the heating boiler at least once a week.
  - Clean the walls of the combustion chamber carefully in order to avoid damage to the fire-clay bricks.
- 
- Open the filling valve and the top plate.
  - Pull the ignition valve. This ensures the gas access to the paths and walls of the heating boiler.
  - Pull out the lid of the cleaning hole from the combustion chamber so the combustion waste can fall freely in the ash container.



- If the lid doesn't come off this means that the chamber is covered with tar. Hit the cleaning lid cautiously with a hammer several times.
- Clean the walls of the heating surfaces, the combustion chamber and the reserve fuel chamber with a cleaning scoop.
- Clean the grills with an ash knife.
- Gather the soot and the ashes in the ash container.
- We recommend annual revision of the heating boiler, performed by an authorized heating firm and check of the system's technical data, for example exhaust gas temperature.

<u>Cleaning works</u>	<u>Weekly at least</u>	<u>Monthly at least</u>
<i>Removing the cleaning lid with a fireplace poker so the filth can fall in to the ash container</i>	✓	
<i>Cleaning the heating surfaces, the combustion chamber and the fuel reserve chamber with a cleaning scoop</i>	✓	
<i>Cleaning the grills with an ash knife (reduced air flow and inefficient combustion may occur if not performed)</i>	✓	
<i>Cleaning the exhaust pipe through the control opening</i>		✓

## 6. Using the turbulator plate



The turbulator plate creates vortex in the paths of the heating gas and thus resulting in higher efficiency, especially during the winter. In the beginning of the heating season and during the intermediate seasons we recommend removal of the turbulator plate of the heating boiler

- At  $-7^{\circ}$  C outer temperature re-install the turbulator plate into the heating boiler.

### Shutting down the heating boiler

To shut down the boiler let the fire to extinguish completely. Acceleration of the process is not recommended.

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Instruction!!! Installation malfunction due to freezing.

When the heating installation is not operating it may freeze due to low temperatures.

- If possible, leave the heating installation constantly running.
- Protect the heating installation from freezing by eventually draining the heating installation on the lowest point.

### Temporary shut-down of heating boiler

- Clean the grill and empty the ash container.
- Clean the supporting surfaces of the loading valve and the ash chamber.
- Close the ash door and the loading valve.

### Long term shut-down of the heating boiler

For a long term shut-down of the heating boiler (for example in the end of the heating season) carefully clean the heating boiler in order to avoid corrosion.

### Emergency shut down of the heating boiler

In case of explosion hazard, fire, burning gases or vapours the combustion process can be terminated by using water.

- Carefully open the loading door in order to avoid incoming flames.
- Extinguish the fire with water.

### Avoiding condensation and tar forming

Excessively low heating output may lead to condensation upon the heating surfaces.

The condensation is leaking down into the ash container.

- Check the indications of the thermometer/manometer to ensure that the working temperature of the boiler water remains above  $65^{\circ}$  C.
- Heat up the heating boiler multiple times. Remove the turbulator plate for the purpose. By the soot accumulation, which is formed during a normal operating process, the condensation risk reduces.

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The point of irrigation of the burning products is at 65° C and for this reason the products temperature on the heating surfaces must not drop below 65° C  
If in the fuel reserve chamber condensation is formed, that indicates the presence of excessively high water content in the fuel (humid fuel). In such cases condensation may occur even at boiler water temperatures above 65° C

The tar is formed in similar circumstances (low output, low temperature) and also in wrong combustion adjustment – too little oxygen. The tar accumulates on the bottom of the gas paths and impedes the removal of the cleaning lid.

The tar can be cleaned in warm state only. For the purpose do as follows:

- It is best to heat up the boiler with some soft wood.
- When a 90° C temperature is reached close all valves of the heating components.
- Pull out the cleaning lid and hit several times with hammer.
- Remove the tar from the floor and the heating surfaces with a cleaning scoop.

## **7. Inspection and maintenance of the heating boiler**

Why regular maintenance is important?

These are the reasons why a regular maintenance of the heating installations is required:

- To keep a high energy conversion efficiency and to ensure an economic functioning of the heating installation (low fuel consumption);
- Ensuring a high operational safety;
- Ensuring a high ecological combustion;

Offer Your client an annual contract for revision and maintenance. Use original spare parts only.

### **Cleaning the heating installation**

- Check the heating boiler and clean if needed.
- Check and clean the exhaust gas pipe.

### **Heating installation pressure check**

The pointer of the manometer must be above the red one. The red pointer of the manometer must be set to the required working pressure.

### **Info: Set a working pressure of at least 1 bar.**

- Check the working pressure of the heating installation. If the manometer pointer is under the red pointer, then the working pressure is too low. Water must be added.

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Instruction!!! Installation malfunctions due to frequent water adding.

When a frequent water addition is performed, depending on the condition of the water, the heating installation can be damaged due to corrosion and limestone accumulation.

- Ensure that the heating installation is air tight;
- Check the insulation of the heating installation and the capability of the enlarging pot;
- Installation malfunctions due to tension in the material from to temperature differences.
- Fill the heating installation in a cold state only (the incoming temperature must not be exceeding 40° C).
- Add water through the loading and unloading valve.
- Air tight the heating installation.
- Check the working pressure again.

## **8. Thermal safety of the flow check**

The thermal safety guard of the flow ensures a safe functioning of the heating boiler in case of system failure if the system cannot lead the heat of the heating boiler out by itself. A malfunction may occur, for example, in case of a frozen heating system, water circulation failure etc. For proper functioning of the thermal safety guard a sufficient pressure and cooling water are required. Pressure of at least 2 bar and a 11 l/min water debit is required.

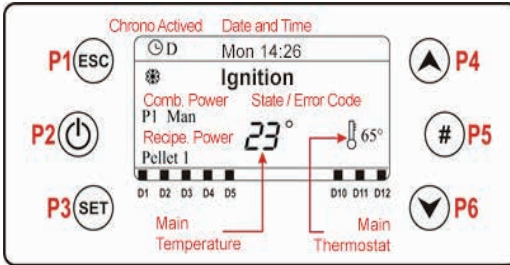
- Check the thermostatic valve of the safety heat exchanger annually according to the manufacturer's data. If the check was not successful – the thermostatic valve doesn't open the flow of the cooling water, or the permeability of the thermostatic valve is too low – you must replace the thermostatic valve.

## **Troubleshooting**

In case of malfunction attempt repair or inform the heating specialist. As a user of the installation you can only attempt maintenance activities like changing parts of the grills, the fire-clay bricks or the insulation tape. Use original spare parts only.



## CONTROL PANEL: USE AND FUNCTIONS



### The main frame shows:

time and date, chrono activation, combustion power and recipe, functioning state, error code, main temperature, main thermostat, summer/winter mode.

Button	Function
<b>P1</b>	Exit Menu/Submenu;
<b>P2</b>	Ignition and extinguishing (push for 3 seconds), Reset errors (push for 3 seconds), Enable/disable chrono;
<b>P3</b>	Enter in User Menu 1/submenu, Enter in User Menu 2 (push for 3 seconds), Save data;
<b>P4</b>	Enter in Visualizations Menu, Increase
<b>P5</b>	Activation chrono time band
<b>P6</b>	Enter in Visualizations Menu, Decrease

### LED

<b>D1</b> - Heating Resistance;	<b>D7</b> - Relay for cleaning engine;
<b>D2</b> - Auger 1;	<b>D9</b> - External Chrono reached;
<b>D3</b> - Pump 1;	<b>D10</b> - Lack of pellet;
<b>D4</b> - Valve or Pump 2;	<b>D11</b> - Local Room Thermostat reached;
<b>D5</b> - Auger 2;	<b>D12</b> - Sanitary water demand;
<b>D6</b> - Motor for cleaning engine;	

### ALARMS

<b>Er01</b> - Security Error High Voltage 1. It may also intervene with the system off;
<b>Er02</b> - Security Error High Voltage 2. It can only intervene if the Combustion fan is active;
<b>Er03</b> - Extinguishing for low exhaust temperature or missing light in the brazier;
<b>Er04</b> - Extinguishing for water over temperature;
<b>Er05</b> - Extinguishing due to high exhaust temperature;
<b>Er06</b> - Pellet Thermostat open (flame return from the brazier);
<b>Er07</b> - Encoder Error. The error may occur due to lack signal from Encoder;
<b>Er08</b> - Encoder Error. The error can occur due to problems of adjustment of the number of revolutions;
<b>Er09</b> - Water pressure low;
<b>Er10</b> - Water pressure high;
<b>Er11</b> - Clock Error. The error occurs due to problems with the internal clock;
<b>Er12</b> - Extinguishing for ignition failure;
<b>Er15</b> - Extinguishing due to power failure for more than 50 minutes;
<b>Er16</b> - RS485 communication error (Display);
<b>Er17</b> - Adjusting the Air Flow Failed;
<b>Er18</b> - No more Pellet in the bunker;
<b>Er23</b> - Boiler probe or Back boiler probe or probe Buffer open;
<b>Er25</b> - Engine cleaning brazier broken;
<b>Er26</b> - Engine cleaning broken;
<b>Er27</b> - Engine cleaning 2 broken;
<b>Er34</b> - Depression below the minimum threshold;
<b>Er35</b> - Depression above the maximum threshold;
<b>Er39</b> - Sensor Flowmeter broken;
<b>Er41</b> - Minimum air flow in Check Up is not reached;
<b>Er42</b> - Maximum air flow exceeded ( <b>F40</b> );
<b>Er44</b> - Open door error;
<b>Er47</b> - Error Encoder Auger: missing signal Encoder (if <b>P81</b> =1 or 2);
<b>Er48</b> - Error Encoder Auger: Auger regulation speed not achieved (if <b>P81</b> =1 or 2);
<b>Er52</b> - Error Module I/O I2C;
<b>Er57</b> - Test 'Forced Draught High' in Check Up fail ( <b>FL70</b> );
<b>Service</b> - Service error. It notifies that the planned hours of functioning (parameter <b>T66</b> ) is reached. It is necessary to call for service.

## MESSAGES

Description	Code
Anomaly of the probes checking, during Check Up phase.	<b>Sond</b>
Room temperature greater than 99 °C.	<b>Hi</b>
This message notifies that the planned hours of functioning are reached.	<b>Clean</b>
Door Open.	<b>Port</b>
The message appears if the system is turned off during Ignition (after Preload) not manually: the system will stop only when it goes in Run Mode.	<b>Ignition block</b>
Periodical Cleaning in progress.	<b>Cleaning on</b>
No communication between motherboard and keyboard	<b>Link Error</b>

## VISUALIZATIONS

**Exhaust T. [°C]** - Exhaust temperature;  
**Room T. [°C]** - Local room temperature; it is visible only if;  
**Buffer T. [°C]** - Buffer Temperature;  
**Pressure [mbar]** - Water pressure;  
**Air Flux** - Air flow;  
**Fan Speed [rpm]** - Exhaust fan speed;  
**Auger [s]** - Auger work time;  
**Recipe [nr]** - Combustion recipe set;  
**Product Code: 510** - Product code;

## USER MENU 1

### Combustion Management

**Power** - In this menu is possible to modify the combustion power of the system. It can be set in automatic or manual modality . In the first case the system chooses the combustion power. In the second case the user selects the desired power. On the left side of the display are signalled the combustion modality (A=automatic combustion, M=manual combustion) and the working power of the system.

**Recipe** - Menu to select the combustion recipe. The maximum value is the number of recipes visible to the user.

**Auger Calibration** - It allows to modify the value set in firm of Auger's speed or On times. The values are in the range – 7 ÷ 7. The firm's value is 0.

**Fan Calibration** - It allows to modify the value set in firm of Combustion Fan's speed. The values are in the range – 7 ÷ 7. The firm's value is 0.

### Heating Management

**Boiler thermostat** - Menu to change the value of the boiler thermostat .

**Buffer thermostat** - Menu to change the value of the Buffer Thermostat.

**Room Thermostat** - This Menu allows to modify the Local Room Thermostat's value. It is visible only if the ambient probe is select.

**Summer-Winter** - Menu that allows the selection Summer-Winter.

### Manual Load

The procedure activates the pellet manual loading with activation in continue modality of the Auger engine. The loading is stopped automatically after 600 seconds. The system must be OFF for the function can be activated.

### Cleaning Reset

Menu to reset the 'System Maintenance 2' function.

## CHRONO

This Menu allows selecting the programming modalities and the Ignition/Extinguishing time slots.

**Modality** - It allows selecting the desired modality, or disable all set programming.

1. Enter modification mode through the key **P3**.
2. Select the chosen modality (Daily, Weekly or Week end).
3. Enable/disable chrono modality through the keys **P2**.
4. Save the settings through the keys **P3**.

Disable  
Daily  
Weekly  
Week -End

### Programming

The system includes three type of programming: Daily, Weekly, Week end.  
After selecting the desired kind of programming:

1. Select the programming time through the keys **P4/P6**.
2. Enter the adjustment modality (selected time will be flashing) through the keys **P3**.
3. Change the time via keys **P4/P6**.
4. Save the programming with the keys **P3**.
5. Enable (a "V" is displayed) or disable the time slot (a "V" is not displayed") by pressing the keys **P5**.

Monday	
ON	OFF
09:30	11:15 V
00:00	00:00
00:00	00:00

### Daily

Select the day of the week to program and set the ignition and extinguishing times.

#### Programs around midnight

Set the clock On of the previous day at the desired time: Ex. 20:30  
Set the clock of OFF of the previous day at: 23:59  
Set the clock On of the following day at 00:00  
Set the clock of OFF of the following day at the desired time: Ex. 6:30  
The system turns on at 20.30 on Tuesday and turns off at 6.30 on Wednesday

Monday  
Tuesday  
Wednesday  
Thursday  
Friday

### Weekly

The programs are the same for all days of the week.

#### Week-end

Choose between 'Monday-Friday' and 'Saturday-Sunday' and then set the switching on and off times.

Mon-Fri  
Sat-Sun

## USER MENU 2

Menu is accessed by pressing the **P3** buttons for 3 seconds .

### Keyboard Settings

**Time and Date** - Used to set the day, month, year and current time.

**Language** - Menu to modify the language of the LCD board.

### Keyboard Menu

**Set Contrast** - Menu used to regulate the display contrast.

**Set Minimum Light** - Menu used to regulate the lighting of the display when the command aren't used.

**Keyboard Address** - It allows to change the address of the RS485 node. In the RS485 bus it is not possible to have more nodes with the same address. It is possible to configure the keyboard as local or remote by changing the address (16 for local , 17 for remote).

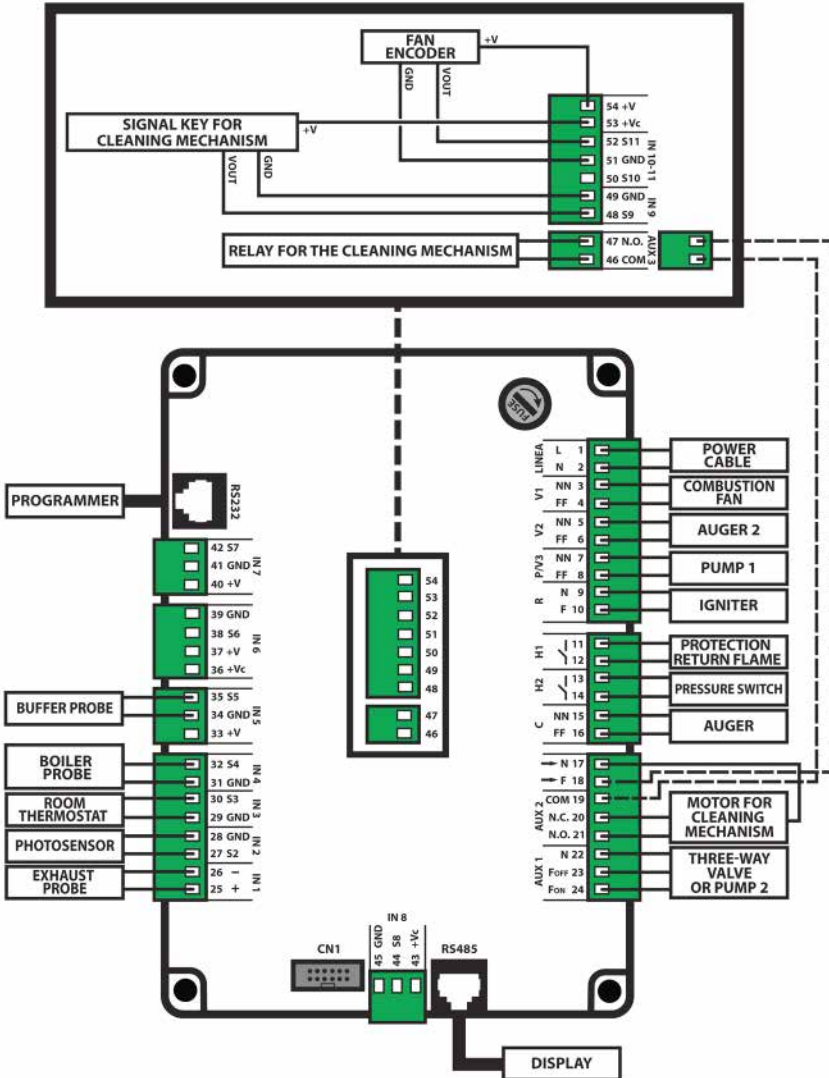
**Node List** - This menu shows: communication address of the board, typology of the board, firmware code and firmware version. Data are not modifiable. The typologies of board that can appear are:

MSTR - Master; INP - Input; KEYB - Keyboard; OUT - Output;

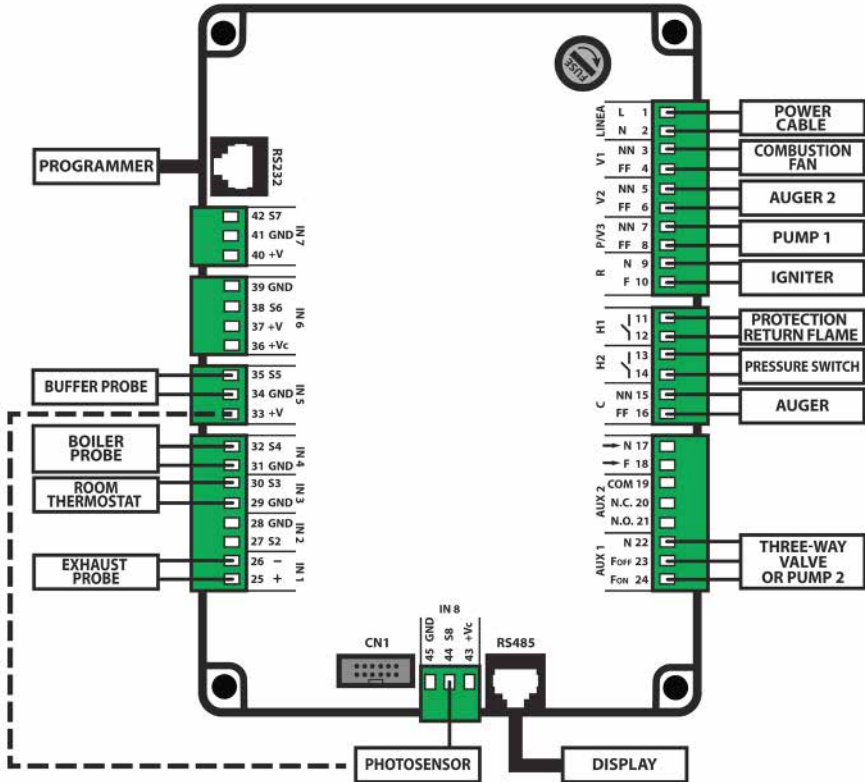
CMPS - Composite; SENS - Sensor; COM - Communication;

**Acoustic Alarm** - It allows to enable or disable the acoustic alarm of the keyboard.

# WIRING DIAGRAM SMB 50 ;



# WIRING DIAGRAM SMB 35 ;



Blank lined writing area consisting of approximately 24 horizontal lines.



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