



## Instruction and Operation Manual

BMT series  
Biomass hot water  
steel boilers



- Thank you for your trust to Thermolev products.
- For the effective use of this boiler it is necessary to read carefully the present guidance manual, before the operation of the boiler.
- Keep the guidance manual in a safe place with the guarantee of the boiler, for any possible use

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## **Biomass boiler BMT - Automatic operation**

### **Technical characteristics of the electronic control panel**

Operating voltage	:230V + 10% - 15%
Operating temperature	:5°C - 40°C
Relative humidity	:20 - 80%
Power of electric resistance (max 750W)	:250W
Circulator's power (max 750W)	:----W
Motor power of tank feeder(max 750W)	:180W
Motor power of burner feeder(max 750W)	:180W
Ventilator's maximum power(max 600W)	:85W

P.S Total load must be up to 10A

### **Operation of the biomass boiler**

Biomass boiler BMT series operation with the electronic table its totally automated.

Command the boiler exclusively from the room thermostat.

Two independent transfer material feeders are used so there is no possibility flame to return in the tank. The tank feeder transfers material from the tank to the burner, the burner feeder promotes material in the combustion chamber.

Feeders operation are programmable in a way that the burner feeder to stay always empty.

The initial ignition of the biomass boiler is achieved automatically with the electrical resistance.

When flame is detected in the combustion chamber, electrical resistance stops and starts scheduled fuelling. Burning material and the quality of it, is strictly controlled.

The power of burner is adjusted easily and quickly. The setting is completed with the setting of tree parameters : the operation time of the tank feeder, pauses time of the tank feeder and finally the amount of air needed for burning.

When room thermostat instructed to stop the boiler, it stops the feeder tank and begin immediately the process of complete evacuation of the burner feeder.

Also with the increased power of the ventilator to maximum level is achieved the best cleaning of the burner as it minimizes unburnt material in the combustion chamber. The boiler is turned off until you retake command of the room thermostat.

Circulator continues to work until the boiler temperature drops to programmable value.

### **Preparation of the biomass boiler**

After placing the boiler in the boiler room and make the electrical connection according to the manual, we fill the tank with the fuel.

The space to install the tank will not have humidity to avoid affecting the nominal output value of fuel and combustion quality.

The boiler can operate perfectly with pellets and olive core.

During the initial fill of the tank or when it is completely empty we should fill the tank feeder manually.

This function is achieved in the following way:

- 1.Originally, the boiler must be activated by the switch 15
- 2.Activate the controller from button 3
- 3.We have taken the command from room thermostat
- 4.Activate the feeders from button 6

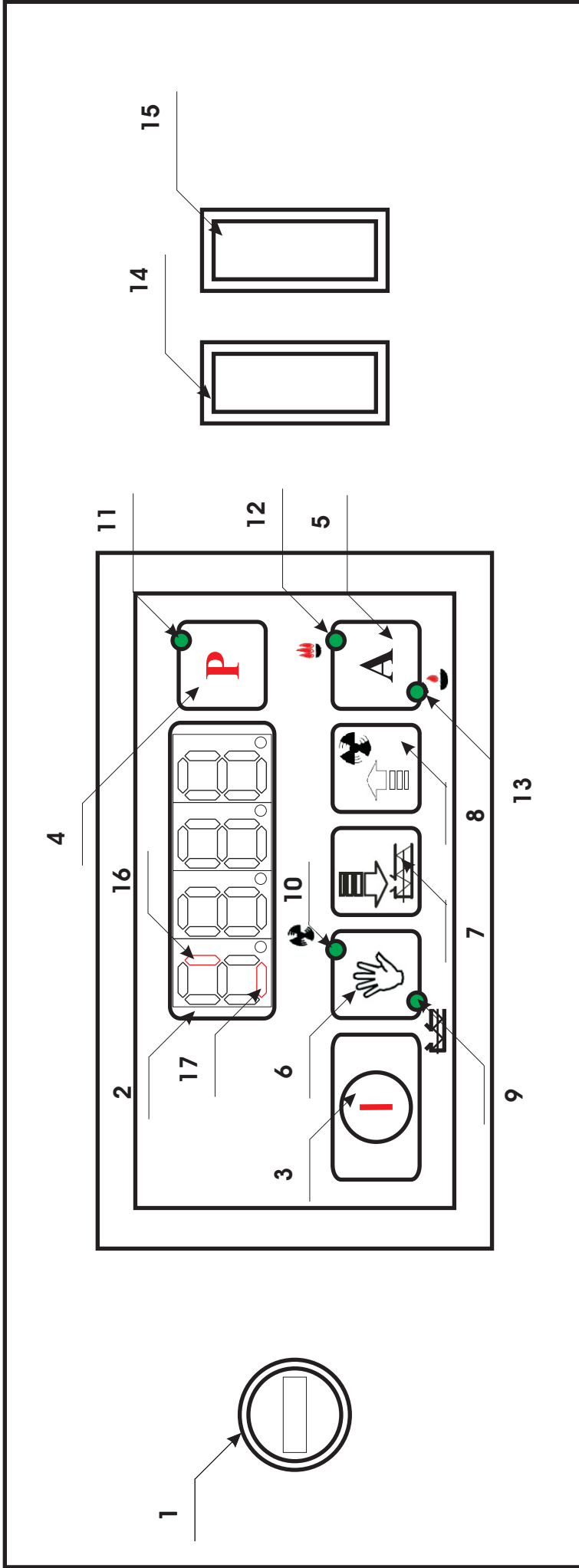
When the feeder fills up select the automatic mode by pressing the button 5

### **Biomass boilers ignition**

Boiler's preparation must be according the above procedure. Boiler is always activate in the automate operation.

The operation is done exclusively from the room thermostat.

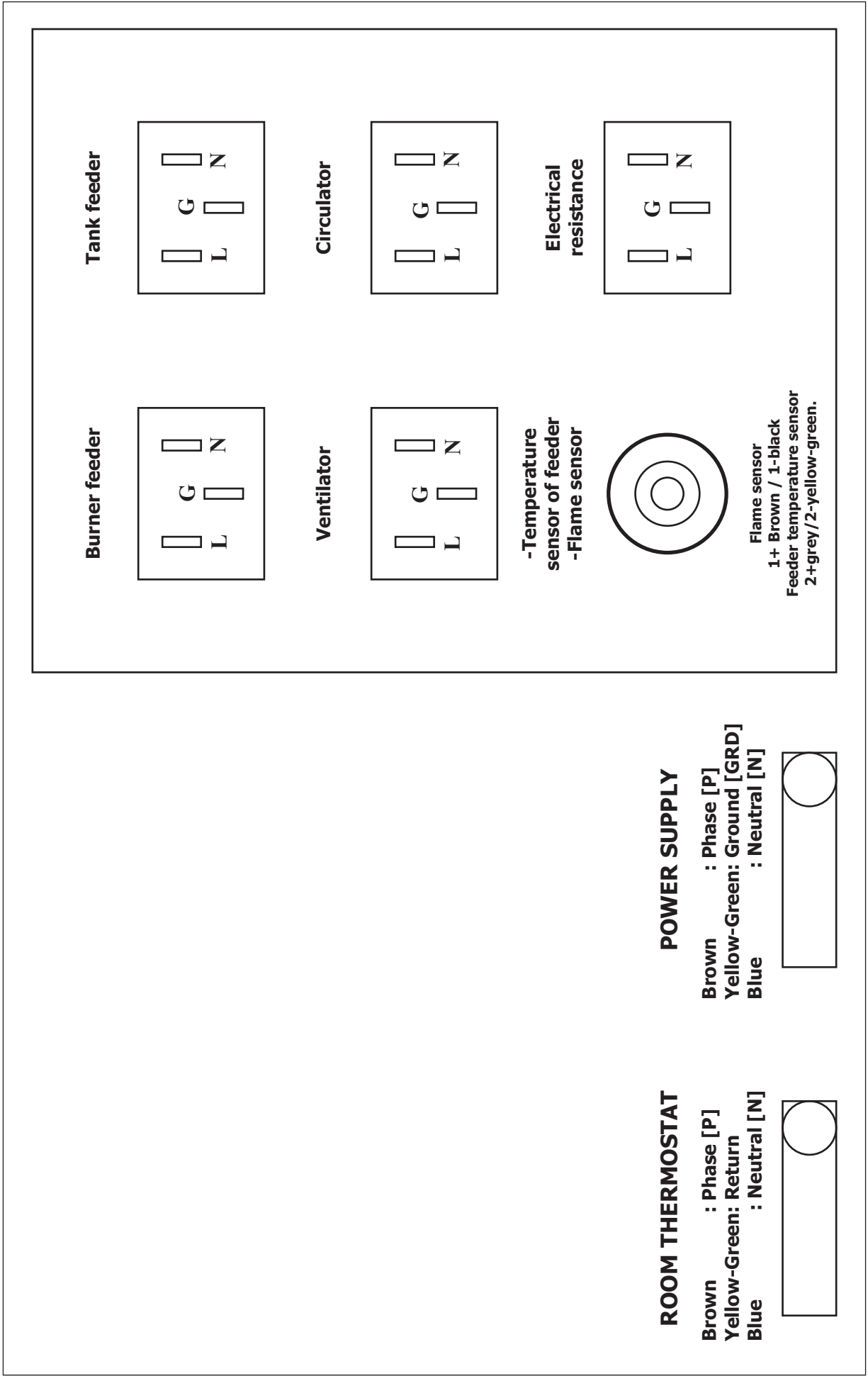
## DESCRIPTION OF CONTROL PANEL OF BMT BOILER



- 01. Temperature delimiter
- 02. Multifunction display
- 03. Button on/off of controller
- 04. Programmable button
- 05. Button of automatic operation
- 06. Button of manual operation
- 07. Button decrease and feeder activation
- 08. Button increase and ventilator activation
- 09. LED display feeder operation

- 10. LED indicator of ventilator's operation
- 11. LED indicator of programming
- 12. LED indicator of existing flame
- 13. LED indicator of boiler operation in a standstill mode
- 14. Lamp indicator for room thermostat command and boiler's operation
- 15. Main switch on/off of the boiler
- 16. LED indicator for circulator's operation
- 17. LED indicator for resistance operation

# ELECTRICAL CONNECTION OF CONTROL PANEL OF BMT BOILER



Parameters settings			
Parameter	Description	Range	Producer settings
<b>U0</b>	Temperature set on the boiler	45-80° C	<b>65° C</b>
<b>U1</b>	Time of operation of the fuel feeder	2-250s	<b>5 s</b>
<b>U2</b>	Stop time of the fuel feeder	2-250s	<b>34 s</b>
<b>U3</b>	Time of the stand still	5-250min	<b>250 min</b>
<b>U4</b>	Delay in turning off the fan during a stage of stand still	5-250s	<b>40 s</b>
<b>U5</b>	Fan efficiency	1-10 %	<b>3 %</b>

Proposed settings of parameters (For pellet 4400Kcal/Kg and humidity 8% )	
Parameter	Output of the boiler
U1=05 U2=32 U5=03	30000Kcal/h
U1=06 U2=30 U5=04	45000Kcal/h
U1=11 U2=34 U5=05	65000Kcal/h
U1=15 U2=34 U5=06	90000Kcal/h
U1=16 U2=28 U5=07	110000Kcal/h

Specific parameters settings			
Parameter	Description	Range	Producer settings
<b>C0</b>	Time of the heater turning on during single ignition cycle	1-25 min	<b>9 min</b>
<b>C1</b>	Time of the feeder operation during one ignition cycle	1-10 min	<b>1 min</b>
<b>C2</b>	Time for which the controller turns on the feeder and the fan when the user set time of stop in a standstill mode finishes	2-240s	<b>40 s</b>
<b>C3</b>	Brake time between ignitions	1-15 min	<b>5 min</b>
<b>C4</b>	Coefficient of which time of the fan operation is multiplied after the controller turns into a standstill mode. (To fire up a fuel)	1-5	<b>5</b>
<b>C5</b>	Parameter responsible for turning ON/OFF the control over the fuel sensor in the feeder	0-1	<b>0</b>
<b>C6</b>	Sensitivity of the flame sensor for the end of the ignition	5-250	<b>60</b>
<b>C7</b>	Sensitivity of the flame sensor of the again (next) ignition	5-250	<b>200</b>
<b>D0</b>	Min temperature	30-50°C	<b>45°C</b>
<b>D1</b>	Max temperature	55-90°C	<b>80°C</b>
<b>D2</b>	The pump turning on temperature	25-80°C	<b>40°C</b>
<b>D3</b>	Low hysteresis of the temperature	1-10°C	<b>2°C</b>
<b>D4</b>	Reserved	-----	-----
<b>D5</b>	The fan minimum rotation	50-90	<b>60</b>
<b>D6</b>	The fan maximum rotation	100	<b>190</b>

## **Warnings of the control panel (Alarms)**

AL1: Damage to the boiler outlet water temperature sensor

AL2: Damage to the burner feeder temperature sensor

AL3: Lack of fuel in the tank or ignition failure

AL4: The outlet water has reached the temperature exceeding 85°C

AL5: Boiler's temperature has reached 95°C

AL6: The maximum temperature in the burner feeder has been exceeded or the burner feeder temperature sensor has broken down

## **Safety operations**

If the boiler reaches 85°C

The controller displays AL4, cut the fuel supply and operate feeder burner for evacuation

If the boiler temperature reaches 95°C

Temperature delimiter pops up and displays AL5. When the temperature drops at 20°C then we can reactivate the boiler manually pressing the reset of the temperature delimiter

In case of power failure, the controller starts with a time delay 60 s to achieve stabilization of the stream. During restart, boiler switched on manual mode

In any case, the combination operation combining the two feeders so that the burners feeder always remains empty and there is no possibility of flashback

In case that increased temperature is observed of the feeder burner, it begins operation for 20 min to avoid any trace of fuel left and the indicator lights AL6. Power line of the tank stops instantly

When the thermostat instructed boiler to stop, it stops the feeder tank and immediately begins the process of complete evacuation of the feeder burner and clean the burner with increasing force of ventilator at maximum.

Thereby is achieved the best possible cleaning of the combustion chamber of residual unburnt material. Then the boiler turn off until it will retake command from the room thermostat.

The operation last for about 3 min.



