PELLET BURNER AND PELLET BOILER CONTROLLER WITH THE POSSIBILITY OF ADDING EXTENSIVE MODULES
TYPE: PELLET BURNER DT + MODULE
Rev0.2_Touch

USER'S GUIDE

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TECHNICAL DESCRIPTION

1. Function

The controller is designed to provide automatic control of combustion process and power regulation of pellet burners, boilers and fireplaces.

It is possible to attach to the controller additional modules of the series *"Expansion modules for pellet boilers"* according to the heating system:

- Module for control of two heating circuits and DHW.
- Module for control of buffer and DHW.

The controller and module information is displayed in **COLOR INTELLIGENT DISPLAY WITH TOUCH SCREEN PANEL.**

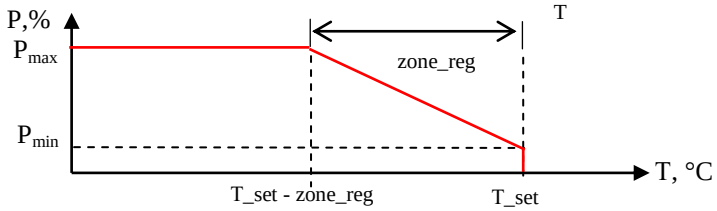
The communication between the controller and the modules is via RS485 and an unlimited number of modules can be connected.

2. Way of working

The controller can control the following units from the pellet burner system:

- fuel supply auger 1.
- fuel supply auger 2.
- fresh air fan.
- flue gas fan.
- electric heater to ignite the pellets.
- cleaner to clean the ash.
- circulation pump.
- expansion modules for pellet boilers

Starting the burner - if there is no signal for a stop or emergency situation and there is a difference between the set and the measured temperature of the sensor **To**, start the burner start procedure. The initial fuel dose is charged and the ignition is switched on. After detecting the presence of a flame, an increase in the burner power is made. Upon reaching the area of regulation "Zone_reg" again starts reducing power, such as when reaching the set temperature have minimal power. When reaching a temperature above the set point, it switches to a stop procedure.



Stopping the burner - Wait until the last dose of fuel is burned and the ash cleaner switches on.

Standby mode - at a temperature measured by the sensor **To** within **Tset <To <Tstb** and allowed Standby mode, the burner operates under minimum power to maintain the heat. The mode has its own setting parameters - maximum temperature, feed and pause times, fan speed, light and duration. (see programming section "Service settings")

2.1 Methods of forming the set temperature.

2.1.1 Manual set point for heating water (Tb set)

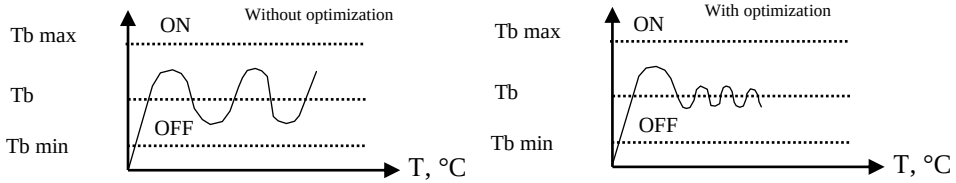
In this case, the assignment does not depend on other factors, such as outside temperature and room temperature, selecting a maintenance value.

This mode must be selected when an expansion module is connected, otherwise the boiler temperature may be limited by the room thermostat. ***(see programming section "Service settings")***

2.1.2 Determining the heating water set point by a room thermostat. ***(see programming section "Service settings")***

Only works with contact room thermostats with "independent output"!

- Optimization time. When optimization time is used, a reduction in the oscillations in the heating water set point is achieved, which leads to better regulation of the heating water. It can be selected from 0 to 60 minutes, with a 5 minute step. *(see programming section "Custom Settings")*



When the room thermostat is switched on or off and we operate without optimization time (0 minutes), the setpoint for the heating water changes to the limits set by **Tb lim**:

- included - maximum;
- excluding - minimal;

When the room controller is switched on or off and we work with optimization (5-60 minutes), the setpoint for the heating water changes to the limits set by **Tb lim:**

- on switch-on - starts to rise the set themepture, with a maximum level being reached at the end of the optimization time
- when switching off - the set temperature decreases, with a minimum level being reached at the end of the optimization period

Temperature limitations and protection:

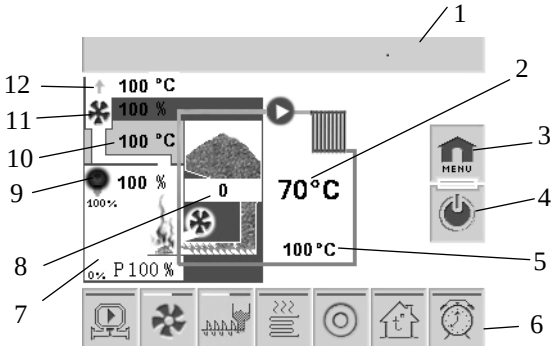
- minimum setpoint of the temperature of the water supplied;
- maximum setpoint of the temperature of the water supplied;
- protection against freezing of water;
- protection against overheating of the boiler and "back fire";
- protection against blockage of the circulation pump;

Minimum and maximum setpoint of heating water temperature. determine the boundaries of the water supplied to the premises. *(see programming section "Service settings")*

Frost protection - Includes the burner at temperatures below 5 ° C.

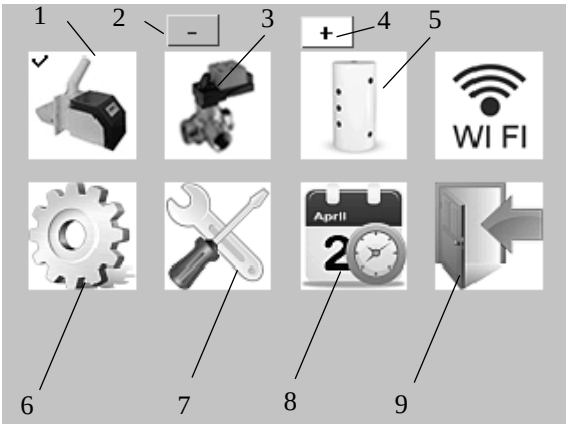
Protection against overheating of the boiler and back fire - input from the blocking thermostat, when the signal stops the burner.
Pump blocking protection - Includes the pump if it has not worked for 24 hours in 5 minutes.

3. Indication



1 - status information;
2 - set boiler temperature;
3 - button menu;
4 - ON / OFF button;
5 - return water temperature;
6 - indications (from left to right - pump, fan, auger, lighter, tubus, roommate, weekly program);
7 - current power;
8 - fan speed 1;
9 - light sensor;
10 - Outlet water temperature;
11 - fan speed 2;
12-flue gas temperature;

4. Settings



1 - burner setting select button;
2 - heating circuit module visualization button;
3 - button to select the heating circuit module setting;
4 - buffer tank module visualization button;
5 - setting button for buffer tank module;
6 - button user settings;
7 - button service settings;
8 - button weekly programmer;
9 - button to return to display screen;

Use the "↑" or "↓" buttons to scroll until the display shows the desired parameter, then click on the parameter and enter the desired value:

After the settings are complete, click "Save"

4.1 User's settings

name	*designation*	*limits*	*factory setting*	*current value (notes)*
time&date	time&date	hh/mm/ dd/mm/yyyy		
animation	animation	check box		
Sleep display	Sleep display	3 – 65535 s 0 – disable	0	
Language	Language	Eng / Бъл	Бъл	

4.2 Weekly timer

name	*designation*	*limits*
Program №	P	1 - 4
interval		00:00 – 24:00
day of the week	SuMoTuWeThFrSa	Su – Sa

To run the controller, the operating range must be set to at least one of the four programs. By setting the same start and end time of the interval, the program is inactive.

4.3 Alarm messages!

The presence of an alert message is indicated by a red status sign.

name	*designation*	*recovery*
Ignition fault	Ignition fault	on/off power
Low water temp	Low water temp	temperature rise
Sensor block thermostat	Sensor block thermostat	on/off power
Sensor flow control	Sensor flow control	on/off power

4.4 Service settings

Passwords	*designation*
000	Input service setting L0
123	Input service setting L1
321	Test outputs

Service settings level L0

name	*designation*	*limits*	*factory setting*	*notes*
heating setting	T set	Tmin – Tmax	80 °C	
delayed room thermostat	Rth delay	0 – 60 min	0	
type of control	Type control	0 – manual 1 – room thermostat	1	

Service settings level L1"

4.4.1 Common Settings

name	*designation*	*limits*	*factory setting*	*notes*
Limits of the water	Tb lim	5 – 90 °C	15 – 80 °C	
Zone regulation	Zone reg	5 – 30 °C	10 °C	
Type control	Type control	0 – manual 1 – room thermostat 2 – buffer tank module	1	
Flame sensor	Flame sensor	0 – фото 1 – дим. газ	0	
Power failure recovery	Lose AC Restore	0 – "Stop" 1 – "Burn"	0	
Delay of the flow sensor response	FC delay	1 – 240 s	30	
Pulse / revolutions Fan 1	Fan1 pulse/rev	0 – 12 0 – inactive	0	0-12 depends on the type of Hall sensor
Revolution for alarm	Fan1 nErr	0 – 2000 n	0	
Pump setting	Tpump set	10 – 70 °C	10 °C	
Flame sensor setting	Fire set	0 – 99 %	30 %	
Flue gases setting	Tfg set	0 – 250 °C	40 °C	
Period of the tubus	Tubus per	0 – 240 s	10s	
Auger 2 delay	Feeder 2 +	0 – 250 s	5s	

4.4.2 Ignition

name	*designation*	*limits*	*factory setting*	*notes*
submission time	Load	2 – 480 s	20 s	
ventilation	Blowing	0 – 10 m	2 m	
time for flame	Fire time	1 – 15 m	3 m	
preheat	Preheat	0 – 180 s	20 s	
intake air fan	Fan1	20 – 100 %	70 %	
fan flue gases	Fan2	20 – 100 %	100 %	
burning time	Inflame	60 – 600 s	120 s	
stabilization delay	Delay	1 – 240 s	5 s	
work on the tubus	Tubus work	0 – 100 %	0%	

4.4.3 Burn

name	*designation*	*limits*	*Factory setting*	*notes*
submission time	Load	1 – 240 s	2 – 8 s	
burning time	Pause	1 – 240 s	14 – 14 s	
intake air fan	Fan1	20 – 100 %	40 – 80 %	
fan flue gases	Fan2	20 – 100 %	48 – 100 %	
work on the tubus	Tubus work	0 – 100 %	10%	

4.4.4 Stop

name	*designation*	*limits*	*Factory setting*	*notes*
time afterburning	Burn out	0 – 15 m	5 m	
stop by fire	Flame stop	0 – 100 %	15%	
cleaning	cleaning	0 – 240 s	120s	

4.4.5 Mode "Reserve"

name	*designation*	*limits*	*Factory settings*	*notes*
submission time	Load	0 – 240 s 0 – disable	1 s	
burning time	Pause	0 – 240 s	30 s	
intake air fan	Fan1	20 – 100 %	40 %	
fan flue gases	Fan2	20 – 100 %	20 %	
Max. temp. water	T set	0 – 90 °C	85 °C	
setting light sensor	Fire set	0 – 99 %	10 %	
duration	Duration	0 – 60 m 0 – disable	30 m	

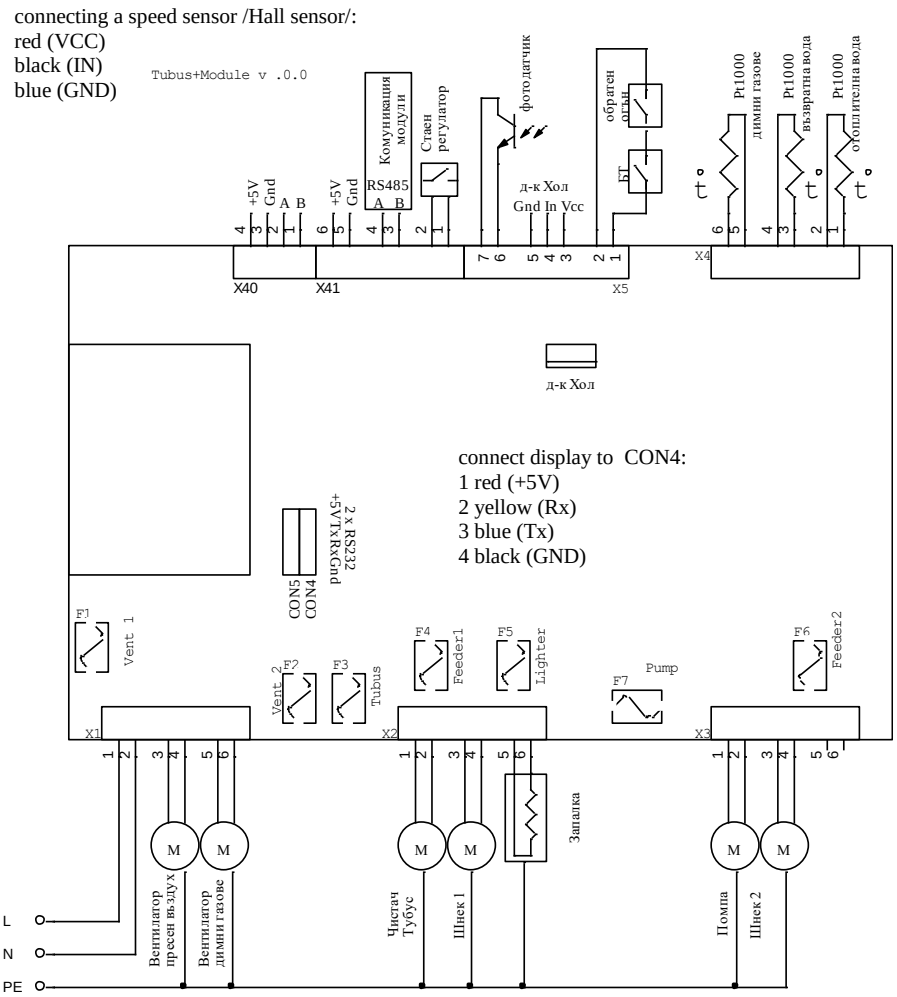
6. Electrical connection and technical data

Technical data:

Power supply voltage	~230V/50Hz
Lighter outlet	~230V/2kW
Outlet circulating pump	~230V/0.35kW
Outlets for fans	2 pieces x ~230V/0.25kW
Output of augers	2 pieces x ~230V/0.25kW
Output cleaner / tubus	~230V/0.25kW
Sensor heating water	Pt 1000 (-50 up to +250 °C)
Flue gas sensor	Pt 1000 (-50 up to +250 °C)
Flame sensor	photoresist/photodiode
Room thermostat input	independent contact
Blocking thermostat input	independent contact
Input flow sensor/revolution	independent contact/Hall sensor
Measuring range temperature	-50 +350 °C
Unit of measurement	1 °C
Humidity of the environment	up to 80%
Degree of protection	IP00

IMPORTANT - instead of the Hall sensor, a flow sensor (FC) can be connected, connected to terminals X5.4 (IN) and X5.5 (GND) and parameter Fan1 pulse / rev - 0 (*see Service settings*).

When not in use bridge is made terminals X5.4 (IN) and X5.5 (GND), parameter Fan1 pulse / rev - 0.



Fuses : F1,F2,F3,F4,F6 и F7 – 2A; F5 – 10A

- Blocking thermostat input (BT) - Trigger when open contact. When not in use, a bridge is made.

- Input for speed sensor - Operates in the absence of revolutions or open contact.

Recommendations for the assembly of the elements:

- heating water temperature sensor T o, mounted on the exhaust pipe from the boiler.

- flue gas temperature sensor ”T_flue gas”, installed at the chimney outlet.

- Flame sensor “Photo sensor”, mounted so that it is protected from excessive heat and visible to the combustion chamber (behind the camera).

- room thermostat, installed in the room in a place protected from direct sunlight and internal heat sources (household electrical appliances, audio - video equipment, etc.).

7. Warranty conditions

The warranty period for the product is 36 months from the date of sale, subject to the requirements for installation, operation, storage and transport.