

Pellet burner controller for an oven – NPBC-V3M-B



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# Electronic Controller for Pellet Oven

## NPBC-VM3-B

SOFTWARE VERSION 1.7/1.7



## INTRODUCTION

The controller NPBC-V3M-B is designed to run burners, that use a photo sensor to detect the burning fire. It measures the level of illumination from the burning fire. The pulsing control of the auger motor from the pellet tank allows the precise dosing of the amount of pellets that goes to the burner. NPBC-V3M-B is able to control an optional internal auger motor that forwards the pellets inside the burner. The controller runs two blowers: one that provides the air to the burning chamber and the other one is an additional fan, for example, for taking out the exhaust gases, if necessary. The power settings for the main air fan are applicable for both of the blowers at the same time and depend on the amount of needed fresh air in the burner. An additional powerful blower could also be connected to the controller to blow away the ashes from the burning chamber during the cleaning procedures. **All of the controlled mechanisms must work on 220VAC or 110VAC mains power supply!**

Main advantages of the controller:

- Settings for all of the ignition and burning processes parameters
- RS-232 interface for PC for remote monitoring, control or software upgrade.
- Supports date and time
- Full hardware and sensors self diagnostic. If a problem occurs, a short message with the reason appears and, if necessary, the work mode automatically changes.
- An option to set up automatic clean-ups, providing independent continuous performance with no attendance needed.
- Automatic three-level power regulation for reaching the set temperature in the oven and an additional temporary Suspend mode to avoid ignition and extinction cycles during temporary reduction of needed energy.

## MECHANISMS AND SENSORS THAT COULD BE CONNECTED TO NPBC-V3M-B

- Electric feed screw motor to transfer pellets from the bunker to the burner (power up to 180W)
- Electric internal auger motor to forward the fuel to the burning area (power up to 180W)
- Main blower with smooth speed control to regulate the air flow (power up to 180W)
- Cleaner motor - an additional high power blower to clean the burner ( power up to 800W)
- A blower for the flue gases (power up to 180W)
- Heater for firing the pellets ( power up to 550W)
- **(Optional)** Frequency inverter to power up a powerful air fan
- Photo sensor to detect ignition
- Thermostat to control the backfire
- pt100 high temperature sensor for the oven

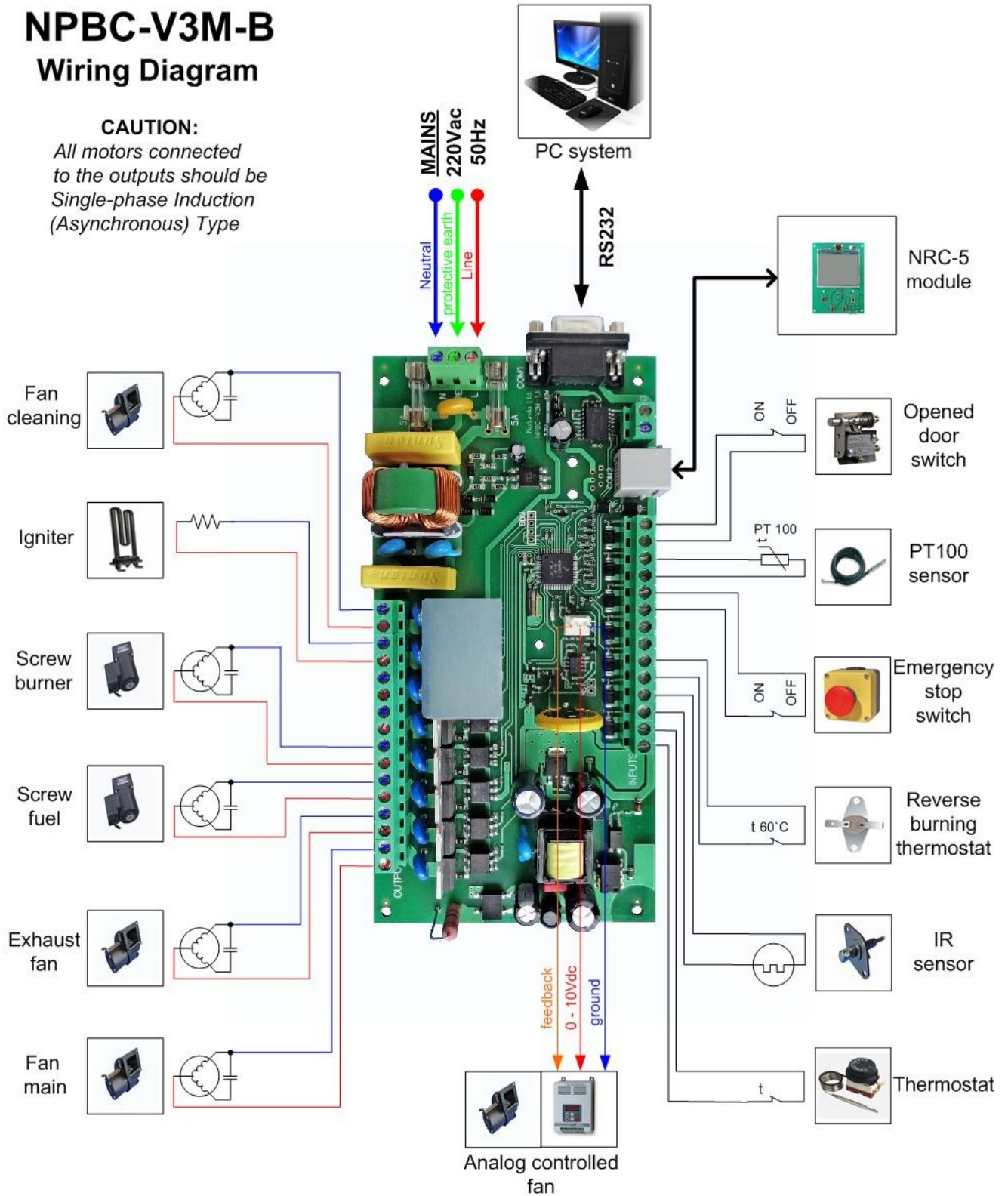
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**NPBC-V3M INPUTS AND OUTPUTS DESCRIPTION:**

Outputs		Inputs	
FM	Main fan	RT	An external thermostat to decrease the power
FSG	Fan for the flue gases	PS	Photo sensor
SF	Screw for fuel	RB	Reverse burning thermostat
SB	Internal screw	B	Not used
PH	Not used	WH	Emergency stop switch (if the circuit is disconnected, the burner turns off)
PWH	Not used	PT	pt100 high temperature sensor for the oven
IGN	Ignition heater	OD	Open door sensor (if the circuit is disconnected, the burner works in Suspend mode)
FC	Fan for cleaning	LED	Not used

# NPBC-V3M-B Wiring Diagram

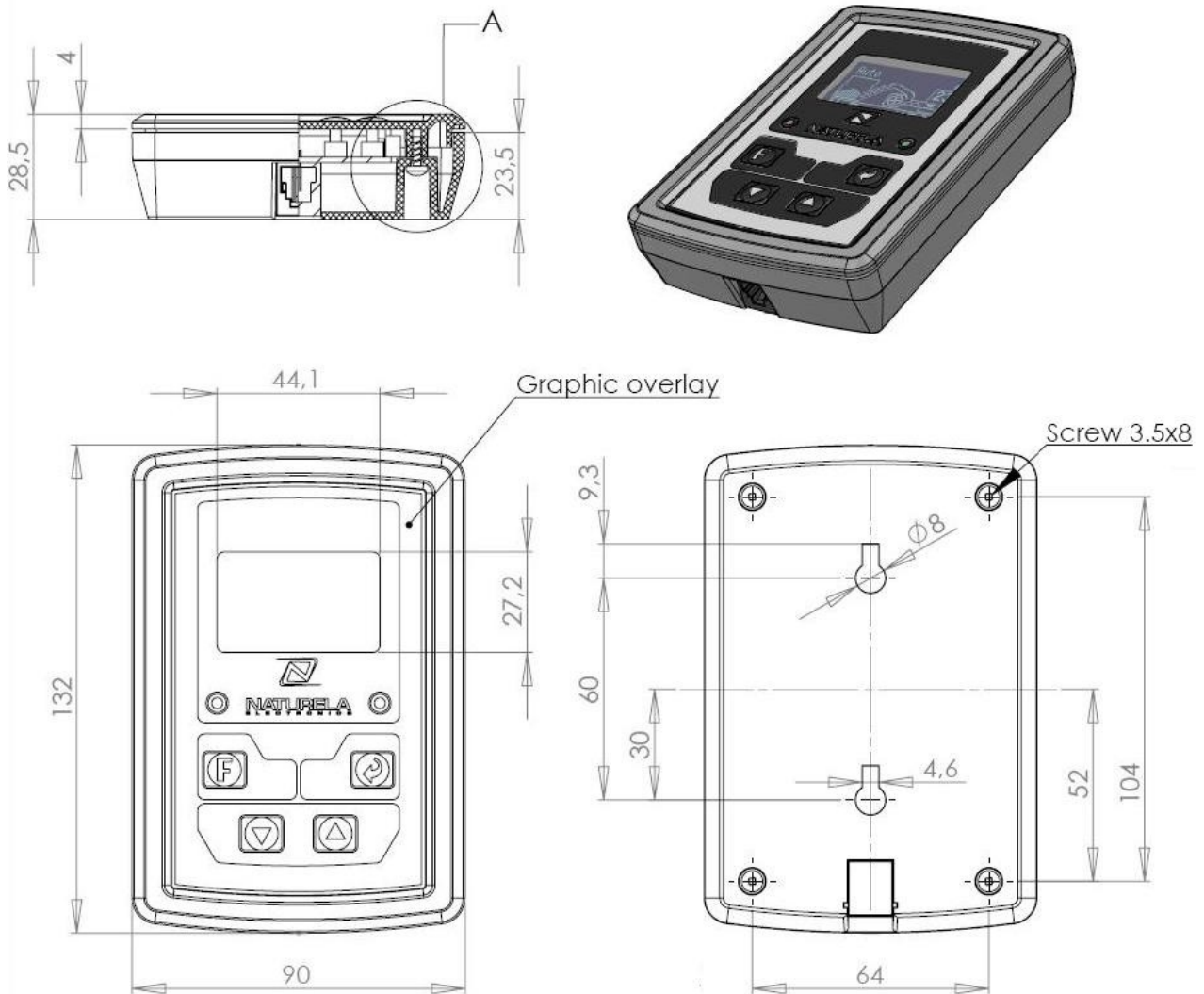
**CAUTION:**  
All motors connected  
to the outputs should be  
Single-phase Induction  
(Asynchronous) Type







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External dimensions of the Control module in a housing box

The control module could be mounted on a wall, by using 2 screws vertically placed on 60 mm from each other with size of the head between 5 mm and 7.8 mm.

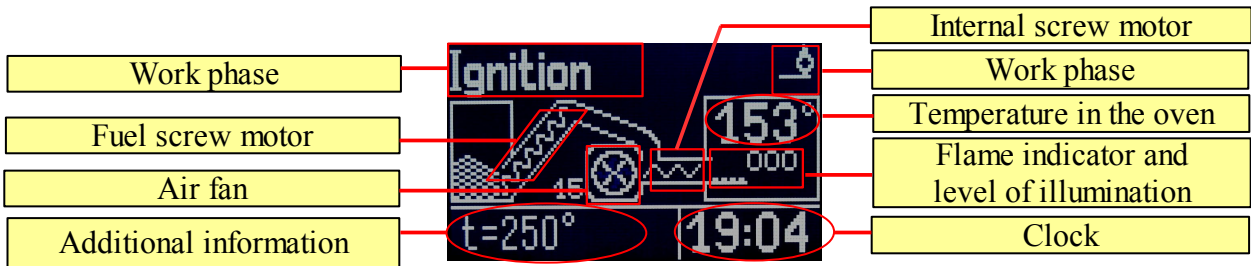
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**NPBC-V3M-B TECHNICAL SPECIFICATION**

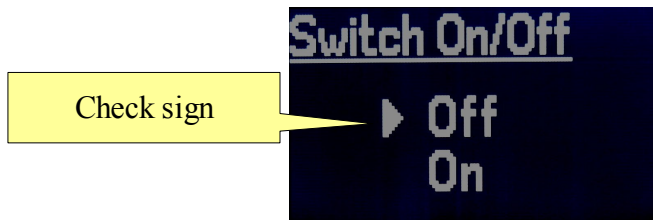
1	Number of inputs	6
2	Temperature sensors type	pt100
3	Maximum measuring temperature	350°C
4	Detecting ignition	By a photo sensor
5	Temperature measuring accuracy	1%
6	Number of outputs	6
7	Supply voltage of each output	power supply voltage
8	Type of the motors of the air fan and the flue gases fan	induction motor with power up to 180W
9	Ignition heater maximum power	550W
10	Additional cleaning blower maximum power	800W
11	Maximum power consumed by any other output	180W
12	Maximum short time current on each output	16A AC
13	Maximum section of the plugged in cables in each terminal	2.5mm <sup>2</sup>
14	Serial interface RS-232	Yes, with connector DB9
15	Power supply voltage	90-250V AC
16	Power consumed in Standby mode	<1W
17	Executive module PCB dimensions	180x90mm
18	Control module PCB dimensions	104x75mm
19	Maximum length of the connecting wire between Executive module and Control module	up to 40m

EXPLOITATION INSTRUCTIONS

Main screen has the following view:



Press the F button to switch to the on/off menu:



The buttons ▲ and ▼ move up or down the check sign, which indicates the mode you are going to select. Press the F button again to select the mode.

- **Off** – The burner does not work. If it was working by the moment of switching to this mode, the fire will be automatically extinguished. In the work phase field appears „Standby”.
- **On** – By selecting this mode the burner automatically starts and during the work process keeps the set temperature.

*If the clock is not set (its indication blinks) then pressing the F button switches to the time setting screen (**Set Time**) instead of mode menu.*

While the burner is on, the controller’s only purpose is to reach and maintain the set temperature in the oven. Moreover, the controller takes care of the periodical cleaning procedures of the burner. The frequency of these procedures can be set from the menu **Auto Clean Setup**.

Turning off the controller:

To turn off the controller press F and choose **Off**. The screen will take the following view:



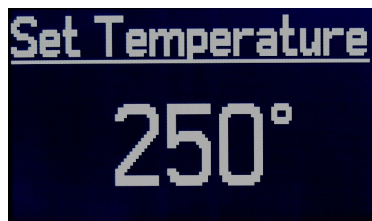


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The controller automatically goes through the extinguishing the fire and cleaning procedures.  
*Remember that the complete extinction and cleaning the burner after that takes time.*

### **General information for operating with the controller:**

When the controller's screen is in base position, by pressing the ▲ (+) or ▼ (-) buttons you enter in a mode for changing the temperature. Confirm and remember the settings by pressing the ↵ (**Enter**) button or automatically by pressing no buttons for 6 seconds.



Press the **Enter** button to switch the additional information in the bottom left side of the screen:

**t=250°** set temperature

**07-12-2013** current date

**No Errors** error messages, if any. Error messages can be:

- **BB Alarm** - alarm from the back burning thermistor
- **Sensor E1** - the temperature sensor is disconnected or missing
- **Sensor E2** - the temperature sensor is short
- **Open Door** - the oven's door is open
- **Frost** - the temperature in the oven is negative
- **IgnitionFail** - ignition fail


View of the screen when a problem is registered:





*If there is a sign „E“ in the top right corner of the screen, press the **Enter** button to check the problem up. The possible messages are listed above.*

## WORKING METHOD







While working, the burner goes through several stages: cleaning, igniting, burning, extinguishing, cleaning again and initial state.

Every ignition begins with a cleaning cycle, which is indicated by a symbol for a fan  in the upper right corner of the screen (field **work phase**). The purpose is to clean all leftovers of the previous burning. At first, for a certain time, set in the **Cleaning on Start** menu, only the primary fan works and after that the additional cleaning fan turns on, if there is any and if it is not set off. After that the burner goes to igniting phase.

The igniting is indicated by the symbol  in the upper right corner of the screen (field **work phase**). A portion of pellets, which are going to be ignited by the electrical heater and the fan, are loaded. When the flame sensor indicates the pellets are burning, a symbol  appears in the **flame indicator** field and the burner goes to burning phase. If the pellets do not ignite before the set time is up, a new portion of pellets is loaded and a new attempt for ignition is made. When the maximum ignition retries are made, the burner stops and a message **Ignition fail** appears.


The logic on igniting is as follows:

1. At first the heater turns on and works without air fan for the time set in the menu **Cycle Setup**, line **Heater**. The purpose is to heat up faster. *Should watch out for the heater not to get overheated and damaged, if the time for turning on the cooling is too long!*
2. At the same time, while turning on the heater, a dose of pellets is fed for so long as it is set in the menu: **General Setup** , line **Feed**.
3. After the time for the heater, working without air fan, runs out, there are two more steps on which the air fan turns on. The idea is that the air fan works less intensive at first, so that it doesn't extinguish the fire, but only keeps the needed oxygen level. After the fire is steady, the fan's speed can be increased for full igniting of all the pellets.
4. If the photo sensor detects enough light, which can be set from the menu **IR Level Setup**, line **Ign**, the ignition cycle breaks off and the burner goes to burning phase. Two parameters are used for recognizing the light level – level of illumination, measured by the photo sensor and time the light is over this level.
5. If by the end of the ignition cycle, the fire doesn't start, a few more cycles are performed, starting with pellet feeding and turning on the heater without air fan. Set the number of retries from **General Setup**, line **Retries**.
6. If the fire doesn't start after all of the retries, an alarm **Ignition Fail** occurs and no more retries are going to be performed.

The burning phase is indicated by any of the following symbols in the upper right corner of the screen: , ,  or . The burner works on its lowest power level indicated by  while going from igniting to burning until the fire flares up. After that the burner goes on its second power level indicated by . The time for the burner to work on these two power levels can be set from the menu **Burning Startup**. After igniting phase, the power is regulated depending on the difference between the temperature in the oven and the set temperature. Power regulation is on three levels with additional level for suspending the fire. For each level you can set the fan speed, amount of pellets and frequency of loading. When the difference in temperatures is smaller than the set temperature for the first power level, the burner goes to Suspend mode. If the temperature in the oven is still increasing and gets higher than the set temperature with as many degrees as set in the menu **Overheating**, the burner turns

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off. While in Suspend mode, if the temperature gets equal to the temperature needed for first power level, the burner switches to first power level. If the burner is turned off, because of Overheating and after some time the temperature gets to the set temperature for the first power level, the burner turns on automatically.

When turning off, no matter manually or caused by a timer or by the input Emergency turning off (WH), the burner goes to extinguishing phase. This is indicated by the symbol  in the upper right corner of the screen. The fuel feeding stops and the fan runs on low speed for preventing a back fire to the container with pellets, while the rest of the pellets burn out. When the sensor indicates that the fire is quenched the burner goes to cleaning phase and after that in initial state.

If the circuit is interrupted on the input **OD** by the sensor for an opened door, the burner works on Suspend mode.

If the circuit is interrupted on the input **WH** by the emergency off switch, the burner goes to extinguishing phase. If the circuit is restored by the same switch, the burner turns on automatically. *While turning off in this case, the burner doesn't go through **Standby** mode.*

*The controller can be set for up to 4 automatic intermediate cleanings for twenty four hours. At the time set for automatic cleaning the burner turns off, cleans and then starts automatically.*

The cleaning process is as follows:

1. The burner extinguishes.
2. The main blower turns on and works on maximum power for time set in the menu **Cleaning on Stop**, line **Fan**.
3. After the above time is up, the additional fan turns on and works along with the main blower for time set in the menu **Cleaning on Stop**, line **Cleaner**.

*If this cleaning method is unnecessary, it could be deactivated by setting the **Clean Count** in the menu **Auto Clean Setup** to 0.*

The controller has one more option for intermediate cleanings that doesn't require the extinguishing of the fire and only increases the power of the blower. The settings for this cleaning method are in the menu **Interm. Cleaning**. The parameters for this setting are: the interval between the cleaning procedure, blower's speed for the cleaning and the duration of the procedure. During this cleaning procedures the pellet feeding doesn't stop.

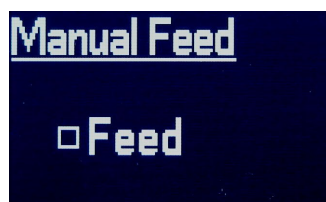
*If this cleaning method is unnecessary, it could be deactivated by setting the duration of the procedure (middle row in the menu **Interm. Cleaning**) to 0 sec.*

## USER SETTINGS

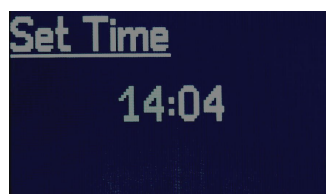
To enter settings mode press and hold the **F** button for 1.5 seconds. User settings are always available no matter in what mode the burner is working at the moment.

When the controller is in settings mode, the buttons have the following functions:

- The **Enter** button switches to the next editable field on the current screen, if any
- **▲** and **▼** buttons increase or decrease the current value. If you hold the button, the value automatically changes in the relevant direction. If the setting requests a choice from a list of options the button **▲** selects the next option and the button **▼** the previous, if any.
- The **F** button forwards to the next setting screen and if any of the parameters has been changed, it confirms the new values. If this was the last setting screen the controller switches to the main screen.
- If no buttons have been pressed for awhile, the controller shows the main screen and ignores the changes made on the current screen.

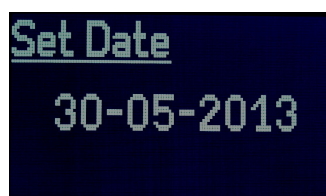


**Manual control of the feed screw motor Manual Feed.** By using the up or down arrow keys turn on or off the check box in front of **Feed**. If the check box is checked the screw motor works for 10 minutes or until the check box is unchecked manually again. You can use this option to load the screw motor if it was left empty on any reasons.  
***This menu is available only in Standby mode!!!***



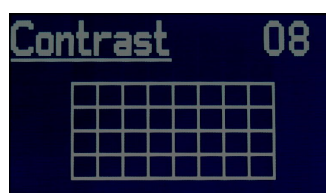
### **Time setting - Set Time**

Sets the clock



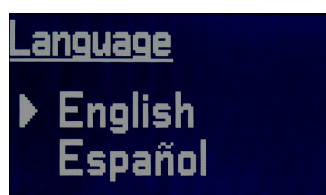
### **Date setting - Set Date**

Sets the date



### **Contrast**

Sets the contrast of the LCD display

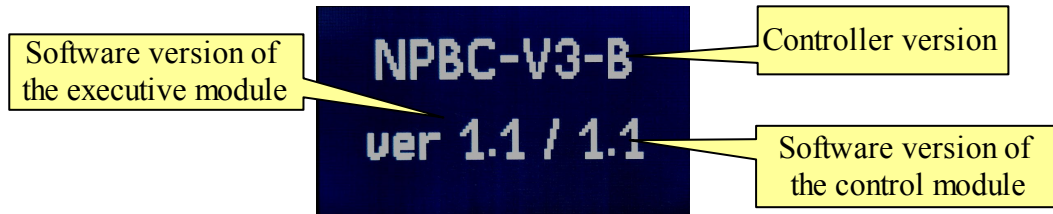



### **Language**

Choose the language you prefer for the menus.

### FACTORY SETTINGS

Factory settings are used for adapting the controller to the specifics of the burner, the pellets which are going to be used and the boiler installation. To enter factory settings mode press and hold the **F** and the **Enter** buttons together for 3 seconds. Information about the hardware and the software version of the controller appears on the screen:



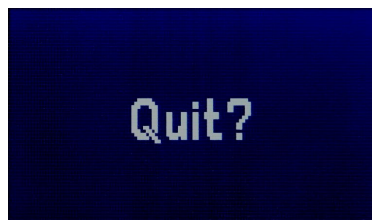
The following pressing the **Enter** button forwards to the first screen with factory settings. Browse the menus by pressing the arrow buttons: ▲ forwards to the next menu and ▼ returns to the previous. If you want to change the parameters in the currently displayed menu, press the **Enter** button again. In the upper right corner of the screen appears the sign , which indicates the Edit mode:



In this mode the buttons have the following functions:

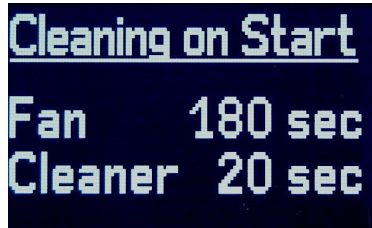
- the arrow buttons ▲ or ▼ change the value of the currently blinking parameter in the relevant direction;
- the **Enter** button switches to the next editable parameter;
- the **F** button saves the changes in the current menu and exits the Edit mode;
- if no buttons are pressed for a certain time, the controller goes back to its main screen without saving the settings in the currently displayed menu.

To exit the factory settings press **F** and confirm your choice with **Enter**:



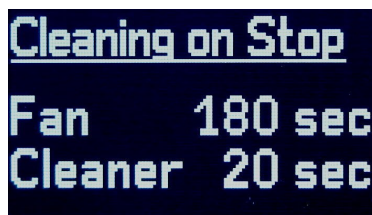
**Factory settings are as follows:**

**Cleaning on Start** – set the work time for the main (**Fan**) and the additional (**Cleaner**) air fan for the cleaning cycle before ignition



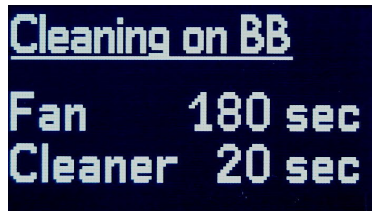
Cleaning on Start  
Fan 180 sec  
Cleaner 20 sec

**Cleaning on Stop** – set the work time for the main (**Fan**) and the additional (**Cleaner**) air fan for the cleaning cycle after extinction. These settings also apply for the intermediate automatic cleanings.




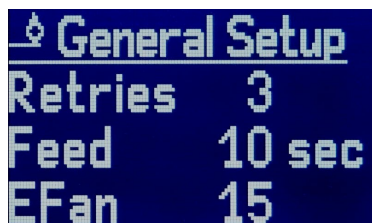
Cleaning on Stop  
Fan 180 sec  
Cleaner 20 sec


**Cleaning after extinction caused by Back Burning alarm – Cleaning on BB** – set the work time for the main (**Fan**) and the additional (**Cleaner**) air fan for the cleaning cycle if a back burning alarm has been registered.



Cleaning on BB  
Fan 180 sec  
Cleaner 20 sec

**General Setup** -  - set the number of ignition attempts (**Retries**), the work time of the auger for initial feed (**Feed**) and the speed of the Exhaust Fan (**EFan**).



 General Setup  
Retries 3  
Feed 10 sec  
EFan 15



**Ignition cycle setup - 🔥 Cycle Setup** – adjusts the work time of the heater before the fan turns on and the following two work modes of the fan, which include speed and duration.

The screenshot shows the 'Cycle Setup' menu with the following settings:

Heater	10 sec
Fan 5	60 sec
Fan 15	3 min

Callouts explain the settings:

- The heater works for 10 sec. before the fan turns on
- After that, along with the heater, the fan works for 60 sec. on 5% of its power
- Next 3 min., along with the heater, the fan works on 15% of its power

**Waiting for the first dose of fuel to burn out – Initial Burning** – After detecting that the pellets are burning, the controller can wait for the fire to get steady. During this initial burning, no new pellets are fed and only the air fan and the exhaust fan work. To activate this setting, enter the duration of this initial burning process without feeding new pellets (**Dur.**) and the speed of the fans (**Fan**).

The screenshot shows the 'Initial Burning' menu with the following settings:

Dur.	00 sec
Fan	20 / 20

Callouts explain the settings:

- If this parameter is 0 sec., this process will be skipped
- The exhaust fan's speed
- The air fan's speed

**Work time on lower power until the fire flares up – Burning Startup** – Right after ignition, the burner doesn't work on its full power to prevent extinction of the unsteady fire. At first it works on its two lower power levels indicated by 🔥 and 🔥🔥. From this menu you can set the work time for each of these two power levels

The screenshot shows the 'Burning Startup' menu with the following settings:

🔥	60 sec
🔥🔥	60 sec

Callouts explain the settings:

- Work time on first power level
- Work time on second power level

**Burn Level** – sets limits for power regulation. Set the difference between the set temperature and the temperature in the oven for each level.


The screenshot shows the 'Burn Level' menu with the following settings:

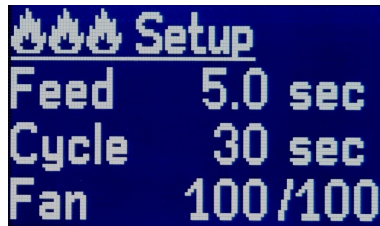
🔥🔥🔥	dT>	10°
🔥🔥	dT>	5°
🔥	dT>	0°


Callouts explain the settings:

- If the temperature difference is more than 10 degrees, the burner works on its 3<sup>rd</sup> level
- If the temperature difference is between 5 and 10 degrees, the burner works on its 2<sup>nd</sup> level
- If the temperature difference is between 0 and 5 degrees, the burner works on its 1<sup>st</sup> level


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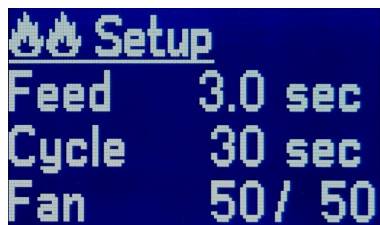
**3<sup>rd</sup> level -  Setup** – adjusts the work mode for 3<sup>rd</sup> power level (maximum power). Set the active time of the auger when loading a portion of pellets, the cycle time before loading a new portion of pellets and the fan speed.





 Setup	
Feed	5.0 sec
Cycle	30 sec
Fan	100 / 100

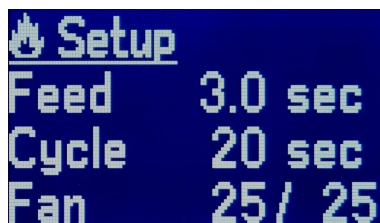
This screen means the following: on 3<sup>rd</sup> power level, on every 30 seconds (**Cycle**), the auger loads pellets for 5 seconds (**Feed**). The fans work on 100% of their power (**Fan**).


**2<sup>nd</sup> level -  Setup** - adjusts the work mode for 2<sup>nd</sup> power level. Set the active time of the auger when loading a portion of pellets, the cycle time before loading a new portion of pellets and the fan speed.




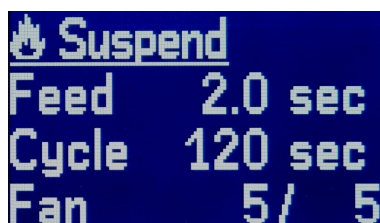
 Setup	
Feed	3.0 sec
Cycle	30 sec
Fan	50 / 50


**1<sup>st</sup> level -  Setup** - adjusts the work mode for 1<sup>st</sup> power level. Set the active time of the auger when loading a portion of pellets, the cycle time before loading a new portion of pellets and the fan speed.



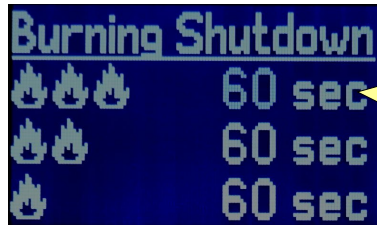
 Setup	
Feed	3.0 sec
Cycle	20 sec
Fan	25 / 25

** Suspend** – adjusts the Suspend mode. Set the active time of the auger when loading a portion of pellets, the cycle time before loading a new portion of pellets and the fan speed. Settings here are the same as above.



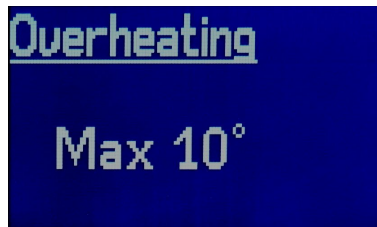
 Suspend	
Feed	2.0 sec
Cycle	120 sec
Fan	5 / 5

**Smooth extinction of the fire – Burning Shutdown** – When the room thermostat activates due to reaching the set temperature while the controller is working in **CH Priority** mode, the burner smoothly decreases the power level and if the room thermostat remains active, it shuts down. The burner goes through each power level and works on it for as long as it is set in the menu below:



If the burner is working on this power level, in 60 seconds it will switch to the lower one

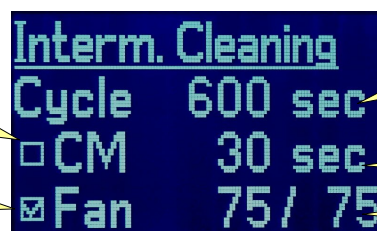
**Overheating while in Suspend mode – Overheating** – When the temperature in the oven gets equal to the **Set temperature**, the burner switches to **Suspend** mode. If the temperature is still increasing and gets higher than the set temperature with as many degrees as set in this menu, the burner turns off.



**Intermediate cleaning – Interm. Cleaning** – This cleaning method works while the fire is burning. The parameter Cycle indicates the total active time of the main feed screw motor between two intermediate cleaning procedures. Set the duration of the procedure from the second parameter on the second line. If you want to deactivate the intermediate cleaning procedures, set this parameter to 0. You have the option to choose the fan that you prefer for the cleaning: main fan, cleaner motor or both. If CM is checked, only the Cleaner motor works on full power. If Fan is checked (or if neither Fan, nor CM is checked), only the main fan and the exhaust fan work. You can set their power level for this cleaning procedures from the last two parameters on the last row. If both CM and Fan are checked, all of the fans will work.

If the box is checked, the cleaning fan (FC output) will work during the intermediate cleaning

If the box is checked, the main fan will work during the intermediate cleaning



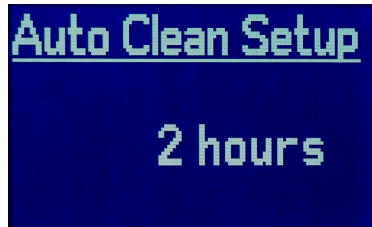
The procedure will be performed on every 600 sec work time of the fuel feeder

The procedure lasts for 30 seconds

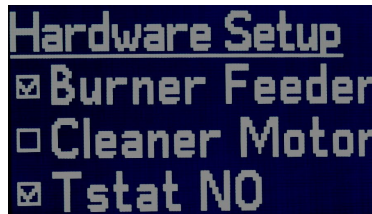
If activated, the main fan will work on 75% of its power

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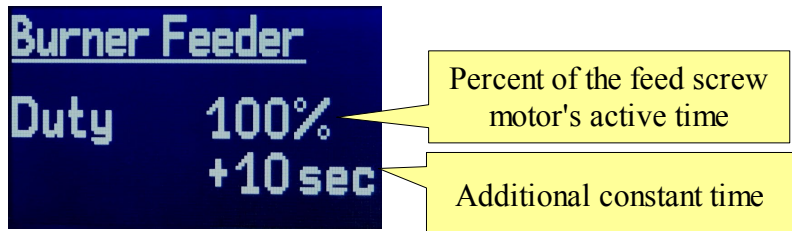
**Automatic cleanings - Auto Clean Setup** – The burner has an option for Automatic cleaning procedures. During these procedures, the burner turns off, cleans itself and automatically turns on again. The parameter in this menu indicates the burning time between the automatic cleaning procedures. If the burner turns off between two cleaning procedures for some reason (for example, it has reached the set temperature, or the thermostat has activated, or else), the timer until the next procedure starts from 0 again.



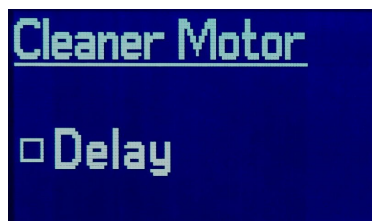
**Hardware Setup** – gives the opportunity for turning off the internal auger motor (**Burner Feeder**) and the additional cleaning fan (**Cleaner Motor**), if the burner does not have these options. If **Tstat NO** is checked, the room thermostat will be with normally opened sockets.



**Burner feeder active time set - Burner Feeder** – adjusts the internal auger motor's (if any) active time in percents, depending on the active time of the feed screw motor. For example, if the feed screw motor works for 5 seconds for each cycle and this setting is 150%, then the internal auger motor will start spinning at the same time with the feed screw motor, but it will stop not in 5 seconds, but in 7.5 seconds.

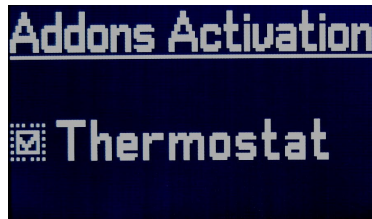


**Delay for the Cleaner motor – Cleaner** – This menu sets a delay time after every cleaning procedure which uses the FC output. The delay time is equal to the active time of the FC output. For example, if you use this output for a mechanical actuator, during the cleaning procedures it will be supplied with power to push out the ashes. After that the actuator will have time to get back to its normal position before the new portion of pellets is loaded.

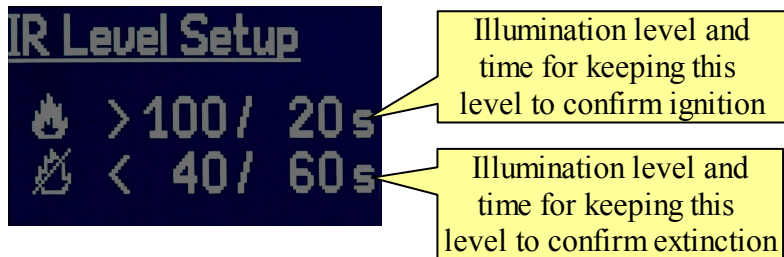


Pellet burner controller for an oven – NPBC-V3M-B

**Addons Activation** – this setting activates the option to work with a room thermostat.



**Flame sensor settings - IR Level Setup** – adjusts the limits of the flame sensor for recognizing ignition and extinction and the minimum time for keeping these rates to confirm the condition. Each row's format is: <illumination level>/<time for keeping this level>



**Set Temperature** – adjusts the upper limit of the range for the oven's temperature



*The following three screens are available only when the burner is in Standby mode!!!*

**Test Fan** – test setting for fan speed. The power of the air fan can be increased or decreased in percents by ▲ and ▼ buttons. This function has limited active time and turns off automatically.

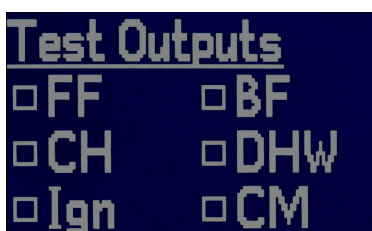


**Test the Exhaust fan – Test EFan Speed** – test setting for fan's speed. The power of the exhaust fan can be increased or decreased in percents by ▲ and ▼ buttons. This function has limited active time and turns off automatically.



Pellet burner controller for an oven – NPBC-V3M-B

**Test Outputs** – When a row is checked, power is supplied to this output for test purposes.



**Setup parameters range for NPBC-V3M-B**

Setup Menu	Parameter	Unit	Min	Max	Default
Contrast	Contrast	level	0	20	10
Cleaning on Start	Fan	seconds	10	600	180
	Cleaner	seconds	1	60	20
Cleaning on Stop	Fan	seconds	10	600	180
	Cleaner	seconds	1	60	20
Cleaning on BB	Fan	seconds	10	600	180
	Cleaner	seconds	1	60	20
General Setup	Retries		0	5	3
	Feed	seconds	1	99	10
	EFan	speed level	1	100	15
Cycle Setup	Heater	seconds	0	600	00
	Fan phase 1	speed level	1	100	5
		seconds	10	600	60
	Fan phase 2	speed level	1	100	15
		minutes	1	9	3
Initial Burning	Duration	seconds	0	300	0
	Fan column 1	speed level	1	100	20
	Fan column 2	speed level	1	100	20
Burning Startup	1 <sup>st</sup> level	seconds	10	600	60
	2 <sup>nd</sup> level	seconds	10	600	60
Burn Level	dT for 3rd Burn Level	°C	0	50	10
	dT for 2nd Burn Level	°C	0	49	5
	dT for 1st Burn Level	°C	0	48	0
3rd Burn Level Setup	Feed	seconds	0.1	25.0	5.0
	Cycle	seconds	4	120	30
	Fan column 1	speed level	1	100	100

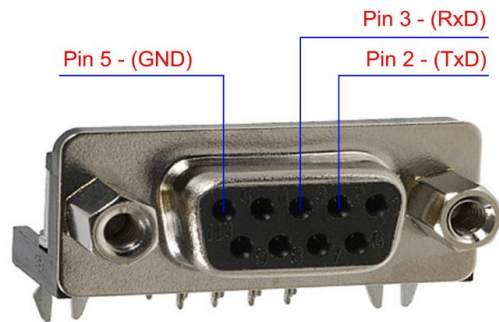


Pellet burner controller for an oven – NPBC-V3M-B

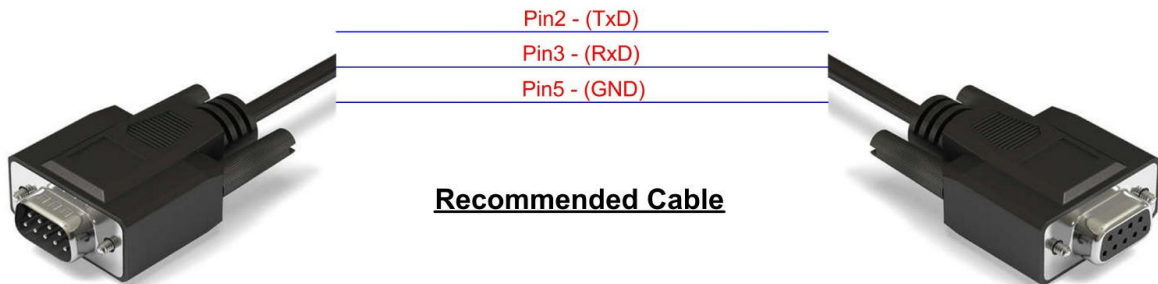
	Fan column 2	speed level	1	100	100
2nd Burn Level Setup	Feed	seconds	0.1	25.0	3.0
	Cycle	seconds	4	120	30
	Fan column 1	speed level	1	100	50
	Fan column 2	speed level	1	100	50
1st Burn Level Setup	Feed	seconds	0.1	25.0	3.0
	Cycle	seconds	4	120	20
	Fan column 1	speed level	1	100	25
	Fan column 2	speed level	1	100	25
Suspend Burn Level	Feed	seconds	0.1	25.0	2.0
	Cycle	seconds	10	120	120
	Fan column 1	speed level	1	100	5
	Fan column 2	speed level	1	100	5
Burning Shutdown	3rd Power Level	seconds	10	300	60
	2nd Power Level	seconds	10	300	60
	1st Power Level	seconds	10	300	60
Overheating	Max	°C	0	50	25
Interm. Cleaning	Cycle	seconds	10	900	600
	Duration	seconds	0	120	30

Pellet burner controller for an oven – NPBC-V3M-B

	Fan, column 1	speed level	1	100	75
Auto Clean Setup	Fan, column 2	speed level	1	100	75
	Cycle	hours	0	24	2
Burner Feeder	Duty	%	110	500	150
		seconds	0	30	0
IR Level Setup	Detect Ignition	level	1	150	100
		seconds	10	240	20
	Detect Extinction	level	0	150	40
		seconds	10	240	60
Set Temperature	Max	°C	50	250	300
Test Fan Speed		speed level	0	100	0
Test EFan Speed		speed level	0	100	0



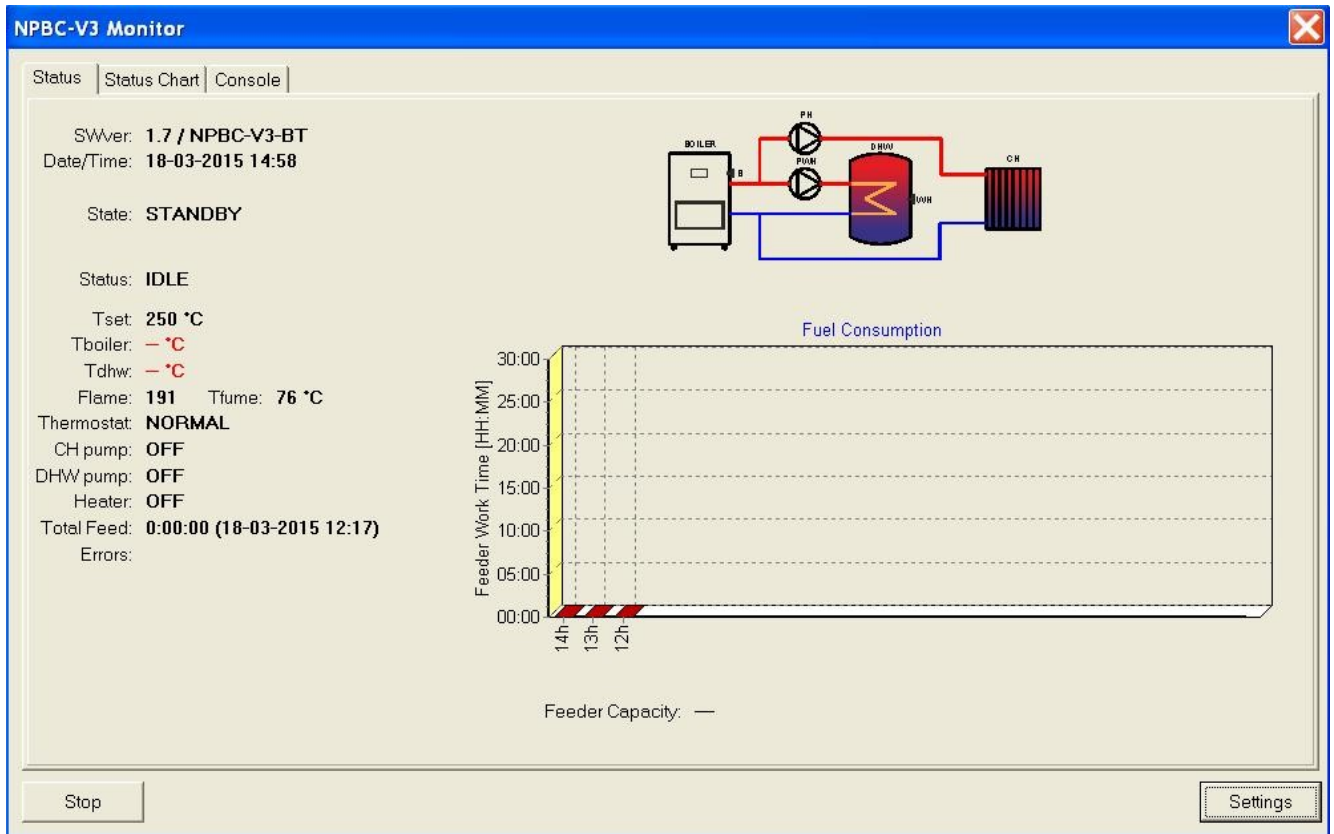
**NPBC-MB3.3  
RS232 connector**



**Recommended Cable**

**NPBC\_Monitor.exe NPBC-V3M monitoring software**

## Pellet burner controller for an oven – NPBC-V3M-B



### Setting the parameters with NPBC\_Monitor.exe

## Pellet burner controller for an oven – NPBC-V3M-B

**NPBC-V3 Settings**
✖

<b>Cleaning on Start</b> Fan <input style="width: 40px;" type="text" value="180"/> sec Cleaner <input style="width: 40px;" type="text" value="2"/> sec	<b>Cleaning on Stop</b> Fan <input style="width: 40px;" type="text" value="180"/> sec Cleaner <input style="width: 40px;" type="text" value="2"/> sec	<b>Cleaning on BBAAlarm</b> Fan <input style="width: 40px;" type="text" value="180"/> sec Cleaner <input style="width: 40px;" type="text" value="2"/> sec	<b>Auto Cleaning</b> After burning for <input style="width: 40px;" type="text" value="2"/> hrs
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<b>Ignition</b> Retries <input style="width: 40px;" type="text" value="3"/> Initial Feed <input style="width: 40px;" type="text" value="10"/> sec Heater <input style="width: 40px;" type="text" value="30"/> sec Fan 1 <input style="width: 40px;" type="text" value="2"/> min @ speed <input style="width: 40px;" type="text" value="5"/> <input style="width: 40px;" type="text" value="15"/> Fan 2 <input style="width: 40px;" type="text" value="3"/> min @ speed <input style="width: 40px;" type="text" value="15"/>	<b>Hardware</b> <input checked="" type="checkbox"/> Burner Feeder <input checked="" type="checkbox"/> Cleaner Motor <input type="checkbox"/> Delay <input checked="" type="checkbox"/> Thermostat NO
<b>Add-ons</b> <input checked="" type="checkbox"/> CH pump <input type="checkbox"/> DHW pump <input checked="" type="checkbox"/> Thermostat	

<b>Initial Burning</b> Duration <input style="width: 40px;" type="text" value="0"/> sec Fan Speed <input style="width: 40px;" type="text" value="20"/> <input style="width: 40px;" type="text" value="20"/>	<b>Burning Startup</b> P1 <input style="width: 40px;" type="text" value="60"/> sec P2 <input style="width: 40px;" type="text" value="60"/> sec	<b>Photo Sensor</b> Ignition > <input style="width: 40px;" type="text" value="100"/> for <input style="width: 40px;" type="text" value="20"/> sec Extinction < <input style="width: 40px;" type="text" value="40"/> for <input style="width: 40px;" type="text" value="60"/> sec
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<b>Power Modulation</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 15%;">dT &gt;</th> <th style="width: 15%;">Feed [s*10]</th> <th style="width: 15%;">Cycle [s]</th> <th style="width: 15%;">Fan Speed</th> <th style="width: 15%;">Fan Speed</th> </tr> </thead> <tbody> <tr> <td>P3 (High)</td> <td><input style="width: 40px;" type="text" value="10"/></td> <td><input style="width: 40px;" type="text" value="50"/></td> <td><input style="width: 40px;" type="text" value="30"/></td> <td><input style="width: 40px;" type="text" value="100"/></td> <td><input style="width: 40px;" type="text" value="100"/></td> </tr> <tr> <td>P2 (Mid)</td> <td><input style="width: 40px;" type="text" value="5"/></td> <td><input style="width: 40px;" type="text" value="30"/></td> <td><input style="width: 40px;" type="text" value="30"/></td> <td><input style="width: 40px;" type="text" value="50"/></td> <td><input style="width: 40px;" type="text" value="50"/></td> </tr> <tr> <td>P1 (Low)</td> <td><input style="width: 40px;" type="text" value="0"/></td> <td><input style="width: 40px;" type="text" value="30"/></td> <td><input style="width: 40px;" type="text" value="20"/></td> <td><input style="width: 40px;" type="text" value="25"/></td> <td><input style="width: 40px;" type="text" value="25"/></td> </tr> <tr> <td>P0 (Suspend)</td> <td></td> <td><input style="width: 40px;" type="text" value="20"/></td> <td><input style="width: 40px;" type="text" value="120"/></td> <td><input style="width: 40px;" type="text" value="5"/></td> <td><input style="width: 40px;" type="text" value="5"/></td> </tr> </tbody> </table> Max Time @ Suspend <input style="width: 40px;" type="text" value="20"/> min    Max Overheating <input style="width: 40px;" type="text" value="0"/>		dT >	Feed [s*10]	Cycle [s]	Fan Speed	Fan Speed	P3 (High)	<input style="width: 40px;" type="text" value="10"/>	<input style="width: 40px;" type="text" value="50"/>	<input style="width: 40px;" type="text" value="30"/>	<input style="width: 40px;" type="text" value="100"/>	<input style="width: 40px;" type="text" value="100"/>	P2 (Mid)	<input style="width: 40px;" type="text" value="5"/>	<input style="width: 40px;" type="text" value="30"/>	<input style="width: 40px;" type="text" value="30"/>	<input style="width: 40px;" type="text" value="50"/>	<input style="width: 40px;" type="text" value="50"/>	P1 (Low)	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="30"/>	<input style="width: 40px;" type="text" value="20"/>	<input style="width: 40px;" type="text" value="25"/>	<input style="width: 40px;" type="text" value="25"/>	P0 (Suspend)		<input style="width: 40px;" type="text" value="20"/>	<input style="width: 40px;" type="text" value="120"/>	<input style="width: 40px;" type="text" value="5"/>	<input style="width: 40px;" type="text" value="5"/>	<b>CH Settings</b> Min Temp <input style="width: 40px;" type="text" value="65"/> Hysteresis <input style="width: 40px;" type="text" value="2"/>
	dT >	Feed [s*10]	Cycle [s]	Fan Speed	Fan Speed																										
P3 (High)	<input style="width: 40px;" type="text" value="10"/>	<input style="width: 40px;" type="text" value="50"/>	<input style="width: 40px;" type="text" value="30"/>	<input style="width: 40px;" type="text" value="100"/>	<input style="width: 40px;" type="text" value="100"/>																										
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<b>Language</b> <input style="width: 100%;" type="text" value="DE / German"/>	<b>DHW Settings</b> Set Temp <input style="width: 40px;" type="text" value="45"/> Hysteresis <input style="width: 40px;" type="text" value="2"/>																														
<b>Set Temperature</b> Max <input style="width: 40px;" type="text" value="85"/>	<b>Safety Settings</b> <input type="checkbox"/> Active Warning <input style="width: 40px;" type="text" value="200"/> Alarm <input style="width: 40px;" type="text" value="220"/>																														

<b>Intermediate Cleaning</b> Cycle <input style="width: 40px;" type="text" value="600"/> sec Duration <input style="width: 40px;" type="text" value="30"/> sec Fan Speed <input style="width: 40px;" type="text" value="75"/> <input style="width: 40px;" type="text" value="75"/> <input checked="" type="checkbox"/> Fan <input type="checkbox"/> Cleaner Motor	<b>Burning Shutdown</b> P3 <input style="width: 40px;" type="text" value="60"/> sec P2 <input style="width: 40px;" type="text" value="60"/> sec P1 <input style="width: 40px;" type="text" value="60"/> sec
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