

MICRO NOVA

mno



MANUALE TECNICO
PER L'INSTALLATORE
TECHNICAL INSTALLATION
MANUAL

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1. PREFACE

version	date	project code	written by
1.0	11.06.2012	N100	Coccato Damiano

2. REVISIONS

version	date	previous revision	description of the changes	written by
1.1	27.09.2016	1.0	1_Some images have been updated 2_English translation of the manual has been added	Nicola Cabbia

3. INTRODUCTION

3.1 Scope

The present document describes the **N100** control board. This device was specifically made for usage in air pellet stoves. It manages all of the stove's functions through an adequate number of inputs and outputs.

3.2 General description

The control board is made up of a circuit board equipped with a series of connectors that allow the circuit board to connect to the various devices, which include the following:

- the **console** (or control panel) of which several versions have been produced and which is highly personalizable.
- Temperature sensor and smoke sensor.
- Fans.
- Auger.
- Glow plug.

3.3 Regulations

The device is manufactured according to the following standards:

- EN 6335

4. TECHNICAL SPECIFICATIONS

Here, as follows, is a list of the device specifications. Please refer to *figure 1* for an illustration of the circuit's electrical connections.

4.1 Electrical specifications

Power source

Supply voltage	230V _{ca} ± 15%, 50/60 Hz
Max consumption (excluding console and users)	13 mA
Max consumption (console connected excl. users)	18 mA

Inputs

Flue temperature thermocouple	TCJ 300 °C
External thermostat	Dry contact
Room temperature NTC probe	NTC 10 kΩ
Serial connection (to be used with an adaptor)	-
Encoder for rotation speed of smoke	1 pulse/turn
Console	N005 - J100
Alarms	Pressure switch – thermal safety

Outputs

Fume exhaust (with phase control regulation)	230 V _{ca} (TRIAC)
Flue Exchanger fan (with phase control regulation)	230 V _{ca} (TRIAC)
Auger motor	230 V _{ca} (TRIAC)
Glow plug	230 V _{ca} (Contact)

4.2 Environmental specifications

Operational room temperature	da 0°C a +60°C
Storage temperature	da -10°C a +60°C
Maximum relative humidity (without condensation)	95%

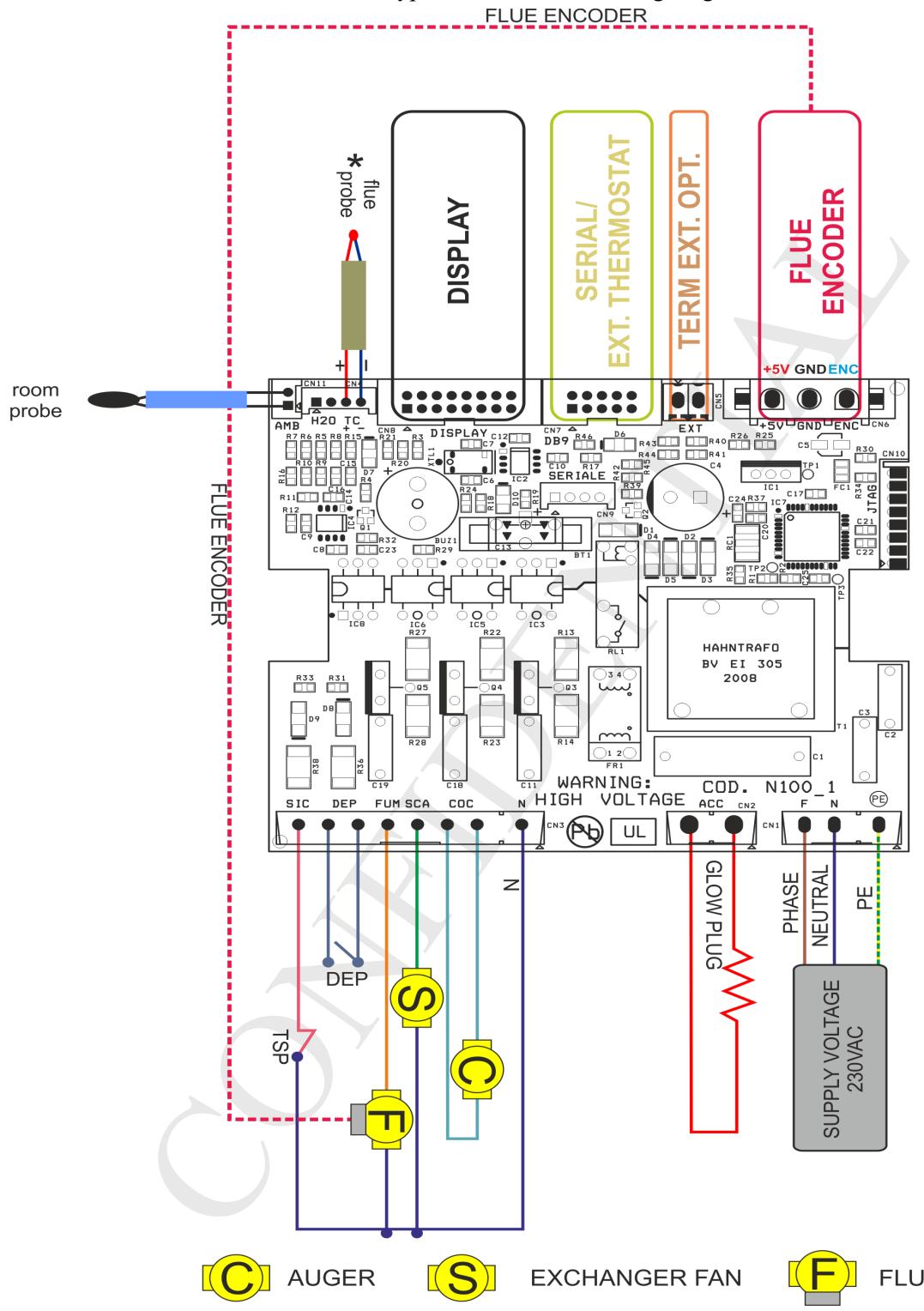
4.3 Mechanical specifications

Control board dimensions (LxWxH)	(110 x 91 x 35) mm
Weight	215 g approximately
ABS container dimensions	(115 x 96 x 40) mm
Assembly position	any
Degree of protection in version with ABS container	IP20

CONNECTIONS

4.4 Connections

Here, as follows, is a typical circuit board wiring diagram.



DEP= PRESSURE SWITCH

TSP=SAFETY THERMOSTAT PELLET COMPARTMENT

- * FOR THE CORRECT USE, CONTROL THE POLARITY OF THE THERMOCOUPLE

figure 1

The following table demonstrates in detail the available connectors and the relative pinout and functional descriptions.

<i>connector</i>	<i>pin</i>	<i>label</i>	<i>description</i>
CN1	1	PE	GROUND
	2	N	NEUTRAL
	3	F	PHASE
CN2	1	COM	NEUTRAL
	2	ACC	IGNITER
CN3	1	N	NEUTRAL
	2,3	COC.	AUGER
	4	SCA.	EXCHANGER
	5	FUM	FLUE
	6,7	DEP	PRESSURE SWITCH
	8	SIC	THERMAL SAFETY
CN4	1,2	H2O	WATER PROBE (OPTIONAL)
	3	TC+	FLUE PROBE +
	4	TC-	FLUE PROBE -
CN5	1,2	EXT	OPTIONAL EXTERNAL THERMOSTAT
CN6	1	+5V	FLUE ENCODER POWER
	2	GND	FLUE ENCODER GND
	3	ENC	FLUE ENCODER SIGNAL
CN7	1,2...10	DB9	SERIAL + EXTERNAL THERMOSTAT
CN8	1,2...16	DISPLAY	<i>Console</i>
CN9	-	SERIALE	SERIAL CONNECTION TO BE USED WITH ADAPTOR
CN10	-	JTAG	FACTORY PROGRAMMING CONNECTOR
CN11	1,2	AMB	ROOM PROBE

5. INSTALLATION

Install the circuit board inside the stove in such a position that will prohibit it from exceeding the operational temperature specifically indicated. The cables and clips provided are sufficient enough to guarantee the correct wiring of the connections to all the various elements of the electrical circuit. Please refer to *figure 1* for more details.

5.1 Starting your pellet stove

Once you are certain to have correctly followed the installation instructions, you can start your pellet stove for the first time. This includes all of the parameter setting steps. These can be set through the use of the buttons on the console or, more quickly and more safely, through the use of a personal computer and the interface software, as well as through the use of the programming system that can be provided by Micronova. By using the automated testing system, this operation is completely automatic and included in the various phases of the final test of the device.

6. USER INTERFACE

Through the **console** you can have a dialogue with the control board simply by pressing a few buttons. The display and LED indicators inform the operator of the operating status of the heater. In programming mode, various parameters are displayed, which can be modified by pressing the keys.

The unit interfaces with the **console** by means of a connection that is made according to Micronova standards and is compatible with all Micronova products belonging to the heater range.

Both the appearance of the display panel and the silk screen print are customizable by the client.

6.1 Description of the console

Figure 2 here describes the standard use of the **console** that can be supplied by horizontal mounting.

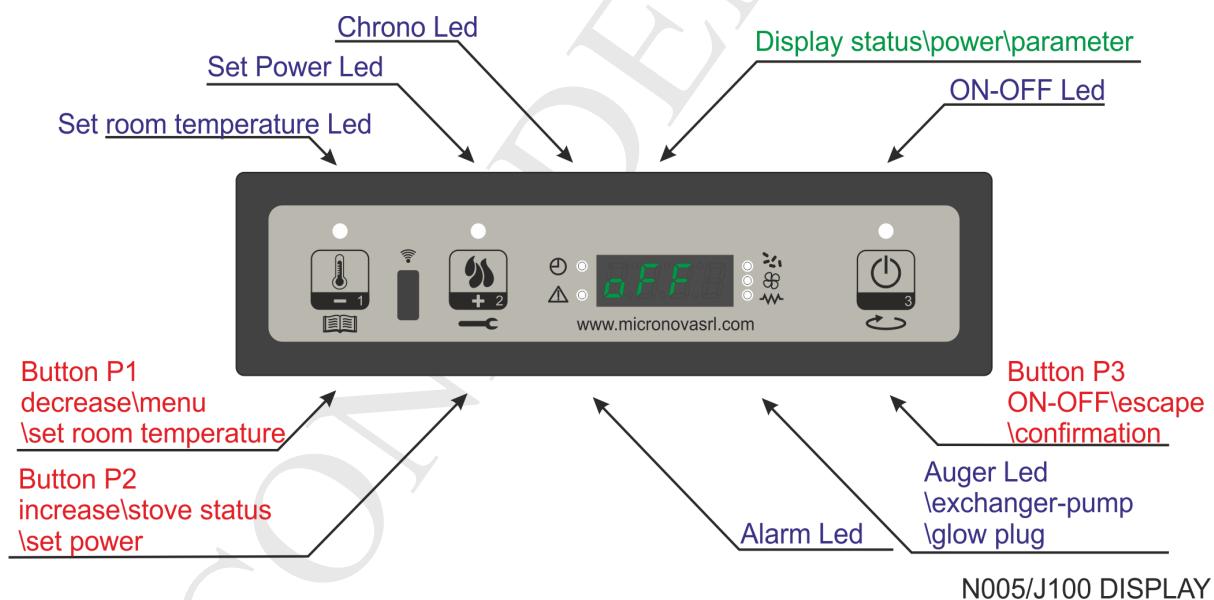


figure 2

6.2 What are the buttons for?

<i>button</i>	<i>description</i>	<i>mode</i>	<i>action</i>
1	Decrease temperature	SET TEMPERATURE	Decrease the value of SET room temperature
		PROGRAMMING	Decrease the selected parameter
		SET POWER	Decrease the power value
2	Increase temperature	SET TEMPERATURE	Increase the value of SET room temperature
		PROGRAMMING	Increase the selected value
		SET POWER	Increase the power value
3	ON/OFF	ON	Hold for 2 seconds to switch the stove on when in off mode, or off when in on mode
		PROGRAMMING	It allows you to select the parameters to be programmed

6.3 Meaning of the LEDs

<i>LED</i>	<i>The meaning of led ON</i>
SET ROOM	Set room programming
SET POWER	Set power programming
TIMER PROGRAM	Timer program ON
ALARM	Stove in alarm status
GLOW PLUG	Glow plug lighting
AUGER ON	Auger is moving
EXCHANGER - PUMP	Exchanger\ pump ON
ON\OFF	Working state

6.4 Display

<i>display</i>	<i>function</i>	<i>terms</i>	<i>visualization</i>
DISPLAY	state power parameter name	OFF	OFF + ROOM TEMPERATURE
		START	START + ROOM TEMPERATURE
		LOAD PELLET	LOAD PELLET
		WORK MODULATION	ROOM TEMPERATURE + POWER + TIME
		PROGRAMMING	SELECTED PARAMETER

7. OPERATING MODE

Described below are the normal functions of the controller that is ordinarily installed in an air heater, with respect to functions available to users.

Before turning the heater on, the display appears as in *figure 3*.



figure 3

7.1 Starting the stove

To light the stove hold the P4 button for a few seconds. Once turned on, the display shows “Start” as in *figure 4*, and the ON/OFF LED will flash. This phase lasts for a period of time given in parameter PR01.

The heater now enters a state of pre-heating, during which the glow plug and the air extraction fan both turn on (this is visible on the glow plug LEDs and shown in *figure 4*). Any problems during the turning on phase will be shown on the display and the heater’s alarm will sound (phase refer to Chapter 9).



figure 4

7.2 Pellet loading

After about 1 minute, the pellet loading phase will begin, the display will show “Load Pellet” and the ON/OFF LED will flash intermittently. During the first phase, the feed screw loads the pellets into the brazier for a period of time given in parameter PR40 (the feed screw LED will come on), while the speed of the air extractor is given in parameter PR42. The glow plug and its LED remain on.

In the second phase, after the period of time stipulated in parameter PR40, the feed screw (and its LED) will turn off for a period of time given in parameter PR41, while the speed of the air extractor will remain the same and the glow plug will still be on as before. If, after this phase, the heater does not turn on, the feed screw will turn back on for a period of time given in parameter PR04, while the speed of the air extractor fan will follow parameter PR16 and the glow plug will remain on (*figure 5*).



figure 5

7.3 Fire ON

After the flue temperature has reached and surpassed the level stated in parameter PR13, the system will enter the on mode and display “Flame Present” on the display, with the ON/OFF LED flashing.

In this phase, the temperature should remain stable for a period of time defined by parameter PR02.

The speed of the extractor fan is given in parameter PR17, the feed screw will turn on for a period of time given in parameter PR05 (with the feed screw LED on intermittently) and the glow plug (and its LED) will switch off. (*figure 6*)

Any problems during this phase will stop the heater and an error message will show (please refer to Chapter 9).

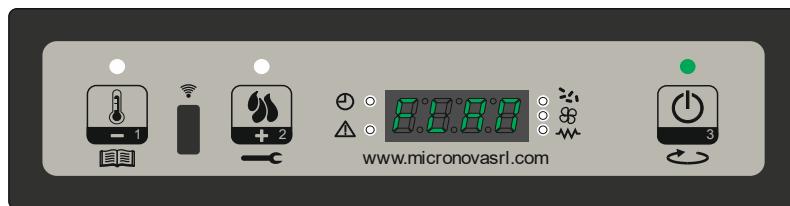


figure 6

7.4 Working mode

After the flue temperature has reached and surpassed the level stated in PR13, and remained so for the time in PR02, the heater will enter the work mode, which is its normal function. The display will show “Work” and the ON/OFF LED will be on. Power can be adjusted by pressing the P2 key and ambient temperature by pressing the P1 key (*figure 7a*).

If the temperature of the air reaches the threshold defined in parameter PR15, the air exchanger fan will switch on (along with its LED).

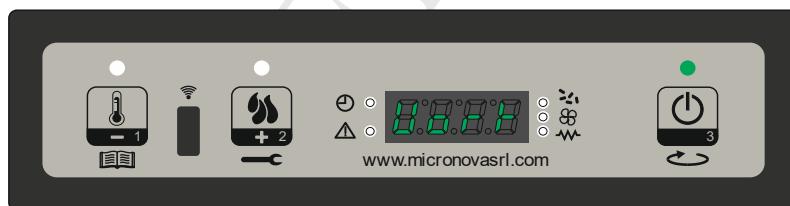


figure 7a

In this phase, after a period of time given by parameter PR03, the heater will clean out the brazier. The display will show “Cleaning brazier”, the feed screw (and its LED) will switch on at the speed given in parameter PR09, and the extractor fan will run at a speed given in parameter PR08 (*figure 7b*).

After the period of time stated in parameter PR12, the heater will return to its work mode.

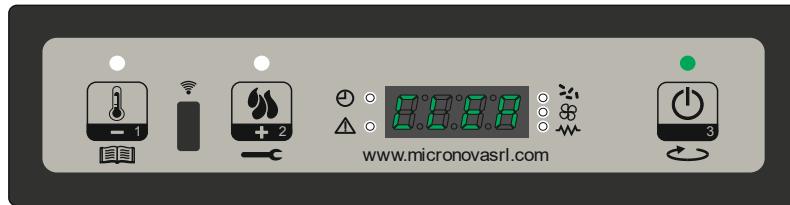


figure 7b

7.5 Change the set heating power

During the normal functioning of the heater (“Work” mode), it is possible to change the heat emitted by pressing the P2 key (the “Set Power” LED will turn on).

To increase the heat, press P2 again, and to decrease press P1. The level of heat selected is shown on the display. (*figure 8*)

To exit this setting, wait 5 seconds without pressing any keys, or press P3.



figure 8

7.6 Adjusting the room temperature setting

To adjust the room temperature setting, simply press the P1 button. The display shows the room temperature set (SET Temperature). Pressing P1 (to reduce) and P2 (to increase) will change this number. After about 5 seconds, the number entered is memorized by the heater and the display returns to normal. Alternatively, to exit you can press P3 (*figure 9*).



figure 9

7.7 Room temperature reaches the set temperature

When the ambient temperature has reached the level set, the power of the heater automatically reduces to the minimum level. At this point, the display will show the message “Modulate” (*figure 10*).

If the room temperature drops below the set temperature, the heater will return to working mode at the power previously set.



figure 10

7.8 Stand-by

If enabled in the menu, the stand-by function allows you to turn off the heater once the following conditions are satisfied.

If, for period of time given in parameter PR44, the ambient temperature is higher than the set temperature by more than parameter PR43, this function will be enabled. The display will show “Go-standby” followed by the minutes remaining (*figure 11a*)



figure 11a

At the end of the time period given in PR44, the display will show “Wait Cooling”. In this state, the feed screw (and its LED) will turn off, the air exchanger will turn off once it reaches the threshold given in PR15, and the ON/OFF LED will flash. (*figure 11b*)



figure 11b

When the temperature of the air reaches the threshold given in parameter PR13, the heater enters stand-by mode and the display will show “Stop eco temp good”. The feed screw (and its LED), the air exchanger fan (and its LED) and the ventilator will all turn off. (*figure 11c*)



figure 11c

If the room temperature drops to below the set temperature by more than the threshold given in parameter PR43, the heater will turn back on.

7.9 Switching off the stove

To turn off the heater, press and hold the P3 key. The display will show “Cleaning final” (figure 12a). The feed screw motor (and its LED) will turn off, the ventilator will be at the speed given in parameter PR08 and the ON/OFF LED will flash.

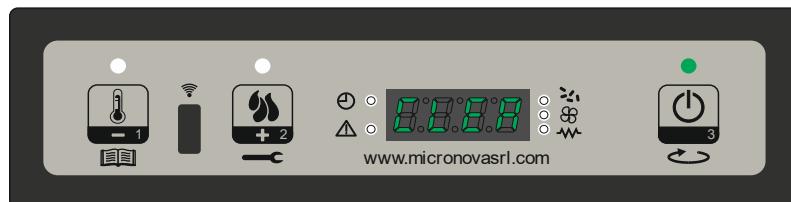


figure 12a

The air exchanger fan (and its LED) will remain on until the temperature of the air drops below the level stated in parameter PR15. After a period of time as stated in PR39, if the temperature of the air is below the threshold in PR10, the heater will turn off and the display will show “Off” (figure 12b).



figure 12b

8. MENU

To access the menu, press and hold P1.

The menu is subdivided into various levels and items that allow access to the settings and programming of the system.

8.1 User menu

The following prospectus briefly describes the structure of the menu, in particular with regards to the options available to the user .

<i>level 1</i>	<i>level 2</i>	<i>level 3</i>	<i>value</i>
M1 - set clock			-
	01- Giorno settimana		M-T-W-T-F-S-S
	02- Ore orologio		0-23
	03- Minuti orologio		0-59
	04- Giorno orologio		1-31
	05- Mese orologio		1-12
	06- Anno orologio		00-99
M2 - set chrono			
	M2-1 - chrono enable	01 - chrono enable	on/off
	M2-2 - program day	01 - chrono day	on/off
		02 - start 1 day	OFF-0-23:50
		03 - stop 1 day	OFF-0-23:50
		04 - start 2 day	OFF-0-23:50
		05 - stop 2 day	OFF-0-23:50
	M2-3 - program week	01 - weekly chrono	on/off
		02 - start prog 1	OFF-0-23:50
		03 - stop prog 1	OFF-0-23:50
		04 - monday prog 1	on/off
		05 - tuesday prog 1	on/off
		06 - wednesday prog 1	on/off
		07 - thursday prog 1	on/off
		08 - friday prog 1	on/off
		09 - saturday prog 1	on/off
		10 - sunday prog 1	on/off

<i>level 1</i>	<i>level 2</i>	<i>level 3</i>	<i>value</i>
	11 - start prog 2		OFF-0-23:50
	12 - stop prog 2		OFF-0-23:50
	13 - monday prog2		on/off
	14 - tuesday prog 2		on/off
	15 - wednesday prog 2		on/off
	16 - thursday prog 2		on/off
	17 - friday prog 2		on/off
	18 - saturday prog 2		on/off
	19 - monday prog 2		on/off
	20 - start prog 3		OFF-0-23:50
	21 - stop prog 3		OFF-0-23:50
	22 - monday prog 3		on/off
	23 - tuesday prog 3		on/off
	24 - wednesday prog 3		on/off
	25 - thursday prog 3		on/off
	26 - friday prog 3		on/off
	27 - saturday prog 3		on/off
	28 - monday prog 3		on/off
	29 - start prog 4		OFF-0-23:50
	30 - stop prog 4		OFF-0-23:50
	31 - monday prog 4		on/off
	32 - tuesday prog 4		on/off
	33 - wednesday prog 4		on/off
	34 - thursday prog 4		on/off
	35 - friday prog 4		on/off
	36 - saturday prog 4		on/off
	37 - monday prog 4		on/off
M2-4 - program weekend			
	01 - chrono weekend		on/off
	02 - start 1 weekend		OFF-0-23:50
	03 - stop 1 weekend		OFF-0-23:50
	04 - start 2 weekrnd		OFF-0-23:50
	05 - stop 2 weekend		OFF-0-23:50
M2-5 - escape			set

<i>level 1</i>	<i>level 2</i>	<i>level 3</i>	<i>value</i>
M3 - select language			
	01 - italiano		set
	02 - english		set
	03 - francais		set
	03 - deutsch		set
M4 - stand-by mode			
	01 -stand - by		On/off
M5- buzzer mode			
	01 - buzzer mode		On/off
M6 - initial load			
	01 - initial load		90”
M7 - stove state			
	01 - stove state		
		01 - Auger state	info
		02 - T minutes	info
		03 - Thermostat state	Info
		04 - Flue state	Info
		05 - Smoke extractor rotating status (rpm)	info
M8 - technical setting			
	01 - access key		set
M9 - escape			
	01 - escape		set

8.2 Menu M1 - SET CLOCK

Sets the current time and date. The circuit board comes equipped with a lithium battery that allows the internal clock to have an autonomy of over 3/5 years.

To access the general programming menu, press P1 for 2 seconds. Pressing P1 (to go down) or P2 (to go up) will select the M1 item, and the display will show “M1 set time” (*figure 13a*).



figure 13a



figure 13b

Choose the desired day and press P3 (figure 13b). Then set the hour (figure 13c), the minute (figure 13d), day (figure 13e), month (figure 13f) and year (figure 13g) by pressing P1 to go down and P2 to go up. To confirm, press P3.



figure 13c



figure 13d



figure 13e

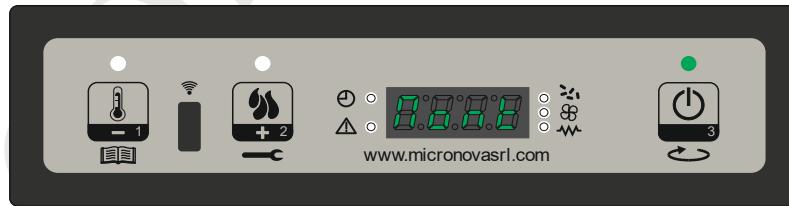


figure 13f



figure 13g

8.3 Menu M2 - Set timer program

Submenu M2 - 1 - Enable chrono

The menu shown on the “M2 set chrono” display allows you to enable or disable all of the functions of the chronothermostat in one go. To enable them, press P3 and then either P1 or P2 for On or Off respectively. Confirm by pressing P3. (*figure 14a*)

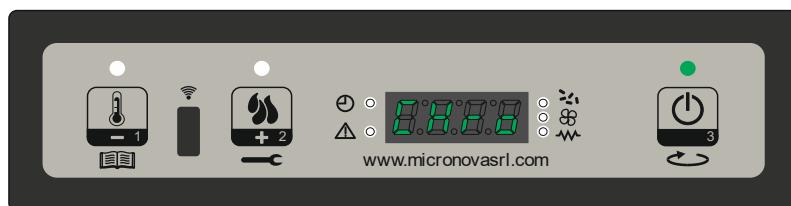


figure 14a

Submenu M2 - 2 - Program day

Select the menu “M2-2 program day” and press P3 to see and enable or disable the various parameters for programming the daily chrono settings (*figure 14b*).

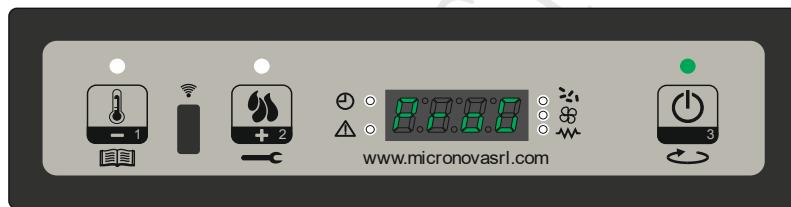


figure 14b

It is possible to set two functioning slots, the first with **START1 Day** and **STOP1 Day** and the second with **START2 Day** and **STOP2 Day**. These slots can be defined according to the timings set out in the table below, where the OFF setting tells the clock to ignore the command. To modify, use P1 (to go down) and P2 (to go up). Confirm with P3.

PROGRAM DAY			
menu level	selection	meaning	possible values
M2-2-01	PROGRAM DAY	Enable chrono day	ON/OFF
M2-2-02	START 1 Day	wake time	OFF-0-23:50
M2-2-03	STOP 1 Day	off-time	OFF-0-23:50
M2-2-04	START 2 Day	wake time	OFF-0-23:50
M2-2-05	STOP 2 Day	off-time	OFF-0-23:50

Submenu M2 - 3 - program week

The “M2-3 Program Week“ menu allows you to enable or disable and set the weekly chronothermostat. The weekly function has 4 independent programs. Additionally, pressing OFF on the timetable will tell the system clock to ignore the corresponding command.

The following tables present the weekly program functions. To get to the next function and select it, press P3. You can exit the menu by pressing and holding P3.

USER MENU

ENABLE PROGRAM WEEK			
menu level	selection	meaning	possible values
M2-3-01	PROGRAM WEEK	Enable program week	ON/OFF

PROGRAM 1			
menu level	selection	meaning	possible values
M2-3-02	START PROG 1	wake time	OFF-0-23:50
M2-3-03	STOP PROG 1	off-time	OFF-0-23:50
M2-3-04	MONDAY PROG 1		on/off
M2-3-05	TUESDAY PROG 1		on/off
M2-3-06	WEDNESDAY PROG 1		on/off
M2-3-07	THURSDAY PROG 1		on/off
M2-3-08	FRIDAY PROG 1		on/off
M2-3-09	SATURDAY PROG 1		on/off
M2-3-10	SUNDAY PROG 1		on/off

PROGRAM 2			
menu level	selection	meaning	possible values
M2-3-11	START PROG 2	wake time	OFF-0-23:50
M2-3-12	STOP PROG 2	off-time	OFF-0-23:50
M2-3-13	MONDAY PROG 2		on/off
M2-3-14	TUESDAY PROG 2		on/off
M2-3-15	WEDNESDAY PROG 2		on/off
M2-3-16	THURSDAY PROG 2		on/off
M2-3-17	FRIDAY PROG 2		on/off
M2-3-18	SATURDAY PROG 2		on/off
M2-3-19	SUNDAY PROG 2		on/off

PROGRAM 3

<i>menu level</i>	<i>selection</i>	<i>meaning</i>	<i>possible values</i>
M2-3-20	START PROG 3	wake time	OFF-0-23:50
M2-3-21	STOP PROG 3	off-time	OFF-0-23:50
M2-3-22	MONDAY PROG 3		on/off
M2-3-23	TUESDAY PROG 3		on/off
M2-3-24	WEDNESDAY PROG 3		on/off
M2-3-25	THURSDAY PROG 3		on/off
M2-3-26	FRIDAY PROG 3		on/off
M2-3-27	SATURDAY PROG 3		on/off
M2-3-28	SUNDAY PROG 3		on/off

PROGRAM 4

<i>menu level</i>	<i>selection</i>	<i>meaning</i>	<i>possible values</i>
M2-3-29	START PROG 4	wake time	OFF-0-23:50
M2-3-30	STOP PROG 4	off-time	OFF-0-23:50
M2-3-31	MONDAY PROG 4		on/off
M2-3-32	TUESDAY PROG 4		on/off
M2-3-33	WEDNESDAY PROG 4		on/off
M2-3-34	THURSDAY PROG 4		on/off
M2-3-35	FRIDAY PROG 4		on/off
M2-3-36	SATURDAY PROG 4		on/off
M2-3-37	SUNDAY PROG 4		on/off

Submenu M2 - 4 - program weekend

Allows you to enable/disable and set the chronothermostat functions on the weekend (days 6 and 7, or Saturday and Sunday). To enable, press P3 on the “chrono weekend” item and select “on” by pressing P1 (to go down) or P2 (to go up). Selecting the times under **Start 1 weekend** and **Stop 1 weekend** will set the times that the heater will function on Saturday, while **Start 2 weekend** and **Stop 2 weekend** will set the operating times for Sunday.

PROGRAM WEEKEND

<i>menu level</i>	<i>selection</i>	<i>meaning</i>	<i>possible values</i>
M2-4-01	PROGRAM WEEKEND	Enable chrono weekend	ON/OFF
M2-4-02	START 1 Weekend	wake time	OFF-0-23:50
M2-4-03	STOP 1 Weekend	off-time	OFF-0-23:50
M2-4-04	START 2 Weekend	wake time	OFF-0-23:50
M2-4-05	STOP 2 Weekend	off-time	OFF-0-23:50

8.4 Menu M3 - Language selection

Allows you to set the language from those available. (*figure 15*). To move to the next language, press P2 (to go up) and to go back press P1. To confirm, press P3.

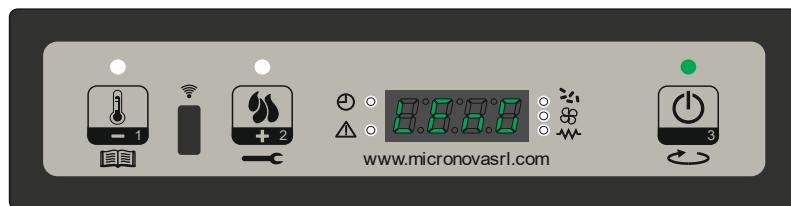


figure 15

8.5 Menu M4 - Stand-by

- Allows you to enable or disable Standby mode (*figure 16*). Once you have selected the M4 menu using the P3 key, press P1 (to go down) or P2 (to go up) to switch between ON and OFF and vice versa. For more information on the standby function, please refer to the paragraph on standby, Chapter 7.8.



figure 16

8.6 Menu M5 - Alarm mode

Allows you to enable or disable the buzzer on the controller when the alarm goes off (*figure 17*). To enable or disable, press P1 or P2 respectively. To confirm, press P3.

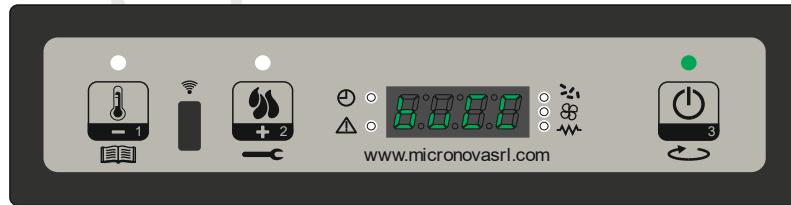


figure 17

8.7 Menu M6 - First charge

This function is only available when the heater is **OFF**. It allows the feed screw to load at the first start of the heater, when the pellet tank is empty. After selecting the M6 menu, the display will show “Press again” (figure 18a). Press P2 (to increase). The ventilator will turn on at maximum speed, the feed screw (and its LED) will turn on and remain on until the end of the time shown on the display (figure 18b), or until you press the P3 key .

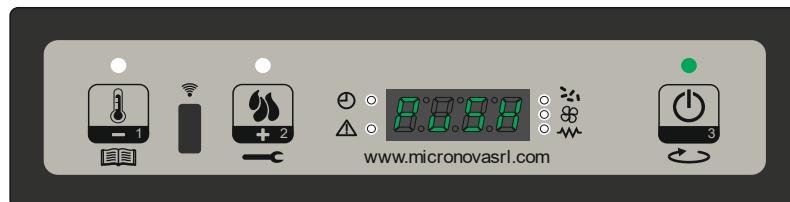


figure 18a



figure 18b

8.8 Menu M7 - Stove status

In menu M7, the display will show the status of several variables during the operation of the heater in work mode. The table below shows an example of the display and the meaning of these numbers.

<i>Visualized status</i>	<i>meaning</i>
3,1"	Feed screw pellet loading status
52'	Time out
Toff	Thermostat status
106°	Flue temperature
1490	Smoke extraction speed

8.9 Menu M8 - Technical settings

This item in the menu is accessible only to the technician who installed the heater. Once the access key **A9** is entered (*figure 19*), it allows you to set the various parameters of the heater's operation by pressing P1 (to go down) and P2 (to go up).

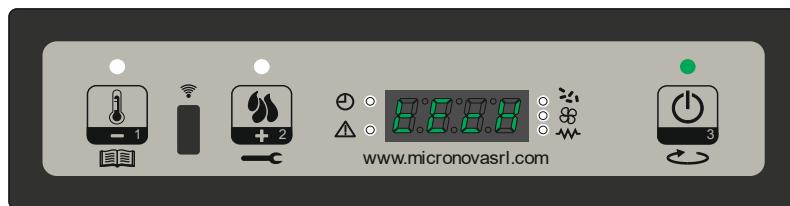


figure 19

8.10 Menu M9 - Escape

Selecting this item by pressing P3 (*figure 20*), you can exit the menu and return to the previous position.

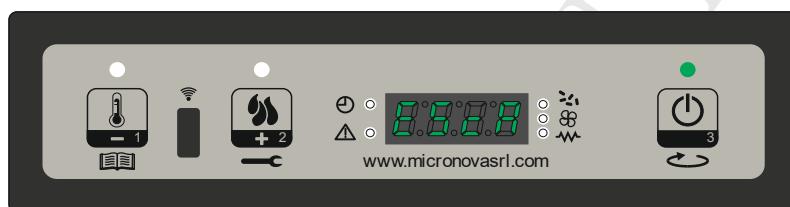


figure 20

9. ALARMS

If a problem is detected during operation, the machine will intervene and alert you by turning on the alarm LED and making a noise.

The following alarms could sound:

Origin of the alarm	Display
Black-out	AL 1 ALAR AL 1BLAC-OUT
Flue gas temperature probe	AL 2 ALAR AL2 PROBE EXHAUST
Flue gas over-temperature	AL 3 ALAR AL3 HOT EXHAUST
Flue encoder damaged	AL 4 ALAR AL 4 FAN FAILURE
Ignition failure	AL 5 ALAR AL 5 NO LIGHTIN-
Pellet absence	AL 6 ALAR AL 6 NO PELLET
Thermal safety overtemperature	AL 7 ALAR AL 7 SAFETY THERMAL
Depression absence	AL 8 ALAR AL 8 FAILURE DEPRESS-

Every alarm causes the stove to immediately shut down

State of alarm occurs after reaching the Pr11 time, **EXCEPT FOR THE BLACKOUT ALARM**, all alarms are activated after a period of time stated in PR11, and can be reset by pressing and holding the P3 key. For security reasons, each time you reset an alarm, the heater will automatically be turned off. When the alarm is activated, the alarm LED will turn on and, where enabled, the buzzer will buzz intermittently. If the alarm is not reset, the heater will turn itself off and the display will continue to show an alarm message.

9.1 Black-out

During the heater's work mode, it might run out of energy. When it restarts, if the black-out period was less than stated in parameter PR48, the heater will re-enter the **WORK** mode; otherwise, the alarm will sound. The display will show the message "Al 1 alar al 1 Blackout" (figure 21) and the heater will turn itself off.

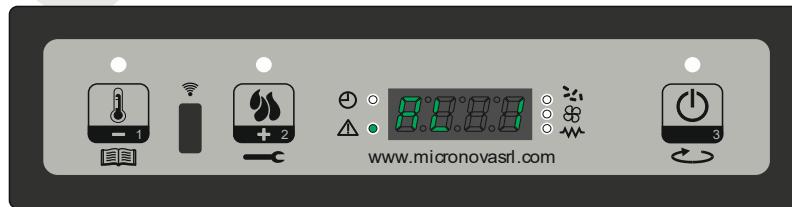


figure 21

9.2 Flue gas temperature probe alarm

The alarm will sound if the exhaust probe is faulty. The alarm LED will turn on, the display will show “Al 2 alar al 2 Probe exhaust” (figure 22), and the heater will turn itself off.

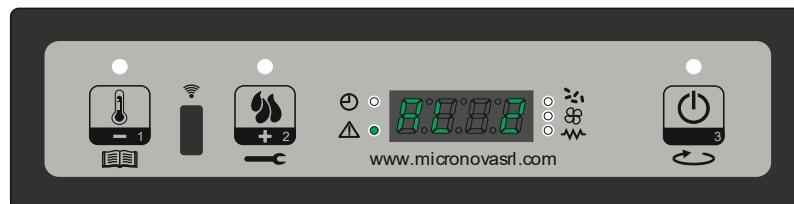


figure 22

9.3 Flue gas over-temperature alarm

The alarm will sound if the exhaust probe reaches a temperature higher than the fixed, unalterable value given in the parameters. The display will show “Al 3 alar al 3 Hot exhaust” as in figure 23 and the heater will turn itself off.



figure 23

9.4 Flue encoder alarm

The alarm will sound if the air ventilator is faulty. The display will show “Al 4 alar al 4 Fan failure– damaged” (figure 24).

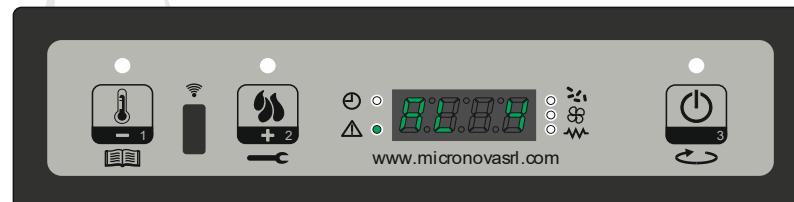


figure 24

9.5 Ignition failure alarm

The alarm will sound when the heater fails to turn on properly, i.e. if within the period of time given in parameter PR01, the air temperature does not rise above parameter PR13. The alarm will come on and the display will show “Al 5 alar al 5 No lightin-“ (figure 25).

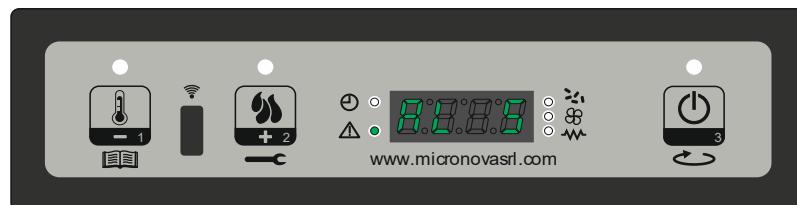


figure 25

9.6 Pellet absence alarm

In work mode, if the flue temperature drops to below parameter PR13, the alarm will sound. The display will show “Al 6 alar al 6 no pellet” as in figure 26.

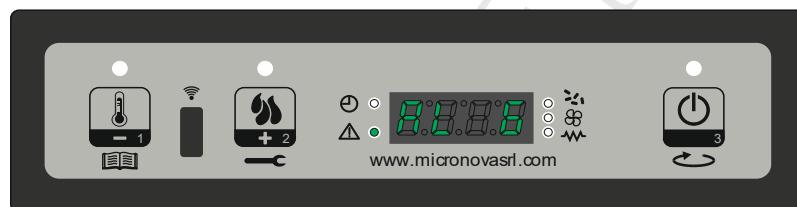


figure 26

9.7 Overtemperature thermal safety alarm

The alarm will sound when the general security thermostat reaches a temperature higher than the trigger threshold. The thermostat will intervene and turn off the feed screw, and the controls will indicate a state of alarm, with the alarm LED on and the display showing “Al 7 alar al 7 safety thermal” (figure 27). The heater will then turn itself off.

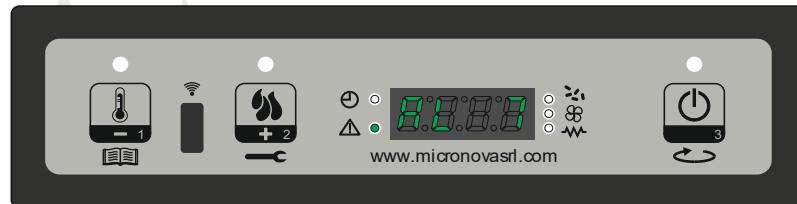


figure 27

9.8 Depression failure alarm

The alarm will sound when the external pressure switch reaches a pressure reading lower than the trigger threshold. The pressure switch will turn off the feed screw and the controls will indicate a state of alarm (with the alarm LED on), while the display will read “Al 8 alar al 8 failure depress-” (figure 28). The heater will then turn itself off.



figure 28

10. TECHNICAL MENU

N.B. The following section is reserved for professional technicians with specific abilities concerning the product. Random changes in the settings could cause severe damage to the device, people and the environment. For this, Micronova assumes no responsibility.

To get to the TECHNICAL MENU, enter the main menu by pressing the P1 key for 2 seconds. Move up and down using P1 and P2 until you see M8 “Technical settings” (figure 29) and press P3 to enter.

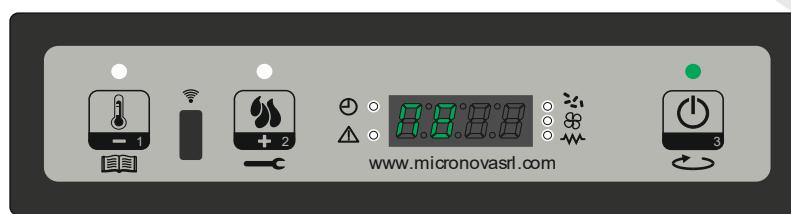


figure 29

Next, press P1 or P2 (press and hold to scroll fast) to enter the access key A9 (figure 30).



figure 30

Press P3 to confirm the access key and to access the submenu, where you can configure the various parameters of the heater. The table below shows the submenu.

Menu	Display
M8-1	Settings factory
M8-2	Set general
M8-3	Type pellet
M8-4	Type chimney
M8-5	Data bank
M8-6	Test outputs
M8-7	Reset part time
M8-8	Reset alarm
M8-9	Counter memories
M8-A	Escape

10.1 M8-1 Technical settings

Within the menu (*figure 31*), by pressing P3 repeatedly you can scroll through all the configuration parameters from PR01 to PR21 (please see **APPENDIX A**).

To modify a parameter, press P1 (to decrease) or P2 (to increase). Confirm by pressing P3. The system will memorize the value entered and the display will show the next parameter.

After parameter PR2, you can exit the menu by pressing P3 again.



figure 31

10.2 M8-2 various adjustments

This menu shows more parameters that you can edit. Press P3 to scroll through configuration parameters PR38 to PR48 (see **APPENDIX A**). To modify, press P1 or P2; to confirm, P3.

After PR48, you can exit the menu by pressing P3 again.

N.B. Key Lock function

When the parameter key lock is enabled, the display console allows you to lock or unlock the keys. Pressing and holding P1+P2 activates the command. The display will then show either “Keys locked” or “Keys unlocked”.

10.3 M8-3 Pellet type

Pressing P1 or P2 will modify the pellet loading percentage (PR54) (*figure 32*) up to a maximum value of +9 and down to a minimum value of -9. Each step increases or decreases it by around 3% of the total period of the feed screw, with respect to the default period (pellet type = 0). The T-ON AUGER time does not change.



figure 32

10.4 M8-4 Chimney type

Pressing P1 or P2 will modify the air ventilator rotation percentage (PR55) (*figure 33*) up to a maximum value of +9 and down to a minimum value of -9. Each step increases or decreases it by around 3% of the rotations of the air extractor with respect to the parameter set.



figure 33

10.5 M8-5 Database

The device contains a series of predefined settings called **DATA BANK**. These settings are available depending on the version of the device, but cannot be modified. This is so they can be adapted to most types of heaters and prevents the need to enter the parameters one by one.

To access these settings, after entering menu M8-5, press P1 or P2 to select the value (o0, o1, o2, etc.) that you wish to edit from the table (data Bank). See *figure 34* and the following table.



figure 34

Value	Database
o0	Predefined data 0
o1	Predefined data 1
o2	Predefined data 2
o3	Predefined data 3
o4	Predefined data 4
o5	Predefined data 5
o6	Predefined data 6
o7	Predefined data 7
o8	Predefined data 8
o9	Predefined data 9

N.B. Availability of the tables depends on the version of the heater. Not all tables will be available

10.6 M8-6 Outputs test

This function allows you to test the controls. This function is only available when the heater is off, with the display showing “OFF”.

Pressing P1 or P2 enables or disables the control being tested, according to the table below. With P3, you can move to the next test.

Test type	value
Glow plug test	On/Off
Auger test	0” ÷ 5”
Flue test	65V ÷ 225V
Fan test	65V ÷ 225V

10.7 M8-7 Reset partial hours

During work mode, the heater takes into account partial hours of operation. To reset this value, enter menu M8-7, enter the access key **55** and press P3. The display will show “executed” to confirm the reset.

10.8 M8-8 Reset alarms

When the alarm sounds, the control system memorizes the type of alarm in one of its 5 memory banks. To reset the memory banks, enter menu M8-8, enter the access key **55** and press P3. The display will show “executed” to confirm the reset (*figure 35*).



figure 35

10.9 M8-9 Meter memory

This submenu shows the alarm and time counter memory banks, as in the table below. Both the partial time counter and the alarm counter can be reset, but the total time counter cannot be reset.

Display	value
Total hours	hours
Partial hours	hours
M- -1	Last occurred alarm
M- -2	Previous alarm
M- -3	Previous alarm
M- -4	Previous alarm
M- -5	Previous alarm

The alarms are saved in memory banks from M--1 to M--5. They are saved sequentially, with M--1 being the most recent alarm. If the number of alarms memorised exceeds 5, the control system will delete the memory of the oldest alarm.

10.10 M8-A Escape

Once the various parameters have been set, you can exit the submenu and return to menu M8 by pressing P3.

11. DATABASES

11.1 Structure of the control board memory

The block diagram in *figure 36* briefly describes the structure of the memory and the mode of access from the outside.

As you can see, it is possible to access the **EEPROM** memory content directly from the console in order to read or adjust the UT and PR parameters.

The same can be done through the serial connection and the **SERAMI** software with the use of a personal computer.

It is also clear how the content for databases o0,o1, o2,o9 is neither accessible nor adjustable from the outside.

It is possible to load a database on the **EEPROM** memory through the use of the console. The database gets added to the content of the **EEPROM** memory when concerning the PR parameters.

The part of the **FLASH** memory that contains the operating program is accessible from the outside only by using the **SERAMI** and the specific firmware update files made available by Micronova.

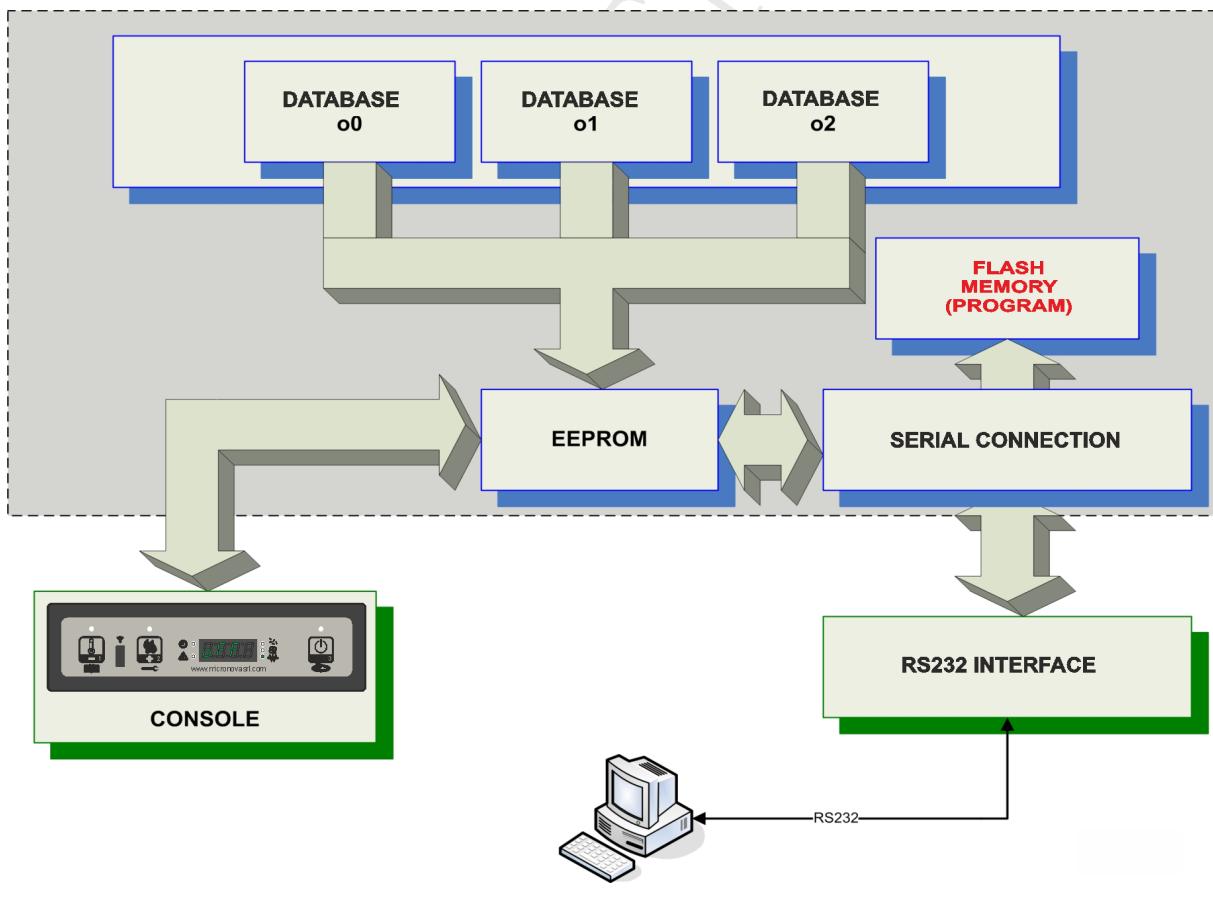


figure 36

11.2 Create personalized databases (*).

By using a personal computer, the **SERAMI** software with a serial connection and the control board and relative RS232 interface, you can create and memorize personalized databases.

To do such you must do the following:

1. Choose the default setting (o0, o1 etc.) closest to your needs. Follow these instructions:
 - 1.1 Enter menu M8 (technical settings) and enter the access key **A9**. Select menu M8-5 (data bank). With P1 and P2 choose the default setting you want, for example o0, and confirm by pressing P3.
 - 1.2 Enter menu M8 (technical settings) and enter the access key **A9**. Select menu M8-1 (pre-set calibration) or M8-2 (change calibration).
 - 1.3 Modify the value of the parameters PR01, PR02 etc. using the P1 and P2 keys. To confirm and move from one parameter to the next, use P3.
2. With **SERAMI**, from the instruments menu, select “manage **EPPROM**”:
 - 2.1 Select “Backup” with the button on the top left.
 - 2.2 Backup the data.
 - 2.3 Save the backup with a suitable name (es. MyDatabase01).
3. Detach the serial interface connector from the control board from which the database had been extracted.
4. Insert the serial interface connector into the control board to which you wish to send the database.
5. With **SERAMI**, from the instruments menu, select “manage **EPPROM**”:
 - 5.1 Select “Restore Backup” with the second button on the left.
 - 5.2 With the “Open Backup” button select the database file you wish to insert the control board, for example MyDatabase01.bk.
 - 5.3 Select the “Restore Backup” option.

From this point on, the system will operate according to the PR parameters copied from the original starting system.

In this way, many changes and configurations can be made according to your needs.

(*) Please refer to the **SERAMI** software manual.

N.B everytime a predefined database o0, o1, etc. is loaded ,the personalized settings will be overwritten and the EEPROM writing will have to be redone, following this procedure starting from step 4.

12. FIRMWARE UPDATE (*).

By using a firmware update file provided by Micronova, you can update the control board's operating software with a personal computer and the **SERAMI** software with a serial connection to the control board and the relative RS232 interface.

- Remove the electrical power from the control board.

Connect the serial cable from the RS232 interface. It must be connected correctly to the personal computer with the serial port correctly configured with the **SERAMI**.

- From the "INSTRUMENTS" menu and from the following "UPDATE FIRMWARE" submenu, access the procedure according to the instructions listed below.
- Select the file (type ENC) containing the stove's operating program. (*figure 37*).

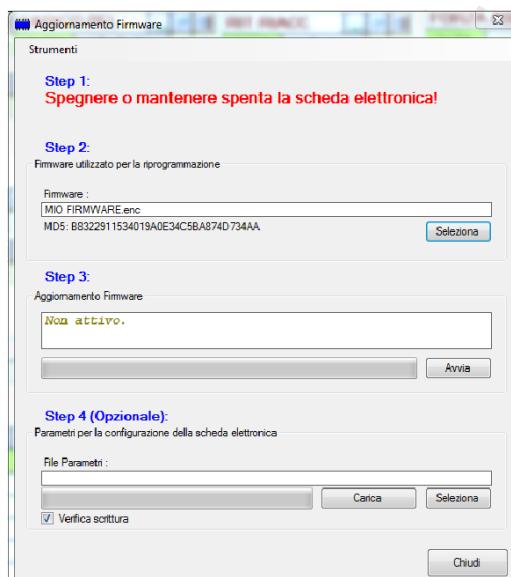


figure 37

- Select the "START" button and wait for the message that reads "*Shut off and turn on the control board*". Power the control board and wait for the progress bar to fill up.
- Select the "CLOSE" button to exit the procedure.

We have introduced a checking system for the files called firmware, in order to verify the state of the files, as shown in the table below.

MDU code color	Value
Transparent	New file enc uploaded
Green	File uploaded successfully without modifications
Red	File uploaded successfully with modifications executed

(*) Refer to **SERAMI** software manual.

13. APPENDIX A : Parameter table

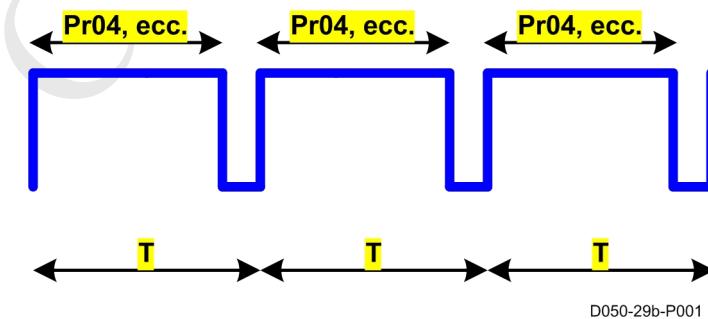
Here, as follows, is a parameter table. The values indicated in the column on the right refer to DATABASE o0 which could have variations based on the version.

PARAMETER	PARAMETER DESCRIPTION	VISUAL RANGE OF THE DISPLAY
PR01	Time out time	05÷25 min
PR02	Start time	02÷20 min
PR03	Frequency time cleaning	10÷255 min
PR04	Ton auger ignition	0,1÷6,0 sec
PR05	Ton auger start	0,1÷6,0 sec
PR06	Ton auger Power 1	0,1÷6,0 sec
PR07	Ton auger Power 5	0,1÷6,0 sec
PR08	Speed fume exhaust during cleaning phase	700÷2800 rpm
PR09	Ton auger cleaning	0÷5 sec
PR10	Off threshold	50÷180°C
PR11	Alarms delay	20÷90 sec
PR12	Cleaning duration	0÷120 sec
PR13	Minimum threshold	35÷180 °C
PR14	Maximum threshold	60÷280 °C
PR15	Fan threshold	50÷210 °C
PR16	Speed fume exhaust during on phase	500÷2800 rpm
PR17	Speed fume exhaust during start up phase	500÷2800 rpm
PR18	Speed fume exhaust Power 1	500÷2800 rpm
PR19	Speed fume exhaust Power 5	500÷2800 rpm
PR20	Exchanger speed P1	65÷225 Volt
PR21	Exchanger speed P5	65÷225 Volt

PARAMETER	PARAMETER DESCRIPTION	VISUAL RANGE OF THE DISPLAY
PR38	Lock reignition time	0÷10 min
PR39	Ventilator extractor off	0÷20 min
PR40	Preload time during ignition	0÷255 min
PR41	Waiting flame time	0÷255 sec
PR42	Speed fume exhaust during preload phase	600÷2800 rpm
PR43	Delta in automatic mode	0÷15 °C
PR44	Delay in automatic mode	2÷120 min
PR45	Power transmission time	0÷60 sec
PR46	Remote enable	On/off
PR47	Enable keyboard lock	On/off
PR48	Black-out	0÷60 sec

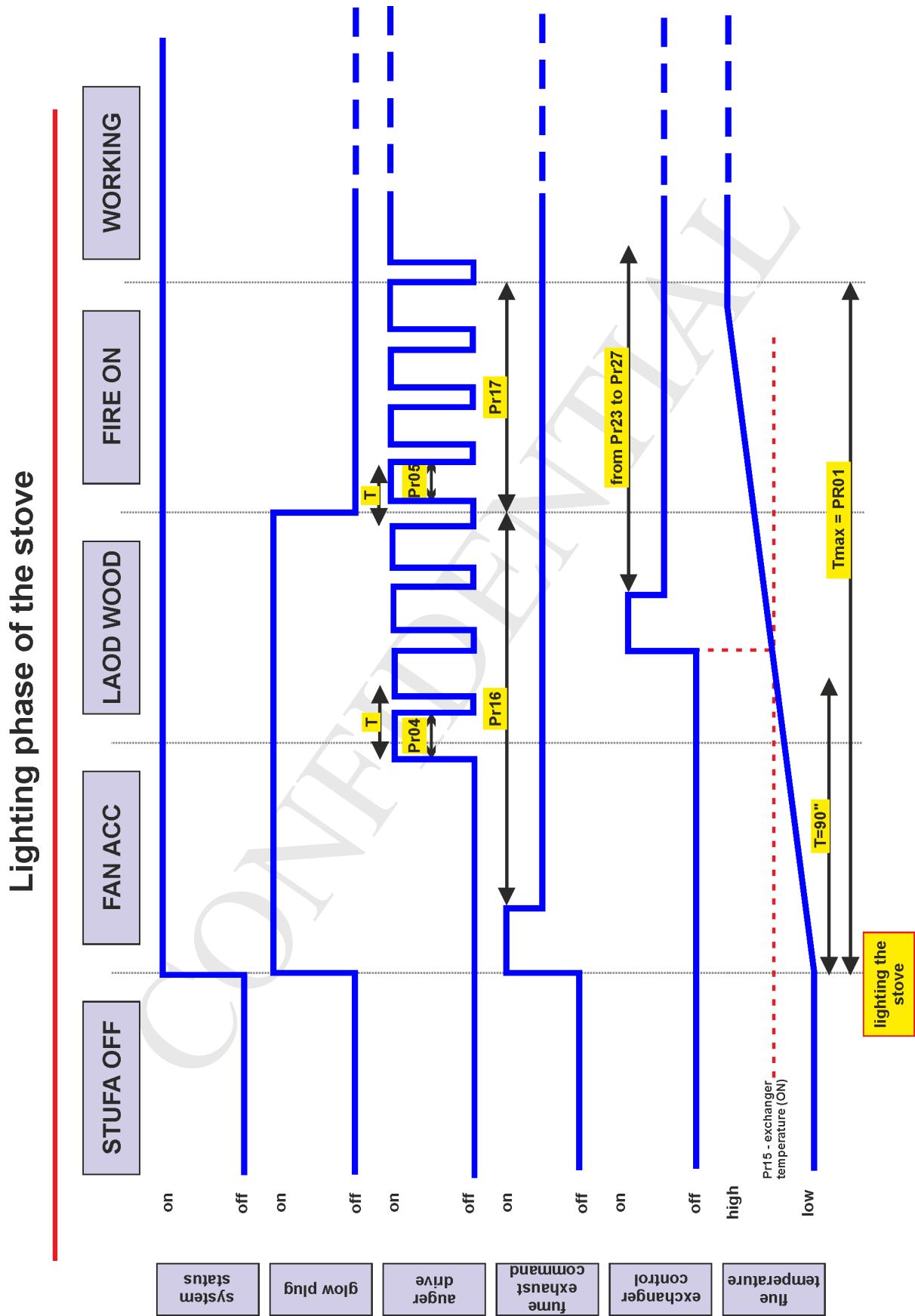
How to interpret the auger timing parameters

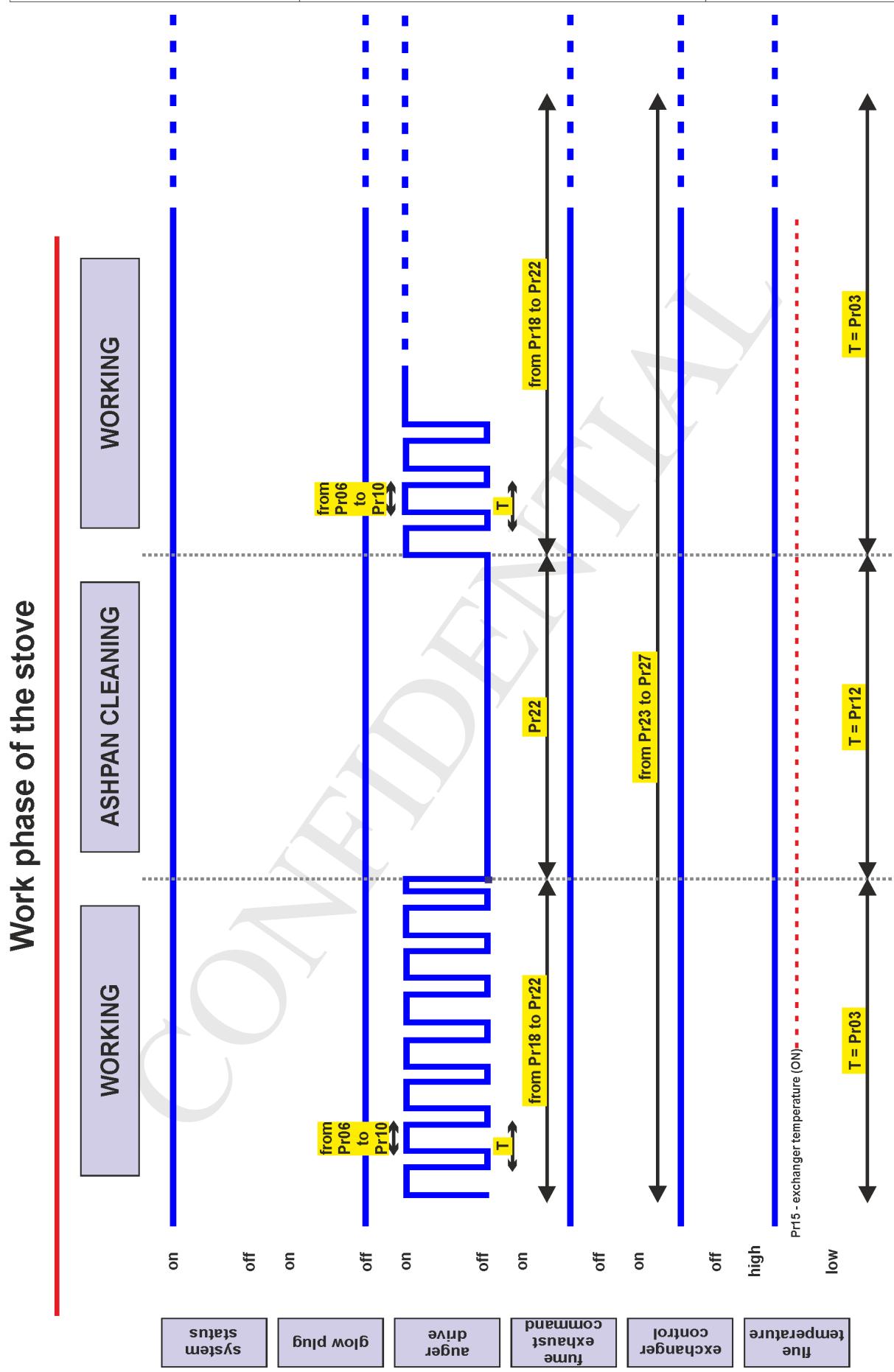
The auger functioning command is temporal and is structured as follows: the period $T=4s$ is established. During this time the motor is activated for the Pr04, Pr05, Pr06, Pr, 07, Pr08, Pr09, Pr10 and Pr12 times based on the operating phase.



D050-29b-P001

14. APPENDIX B : Start up sequence and working conditions





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INFORMATION

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file name: MANUALE N100-J100_ARIA_ITA-ENG