BAXI

LUNA DUO-TEC
Troubleshooting

WARNING!

THIS DOCUMENT IS INTENDED ONLY AS AN EDUCATIONAL TOOL

This Troubleshooting Guide, and the instructions and suggestions within are intended solely as an educational tool assisting completely qualified Gas Appliance Mechanics who have successfully completed the Baxi Installation Certification Program. Use of the information herein for the purposes of onsite appliance correction by untrained personnel may cause extremely dangerous conditions, and may void the manufacturer's warranty. Baxi N.A. assumes absolutely no liability in the execution of the training suggestions in this document. Should you experience problems or complications beyond your realm of training, please contact Baxi N.A. for further instructions.

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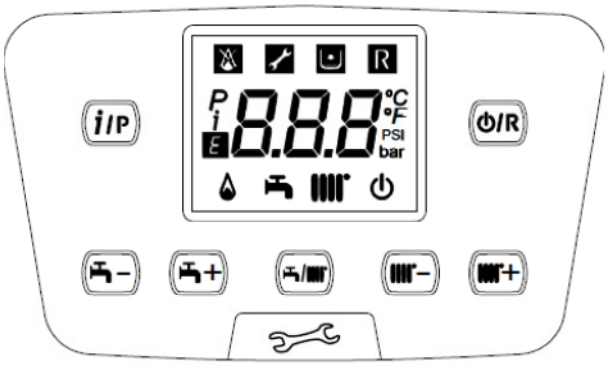
CONTROLLER



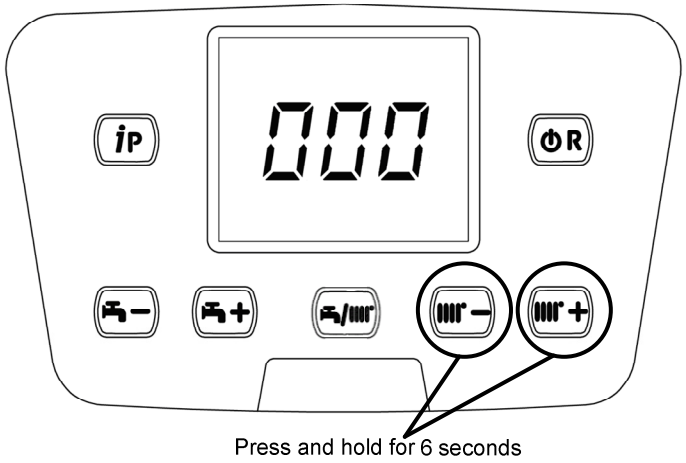
SYMBOLS

⏻	**Boiler Off – Heating and DHW disabled (Boiler frost protection is active)**	🔥	**Burner on**
	Ignition Fault	🚰	**Domestic hot water mode enabled**
	Boiler/system water pressure low		**Central Heating mode enabled**
🔧	**Error call for service**	*P*	**Programming menu**
R	**Resettable fault**	*i*	**Boiler information menu**
E	**Fault in progress**	°C, °F, bar, PSI	**Units of measure**

BUTTONS

+ −	**DHW temperature adjustment** (+ to increase the temperature and – to decrease it)
+ −	**CH temperature adjustment** (+ to increase the temperature and – to decrease it)
i/P	**Boiler operating information**
	Boiler Operating mode: DHW only – DHW & Heating – Heating only
⏻/R	**Off – Reset – Exit menu/functions**

ACCESSING PARAMETERS



1) Press both the + and − buttons fro 6 seconds, the display shows "**P01**" alternating with its value **(0)**;

2) Press either + or − buttons to scroll the parameters list;

3) Press the i/P button to edit the selected parameter;

4) Press either + or − buttons to modify the parameter value ;

5) Press the i/P button to save the parameter value, or press the ⏻/R button to exit the function without saving.

In the default condition it is possible to scroll through the parameters until **P42**. If you need to set some parameters after **P42** proceed as follows:

-Press either + or − buttons until **P22** is reached;
-Press the i/P button to edit the selected parameter;
-Set **P22** to **22;**
-Press the i/P button to save the parameter value;
-Press either + or − button to scroll through the parameters from P42 to P76

DESCRIPTION OF PARAMETERS LUNA DUO-TEC		FACTORY SETTINGS	
		1.33 GA	40 GA
P01	-------	00	
P02	**Gas used** Natural Gas = 00 Propane = 01	00	
P03	**Hydraulic system** 00 = instantaneous appliance 03 = instantaneous appliance with pre-heat function 05 = appliance with external storage boiler 08 = heating only appliance 13 = instantaneous appliance with pre-heat function for solar application	08	00
P04	**Programmable relay 1 setting (optional):** 00 = no function is associated 01 = close contact with a room thermostat request 02 = close contact with a remote control request 03 = relay for Low water in the system alerts 04 = relay for Error code alerts 05 = relay for kitchen fan function 07 = relay for post circulation pump 09 = DHW relay on with DHW program setting 10 = DHW relay on with DHW request; if P64 = 1 relay on with CH and DHW request 13 = relay for Cooling function 14 = close contact with a room thermostat request with post circulation 15 = close contact with a remote control request with post circulation	02	
P05	**Programmable relay 2 setting (optional):** (The same configurations as Relay 1-P04)	04	
P06..P09	**Manufacturer information**	--	
P10	**Heating set point setting OT / RT** **(Open Therm / Room Thermostat 120V~)** 00= with Remote Control (RC) connected, the temperature request is the RC set point 01= The temperature Request is the highest set point between RC and PCB 02 = The temperature request is the RU set point. The RT enable the gas boiler operates	00	
P11..P12	**Manufacturer information**	**--**	
P13	**Max. heating output (0-100%)**	100	77
P14	**DHW max. output (0-100%)**	100	
P15	**Min. heating output (0-100%)**	00	

P16	**Maximum CH setpoint (°C)** **00 = 176°F / 80°C - 01 = 113°F / 45°C**	00
P17	**Pump overrun time in heating mode** (01-240 minutes)	03
P18	**Burner ignition pause time in CH mode** (00-10 minutes) - 00=10 seconds	03
P19	**Manufacturer information**	07
P20	**Pump overrun time in DHW mode (seconds)**	30
P21	**Anti-legionellosis function** 00 = Disabled 01 = Enabled	00
P22	**Manufacturer information** (set "22" to display parameters P71 and P72)	00
P23	**Maximum DHW setpoint temperature** (113°-140°F /45°-60°C)	49
P24	**Manufacturer information**	35
P25	**No water safety device**	00
P26..P31	**Manufacturer information**	--
P32..P41	**Diagnostics (See SERVICE Instructions**	**--**
P44	**Temperature unit setting** **00 = °C** **01 = °F**	01
P71 *	**Maximum fan speed**	**--**
P72 *	**Minimum fan speed**	**--**

* See Tables on SECTION 12.4

NOTE : to display parameters P71 and P72 it is necessary to set before the parameter P22 = 22

ERROR CODE HISTORY

The Baxi Luna Duo Tec PCB is able to store the last 10 errors that have occurred. The PCB is programmed with a counter which counts consecutive errors of the same error code.
In order to view the error code history scroll to COO after P31 as described in the Accessing Parameters

C00	**Errors without reset**
C01	
C02	
C03	
C04	
C05	
C06	
C07	**Errors with reset**
C08	
C09	

1 – Error storage number (C00 is the last error to occur)
2 – Error code
3 – Consecutive error code counter of the same error
4 – Number of days past since the error (00= today)
5 – System status
6 – System phase
7 – Central heating temperature at the time of the error in °C

SYSTEM STATUS

01 Stand by
02 DHW request
03 Controller stop function
04 CH request
05 Preheat function
06 CH frost protection function active
07 DHW frost protection function active
08 Post-circulation pump active
09 Overheating circulation pump function active

SYSTEM PHASE

00 Stand by
01 Pre-purge function active
03 Ignition load purge between the first and second attempt
04 Ignition load first attempt
05 Operation active
06 Lock out
08 Second ignition load attempt
11 Ignition load purge between the second and third attempt
14 Third ignition load attempt
15 Post- purge function
16 Overheat post-purge function active

	Parameters	Error storage number	Error code	Consecutive error code counter of the same error	Number of days pasted since the error (00= today)	System status	System phase	Central heating temperature at the time of the error in °C
Errors with out reset	P32	C00						
	P33	C01						
	P34	C02						
	P35	C03						
	P36	C04						
	P37	C05						
	P38	C06						
Errors with reset	P39	C07						
	P40	C08						
	P41	C09						

Error Code	Error	Solution
09	Gas valve connection fault.	-Check connection at the gas valve and PCB -If both connections are good replace PCB
Notes:		
10	Outdoor sensor fault.	-Disconnect the outdoor temperature sensor and Take an ohm reading refer to NTC sensor chart -Check the wiring to the outdoor temperature sensor looking for a break or short in the wire -If the outdoor temperature sensor and wiring are good replace the PCB
Notes:		
15	Gas valve command fault.	-Check the wiring harness connection at the gas valve and PCB -If wiring harness is good, replace PCB
Notes:		
20	Central Heating NTC sensor fault.	-Take an Ohm reading of the CH NTC supply sensor refer to chart. The sensor should read within +/- 10% of the stated ohms on the NTC sensor chart, if out of calibration replace sensor. - If the sensor is good, check the wiring harness for loose or broken wires - If the sensor and wiring are good replace the PCB
Notes:		
28	Flue NTC heat exchanger sensor fault	-Check wiring harness connections at the flue high limit and control board for loose connection -Check wiring harness for short
Note:		

40	Return NTC sensor fault.	-Take an Ohm reading of the return NTC sensor refer to chart. The sensor should read within +/- 10% of the stated ohms on the NTC sensor chart, if out of calibration replace sensor. - If the sensor is good, check the wiring harness for loose or broken wires - If the sensor and wiring are good replace the PCB
Note:		
50	Domestic Hot Water NTC sensor fault	-Take an Ohm reading of the DHW NTC supply sensor refer to NTC sensor chart. The sensor should read within +-10% of stated ohms on the chart, if out of calibration replace sensor. - If the sensor is good, check the wiring harness for loose or broken wires - If the sensor and wiring are good replace the PCB
Note:		
53	Obstruction in the flue pipe.	-Check for obstruction in the flue pipe -Ensure the vent is sloped back towards the boiler 3/4” per 3.3’ and make sure there are no dips in the venting -With the unit sealed put your combustion analyzer in the intake test port. This should read a CO of 0ppm, if there is CO this would indicate a pinched gasket on the inner pipe (exhaust pipe).With concentric venting system -Check the combustion settings using a combustion analyzer. Refer to section 12.3 Chimney sweep function – Combustion adjustment function in the installation manual.
Note:		

55	PCB not programmed.	-Ensure the memory stick is connected properly to the PCB -Follow the instructions PCB Replacement (with easy key service) in the troubleshooting guide or the instructions that re provided with the new PCB
Note:		
83-84-85-86-87	Communication problem between boiler board and control unit.	-Check the wiring connection between the Baxi modulating room unit and the M2 bus terminal position 1 & 2 -Check for a short circuit in the wiring.
Note:		
109	Pre-circulation alarm (temporary fault).	-Check pump to ensure it is running and is not ceased or sticking -Check for restrictions in the boiler and system -Ensure wiring to pump is not disconnected -Ensure all air is purged from the system -Check that the heating supply and return sensor are clipped to the proper pipes and are not hanging in the air.
Note:		

110	Safety thermostat tripped due to over temperature	-Check pump to make sure the impeller is spinning and not creased -Check for restrictions -Ensure that all air is out of the system - Ensure wiring to pump is not disconnected -Use a multi meter and ohm(Ω) test the high limit (0Ω switch closed, OL switch open) -if E110 persists replace the high limit sensor
Note:		
118	Hydraulic pressure too low.	-Check system pressure. If necessary fill system reference the installation manual section 2.7 system volume in the manual -ensure all air is purge from the system and all shutoff valves are open -Ensure the expansion tank is pressurized as per the installation manual section 2.7 system volume -if the system is pressurized over 7psi / 0.5bar, check the low water cutoff using a multi meter set to ohms. If it reads OL and system is pressurized then replace low water cutoff
Note:		
125	No circulation of the water	-Check pump to ensure it is running and not ceased -Check for restrictions -Ensure wiring to pump is not disconnected or break in the wire -Ensure all air is purged from the system -Make sure heating supply and return sensor are securely attached to the heating pipes
Note:		

128	Loss of flame.	-Check the flame sensor gap to the burner -Check the flame sensor for any damage or build up. If cleaning is required use an non-abrasive cloth -Check flame sensor wiring for a loose connection or broken wire - Check for proper polarity and grounding to the unit -Check for adequate gas pressure and flow to the unit refer to the installation manual -Check µA (micro-amps) reading from flame sensor. -Check venting for flue recirculation
Note:		
130	NTC flue sensor tripped due to over temperature.	-Check pump to ensure it is moving properly and is not ceased - Inspect heat exchanger for any blockages. If the heat exchanger is blocked flue gas may not be exhausted properly cause a high temperature situation. -Check the vent to ensure there are no pinched gaskets on the exhaust pipe. Ensure the venting is sloped towards the unit and the venting is properly support to prevent dips. -Check for obstructions in the flue -using a combustion analyzer verify the CO_2 values for high, low and ignition fire are within the parameters given in the installation manual section 12.3 Chimney Sweep – Combustion Test
Note:		

131	Thermo fuse tripped due to over temperature.	-Check the thermo fuse, use a multi meter and check for resistance (OL indicates the sensor is broken and 0 Ω indicates its closed) -Check the status of the primary exchanger. Replace the heat exchanger if necessary.
Note:		
133	Ignition failure	<u>No Spark</u> - Check Power, polarity and grounding to the unit -Check spark electrode and wiring connection from the igniter to the PCB -Ensure spacing between electrode and burner is maintained. Refer to installation manual <u>No Flame</u> -Ensure gas shut off is open and the gas line is purged of air -Check wiring connections to the gas valve & PCB – X36 and X2 connector -Check the resistance of the coils: Pin 1 and 3 = 20 - 30 Ohm Pin 2 and 4 = 60 - 70 Ohm If you do not receive an Ohm reading replace the gas valve. If you get a Ohm reading replace the PCB <u>No Flame Signal</u> -Check the flame sensor gap to the burner -Check the flame sensor for any damage or build up. If cleaning is required use an non-abrasive cloth -Check flame sensor wiring for a loose connection or broken wire

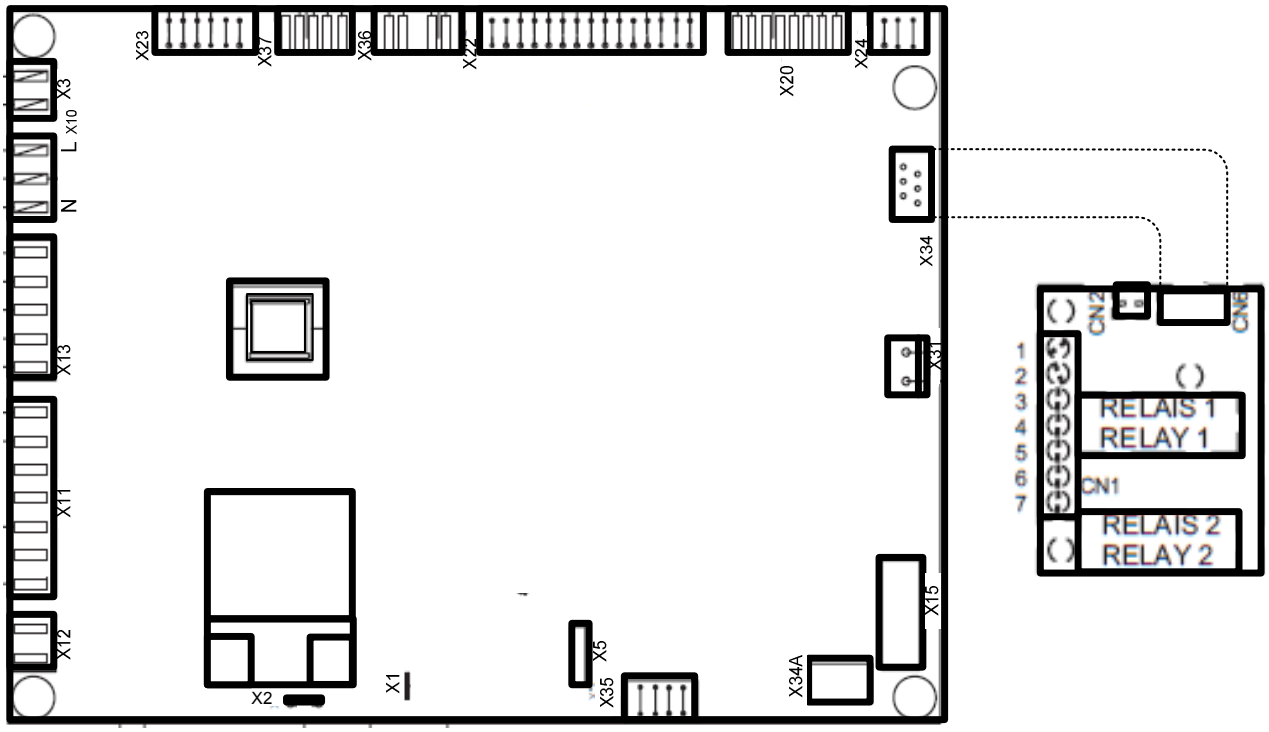
133	Ignition failure	- Check for proper polarity and grounding to the unit -Check for adequate gas pressure and flow to the unit refer to the installation manual -Check µA (micro-amps) reading from flame sensor. Should be 3-5µA
Note:		
134	Gas supply valve blocked.	-Replace PCB
Note:		
135	Internal error.	-Check polarity, grounding and ensure the unit is on a dedicated electrical circuit back to the panel -Ensure no water or water residue is on the PCB. If there is sign of water damage replace PCB - remove all exterior controls to the unit and unplug the unit. Let it sit for 20 minutes and then plug the unit back in and reset it. If it does not reset replace PCB
Note:		

160	Fan fault.	-Ensure Fan connections correct at fan and PCB Connectors X11 & X23 -Is there 120V AC at fan terminals connector X11 blue to brown. If not replace PCB -ensure fan is not seized or sticking
Note:		
162/ 317	Incorrect power supply frequency.	-Ensure P 43 is set to 01
Note:		
169	Flue pressure switch (contact open)	-Check venting for blockages -ensure maximum vent length is not exceeded for your venting system. -Ensure venting is sloped correctly and supported to prevent the vent from sagging -Check inlet gas pressure. Ensure that no more than a 1" w.c. pressure between static gas pressure and dynamic gas pressure. If it is more than this check pipe size and gas regulator -Ensure proper operation of the pressure switch in the open and closed positions
Note:		

164/ 384	Fault flame (parasitic flame).	- Check for proper polarity and grounding to the unit -Check venting for flue recirculation -Check wiring connections to the gas valve & PCB – X36 and X2 connector -Check the resistance of the coils: Pin 1 and 3 = 20 - 30 Ohm Pin 2 and 4 = 60 - 70 Ohm If you do not receive an Ohm reading replace the gas valve. If you get a Ohm reading replace the PCB -Check for a dirty flame sensor. It should read 3-5µA when flame is present -Check location for high winds
Note:		
165/ 385	Input voltage too low.	-Check Power at M1 -Ensure voltage to the unit is not less than 86 volts -Ensure that the power maintain constant and does not drop or spike
Note:		

MULTI ZONE RELAY CARD CONNECTION AND OPTIONS (OPTIONAL ACCESSORY)

The multi zone relay card can be programmed for multiple outputs. The multi zone relay card connects to the PCB on the X34 connector. The multi zone relay card has two relay which are controlled by **P04** (relay 1) and **P05** (relay 2) parameters.



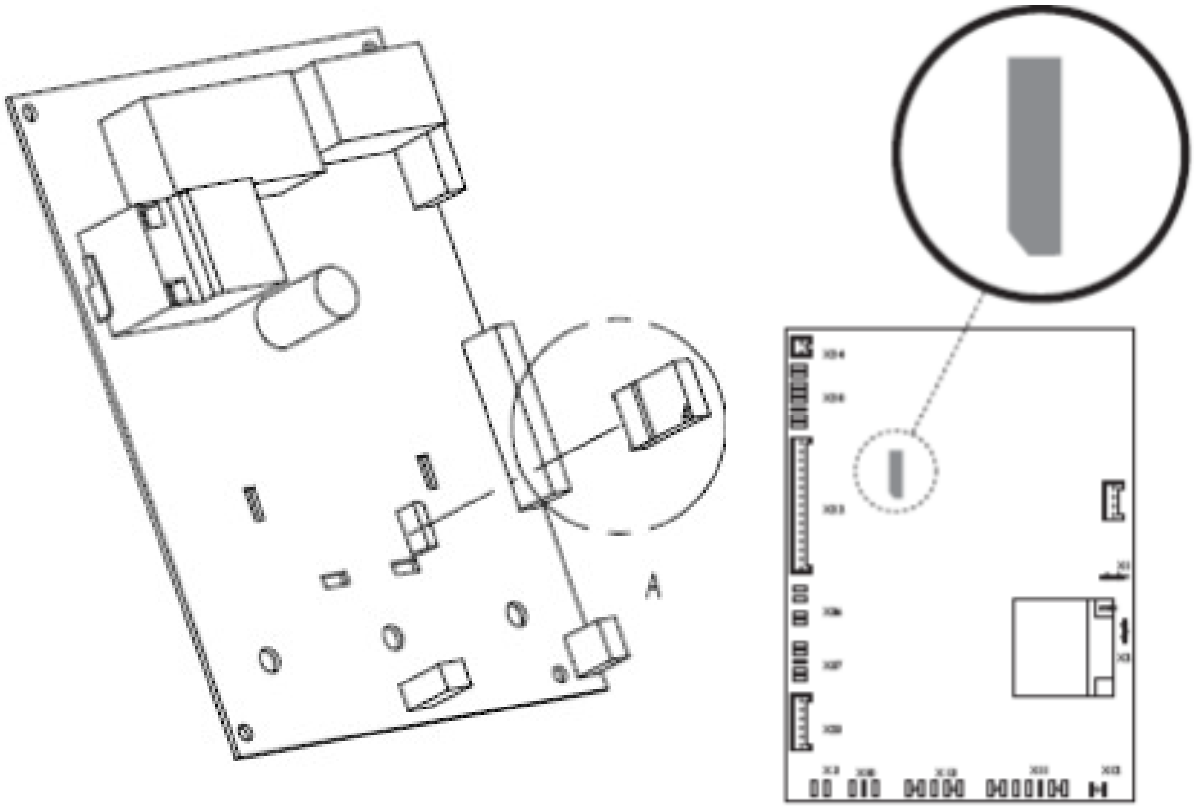
Default parameters are: **P04 = 02** and **P05 = 04**

01 Relay is activated by a call on the M1 Bus terminal position 1 & 2
02 Relay is activated by a call on the M2 bus terminal position 6 & 7
03 During a Low water pressure switch fault, the relay is activated.
04 In the event of a fault the relay is activated.
05 When the fan is operating the relay is activated.
07 For any CH or DHW request, the relay is activated.
08 Relay contact operates on an interval timer depending on the F19 parameter (default = 7 minutes)
09 Relay is activated if room unit is connected and the DHW programming mode is calling
10 For each DHW call, the relay is activated
13 For each Cooling call, the relay is activated. (if the cool function is enabled).

PCB REPLACEMENT (WITHOUT EASY SERVICE MEMORY STICK)

The procedure is as follows:
- Switch off the boiler and make sure the unit is unplugged
- Remove the front panel and open the PCB plastic box cover
- Remove the memory stick out of the pcb and move it in the new one
- **Pay attention when inserting the memory stick that it is put in the correct position on the connector (see the shape printed on the pcb and match the corners);**
- Replace the pcb
- Close the plastic box and place the front panel to close the boiler
- plug the boiler in and switch on the boiler

NO PARAMETER CHANGEs ARE NEEDED



PCB REPLACEMENT (WITH EASY KEY SERVICE)

The procedure is as follows:

- Switch off the boiler and make sure the unit is unplugged
- Remove the front panel and open the pcb plastic box cover
- Replace the easy key
- Close the plastic box and place the front panel to close the boiler
- Switch on the boiler (power supply)

The first message that the display shows is **E55/E53** (not calibrated/setting pcb);
proceed as follows before calibrating the boiler.

PCB Configuration

1) Press together for about 6 seconds the + and − buttons, the display shows "**P01**" alternating with its value **(00)**;

2) Press either + or − button to scroll through the parameters list to parameter **P02** and check the value is in accordance to **table 1:**

Table1

P02	Gas type
0	Natural gas
1	LPG

3) Press the i/P button to edit the selected parameter (parameter blinks);

4) Press either + or − button to modify the parameter value;

5) Press the i/P button to save the parameter value;

6) Press either + or − button to scroll through the parameters list to parameter **P03** and set the value in accordance to **table 2:**

Table 2

P03	Hydraulic System
0	Instantaneous combi
1	Micro tank on CH (MAX)
3	Instantaneous preheat
5	External tank
6	Integrated tank
8	Ch only
10	solar

7) To change the value follow the same sequence from point **3)** to point **5)**;

Table 3

8) Press either  or  button to scroll through the parameter list to parameter **P22**;

9) Press the  button to edit the selected parameter and set **P22 to 22;**

10) Press the  button to save the parameter value;

11) Press either  or  button to scroll through the parameter list until parameter **P73;**

12) Press the  button to edit the selected parameter;

13) Set the power percentage of the boiler (see **table 4**);
(the power value is printed on the serial number plate)

Table 4

P73	Power (kW) (Central heating – Domestic Hot water)	P13 (%Central Heating)	P14 (%Domestic Hot water)
3	**33/40 (SS)**	80	100
10	**33 (SS)**	100	100

SS = Stainless steel exchanger

14) Press either  or  button to modify the parameter value;

15) Press the  button to save the parameter value;

16) Press the  button to exit.

After the setting of the boiler it is possible to proceed with the calibration function.

The verification of the CO2 level must be done with a calibrated combustion analyzer.

COMBUSTION ADJUSTMENT FUNCTION (304)

(In the event the CO2 value is out of range as describe in the manual section 12.4 Combustion adjustment function).

To enable the function follow the sequence below:

- **a)** press together for about 6 seconds the  and  ;
- **b)** when the function is active the display shows '**On'** (2 seconds) and the code **304** with the power of the boiler in %**;**
- **c)** after the switch on of the burner the boiler goes at maximum power in DHW (100);
- **d)** to adjust the CO2 level press the  button;
- **e)** the display shows '00' and the code 304 (the flame symbol blinks);
- **f)** press either  or  to increase or decrease the CO2 value)from +3 to – 3);
- **g)** press  button to store the new value; the display will show again 100;
- **h)** for the ignition power press  button and follow from the point d); same procedure for the minimum power;
- **i)** to esc from the function press together for about 6 seconds the  and  .

MANUAL CONTROL FUNCTION (301)

It is possible to enable a special function 301 that permits to work the boiler at a fixed set point.

By pressing both  and  buttons together for 6 seconds the display will show 'On' and '301'.

By pressing either  or  it is possible to change the set point of the boiler step by step (1°C) from maximum to minimum.

The function lasts 30 minutes from the last time a button is pressed or you can exit this function by pressing the  and  buttons at least 6 seconds.

DE-AERATION FUNCTION (312)

This function is used to facilitate the elimination of air inside the heating circuit when the boiler is first installed or after maintenance when the water is drained from the primary circuit.

To enable the de-aeration function press buttons  together for 6 seconds

When the function is active, **On** appears on the display for a few seconds, followed by 312
The electronic board will activate the pump on/off cycle for 10 minutes. The function will automatically stop at the end of the cycle.

To manually exit this function, press  together for 6 second.

REPLACEMENT PARTS

If a new:

- Exchanger
- gas valve
- gas nozzle
- fan
- Burner
- Ionization electrode

The **Automatic sequence of the Calibration function** is needed. After that check the combustion and adjust the CO2 value with the CO2 adjustment function.

NOTE: It is recommended, whenever you perform an operation, to check the integrity of the sensing electrode; in case of deterioration, replace it.

NOTE:
If the Calibration function doesn't complete the cycle (the function remains at 100% for more than 10-12 minutes) press ⏻/R button to exit and set the parameter (Maximum fan speed) P71 to P71 - 15 and perform again the function.
See section **Parameters setting** in the installation manual to change the parameter.
Example:
If P71 = 200 set P71 = 185
If the Calibration function doesn't complete the cycle again replace the fan and re perform the function with the last setting of P71 parameter.

PRESSURE TABLE

Power	P73	Gas type	P Mix [Pascal] ± 10%
33 kW	**10**	NG	480
		LPG	420
32/40 kW	**3**	NG	600
		LPG	600

The value of P mix is tested with:

- **1 m of flue duct (coaxial and separated)**
- **at max heat input (DHW power)**
- **door on**
- **< 1000m msl**

These values are indicative, it is necessary to consider the tolerances of the components (i.e. the fan), the length of the flue duct and the calibration of the manometer. The measurement is used to understand if there is an obstruction in the system or in the exchanger.