



*Marathon International*

# **BAXI**

## **Luna 3 Comfort Troubleshooting Guide**

**June 2008**



For Technical Assistance Call: (800)461-4657

**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.

Marathon International 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 Marathon International for further instructions.

## Resetting The Boiler


There are two types of errors that can be found on the controller:  
*Fault* and *Block*.

### **Fault:**

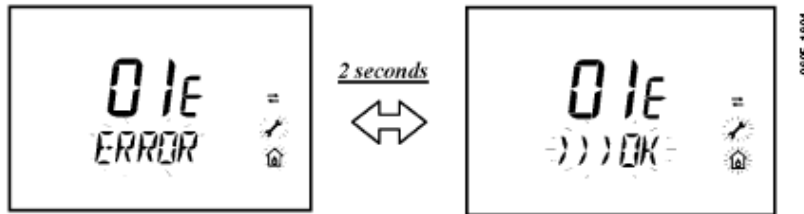
If a fault occurs, the display shows  symbols flashing with the writing <ERROR>. The fault is identified by the error code followed by the letter “E” and is not resettable unless the problem is corrected.



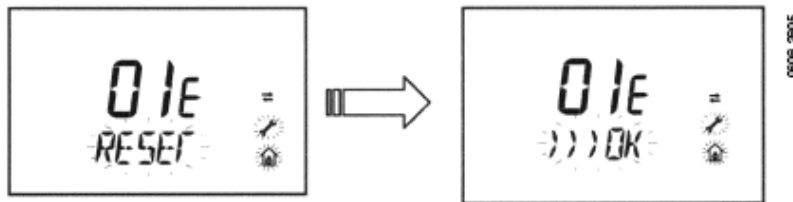
### **Block:**

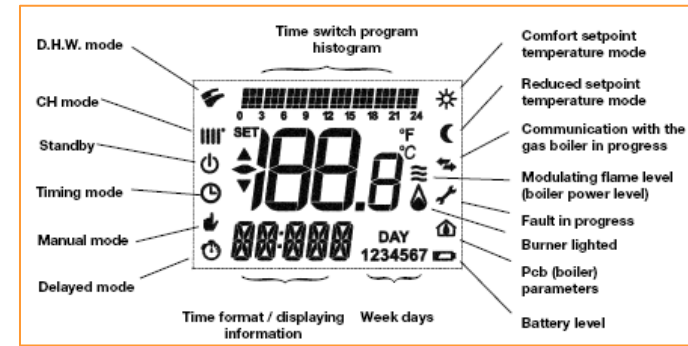
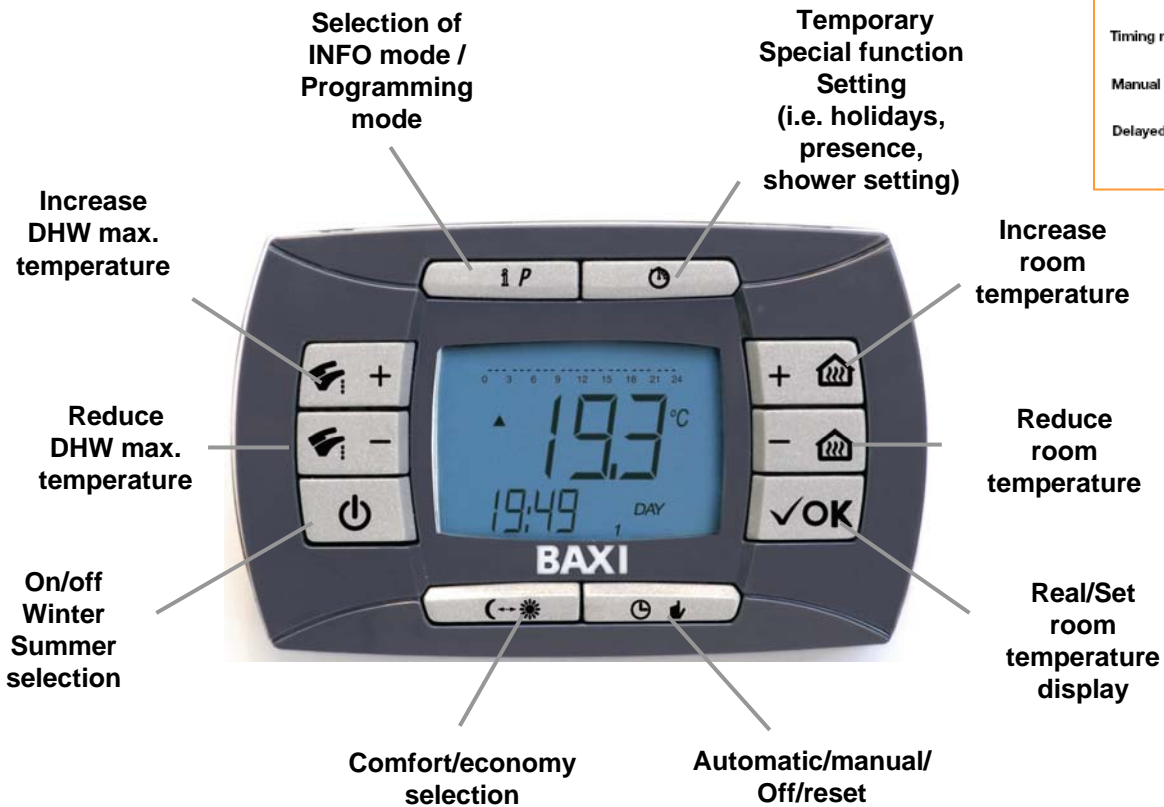
If a block occurs, the display shows the  symbols flashing together with the <ERROR> and <>>>OK> symbols alternating.

The block fault is identified by an error code (see the table below) followed by the letter “E”.



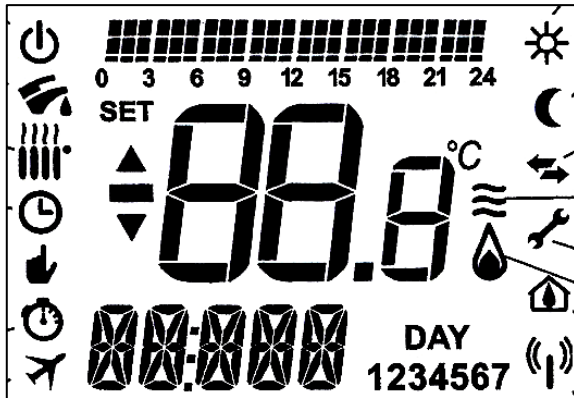
Press the **OK** button on the controller to reset the boiler. The display shows the <RESET> writing followed by the >>>OK writing.





These buttons operate accordingly when in the standard operation mode. The buttons may have different functions depending on operation, and the programming mode.

# CONTROLLER FUNCTIONS



## Types of Functions


- Normal functioning (RUN)  
This level is what appears on the controller during normal operation.
- User programming (PROGR)  
This level allows the user to set the clock, the date, temperature setpoints and time programs.
- Advanced information (INFO)  
This level allows the installer to set a group of advanced parameters and obtain a sequence of advanced information on the system functioning.

The programming functions operate as follows:


1. To change from **RUN** to **PROGR** shortly press the **IP** button (on the display you should see the running inscription <**PROGR**>) for two seconds then the time will appear.
2. To change from **RUN** to **INFO** press the **IP** button for 3 seconds (you should see the running inscription <**INFO**>) appear.
3. To return from **PROGR** or **INFO** to **RUN** shortly press the **IP** button (you will see the running inscription <**RUN**>) for two seconds and the screen will go back to normal.

## INFO MODE AND ADVANCED SETTINGS


To enter the Information and Advanced Setting modes it is necessary to press the **IP** button for at least 3 seconds; the running words “**INFO**” should appear.

Once the running words appear, press the **OK** button to scroll through the parameters; when the big numbers are blinking it is possible to modify the value using buttons +/-  .

### HEATING CIRCUIT

- “CH SP” Maximum setpoint heating circuit, setting value with buttons +/-   
Notice: by pushing the comfort button it is possible to change the temp. value from °C to °F.
- “EXT°c” External temperature (with external connecting probe).
- “CH O>” Temperature water heating inlet pipe.
- “CH S^” Set-point water heating circuit.
- “CH MX” Maximum setpoint heating circuit (max. setting value).
- “CH MN” Minimum setpoint heating circuit (min. setting value).

### DHW CIRCUIT

- “HW O>” DHW inlet or storage tank temperature.
- “HW S^” Set-point water sanitary inlet. Value set up with buttons +/- 
- “HW MX” Maximum setpoint sanitary circuit (max. setting value)
- “HW Mn” Minimum setpoint sanitary circuit (min. setting value)




## ADVANCED INFORMATION

- “PWR %” Power level/flame modulation (in %).
- “P BAR” Water pressure heating circuit (in bar).
- “F I/M” Water flow outlet sanitary circuit (in liters/min).





## Advanced Functions

To setting the boiler’s parameters:

1. Press the **IP** button for at least 3 seconds
2. Hold the  button and press the   button

When the function is active on the display the **F01** will appear and the value of the selected parameter.

3. Use +/-  for scrolling through the parameters;
4. Use +/-  for changing parameter values;
5. The new value is automatically saved after 3 seconds;
6. Press the **IP** button to exit.

Parameter Number	Description	Default Value	
		310 Fi	1.310 Fi
1	Type of Boiler 10= Sealed Chamber 20= Atmospheric Chamber	10	
2	Type of Gas 00 = Natural Gas 01 = LPG	0	
3	Hydraulic System 00 = Instantaneous Appliance 05 = Appliance with External Water Tank 08 = Heating Only Appliance	0	8
4	Programmable Relay 1 Setting 2 = Zone System (See Service Instructions)	2	
5	Programmable Realy 2 Setting 13 = Cool Function (See Service Instructions)	4	
6	External Sensor Programmable Input Setting (See Service Instructions)	0	
7 to 9	Manufacturer Information	0	
10	Controller Installation 00 = Wall Mounted 01 = Not Used 02 =Boiler Front Panel Mounted	0	
11 to 12	Manufacturer Information	0	
13	CH max. Heating Output (0-100%)	100	



Parameter Number	Description	Default Value	
		310 Fi	1.310 Fi
14	D.H.W. max. Heating Output (0-100%)	100	
15	CH min. Heating Output (0-100%)	0	
16	Maximum Temperature Setpoint Setting 00 = 85°C 01 = 45°C	0	
17	Pump Overrun Time 01 - 240 minutes	3	
18	Minimum Burner Pause Time (01-10 minutes( - 00 = 10 seconds	3	
19	Manufacturer Information	7	
20	Manufacturer Information	0	
21	Anti-Legionella Function 00 = Disabled 01 = Enabled	0	
22	Manufacturer Information	0	
23	Maximum D.H.W. Setpoint	60	
24	Manufacturer Information	35	
25	Lack of Water Safety Device	0	
26 to 29	Manufactuerer Information (Read Only Parameters	--	
30	Manufacturer Information	10	
31	Manufacturer Information	30	
32 to 41	Diagnostics (See Service Instructions)	--	

## Anomalies

The electronic PCB for the LUNA 3 Comfort is able to memorize the last 10 anomalies which have occurred.

Every anomaly has a counter which increases only if the same anomaly is consecutive; the same mistake non-consecutively is recognized as new.

To see all the information of every single anomaly you have, go to the Advanced Functions and run down the list of parameters to F32.

Parameters F32 to F38 refer to volatile anomalies which means mistakes with no necessity to Reset (for example DHW probe mistake); parameters from F39 to F41 refer to anomalies that need to be Reset (e.g. safety thermostat).

<b>Mistakes without reset</b>	<b>F32</b>
	<b>F33</b>
	<b>F34</b>
	<b>F35</b>
	<b>F36</b>
	<b>F37</b>
	<b>F38</b>
<b>Mistakes with reset</b>	<b>F39</b>
	<b>F40</b>
	<b>F41</b>

By using the **OK** button at each of these parameters you can read:

1. ANOMALY CONSECUTIVE NUMBER (F32 is the last one that occurred so it has a 00 value)
2. ANOMALY CODE (xxE – for example 06E, DHW NTC failure)
3. CONSECUTIVE EVENTS FOR THE SAME ANOMALY
4. TIME (days) PASSED FROM THE SIGNALLING (00 means “today”)
5. SYSTEM STATUS
6. SYSTEM PHASE
7. CENTRAL HEATING DELIVERY TEMPERATURE WHEN THE ANOMALY OCCURRED

By using this information you can keep a **SERVICE CHART** for the boiler.

## Anomalies diagnostic

**The system condition** (STATUS) identifies the working method in which the boiler is at the moment of the anomaly:

- 00 Stand-by
- 01 Sanitary active
- 02 Calibration function
- 03 Heating active
- 04 Pre-heating active
- 05 Anti-freezing heating
- 06 Anti-freezing DHW
- 07 Post-circulation
- 08 Circulation for over temperature

**The system phase** identifies in which particular function the boiler is at the moment of the anomaly:

- 00 Stand-by
- 01 Pre-ventilation
- 03 Ventilation between first and second ignition attempt
- 04 First ignition attempt
- 05 Active operating
- 06 Stoppage
- 08 Second ignition attempt
- 11 Ventilation between second and third ignition attempt
- 14 Third ignition attempt
- 15 Post-ventilation
- 16 Ventilation for over temperature

Error Code	Description	Solution
01E	Burner Lockout	<p>No Spark:</p> <ul style="list-style-type: none"> <li>Check ground and polarity back to the circuit breaker</li> <li>Ensure the boiler is on a dedicated circuit</li> <li>Check for 120 V going to the spark generator</li> <li>If there is voltage to the spark generator change the spark generator</li> <li>If there is no voltage to the spark generator change the main control board</li> </ul> <p>No Flame:</p> <ul style="list-style-type: none"> <li>Ensure that all gas shutoffs are open and that adequate working gas pressure is coming to the unit. 7 in. w.c. for NG and 11 in. w.c. for LP</li> </ul> <p><b>Note:</b> These pressures must be maintained while the unit is operating</p> <ul style="list-style-type: none"> <li>Check for 120 V going to coils 1 and 2 on the gas valve</li> <li>If there is voltage to the gas valve replace the gas valve</li> <li>If there is no voltage to the gas valve replace the main control board</li> </ul> <p>Flame Sensor is not sensing</p> <ul style="list-style-type: none"> <li>Check polarity and ground from the boiler back to the circuit breaker</li> <li>Check for 3-5 micro amps going to the board</li> <li>If you do not have 3-5 micro amps try cleaning the flame sensor</li> <li><b>Note:</b> Do not clean the flame sensor using sandpaper as it may damage the protective coating.</li> </ul> <p>Flame Sensor is Dirty</p> <ul style="list-style-type: none"> <li>Check your venting to ensure you are not recycling products of combustion</li> </ul> <p>Make sure you have the proper orifices in the unit and the controller is set to the correct type of gas.</p> <p>Weak Spark</p> <ul style="list-style-type: none"> <li>Make sure you have 3-5 sparks per second and the boiler is grounded</li> <li>Make sure the spark generator ground is fastened tightly to the mounting bracket</li> <li>If a weak spark persists follow the procedure outlined in the "No Spark" section</li> </ul>

Error Code	Description	Solution
02E	Highlimit Safety Thermostat	<p>Check pump to make sure it is running and not ceased.            Check for restrictions            Make sure that all air is purged from the system            Take an ohm reading on the high limit sensor (0Ω indicates the sensor is closed, OL indicates the sensor is open)</p> <p>If an E110 error code persists change the high limit sensor.</p>
03E	Fan/ Flue Fault	<p>Ensure the venting is within the maximum venting length requirements            Check for obstructions in the venting and termination            Check gas pressure on the inlet test port of the gas valve and make certain there is less than 14" w.c.            Check for 120 V going to the fan            If there is 120V going to the fan and it does not turn on, replace the fan.            If there is no voltage to the fan replace the main control board            Check the flue venturi for any obstructions or melting            Ensure that there are no loose wires and that the pressure switch is opening and closing properly            Check the silicone tubes coming from the air pressure switch for kinks, melting and holes, make sure that the low pressure opening at the back of the unit is not blocked.</p>
05E	Central Heating NTC Sensor Fault	<p>Take an ohm reading of the CH NTC sensor using chart A. If the sensor is out of calibration, replace the sensor. If the sensor is working properly, replace the main control board.</p>
06E	Domestic Hot Water Fault NTC Sensor Fault	<p>Take an ohm reading of the DHW NTC sensor. If the NTC sensor is out of calibration replace the faulty sensor.            Check for a resistor in terminals 5 and 6 on the M2 connector (Only for heating only boilers)            If utilizing an indirect tank sensor, take an ohm reading using chart C. If the sensor is faulty replace it. If the sensor is working ensure function F03 is set to 08. (For heating only models only)            If problem persists replace the main control board  <b>Note:</b> The DHW NTC sensor is in a wet well, shutoff the cold water inlet and open a hot water tap before replacing the sensor.</p>

Error Code	Description	Solution
10E	Low Water Pressure	<p>Ensure all air is purged from the system and all shutoff valves are open</p> <p>Check boiler and system for leaks</p> <p>Ensure the pressure in the expansion tank is 11.6 psi</p> <p>Fill the system between 1 and 1.5 bar on the pressure gauge.</p> <p>If an 10E error code persists jump the leads on the low water cutoff. If the boiler fires up change the low water cutoff switch.</p> <p><b>Note:</b> If the expansion tank is low on pressure pump it back up to 11.6 psi. If the expansion tank produces water at the Schrader valve change the expansion tank.</p>
11E	Outdoor Temperature Sensor Fault	<p>Disconnect the outdoor temperature sensor and take an ohm reading using chart B. If the sensor is out of calibration replace it.</p> <p>If the Sensor is working properly replace the main control board.</p>
25E	Boiler Max Temperature Exceeded	<p>Check the pump to ensure it is not ceased</p> <p>Check for restrictions</p>
98E	Gas Valve Contact Relay/Internal Error	<p>Ensure all air is purged from the system and all shutoff valves are open</p> <p>Ensure no water got on or into the gas valve</p> <p>If error code persists check for 120 V going to the gas valve coils, if there is 120 V going to both coils replace the gas valve. If there is not 120 V going to the gas valve replace the main control board</p>
99E	Control Board Contact Relay. Internal Error	<p>Ensure that the boiler is operating on a dedicated circuit and is properly grounded</p> <p>Check the polarity</p> <p>Disconnect all external controls and connect them back up one by one. If the error code comes back while connecting one of the controls check for faulty wiring and proper grounding of the control.</p> <p>Check the grounds on the internal pump, gas valve and fan</p> <p>Check for water on the board</p>
No Code	DHW is not hot enough	<p>Make sure the CH water is going through the plate heat exchanger and not into the CH loop</p> <p>If it is going through the CH loop replace the paddles inside the diverter valve and clean the diverter valve</p> <p>Clean the DHW plate heat exchanger</p> <p>Check the DHW NTC sensor</p> <p>Check your high fire gas setting using chart D</p> <p>Ensure you have adequate incoming gas pressures</p>

Error Code	Description	Solution
No Code	Boiler Short Cycles/ Fluctuating Hot Water	Check your low fire gas setting using chart D  Check to see if the modulating pin is broken Make sure your heat load is adequate for the boiler Make sure your boiler is running on the proper type of gas.
No Code	Boiler makes a Squealing Noise	Check that there is no more than 25% of the system volume of glycol in the system Clean the diverter valve
No Code	Boiler makes a banging noises	Ensure there is no air in the system Make sure the pump is moving Make sure there is no restrictions

**Chart A NTC Sensor**

Temperature vs. Resistance Thermistor @ 25°C		
°F	°C	Resistance (Ω)
Open		Open Loop
32	0	32,630
41	5	25,380
50	10	19,890
59	15	15,710
68	20	12,490
77	25	10,000
86	30	8,057
95	35	6,531
104	40	5,326
113	45	4,368
122	50	3,601
131	55	2,985
140	60	2,487
149	65	2,082
158	70	1,751
176	75	1,255
194	80	917
212	85	680

**Chart B Outdoor Temperature Sensor**

Temperature vs. Resistance Thermistor @ 25°C		
°F	°C	Resistance (Ω)
Open		Open Loop
32	0	32,505
41	5	25,308
50	10	19,854
59	15	15,689
68	20	12,483
77	25	10,000
86	30	8,060
95	35	6,537
104	40	5,332
113	45	4,374
122	50	3,608
131	55	2,991
140	60	2,492
149	65	2,086
158	70	1,754
176	75	1,481
194	80	1,257
212	85	1,070

**Chart C Indirect Tank Sensor**

Temperature vs. Resistance Thermistor @ 25°C		
°F	°C	Resistance (Ω)
Open		Open Loop
32	0	27,279
41	5	22,069
50	10	17,959
59	15	14,694
68	20	12,090
77	25	10,000
86	30	8,313
95	35	6,944
104	40	5,828
113	45	4,913
122	50	4,161
131	55	3,538
140	60	3,021
149	65	2,589
158	70	2,229
176	75	1,925
194	80	1,669
212	85	1,451

**Chart D Gas Pressures**

	High Fire	Low Fire
Natural Gas	5.6" w.c.	0.7" w.c.
Propane	9.8" w.c.	1.3" w.c.

**Warning:** The modulating pin should only be turned a quarter turn at a time to avoid damage. Avoid using magnetic screwdrivers on the modulating pin. In the event your gas pressures are not increasing when you are adjusting the modulating pin DO NOT continue to adjust the gas pressure as your incoming gas may be to low.