

# ***User's Instructions***

## **Eco**

**Wall Mounted, Fan Assisted, Room Sealed,  
Gas Fired, High Efficiency Condensing Combination Boiler**

For Technical help or for Service call ...  
**ALPHA HELPLINE Tel: 0844 871 8764**  
website: [www.alpha-innovation.co.uk](http://www.alpha-innovation.co.uk)

***Alpha***  
HEATING INNOVATION

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Alpha Eco

G.C. No. 47 532 59



**For use with Natural Gas only**  
**Leave these instructions with the User**

Please read these instructions carefully before operating your boiler.

## 1 INTRODUCTION

The Eco high efficiency condensing boiler incorporates the latest technology in boiler design. With improved burner efficiency and reduced electrical consumption together with high quality and reliability.

The boiler output will automatically adjust according to the requirements of the system.

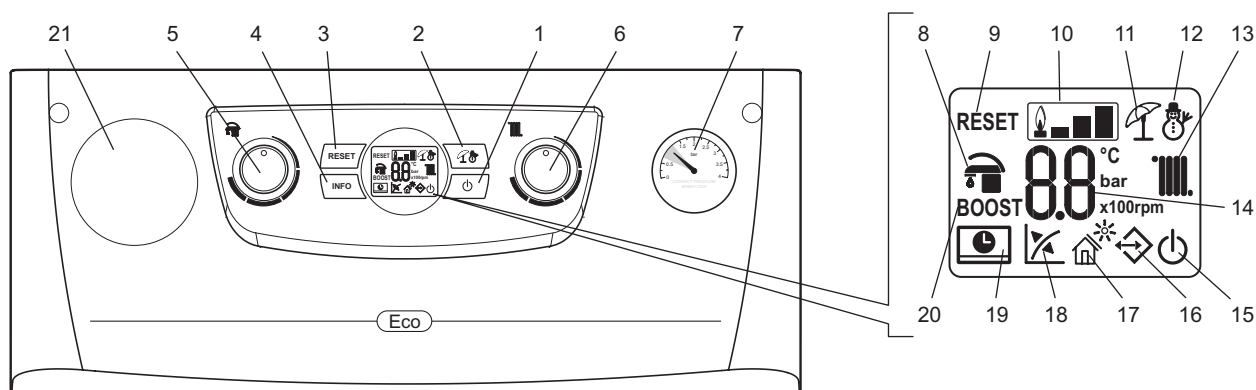
The Eco is designed to work with most central heating controls however we recommend the Alpha Comfort standard controls or the enhanced Alpha Climatic boiler energy manager further improving the system efficiency by varying the system temperature depending on the room temperature and heat losses.

In addition the Eco features optional connections for an outside sensor to enable the boilers built in weather compensation feature.

The boilers will provide central heating when required during the on times as set according to the controls fitted. Hot water will always take priority over the central heating whenever a hot tap is opened.

## 2 OPERATING THE BOILER

The boiler controls are located on the control panel.



- |   |   |  |
|---|---|--|
| 1 On-Off/Standby button                             | 9 Boiler locked does not require reset via "RESET" button | 16 Presence of external connected devices                        |
| 2 Summer/Winter button                              | 10 Flame present symbol and relative power scale          | 17 Solar function active   |
| 3 Reset button                                      | 11 Operating in summer mode                               | 18 Functioning with external temperature probe active (optional) |
| 4 Information button                                | 12 Operating in winter mode                               | 19 Boiler connected to remote control (optional)                 |
| 5 Domestic hot water temperature selector switch    | 13 Central heating mode active                            | 20 Not used on this model  |
| 6 Central heating water temperature selector switch | 14 Temperature indicator, boiler info and error codes     | 21 Optional boiler controls (if fitted)                          |
| 7 Heating system pressure gauge                     | 15 Boiler in Stand-by mode                                |  |
| 8 DHW mode active                                   |   |  |

**Fig. 1**

Make sure the heating system is filled and the needle on the pressure gauge (item 7 in Fig. 1) is in the green band. If incorrect refer to Section 5.

Switch the boiler on at the mains supply socket switch. The boiler will automatically go through a system purging operation for 8 minutes; this is indicated by a count down on the display starting from 96. During this operation the pump will turn on and off to help remove any air that may be trapped in the heating system. If the boiler has already been commissioned by the installer then this operation can be terminated by pressing the reset button (item 3 in Fig. 1).

**Note:** It is important to allow this purging operation to function when the boiler has been initially installed to remove all the air from the system.

After this purging operation the boiler will be in 'Standby' or 'On' mode.

By pressing the On-Off button (item 1 in Fig. 1) the Standby or On mode can be selected, or press and hold the On-Off button for eight seconds to turn the boiler off.

**Standby** - In this mode the boiler will not provide hot water or central heating, but frost protection and pump circulation features are still active.

**Off** - In this mode there is electrical power to the boiler but the boiler will not function in any condition.

**On** - In this mode the boiler can be switched between 'Summer' or 'Winter' settings by pressing the Summer/Winter button (item 2 in Fig. 1).

**Summer setting** - The boiler will only provide hot water when a tap is turned on and the central heating will not activate even if requested by external controls (frost protection and pump cycle are still active).


**Winter setting** - The boiler will operate in both heating and hot water. The heating will activate depending on the time and temperature from any heating controls fitted. Hot water will always take priority over heating when a hot outlet tap is opened.

### 3 HEATING AND HOT WATER TEMPERATURE

The temperature of the hot water to the taps can be adjusted by turning the hot water selector switch (item 5 in Fig. 1) to the required value shown on the display in °C.

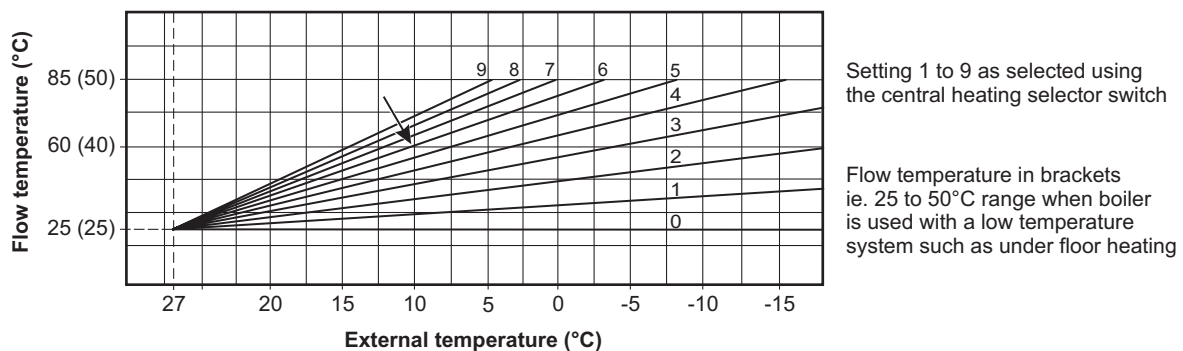
When a tap is opened the display will indicate the temperature of water in the boiler heating the tap water and not the actual water temperature to the tap.

The temperature of the central heating water can be adjusted by turning the central heating selector switch (item 6 in Fig. 1). When the heating is on the temperature of the water leaving the boiler to the radiators will be displayed.

If an external weather compensation probe is fitted, indicated by the  symbol (item 18 in Fig. 1) in the display, it will automatically vary the temperature of the water in the radiators and on mild day the radiators will not feel as hot as on a cold day, this is normal and not a fault with the boiler or heating circuit. The room temperature will still be maintained as set by the room thermostat.

When an external weather probe is fitted, the central heating selector switch (item 6 in Fig. 1) will no longer adjust the flow temperature in °C, instead the display will show a scale of 1 to 9. Each number corresponds to a line on the graph in Fig 2 i.e. line 6 will give a flow temperature of 60°C when the external temperature is 10°C.

**Note:** This is the temperature of the water supplied to the radiators and not the desired room temperature. The time and temperature will still be maintained according to the setting of the room thermostat.



**Fig. 2 - External weather compensation probe fitted**

### 4 FILL AND PRESSURISE THE SYSTEM

Your boiler should have a filling loop fitted by the installer located in the pipework below the boiler.

**Do not attempt to fill or pressurise the system while the system is hot - wait for it to cool.**

The filling loop on the underside or underneath the boiler will have two tap connections at either end of the filling loop.

These taps should normally be in the closed position 90° to the tap housing.

To fill or pressurise the system open one tap fully by turning it 90° anticlockwise in line with the tap housing. The second tap should be opened a quarter of a turn and the water will start to refill the system (water should be heard filling the system). You should see the pressure gauge (item 7 in Fig. 1) rise back up into the green area on the pressure gauge between 1 bar and 1.5 bar pressure.

Once the pressure gauge is in the green area turn the taps back to the off position and the water will stop filling the system.

If you happen to fill the system too much and the pressure gauge is over the green area, just bleed water from a radiator until the pressure on the gauge goes down into the green area.

## 5 INFORMATION MENU

By pressing the info button (item 4 in Fig. 1) the information menu is accessed this will then show the information according to the table below.

| Info Menu (d - prefix) | Information  | Units Shown      |
|------------------------|--|------------------|
| d0                     | FlowSmart cylinder temperature adjustment (45 - 78°C)  | °C               |
| d1                     | Flame signal   | µA x 10 (approx) |
| d2                     | Central heating water temperature leaving the boiler   | °C               |
| d3                     | Domestic hot water temperature leaving the boiler  | °C               |
| d4                     | Central heating set point temperature  | °C               |
| d5                     | Domestic hot water set point temperature   | °C               |
| d6                     | External weather compensation probe temperature (value flashes if negative)                                    | °C               |
| d7                     | Mains inlet temperature or FlowSmart cylinder temperature (if sensor fitted)                                   | °C               |
| d8                     | Not used   |                  |
| d9                     | Fault history - by rotating the CH knob (item 6 in Fig. 1) in this menu the last five faults will be displayed | Error code       |

## 6 FROST PROTECTION

The boiler has a built in frost protection function to protect the boiler (only) from freezing. If water within the boiler falls below 4°C the boiler will fire in heating mode and raise the temperature of the heating water (in the boiler only) to 30°C.

For this function to be active the gas and electricity supplies to the boiler must be turned on and the boiler be in either 'Standby' or 'On' mode.

Further protection for the mains water supply and heating circuit must be provided separately.

If Alpha external controls are fitted, a frost protection setting is incorporated into the room thermostat activating the central heating when the temperature falls below 5°C.

## 7 CONDENSATE DRAINAGE

High efficiency (condensing) boilers remove more useful heat from the combustion gases, resulting in additional water vapour which is collected within the boiler (as condensate) and run to a suitable drainage point via the condensate drainage pipe.

If the condensate drain pipe runs outside it should be fitted with increased diameter pipe and be suitably lagged to reduce the risk from freezing.

In situations where there are likely to be extremes of temperature or wind-chill the use of a proprietary trace-heating system for external condensate drainage pipework, incorporating an external frost thermostat, should be considered.

## 8 OPERATIONAL FAULTS

The Eco boilers are fitted with a fault code display feature.

If a fault occurs a fault code will be displayed in the LCD display screen (item 14 in Fig. 1), indicated with an alternating flashing E followed by the fault code. A list of fault codes are given in the table below.

In the event of a fault occurring firstly check that the gas and electricity supplies are on and that any external controls fitted are set and working correctly.

Press the reset button (item 3 in Fig. 1) on the control panel to restart the boiler if the fault occurs again, make a note of the fault code and contact your installer or Alpha technical Helpline for further advice.

| Error code | Fault                                  | Fault description  | Possible causes  |
|------------|--|--|--|
| 01         | Ignition failure                       | Flame not detected during ignition sequence                | Gas supply<br>Check pressure tubes<br>Ignition electrode gap<br>Flame sensor electrode gap<br>Ignition generator or lead<br>Flame sensor electrode lead<br>Gas valve setting<br>Gas valve<br>PCB |
| 02         | Overheat boiler lock out               | Overheat thermostat or thermal fuse has operated           | Pump or flow problem<br>Blocked heat exchanger<br>Air in heat exchanger<br>Overheat thermostat<br>Thermal fuse (if open circuit then replace primary heat exchanger)                             |
| 03         | High flue thermostat temperature       | Flue thermostat intervention (flue temperature over 113°C) | Blocked or restricted primary flow<br>Heat exchanger air flow blocked<br>Flue restriction<br>Flue sensor fault   |
| 04         | Gas valve electrical connection fault  | Gas valve wiring circuit fault detected                    | Gas valve lead connection fault<br>Faulty gas valve<br>Faulty PCB  |
| 05         | Heating flow sensor fault              | Incorrect flow sensor resistance value                     | Flow sensor wire connections<br>Flow sensor faulty   |
| 06         | DHW sensor fault                       | DHW sensor resistance value is incorrect                   | DHW sensor wiring connection<br>DHW sensor faulty  |
| 08         | Maximum number of resets               | Maximum number of resets reached (5)                       | Refer to fault history codes (INFO menu d9)  |
| 10         | Primary system pressure low            | Primary pressure switch has operated                       | Check expansion vessel pressure (1 bar)<br>Leak in system<br>Expansion relief valve operated<br>Primary pressure switch  |
| 12         | Cylinder sensor fault (FlowSmart only) | Incorrect cylinder sensor resistance                       | Cylinder sensor wiring connections<br>Cylinder sensor faulty   |
| 15         | Internal wiring error                  | Incorrect wiring configuration detected                    | Check internal wiring connections to PCB<br>Combination boiler DHW sensor X4<br>System boiler link X14<br>Refer to wiring diagram  |
| 16         | Fan fault                              | Fan wiring fault or fan faulty                             | Check fan wiring connections<br>Fan fault<br>PCB fault   |

| <b>Error code</b> | <b>Fault</b>   | <b>Fault description</b>  | <b>Possible causes</b>  |
|-------------------|--|---|---|
| 20                | Flame sensing fault  | False flame detection<br>Flame detected but gas valve is not open   | Check flame sensing electrode and lead<br>PCB fault   |
| 24                | Control panel button fault                                   | Control panel button stuck in the on position   | Check for jammed control panel buttons<br>Check for jammed PCB buttons  |
| 25                | Overheat lock out  | Rapid temperature rise of flue sensor   | Air in heat exchanger<br>Blocked or restricted primary flow<br>Heat exchanger air flow blocked<br>Flue restriction<br>Flue sensor fault<br>Pump fault<br>Boiler or heating circuit valve closed |
| 27                | Insufficient primary flow                                    | Rapid temperature rise of primary sensor  | Blocked or restricted primary flow<br>Air in heat exchanger<br>Boiler or heating circuit valve closed<br>Pump fault<br>Primary flow sensor fault  |
| 29                | Flue sensor fault  | Flue sensor resistance out of range   | Check sensor wiring connection<br>Flue sensor faulty  |
| 31                | Loss of communication with external control (Alpha Climatic) | Loss of connection between the boiler and Alpha Climatic control unit   | Remote control or receiver connection wiring<br>Remote control or receiver  |
| 37                | Low supply voltage   | Insufficient supply voltage to operate boiler   | Check mains power supply  |
| 38                | Loss of flame rectification                                  | Flame detected but signal is lost. Ignition reattempts after fan purge  | Check flame sensing electrode and lead<br>Check for flue gas recirculation<br>Check/adjust the gas valve settings<br>Check/adjust the fan speed settings  |
| 43                | Loss of flame rectification                                  | Repeated loss of flame signal during operation (shown as E38 in the fault code history in the INFO menu)  | Check gas supply/working pressure<br>Check flame sensing electrode and lead<br>Check for flue gas recirculation<br>Check/adjust the gas valve settings<br>Check/adjust the fan speed settings   |
| 44                | Safety lock out  | The boiler has attempted to fire repeatedly for the maximum time limit  | Check external control (room thermostat) requests<br>Rapid on/off hot tap requests  |
| 46                | External sensor intervention                                 | No continuity of external sensor circuit  | Check external sensor and cable are not damaged or wet<br>Check continuity of external sensor and circuit<br>Check connection at X19 on PCB and sensor connecting block                         |
| 47                | Reduced burner output  | Flue thermostat has sensed high flue gas temperature (110°C) and reduced the burner output to prevent damage. If the temperature continues to rise the boiler will lock out and E03 will be displayed | Air in heat exchanger<br>Restricted primary flow<br>Heat exchanger air flow blocked<br>Flue restriction<br>Flue sensor fault<br>Pump fault  |
| 51                | Climatic RF communication fault                              | Error between the communication of the Climatic transmitter and boiler receiver   | Batteries require replacing<br>Distance between boiler and climatic control too great<br>Interference<br>Object blocking signal (metallic)  |

## 9 IMPORTANT NOTES

### 1. BOILER LOCATION

Always ensure the following clearances are available around the casing of the boiler:-

**Top:** (horizontal flue) 235 mm, **Top:** (vertical flue) 150 mm, **Bottom:** 150 mm, **Each side:** 5 mm, **Front:** 450 mm

Do not store any other articles in a cupboard containing the boiler and never place any clothing or combustible material on or near the boiler or flue pipe.

### 2. FLUE TERMINAL

The terminal on the outside wall must not be allowed to be obstructed. If it is damaged, in any way, turn the boiler off and contact your Service Engineer.

**Note:** The Eco boilers are high efficiency condensing boilers and when operating vapour will be emitted from the terminal. This is safe and quite normal.

### 3. MAINS FAILURE

In the event of an electrical supply failure the boiler will not operate. When the supply is restored, the boiler will return to normal operation. Remember to reset any controls, if fitted, when the supply is restored.

If the mains water supply fails, there will be no hot water from the taps. The boiler will continue to provide central heating.

### 4. ADDITIONAL BATHROOM FITTINGS

Any equipment such as mixing valves, showers, bidets etc. must be designed to operate at mains water pressure. Contact your plumbing merchant or installer for advice when considering purchasing such items.

### 5. CLEANING

Use only a damp cloth and mild detergent to clean the boiler outer casing. Do not use abrasive cleaners.

### 6. SERVICING

To maintain efficient and safe operation of your boiler, routine annual servicing is essential.

For advice on servicing contact:- The Alpha Helpline: 0844 871 8764.

### 7. GAS LEAK

If a fault or gas leak is suspected, turn off the gas supply. Do not touch any electrical switches, do not smoke and extinguish all naked flames. Contact your local Gas Region immediately on 0800 111 999.

### 8. ELECTRICAL SUPPLY

The boiler requires a 230/240 V ~ 50 Hz supply, fused at 3 A if a 13 A 3-pin plug is used or a 5 A fuse if any other type of plug is used.

#### To connect a plug:-

The colour of the wires in the mains lead of the boiler may not correspond with the coloured markings identifying the terminals in your plug. In this case proceed as follows:-

The wire coloured green and yellow must be connected to the terminal in the plug that is marked with the letter **E**, or by the earth symbol  $\equiv$ , or coloured green or green and yellow.

The blue wire must be connected to the terminal which is marked with either the letter **N** or coloured black.

The brown wire must be connected to the terminal which is marked with the letter **L** or coloured red.

**THE APPLIANCE MUST BE EARTHED.**

## 10 GAS SAFETY REGULATIONS

Current Gas Safety (Installation and Use) Regulations:-

It is the law that all gas appliances are installed and serviced by a competent person, i.e. Gas Safe registered personnel. Failure to install or service appliances correctly could lead to prosecution. It is in your interest and that of safety to ensure compliance with the law. The manufacturer's instructions must not be taken in any way as over-riding statutory obligations.

The Benchmark Checklist must be fully completed by the installer on installation of the boiler. The Benchmark Checklist is shown in back of the Installation and Servicing instructions. All Gas Safe registered installers carry a Gas Safe ID card and have a registration number. Both should be recorded in the Checklist. You can check your installer is Gas Safe registered by calling Gas Safe on 0800 408 5500.

## 11 OPTIONAL BOILER CONTROLS (if fitted)

There is a range of controls available from Alpha to operate your boiler. In addition to the items listed below the Eco boilers are compatible with most controls available on the market. However to get the most comfort and efficiency from your boiler we recommend the Alpha Climatic controls with enhanced remote boiler functions and efficiency control.

Please refer to the instructions provided with the controls for further information on their setting and use.

Available Alpha controls:

|   |                    |
|---|--------------------|
| 24hr mechanical heating clock (boiler mounted) .....                                      | Part No. 6.1000201 |
| 7 day digital heating clock (boiler mounted) .....  | Part No. 6.1000210 |
| Alpha Comfort 7 day wireless programmable room thermostat (boiler mounted receiver).....  | Part No. 3.022141  |
| Alpha Climatic wired programmable boiler energy manager (boiler mounted).....             | Part No. 3.022144  |
| Alpha Climatic wireless programmable boiler energy manager (boiler mounted receiver)..... | Part No. 3.022143  |
| External weather compensation probe.....  | Part No. 3.022383  |
| Optional boiler controlled condensate trace heating kit.....                              | Part No. 6.5500000 |

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HEATING INNOVATION

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*These instructions have been carefully prepared but we reserve the right to alter the specification at any time in the interest of product improvement.  
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