EHS
ELECTRIC HEATING SYSTEMS

FLEX HEAT ONLY ELECTRIC BOILER

INSTALLATION MANUAL

REV 1 2026

Contents

Welcome to the Flex Heat Only System Boiler

Congratulations on choosing the **EHS Flex heat only electric system boiler.** This unit is designed for maximum flexibility, acting as the "heat engine" for bespoke system designs. Because it lacks an internal pump or expansion vessel, its performance relies entirely on the quality of the system you build around it.

This manual will guide you through creating a robust, efficient, and long-lasting installation.

If you require any help or advice on any part of the system you are installing, please don't hesitate to get in touch with us either through our support pages or via our technical helpline Tel:+44 (0) 345 862 8699.

Section 1: Introduction

The EHS Flex Heat Only (HO) is a high-efficiency, range-rateable, electric flow boiler designed for central heating applications.

Unlike the "System" model, the HO version does not contain an internal pump or expansion vessel.

This makes it an ideal, compact solution for replacing older flow boilers or for use in large bespoke systems where external pumps and vessels are already present or required.

Please follow the instructions as they will assist you in obtaining the best, trouble free performance and most economical settings for your appliance.

ATTENTION: Only qualified engineers and approved service engineers are recommended for installing and servicing this product. Unqualified personnel and the use of nonstandard parts can be dangerous and will invalidate the manufacturer's warranty.

Please make sure you have performed all the necessary 'Essential Installer Checks' prior to opening the packaging, as we cannot take the product back if the packaging has been opened and the boiler has been put on the wall.

The installation must be performed in accordance with current IEE Wiring Regulations, Building Regulations, Water Fitting Regulations (England and Wales) or Water Bylaws (Scotland) and all relevant British standards.

It is very important that you have read and fully understood this manual before installation of the EHS Electric Boilers to ensure their long life. This instruction manual should be kept in a place close to the appliance for easy reference. Please read the whole manual before attempting installation and follow these installation instructions and operating instruction to ensure long life of this EHS Flex HO. These instructions must be conserved and given to any new user.

All EHS Electric Boilers are guaranteed from manufacturing defects for a full 5 years. To ensure that you are eligible for this guarantee you must register the boiler at www.ehs-heating.com within the time specified in the warranty terms and conditions. This can be found at the back of this manual and on the EHS website. The warranty relates to any manufacturing defects and covers the replacement of any faulty parts. The guarantee does not cover any damage or faults that are a consequence of poor installation or faults caused by leaks within the boiler. It is therefore very important that all connections are thoroughly checked by the installer prior to leaving it with the customer. All work that takes place under the guarantee must be agreed with EHS prior to commencing the installation.

This appliance must only be used and programmed by an authorised adult. It should not be used by children or anyone who has not read the installation manual. If in doubt, seek expert advice.

1.1 Health and Safety

At EHS we take every precaution to design and manufacture our products to meet all safety requirements, when installed and operated according to the correct procedures. All products are comprehensively examined and tested before despatch.

Under the Consumer Protection Act 1974 it is a requirement to provide information on substances harmful or hazardous to health (COSHH Regulations 1988)

Materials used in the manufacture of this appliance are non-hazardous and do not require any special precautions when fitting or servicing this appliance.

It is the responsibility of the user or engineer to use the correct Personal Protective Equipment and Clothing when installing or working on this appliance.

1.2 Installation Regulations

Installation of the boiler must comply with the following standards:

1. The local building regulations
2. UK building regulations
3. BS EN 12828 - Heating systems in buildings: Design for water-based heating systems.
4. BS EN 12831 - Heating systems in buildings: Method for calculation of the design heat load.
5. BS EN 14336 - Heating systems in buildings: Installation and commissioning of water-based heating systems.
6. BS7671 - Requirements for electrical installations. IEE Wiring Regulations. Seventeenth edition.
7. BS EN 7593 - Code of practice for treatment of water in heating systems

1.3 Essential installer checks to be made prior to installation

1. Carry out all heat loss calculations on the property and make sure that this boiler is suitable for the installation. EHS can assist with these calculations. Should you require this service please contact info@ehs-heating.com

   HEAT LOSS CALC DONE? ☐

2. Check the mains water pressure - The minimum desired heating system pressure is 1 bar (Max 3 bar), Check the mains water pressure is ok to charge a sealed system.

   MAINS WATER PRESSURE CHECK OK? ☐

3. Check that the power supply to the premises meets the minimum requirements of the unit being installed.

   PREMISES POWER SUPPLY SUFFICIENT? ☐

4. Carry out a voltage and load test to determine the correct sized cable and breaker is used.

   VOLTAGE AND LOAD TEST DONE? ☐ CABLE SIZE mm? ☐
   BREAKER (AMPS)? ☐

5. Check the central heating design is suitable for the application (Detailed recommendations are provided in BS EN 12828 and BS EN 6700.)
6. SYSTEM DESIGN COMPATIBLE WITH PART L OF THE BUILDING REGULATIONS ☐
7. When siting the boiler, consider the requirements for servicing the boiler (i.e. space around and in front of the boiler) and ensure that it is fitted in a location that cannot be accessed by unauthorised/unqualified people or children. ☐
8. Make sure that this boiler is not installed in a shower compartment or bathroom. ☐
9. The boiler must be installed in an upright position. ☐
10. Check that the boiler will be mounted on a suitable wall that can bare the weight of the boiler. ☐
11. Ensure that all fixing points are used when fixing the boiler to the wall. ☐
12. Please make sure you have performed all the necessary checks above prior to opening the packaging, as we cannot take the product back for a free return if the packaging has been opened.
13. Finally, you can unpack the boiler from its packaging.
14. PLEASE NOTE EHS ARE NOT RESPONSIBLE FOR ANY FAILURES SHOULD THE ABOVE TERMS NOT BE MET

1.4 Electric Boiler Schematics

1.4.1 EHS Flex 12KW Heat Only Boiler Single Phase (230V)

No.	Part	No.	Part	No.	Part
001	Main Circuit Board	006	Mains Knock outs	011	3 Amp Fused Supply
002	Flow Temp Sensor	007	0 Volt Thermostat Connection	012	Top Knockout
003	12kw Heat Exchanger	008	Paddle Flow Switch	013	Low Pressure Sensor
004	High Temp Cut Out	009	High Temp Thermostat	014	Front panel Display
005	Mains Terminal Block	010	Pump Terminal Block	015	¾" Male Flow & Return

Note: When ordering spares parts please quote Heat Only Flex -

Fig 1. Internal Image of Flex HO Boiler:

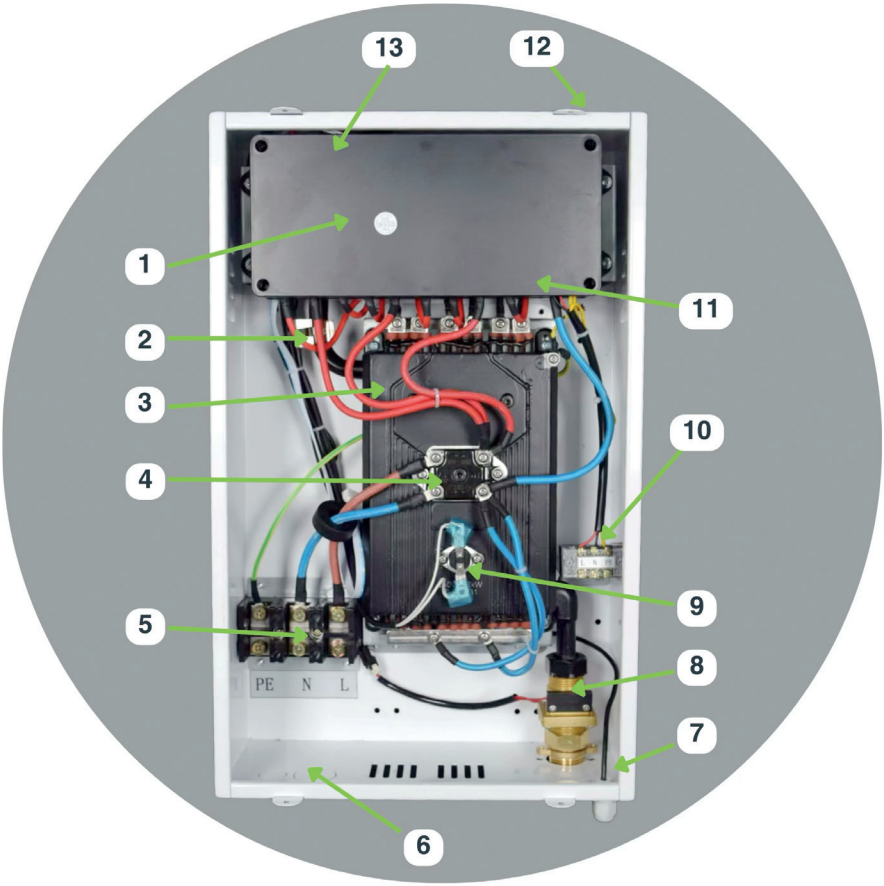
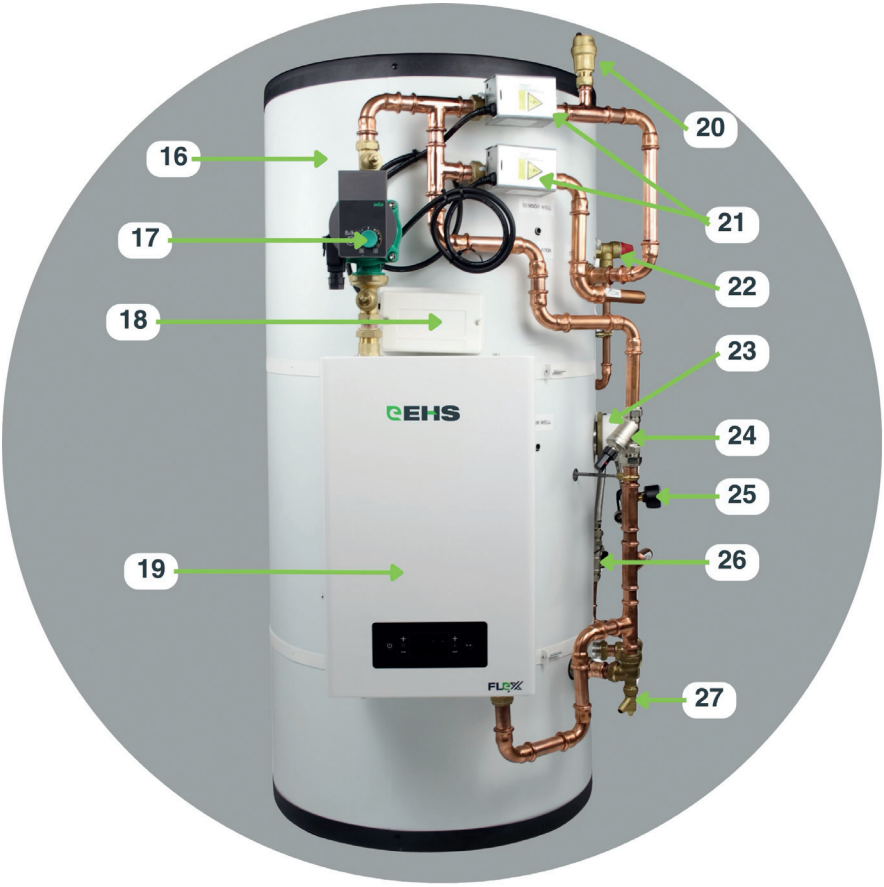


Fig 2. External Image of Flex HO Boiler:

Fig 3. EHS Flexstore Heat Only (230V) Boiler & Cylinder Pre-plumbed Package

(Available from our UK distributors and EHS, the Flexstore is the pre-plumbed cylinder and boiler package made for ease of installation. Note: The installer must hold a valid G3 Unvented Certificate or Hot Water Systems and Safety certificate to install and certify this unit.)

No.	Part	No.	Part	No.	Part
016	150/200L hot water Cylinder	021	Zone Valves	026	Filling Loop
017	Pump	022	3 Bar Blow off Valve	027	Drain
018	Wiring Centre	023	High Heat stat	***	Expansion Vessel HW (inc)
019	EHS Heat Only Boiler	024	Bypass Valve	***	Expansion Vessel Heating (inc)
020	Automatic Air Vent	025	Pressure gauge	***	Magnetic Filter (not Inc)



2. Designing the system

2.1 The Essential System Requirements for Heat Only Units

Since the HO model is a "bare" flow boiler, the following components are not optional—they are essential for the boiler to work well and safely.

- **External Pump & Overrun:** You must wire your external pump directly to the boiler's Pump terminal block (No 10 on page 7). This allows the boiler to manage the pump and the "Pump Overrun," circulating water for 2–3 minutes after the heating elements switch off. Without this, residual heat can "cook" the elements and trip the thermal safety limit.
- **Automatic Bypass Valve (ABV):** Due to the requirement for 'pump over-run', when there is no demand for heat and the 2 port valves or TRV's (Thermostatic Radiator Valves) close down, there must be a safety circuit for the pump to keep supplying and cooling the heat exchanger. An ABV ensures that as pressure builds on the flow side of the system it opens up a path for the water to bypass the system and go straight back to the boiler, thus cooling the heat exchanger.
- **Flow & Return Connections.** Flow & Return connections are G 3/4" male thread. Use 2 x 3/4" female to 22mm pipe adapters along with 2 x full bore isolation valves to provide good system circulation. Care must be taken not to overtighten connections as this can twist and damage the internal pipework of the boiler (which is not covered under the warranty). An external **magnetic filter** must be fitted on the return pipework on all installations.
- **Drain Point:** A drain point should be fitted at the lowest point of the heating system. It is not acceptable to drain the boiler through a safety valve as debris can prevent the correct operation of the valve
- **Expansion & Safety:** A 3-bar Pressure Relief Valve (PRV) and a correctly sized expansion vessel should be installed for the heating side of the system. For most 2-3 bedroom homes, an 8L or 12L vessel is standard, but the installer must always calculate based on the total system water volume. Please also note that if fitting an unvented cylinder, that will also require a separate expansion vessel and pressure relief valve and be fitted according to G3 regulations.
- **Filling Loop and Pressure gauge:** Install filling loop from the cold mains to the heating system but make sure it has a pressure gauge so that you can see the pressure in the system. The boiler has it's own low level pressure gauge which will stop the boiler from working at 0.5 bar. Fill system to an ideal 1.5bar
- **Magnetic Filtration** Install a high-quality **Magnetic System Filter** on the return pipework. Electric elements are highly sensitive to "sludge" (magnetite). A filter is the single best way to prevent premature element failure and noisy operation.

- **Automatic Air Vent:** It is good practice to fit Automatic Air Vents (AAV) on a horizontal return pipe near to the boiler as well as any areas where there is a likelihood that air is going to be trapped in the heating system. If you find that your boiler is the highest point in the system, it is always wise to design the pipework so that you can flush air out of the boiler using the filling loop to fill the system and the drain to expel the air.

Note: Failing to install the boiler according to our instructions will negate any warranty

3. Siting & Installation

3.1 Choosing the Location

- **Wall Type:** The boiler must be mounted on a flat, non-combustible wall. If mounting on wood-framed walls, ensure a fire-rated backing board is used. It must also be strong enough to support the boiler when full (12kg).
- **Clearances:** Leave at least 150mm above and below the unit and 100mm to the sides.
- **Noise:** While electric boilers are near silent, external pumps and air in the pipework are not so we recommend you avoid mounting on bedroom walls where possible.
- **Out of reach of children.** The boiler should be fitted out of the reach of children or protected against people without the right skills and qualifications. If there is the possibility that the boiler could be opened without first isolating the electrical supply then you must install it in a fashion that prevents access to the boiler, such as a lockable cupboard.

3.2 Unpacking and Installing

1. Lift the boiler gently out of the box.
2. Box Contents
    - Electric Boiler
    - Cable Glands
    - Wall mounting guide
    - Labels and Instructions
    - Expanding Wall bolts.
3. Secure the wall hanging brackets to the wall with the 2 x Φ8mm expansion bolts into the top three holes
4. Hang the boiler from the top hanger before securing the boiler to the wall using standard fastenings at the bottom. Screw 2 x screws

4. Electrical Connections

All electricity connections to the boiler must be made by a fully qualified electrician. Improper electric connections made by unqualified people may cause the failure of critical components of the boiler and will invalidate the warranty.

DANGER! Electric Shock Risk

Make sure to isolate the main power supply before starting work inside the boiler. Secure the main energy supply to prevent from turning on while working on the boiler.

IMPORTANT NOTICE

UNDER NO CIRCUMSTANCES SHOULD THIS BOILER BE CONNECTED TO THE MAINS POWER WHILST THE BOILER IS DRY.

THE BOILER MUST BE FILLED WITH WATER AND PRESSURE TESTED PRIOR TO ELECTRICAL CONNECTION.

FAILURE TO DO SO WILL DAMAGE THE BOILER AND INVALIDATE THE WARRANTY

4.1 Electricity Connection Precautions

We recommend that a load check is carried out on the property when installing high power boilers.

All electrical connections must be made by a fully qualified electrician.

All wiring must be carried out in accordance with current IEE BS 7671 wiring regulations. The supply cable to the boiler should be of sufficient size to carry the load capacity required. We recommend a high temperature multi strand flexible cable like HO5 or HO7 standard cable be used inside the boiler. All fine strand flexible cables must be suitably terminated.

Table 1 Electrical Parameters @230v

Rated Boiler Output	2kW	4kW	6kW	8kW	10kW	12kW
Boiler UH Parameter Setting	01	02	03	04	05	06
Single / Three Phase	Single	Single	Single	Single	Single	Single
Rated Voltage	230VAC	230VAC	230VAC	230VAC	230VAC	230VAC
Current (A) @ Rated Voltage	9	18	26	35	44	52
Minimum MCB/RCBO (A)	10	20	32	50	50	63
Minimum Cable Size (mm2)	2.5	4	6	6	10	10

4.2 Mains Supply

A 12kW Flex HO pulls approximately 53 Amps at full load.

- **Cable Sizing:** Use 10mm^2 or 16mm^2 cable depending on the length of the run and installation method (refer to BS 7671). Any cable wired into the boiler must be a Heat resistant grade, either HO5 or HO7

- **Protection:** Surge protection devices must be installed within the installation in-line with regulation 443 of BS 7671. A suitably sized RCD is required. Do not share this circuit with other high-load appliances.
- **Isolator:** We recommend fitting an appropriately sized rotary isolator or double pole isolator next to the boiler so that it can be easily isolated if any work needs to be completed inside the boiler.
- **Earth Bonding:** As well as the boiler being properly earthed, this appliance may require supplementary earth bonding across all pipes connected to the boiler.

4.3 Control Wiring

The boiler cannot control external temperature and therefore an external thermostat and programmer should be used to control the boiler to schedule the hot water and heating. This is a ZERO VOLT connection, so DO NOT connect any power to the thermostat cable from the boiler.

- **Warning:** Never apply 230V to these terminals as it will damage the main PCB. If your room thermostat requires a 230V switched live, you must use a relay or contactor choose a different wiring configuration. Any live supply to the boiler thermostat wire will damage the main electronics boards and will immediately invalidate the warranty
- **S-Plan Wiring:** When wiring on S-Plan system, utilise the volt free orange and grey signal wires on the zone valves to turn the boiler on and off i.e. Thermostat demand drives the zone valves forward, this creates a closed circuit between orange and grey of the zone valve which in turn closes the circuit on the boiler thermostat wire, which tells the boiler to fire. See appendix for S-Plan wiring Diagram.

4.4 Pump Wiring

The pump power is supplied and controlled by the boiler. This is because the pump over runs by 3 minutes after the temperature has been reached to enable the heat exchanger to cool and to monitor the system temperatures. The pump must be wired into the boiler via the 230V connection (fig 1. Item 10) using heat resistant cable.

4.5 Max Power Control and Engineers Settings

Please see Engineers settings in the appendix to range rate the boiler prior to range rate the boiler. Please note that you must be a qualified electrical installer if you are to range rate the boiler and install fuses and RCD protection lower than the maximum recommended. The range rating of the boiler is not altered by a factory reset.

WARNING: Please note that if de-rating a combi boiler, the cables and circuit protection must match the highest demand. The supply cable to the boiler should be of sufficient size to carry the load capacity required. It should be wired through a linked double pole isolator switch with minimum contact gaps of 3mm on every pole and protected by a suitable RCD.

Install the necessary electrical protections as Indicated In the current regulations.

In the event of these regulations not being complied with, the manufacturer will not be liable for any bodily injury or material damage that may occur.

It is essential that the boiler Is properly earthed, and the wiring tested to the latest IEE regulations

WARNING: On installations where the incoming power supply is not capable of maximum load the boiler control must be re-configured to limit the output before switching on.

CAUTION: It is essential to confirm the power output with the use of a clamp ameter after set up

5. Commissioning

5.1 Hydraulic System Cleaning (BS 7593)

A "dirty" system will reduce the performance or can stop an electric boiler from working so it is essential that the system is cleaned before installing this boiler. It is also a mandatory step as part L of the building regs.

- **Flush:** Power flush or mains flush the system until the water runs crystal clear.
- **Inhibit:** Add a high-quality chemical inhibitor (e.g., Fernox or Sentinel) to prevent future corrosion.

Note: Refer to the manufacturers instructions for use of power flush and inhibitors.

5.2 Manually fill and vent the system

Electric elements operate at incredibly high temperatures. A large air pocket trapped in the heat exchanger can cause an element to burn out.

Proceed as below to fill and vent the system.

- After flushing the system, Open the isolation valves that you have fitted to the flow and return of the heating system near the boiler.
- Connect the filling loop.
- Open filling loop so that it fills through the boiler (to remove air from the boiler) and clear to drain until all the flushing fluid has been removed and you have just mains water in the system. Fill the system slowly, checking for leaks on the connections as you do. Fill and dose with inhibitor until the pressure on the pressure gauge reads between 1 and 1.5bar, then close the filling loop connection.
- Vent the air out of the system and repeat the stage above

- Check the system (including the inside of the boiler) for leaks. Please allow at least an hour of normal operation to confirm all fittings are leak free.
- Where the boiler is the highest point in a system, it is a good idea to fit a vertical automatic air vent (AAV) on a horizontal return pipe from the heating system and a drain valve on the flow side of the boiler so that the boiler can be flushed through to remove air from the heat exchanger.

6. Thermostat Connections

The boiler cannot control external temperature and therefore an external thermostat and programmer should be used to control the boiler to schedule the hot water and heating. This is a **ZERO VOLT** connection, so **DO NOT** connect any power to the thermostat cable from the boiler.

Any live supply to the boiler thermostat wire will damage the main electronics boards and will immediately invalidate the warranty.

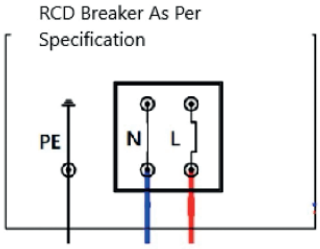
Thermostats can be fitted as a single programable thermostat or as an individual programmer and thermostat.

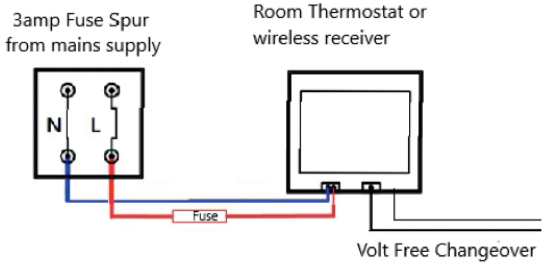
Thermostats must be fitted by a competent person, and installation must comply with the guidance provided in the current editions of BS 7671 (IEE wiring regulations) and part "P" of the building regulations.

There is a 230V 3amp Auxiliary live supply available within the boiler or the thermostat can be supplied by and external fused spur with either a 6amp or 3amp fuse depending on your thermostat.

Please see wiring diagrams and pictures in appendix for the boiler auxiliary supply.

The Zero volt thermostat connection to the boiler is provided externally on the bottom right of the boiler. Do Not supply any power to this connection.





7. Powering On the Boiler and setting the Parameters

7.1 Power On

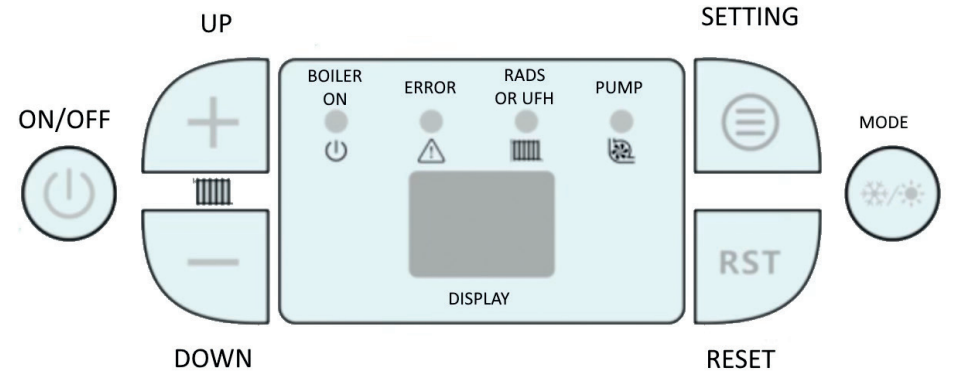
Before any power is turned on to the boiler it is important that it is checked for any loose connections. Check all connections including the factory-made ones as these can come loose in transit.

Prior to turning the boiler on for the first time, please make sure you have completed the following:

1. All STEPS in the manual so far, have been completed as instructed. The boiler must have been filled with water and isolating valves must be in the open position.
2. The boiler casing is closed and secured.
3. Set the thermostat to the off position or lowest possible temperature.
4. By activating the appropriate RCD breaker in the consumer unit (or preferably next to the boiler) external to the boiler, this will put the Boiler into standby mode. Don't press the power on button yet but leave it in standby mode until the system parameters can be configured.

8. Key Operating Function Descriptions.

Fig 4. Full Display



Note: The control panel responds differently based on the duration of the press and the boiler's power state (ON or OFF).

Button	Function	Button	Function
ON/OFF	1. **Power Control** : Press and hold for 1 second to power the boiler on or off 2. **Confirm/Exit**: In parameter setting mode, it acts as the "Enter" or "Confirm" button 3. **Fault/Clear**: Use to clear fault codes when the item has been fixed.	**UP**	1. **Temperature Adjustment**: Briefly press to set and adjust heating flow temperature UP. 2. **Rapid Temp Adjustment:** When the temperature display flashes, press and hold the up key for 3 seconds to rapidly adjust the heating flow temperature in standard mode. 3. **Increase parameter Value:** In Parameter mode adjust setting codes and values up.
MODE	1. Switches between winter and summer modes, but because this boiler is not a combi **always leave in WINTER MODE**	**RESET**	1. **Manual Reset:** Press briefly to reset any errors after fixing fault. 2. **Factory Reset**: Press for 5s or longer while the boiler is off to wipe all settings and restore factory defaults.
SETTING	1. **Enter Menu**: While powered on, press and hold for 5 seconds to enter the engineer parameter interface. 2. **Toggle Code/Value:** During parameter configuration, toggle between parameter items and numerical values. 3. **Forced Pump:** When in standby mode (powered OF), press and hold for 5 seconds to force the pump on to remove air from the system. Press and hold for 5 seconds to turn the pump off again before turning the boiler on	**DOWN**	1. **Temperature Adjustment**: Briefly press to set and adjust heating flow temperature DOWN. 2. **Rapid Temp Adjustment:** When the temperature display flashes, press and hold the DOWN key for 3 seconds to rapidly adjust the heating flow temperature in standard mode. 3. **Increase parameter Value:** In Parameter mode adjust setting codes and values DOWN.

Fig 5. Screen Symbols Description

Symbol	Description	Symbol	Description
	Displays the current heating water temperature under normal conditions. When adjusting the temperatures it will show the set temperature but revert to the actual temperature . Also shows codes and values when in settings mode.		Lit =Radiator Central Heating Mode Temp 30~80℃ Unlit= UFH Mode Temp 30 to 60℃
	Lit: Pump working		Error Mode – Error code should be visible

9. Key Operating Instructions

9.1 Purge Air from System

1. With the boiler in standby mode (OFF should be showing on the main screen) press and hold the SETTING ☰ button for 5 seconds to force pump on. The pump symbol should be lit showing that the pump is running. Run the pump for 20 mins to move and clear the air from the system through the AAV. Vent radiators. It is clear of air when the pump is running and it is flowing quietly. Press and hold the SETTING ☰ button for 5 seconds to turn Forced Pump off.

9.2 Start up Boiler

2. Ensure you have between 1-1.5bar of pressure on the central heating system pressure dial, purged the heating system of air (as above). Turn the boiler on by pressing the ON/OFF ⏻ button for 1 second.
3. A temperature will appear on the front panel. This is the current heating flow temperature that the boiler is measuring. The heat only boiler is always in winter mode so the heating will either be on or in standby.
4. When there is a demand for heat, the pump will start running for 20 seconds.The boiler will now check for flow in the heating system before firing the heating elements. If there is no flow in the heating system an F6 error will occur. Please check the system for closed values, airlocks and vent all radiators again.
5. When the boiler senses flow and confirms the current flow temperature is below the set temperature the heating elements will be powered on. The boiler will show the current heating flow temperature.
6. The target or set flow temperature can be changed by pressing either the up or the down keys.

7. Underfloor heating mode is accessed via the engineers control panel. When the boiler is in underfloor heating mode the temperature is set between 30 and 60°C. When the boiler is set in radiator mode the heating system can operate between 30 and 80°C. To enter the engineers panel press the setting ☰ button for 5 seconds – CS will show – this is the under floor or radiator system setting. Press the setting button ☰ again and 00 will show. This is the value of the CS code. 00= Radiator mode (max Temp 80°C). Press the + symbol to increase the value to)! For Underfloor heating (max temp 60°C). Press the settings key to confirm and press the on/off key to exit.
8. For more engineers settings see Appendix

Heating Cycle Sequence

1. **Start Condition:** Heating begins when Actual Temperature + Hysteresis (HC, (Default 12°C)) ≤ Set Temperature and thermostat wire is closed circuit.
2. **Pump Start:** Pump circulates for 20 seconds.
3. **Element Activation:** Heating elements fire in 3 stages, two every 5 seconds (full power reached in 15 seconds).
4. **Power Reduction:** When the water is within 5°C of the target, power is halved.
5. **Shutdown:** Elements cut out completely when temperature reaches Set Point + 5°C.

9.3 Common Start up problems

1. If the pump symbol does not come on when your thermostat is calling for heat, firstly check check you have the correct Zero-volt connections on the boiler wire in the thermostat receiver or wiring centre. To check, remove the boiler thermostat cable from the receiver and connect the two cores in a suitable connector. This will force the boiler to fire. If the pump comes on you have the wrong connections in the thermostat. Please read the manufacturer's instructions.
2. If the pump continues to cycle and then gives an F6 error, the boiler is not detecting any flow in the heating system via the paddle flow sensor (Part 008 in fig 1). This is generally caused by air locks, a closed isolation valve or no ABV (automatic Bypass Valve) being fitted. In old systems it can be caused by a dirty flow switch

10. Installers Online Support

11. Registration for Warranty

The boiler can be registered for extended warranty by completing the requirements on the registration page on the website. Please use the QR code below to be start the registration process.

Note: The boiler must be fitted according to these installation instructions and our terms and conditions in order to qualify for extended warranty. Please be aware that if an engineer's callout is required there is a deposit required in order to confirm the visit and also to ensure that the boiler is fitted correctly. If you are in any doubt as to the fitting of the boiler please don't hesitate to contact us.

Please also be aware that our service helpline is **always** the quickest way to remedy any issues you are having with your hot water or heating system. Please don't hesitate to contact us by telephone on +44 (0)345 862 8699 or by email on info@ehs-heating.co.uk for free help and guidance.

12. PLUMBERS CHECKLIST

COMPANY NAME .....

PLUMBERS NAME .....

COMPANY ADDRESS:.....

COMPANY TELEPHONE:.....

DATE OF INSTALLATION.....PRODUCT CODE.....

WAS THIS A EXISTING INSTALL OR NEW INSTALL? EXISTING NEW INSTALL

HOW MANY HEATING ZONES ARE INSTALLED? 1 2 3+

HAS THE FILLING LOOP BEEN REMOVED & CAPPED OFF? YES NO

WAS AN ABV FITTED? AT WHAT SETTING? YES NO SETTING .....

WHAT IS THE HEATING PRESSURE SET AT? ..... Bar

WHAT IS THE INCOMMING MAINS PRESSURE? .....Bar

WHAT HAS THE BOILER FLOW TEMPERATURE BEEN SET AT? .....°C

WHAT HAS THE BOILER DIFFERENTIAL TEMP. BEEN SET AT?.....°C

WHAT PUMP SPEED HAS BEEN SET ON THE BOILER?.....

Notes-

BY SIGNING YOU AGREE THAT YOU HAVE INSTALLED THE BOILER IN ACCORDANCE WITH THIS MANUAL, HAVE READ THE WARRANTY CONDITIONS AND CAN CONFIRM THAT THE BOILER IS WORKING AS INTENDED WITHOUT ANY LEAKS AND ALL INSTALLER MADE AND FACTORY-MADE CONNECTIONS HAVE BEEN CHECKED

SIGNED: ..... DATE:.....

PRINT .....

13. ELECTRICIANS CHECKLIST

COMPANY NAME .....

ELECTRICIANS NAME.....

NICEIC REGISTRATION NUMBER .....

COMPANY ADDRESS:.....

COMPANY TELEPHONE:.....

DATE OF INSTALLATION .....

WHAT IS THE TOTAL MAINS SUPPLY AT THE FUSE BOARD?	AMPS
WHAT IS THE INCOMING MAINS VOLTAGE AT THE APPLIANCE?	VAC
WHAT SIZE BREAKER HAS BEEN FITTED FOR THE BOILER?	AMPS
WHAT IS THE DRAW OF THE APPLIANCE FOR HEATING?	AMPS
WHAT IS THE DRAW OF THE APPLIANCE FOR HOT WATER?	AMPS
WHAT SIZE CABLE WAS INSTALLED TO THE APPLIANCE?	MM2
WHAT IS THE APPROXIMATE CABLE RUN TO THE BOILER?	M

WHAT TYPE OF CABLE HAS BEEN USED?

Notes-

BY SIGNING YOU AGREE THAT YOU HAVE INSTALLED THE BOILER IN ACCORDANCE WITH THIS MANUAL, HAVE READ THE WARRANTY TERMS AND CONDITIONS AND CAN CONFIRM THAT THE BOILER IS WORKING AS INTENDED WITHOUT ANY LEAKS AND ALL INSTALLER MADE AND FACTORY-MADE CONNECTIONS HAVE BEEN CHECKED

SIGNED: ..... DATE:.....

PRINT .....

14. Trouble Shooting For Qualified Installers

Error Code	Protection Function	Potential Cause	Potential Solution
E2	Electric leakage on system	Check whether the external power supply has leakage or whether there is condensation or water leakage on the main circuit board.	1.Switch off the boiler 2.Qualified engineer to open cover and dry/inspect circuit board.
E3	Heating Water Temperature Sensor broken/loose	Sensor is in short circuit or open circuit.	1.Check if the sensor connection is loose or not. 2.If broken contact EHS customer service to replace sensor.
E9	Antifreeze fault	Heating water temperature is too low	1. If the heating pipework is frozen, the boiler will not be able to work. 2. Clean pipeline, refill the water then switch on.
EC	Display Disconnected from PCB	Display Disconnected from PCB	1. Check whether the connection between the cable and the PCB is broken or loosen. 2. If broken Contact EHS customer service to replace cable/PCB.
F1	Heat exchanger temperature sensor is reading over 90deg C Or is in open circuit (broken/disconnected). Heating is immediately stopped until exchanger has cooled.	• Very low water flow in heat exchanger • Air trapped in heat exchanger • Airlock in heating system • Broken wire on sensor	1.Check whether the water flow circuit is ok or not. 2.Check ABV is fitted correctly 3.Check Isolating valves are open. 4.Fill system and vent all high areas 5.Fit auto vents in potential airtrap areas 6. Press and hold TIME key for 6 seconds to re-set
F2	Heat too fast error	If rise ≥15℃ in 3s continuously	1.Air in the heat exchanger Solution: Flush through boiler with mains water. 2.Pipe or filter blocked: the heat can't be taken away due to reduced water flow Solution: clear pipeline blockage and clean filter 3.Pump blocked or stalled. Solution : repair or change pump

Error Code	Protection Function	Potential Cause	Potential Solution
F4	Water Pressure Fault	System is low on water	1. Fill to correct pressure with filling loop 2. Check whether the water pressure of the system drops and check for leaks. 3. Check whether the pressure switch is blocked, or it has fault.
F6	No water flow circulation	Air in the system, no water or water pump not working, pump is blocked, water flow switch blocked, water flow switch is faulty. Red transport bungs not removed from pipework before installation	1. Vent system. Put automatic vents in highest point of the return system. 2. Check automatic bypass valve is installed and set correctly. 3. Check system pressure. 4. Check pump and flow switch for blockage/operation 5. Check inside pipework for red transportation bungs
E6	Neutral wires not well connected	No heating	1. Check whether the neutral wire of the machine has false connection. 2. Check whether the neutral wire end of the leakage protection switch is damaged. 3. Measure whether the voltage between the neutral wire and the live wire is 220 v. 4.Contact the customer after sales to replace the motherboard.
No Power on display screen	Thermal Trip on heating system heat exchanger activated. (Heat exchanger has reached 110C and bi-metallic thermal trip has activated)	• Low or no water flow in the heating system. Before resetting the trip, solve the problem	1. Has the automatic bypass valve been fitted correctly and does it point from flow to return? 2. Check all system filters and clean. 3. Vent the system and install automatic air vents in the highest points of the return system. 4. Flush heating system, through the boiler with mains water to clear air. 5. Check the flow of water pump.
No Power on display screen	Circuit protection off	1. Incorrect circuit protection installed or loose connection in	1. Qualified person to check the system for correct installation and fault find.. 2.

Error Code	Protection Function	Potential Cause	Potential Solution
		terminations or wrong size cable used	
	No heating	3. Equipment temperature does NOT rise.	1. Water temperature setting too low. 2. Differential temperature set too high. 3. Timing and opening 4. Indoor temperature controller setting incorrect or set too low.

15. Engineers Codes and Power Adjustment

To enter and adjust the Engineers codes, with the boiler on, press and hold the settings button for 5 seconds until CS appears in the digital display. That is the first of the engineers settings in the table below. To toggle to the value of that parameter press the settings button once again. To adjust the value up press the PLUS key and to adjust down press the MINUS key. Toggle back to the parameter with the setting key and press PLUS to go to the next parameter. When completed press the ON/OFF key to exit and return to normal operation

15.1 Power Adjustment of 12kW Flex Heat only boiler

Enter the Engineers code menu as above and then press the PLUS key until you get to the UH code. Press the setting key to toggle to the value. The default setting is 06 which signifies that the boiler is at its maximum power (6 x 2kw heating elements = 12kw). You can adjust the value 1 to 6 to choose how many elements you want as a maximum power i.e. Set to 03 for 6kw (3 x 2kw = 6kw). Toggle back to the parameter with the setting key and press the ON/OFF key to exit.

Code	Parameter	Adjustment limits	Default Setting	Details of Parameter
CS	Maximum heating temperature	0-1	0	0：Radiator mode=30 to 80℃ 1：Under floor heating = 30 to 60℃
HC	Return differential temperature	5-30	12℃	Differential Temperature setting (Flow temp – Return temp)
PH	Heating power	60-80	80℃	Maximum heating temperature setting
BH	Mandatory heating stop time	1-31	02	If the flow temperature is still lower than the set temperature after B hours, the system shuts down all heating.
SL	Pressure and Flow detection	0-3	03	0:pressure switch 1:pressure sensor 2：flap switch 3：detection at the same time

Code	Parameter	Adjustment limits	Default Setting	Details of Parameter
FB	Disable flap switch and pressure switch detection	0-3	00	0:Enable 1：Disable water pressure switch detection 2：Disable flap switch detection 3： Disable all
CC	Water pump operation	0-4	04	0：working3 stop7 1：keep working 2：working1 stop7
BN	Heating control	0-60	05min	When the power is halved, restart a group of relays every BN time to work
DU	Dry burn/ no water flow issue	2-20	15℃	If the temperature rise is higher or equal to DU every 3 seconds, it is considered as a dry burn issue
UU	N/A			
DD	N/A			
UH	Heating Maximum Power adjustment (240v)	1-6	06	Adjustment of Maximum power use for Hot water only. See table below (fig 2) for adjustment guide. Confirm with current clamp
DR	N/A			
LS	HW Minimum Flow Rate	15-80	30	Sets the minimum flow rate before power applied to heat exchanger (30 = 3 litres/min)
AD	Secondary menu selection	0-1	00	0：Off 1：On
PP	Setting memory	0-1	1	0 disable memory，1 enable memory
RS	Restore to factory Settings	0-1	0	RS=1时，restore to factory
U0	220V standard voltage HZ low	0-FF	50	Electric quantity collection parameter
U1	220V standard voltage HZ high	0-FF	2	Electric quantity collection parameter
P0	220V power HZ low	0-FF	3	Electric quantity collection parameter
P1	220V power HZ high	0-FF	0	Electric quantity collection parameter
P2	Hot water Max Power adjustment	0-99	99	Adjustment of Maximum power use for Hot water only. See table below (fig 2) for adjustment guide. Confirm with current clamp
P3	N/A			
H1	N/A			
H2	Board changing mode	0-1	0	0：Non board changing mode 1：Board changing mode
HP	Pump starting temperature	0-80	45	(Reserved)【When the pump temperature is selected, the water outled temperature reaches 40°（HP=40°）.the pump starts working】
HL	Pump temperature	0-1	0	Reserved（0：Off 1：On）
HD	Hot water power setting	0-99	Single phase max 14kw Three phase max 24kW	Hot water heating power setting 14 for single phase boilers (14kw) and 24 for 3 phase boilers (24kw)
HH	Heating at 0 degree（Heating time:10mins）	0-1	0	0：invalid 1：disable allow to heating

Code	Parameter	Adjustment limits	Default Setting	Details of Parameter
FA	Combi or system boiler	0-1	01	00：Combi setting (heat and HW) 01：System boiler (heat only)
FC	Power acquisition	0-FF	00	00：no collection 01：single-phase power collection- 02：three-phase power collection
PU	Reference power value	0-FF	64	Electric quantity collection parameter

CAUTION: THE POWER READING ON THE BOILER DISPLAY MAY NOT ACCURATELY REFLECT THE ACTUAL CURRENT AND THERFORE YOU MUST CONFIRM THE POWER ADJUSTMENT WITH A CURRENT CLAMP AMETER.

		Approx Power (KW)	Approx Current (A)
			@230V
Setting for Heating UH (standard setting is 06)	1	2	9
	2	4	18
	3	6	26
	4	8	35
	5	10	44
	6	12	53

APPENDIX

Fig 6. EHS System Boiler 1 Phase Heating Circuit Diagram

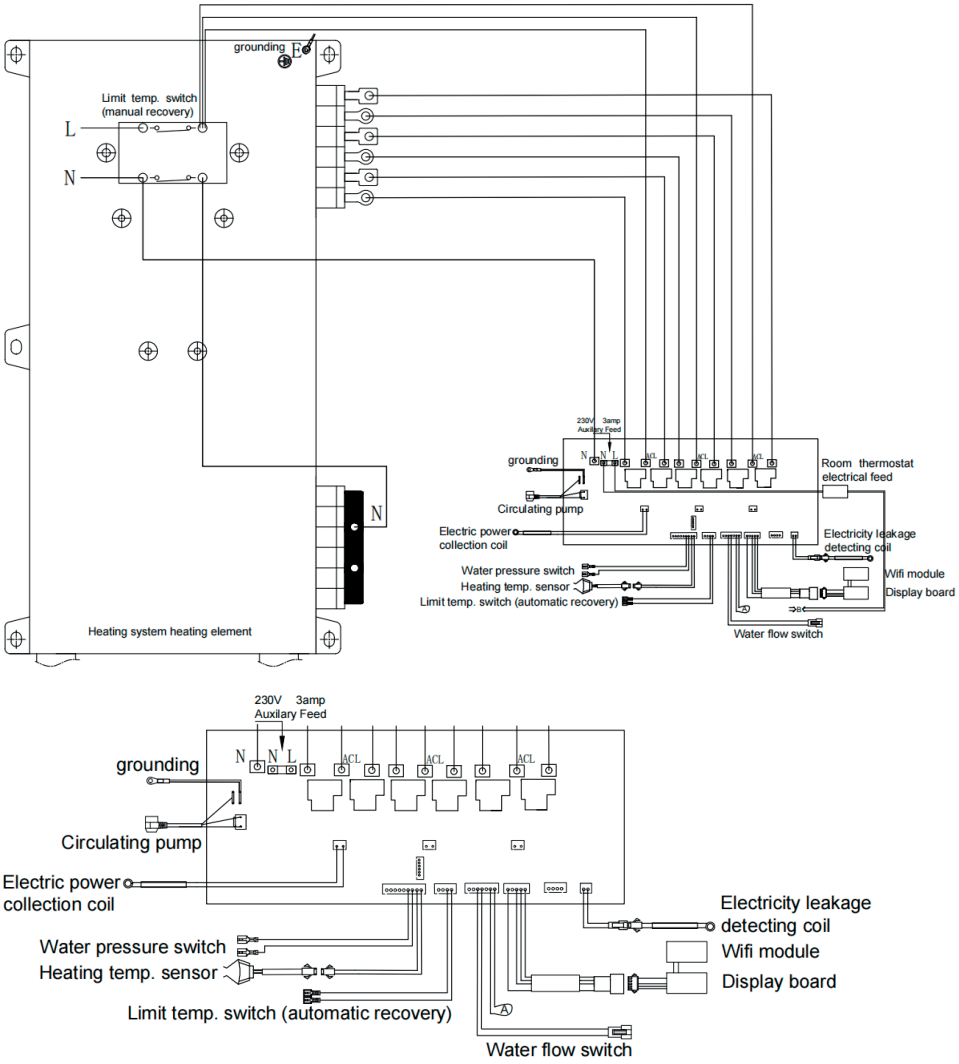
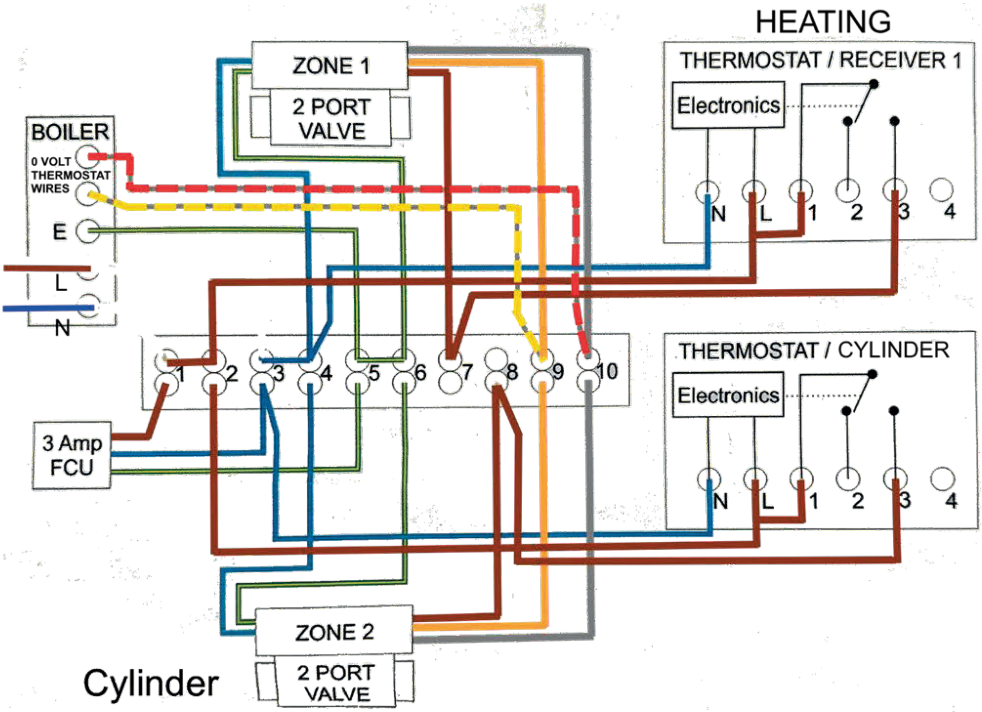


Fig 7. Typical System Boiler S-Plan Wiring Centre Diagram for a Volt Free Boiler connection



Notes.

1. This is a guide. All wiring to be completed by a qualified professional and it is the responsibility of the installer to achieve a volt free connection.
2. The EHS Boilers have a black thermostat cable exiting from the bottom right of the boiler. This is a ZERO VOLT connection!! Do not wire any live voltage to this wire otherwise you'll blow the main circuit board
3. The orange and grey wires from the 2 port valves will usually provide the zero volt contact (the external thermostats drive the valves forward which creates that contact between orange and grey)
4. Please follow each individual manufacturers instructions for wiring of the thermostats (this is just a guide)
5. You must fit an automatic bypass valve between flow and return prior to the 2 port valves.

Fig 8. Technical Data

Product Name	12KW EHS FLEX HEAT ONLY BOILER 2026
Heating Max Power	12KW
Function	Heating Only
IP Rating	IPX1
Cable size required	3x10mm²
Colour	White
EHS PART NO	ALS1-1PHO-12F
Voltage	240v
Water Pressure	1~3 bar (1.5)
Net Weight (kgs)	9kg
Gross Weight (kg)	11Kg
Flow and Return connection	G3/4"
Product Size EHS Combi Boiler	450 x 25 x 145mm
Box Size (cm)	510 x 345x 215mm

BOILER MAINTENANCE

EHS electric boilers require only minimum maintenance. Periodically check the following:

The heating system must be filled and maintained when the water is cold, between a pressure of 1 – 3 bar. Frequent refilling of the system can cause scaling, corrosion and damage to a heating system and should be avoided wherever possible. Regular pressure loss could be indicative of a leak within the system and should be investigated.

UNDER NO CIRCUMSTANCES SHOULD THE BOILER BE SWITCHED ON WHEN THE SYSTEM IS DRY.

The boiler contains an installed frost-protection program. For this to operate, power must be always supplied to the boiler.

Anti-freeze can be added to the heating system (no more than 20% by volume) if the boiler is going to be stood unused for long periods of time. Otherwise, the boiler should be disconnected from the electricity supply and the system fully drained to avoid any frost damage.

A yearly boiler service is recommended and is part of the warranty conditions. It will confirm that everything is working correctly.

WARRANTY INFORMATION

All EHS products are supplied in accordance with standard Terms & Conditions (available on request or via our website). This Policy also applies in addition to our terms and conditions to any EHS electric Boilers and by fitting this product you are agreeing to be bound by these Terms & Conditions and this Policy. This Policy sets out the Warranty Period and exclusions which apply to Electric Boilers, for other products please see our website or their corresponding manuals. This Policy is subject to our Standard Terms and Conditions and should be read in conjunction with those terms. We reserve the right to amend this policy at any time.

Warranty Details:

Warranty and Liabilities

19. The installer must be suitably qualified to install products and all Commissioning Sheets & Annual Servicing Sheets require to be made available to us when requested.
20. The product must be installed as per the installation instructions.
21. The Warranty must be registered with EHS by either the Installer or the Householder, within 30 days of the Boiler being installed. Failure to do so will reset the Warranty Period to 1 Years for Parts and Labour only.
22. For products registered within the stated time frame, the 5 Year Warranty will compromise of 2 Years Parts and Labour with a further 3 years Parts only.
23. To comply with our Warranty Terms the product must be serviced each year as outlined in the product installation manual. The service must be carried out by a suitably qualified engineer and a record of that service kept by the owner. The service can be within a 30 day period of the anniversary of the last service, without invalidating the Warranty.
24. If the service is not carried out in accordance with the guidelines within the product installation manual, the Warranty cover will become void.
25. During the Warranty period, we will replace parts which were faulty from the date of purchase, at our discretion free of charge. Reasonable Labour costs will only be paid where the value has been pre-agreed and authorised by EHS prior to the repair.
26. This Warranty is limited to the purchased product only and does not include any connected products or systems.
27. If the product breaks down or is showing a fault and requires an engineer to visit, we may ask you to pay a deposit prior to the repair visit. We will return the deposit in full if we find a fault that is covered by the Warranty. We may keep the deposit if we cannot access your property at the agreed visit time or conditions mentioned in point 23 above of this Warranty have

not been met. A responsible adult must be at the property to provide access to the Engineer.

28. Any repair carried out under the terms of this Warranty does not extend the Warranty beyond its original period.
29. The Warranty only applies to products bought and used in the United Kingdom.
30. For products installed in the Channel Islands and Isle of Man only a 2 Year Parts & Labour Warranty is applicable.
31. Engineers will not carry out repairs if they think accessing the product would be a risk to Health and Safety. We will not be liable for any costs if there is a health and safety issue
32. There must be sufficient room for the Engineer to work (the minimum area is set out in the installation instructions). We will not accept responsibility for removing cupboards, kitchen units, trims etc to gain access for repairs.
33. This Warranty does not in any way affect your Statutory or Legal Rights.
34. A central heating inhibitor (Fernox or equivalent) is required to be added to the system during installation and thereafter at regular intervals using the correct dosage.
35. A magnetic filter requires to be installed on the return of every Boiler. This must be cleaned at every yearly service.
36. Existing systems require to be pressure flushed correctly and final TDS reading recorded on the commissioning paperwork.
37. This Warranty does not cover the following:
    - Parts which fail due to system debris, contamination and/or water quality issues,
    - Boilers installed within mobile leisure accommodation. e.g., Boats, Mobile Caravans.
    - Any extra costs incurred whilst undertaking a repair due to incorrect installation
    - Products that have been moved from their original place of installation.
    - Costs of each annual service, including consumable parts such as seals and chemical treatments (inhibitor etc.)
    - Any repair that is needed because of anything other than a fault to the Boiler or failure of the Boiler itself.
    - Any 3rd party damage, whether accidental, negligent, malicious, or otherwise.
    - Theft or attempted theft.
    - Any fault or failure in the heating system to which the Boiler is connected.

- Any other costs or expenses caused by or arising because of a repair.
- Any damage caused by hard water scale deposits or sludge resulting from corrosion.
- Any problems caused by inadequate supply of services such as electricity or water to the property including loss of power.
- Boilers where:
- EHS Genuine Parts have not been used in any service or repair or
- They have not been Installed and set up strictly in line with the installation instructions supplied with them (including the requirement to clean the system and add corrosion inhibitor in line with BS 7593:1992); or
- They have not been maintained strictly in line with the maintenance instructions supplied with them.

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