

CORAL Eco

elson
hot water

Mains Pressure Hot Water & Heating Packages
with "Renewables" interface for Apartments and Houses



Electric Hot Water & Heating Packages for Apartments and Houses

Elson Coral Eco

Providing a renewable energy interface as part of a domestic hot water system is fast becoming a standard requirement – and it makes a great deal of sense too. While this may be relatively easy to achieve in a house, for example with Solar Panels on the roof and a solar cylinder, it is not as easy in communal dwellings and apartments.

The Coral Eco package is designed specifically for use in Apartment blocks or clusters of bungalows and houses, and takes as its start point the well established Coral E thermal store, electric water heating system.

The addition of specifically designed plate heat exchangers and controls provide an interface for renewable energy sources, thus reducing the Kw loading on the hot water generator, and as the domestic hot water is generated instantaneously this greatly reduces any potential risk from Legionella.

With over 80 years of experience, Elson has developed an extensive product range including the Coral Eco. The range provides mains pressure hot water from an open vented store and is also available as a pre-assembled package, incorporating heating interfaces, underfloor manifold, pumps and controls. Elson offer technical advice and support, commissioning on site and a national network of field service engineers.

Contents

Page

- 2 Electric Hot Water & Heating Packages for Apartments and Houses
- 3 Coral E - Principle of Operation
- 4-5 Coral Eco
- 6 Technical Information
- 7 Dimensions

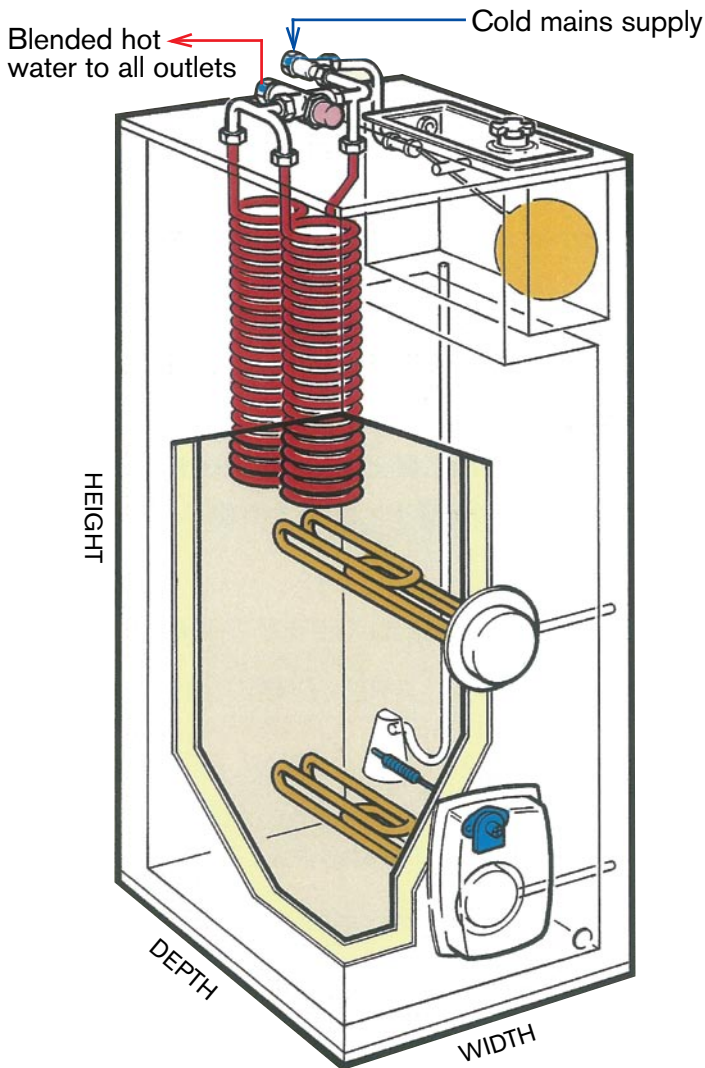
2

**RENEWABLES • SOLAR • GROUND SOURCE HEAT PUMP • CHP
• WEATHER COMPENSATION • MBUS • ZERO ODP • FUTURE PROOF**

SEDBUKA • NOx5 BOILER PACKAGES • 100% ENERGY EFFICIENT ELECTRIC BOILER PACKAGES • TOTAL CONTROL ENERGY EFFICIENT • COMPACT • SPACE SAVING DESIGNS • COST EFFECTIVE • TAILOR MADE SOLUTIONS OFF PEAK LOW COST ELECTRIC HEATING & HOT WATER • INTEGRATED GAS BOILER & HOT WATER PACKAGES CENTRAL BOILER • DISTRICT HEATING • ELECTRIC WET CENTRAL HEATING • SEALED & OPEN VENTED • BOOSTED HOT & COLD STORAGE

Coral E

Principle of Operation



The standard Elson Coral E is a floor standing mains pressure open vented primary hot water store with 100, 150 or 210 litre options, (larger capacities available on request) insulated with 50mm thick HCFC free polyurethane foam and supplied in a durable white steel case. The foam insulation used by Elson meets Eco Homes standards with a global warming potential of less than 5 and zero ODP. This unit can help achieve the highest possible SAP ratings using manufacturers heat loss figures and not the thickness of insulation.

The unit provides thermostatically controlled mains pressure hot water at high flow rates. This allows installation to be in almost any position in the home making it ideal as a stand-alone solution for cylinder replacement, refurbishment schemes and new build energy saving projects.

The Elson Coral E is an open-vented thermal store. Water stored in a well-insulated copper tank is heated to a high temperature by electric immersion heaters. When hot water is called for, mains cold water is allowed through coils that sit in the upper part of the unit. As it passes through, the mains cold water is heated instantaneously by the hot

water that surrounds the coils. It then emerges from the other side of the coils at high temperature to be mixed with mains cold water at the thermostatic blending valve that sits on top of the unit. The valve has a temperature range of 33-55 degrees centigrade and is supplied factory set at 50°C. This temperature can be adjusted by the user or the installer. The ball valve header tank allows the unit to fill when it is being commissioned and accommodates expansion of heated water.

Manual Fill

A manual fill option is available which does not require an overflow.

Heating the thermal store

Two electric immersion heaters are fitted inside the unit for most economical use and for maximum performance. The lower immersion heater should utilise some form of cheap-rate electricity tariff (Economy 7 being one of the more popular), while the upper heater is there to be used as a daytime boost as and when required. With 50mm foam insulation to minimise heat loss, these immersion heaters keep the thermal store at an operating temperature high enough to ensure hot water is available throughout the day. A runback timer should be fitted to the upper 'boost' immersion heater, firstly to prevent uneconomical use of full price electricity and secondly to act as a form of protection against boiling in the unlikely event of thermostat failure.

The type of cheap-rate electricity tariff and the means by which it is controlled varies from area to area and from property to property. Please consult your electricity supplier and installer for this information.

Hot water performance

The amount of hot water available depends upon several variables, chief amongst these being the temperature of the incoming mains cold water, the operating temperature of the thermal store and the temperature at which the blending valve is set. A graph giving an indication of hot water performance is published opposite on page 5. From this, the conclusion can be drawn that the temperature at which the blending valve is set has a direct impact on the amount of available hot water.

Coral Eco

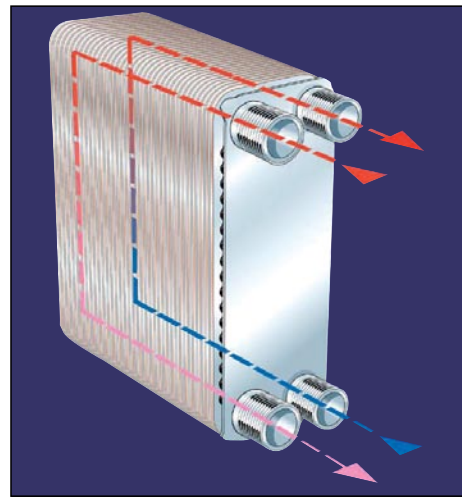
The Coral Eco is a pre-packaged unit with only five connections required by the installer, and thus minimising the need for assembly of a variety of piece parts on site. The mounting frame of the Coral Eco also houses the domestic heating plate heat exchanger, under-floor manifold, controls, pump and expansion vessel, again pre-piped and offering all the benefits from off site fabrication and test.

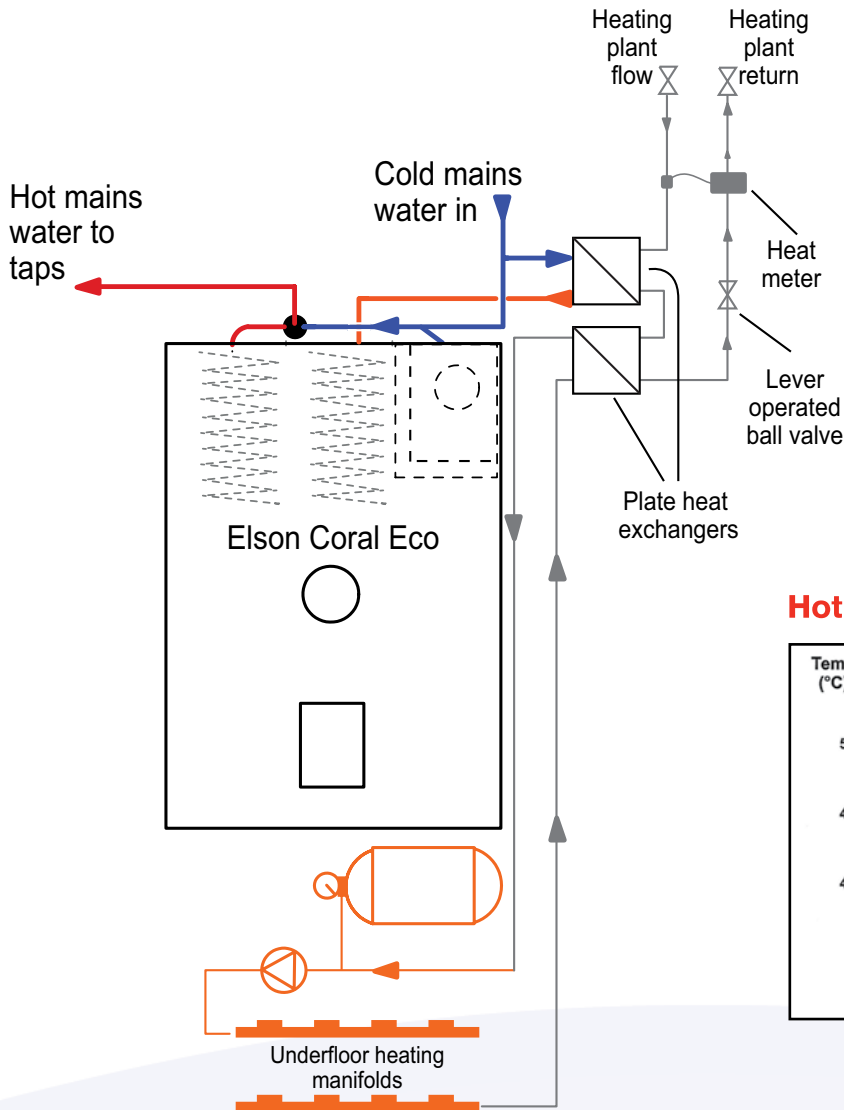
The Coral Eco package is designed to pre-heat the DHW via a plate heat exchanger, utilising suitable renewable energy, such as ground or air source heat pumps. Also built into the frame is a second heat exchanger which passes heat pump energy into the manifold of the underfloor circuit. The manifolds, heat exchangers, and heat meter are all factory assembled within the Coral frame to give minimal connections and scope for error on site.

The DHW plate heat exchanger is rated at 14kw and is capable of raising the incoming cold water main from 10 to 35 deg c at a flow rate of 5 ltrs/min, when supplied with ground or air source at 45 deg c. The load on the thermal store is therefore significantly reduced and less energy is required to provide 50 deg c blended water to the domestic water outlets.

Alternative interface systems utilising a renewable coil in the base of a storage cylinder could result in stored water at 40 deg c, in the event of failure or loss of the primary heat source. Such a situation might provide a breeding ground for Legionella if undetected for long periods. The heat transfer in the Coral Eco is instantaneous with minimal stored water in the plate heat exchanger and thus eliminating any Legionella risk.

A secondary heat exchanger mounted in the base frame of the Coral Eco provides the interface for domestic heating and is linked to the underfloor heating manifold. The package can be tailored to suit individual requirements and will include all necessary expansion vessels, pumps, and controls, making these systems quick and easy to install and offering trouble free operation to the homeowner.



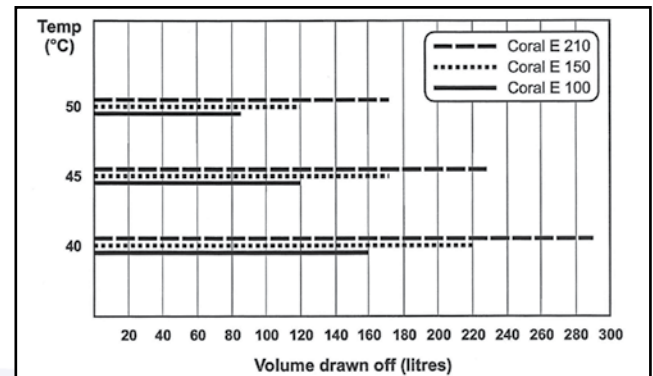


Technical Data

Hot water supply	15mm comp
Immersion heater boss	2 1/4" BSP
Mains cold water supply	22mm comp
Drain boss	1/2" BSP
Overflow	22mm comp
Electric supply	230/240v 50Hz
Outlet temperature	50°C
Flow rate*	upto 30 ltrs/min

* 100 Litre models only - flow rate limited to 12 litre/min

Hot water performance



Figures obtained using the store fully heated to 85°C, with a mains cold water supply temperature of 10°C.

Example of potential energy savings - based on daily DHW usage of 210 litres, on 2 hour recovery

$$\text{Kw loading required for conventional Coral E} \\ = 210 \times (50-10) / 120 \times 14.3 = 4.89\text{Kw}$$

$$\text{Kw loading for Coral Eco "b" (100\% availability of renewable)} \\ = 210 \times (50-35) / 120 \times 14.3 + 0.76^* = 2.59\text{Kw} \quad *0.76 = \text{load on heat pump}$$

$$\text{Kw loading for Coral Eco "c" (50\% availability of renewable)} \\ = 3.74\text{Kw}$$

Annual carbon savings "b" = 360kg of CO₂** per unit

Annual carbon savings "c" = 180kg of CO₂** per unit

** (1kw electric energy saved = 0.43kg carbon)

Water Heater Control

Immersion Heater Control for all low price tariffs

The Horstmann Electronic 7 Coral E hot water immersion heater controller is instantly compatible with tariffs that keep to Greenwich Mean Time and those that vary with British Summer Time. It allows up to three secure off-peak heating periods every 24 hours, to make the maximum use of electricity when prices are cheaper.

Suitable for use with Single, dual or twin element immersion heaters.

Programmable or one hour manual boost.

Precise and flexible programming.

One touch winter/summer time button.

The Electronic 7 is interchangeable with previous Economy 7 controllers using the standard size wall box and plug in connectors. A two year battery reserve provides more than the total number of hours of power interruption the typical home will have in 200 years.

Product Specifications

Contact Rating:	13Amps 230V a.c. suitable for immersion heaters up to 3kW
Contact Type:	Micro-disconnection on control Disconnection to immersion heater(s) on double-pole rocker switch
Supply:	230V 50Hz
Dirt Protection:	Normal situations
Moisture Protection:	Ordinary
Enclosure Protection:	IP30
Shock Protection:	Class 1

Live Parts:	Enclosed
Operating Temperature Range:	0°C to 35°C
Battery Reserve:	Approximately 2 years total power disconnection
Programme Settings:	Off Peak Up to 3 on/off time periods
Boost:	Programmable automatic boost and one hour manual boost
Dimensions:	170mm (w) x115mm (h) x 60mm (d) (excluding rocker switch)
Display:	am/pm indication, winter/summer indication
BEAB Approved	



Powersaver Boost

Run Back Timer

This run back timer is a simple to use time switch for the water heating boost control, allowing independent boosting of the top immersion heater.

This Electronic Boost controller with a single button operation, offering three user-selectable boost periods of ½ hour, 1 hour or 2 hours. An indicator light on the product shows the remaining time.

One of the main benefits of the Powersaver Boost product is its standard size. This is common to all models, which fit directly onto a single gang patress box. This allows installation or upgrading from one model to another, quick and simple.

The Powersaver saves on fuel expenditure and energy wastage by automatically switching off when the user may forget.

Product Specifications

Contact Rating:	16A Resistive 240V a.c.
Supply:	230V 50/60 Hz a.c.
Fixing:	Single Patress – Surface & Flush Mounting
Resolution of Programs:	N/A
Power Consumption:	10VA Maximum
Live Parts Protection:	This unit is totally protected by the enclosure
Dirt and Moisture Protection:	IP00
Shock Protection:	Class 1 (this unit must be connected to earth)
Case Material:	Polycarbonate
Type of Action:	Type 1B

Temperature Rating:	T35
Operation Temperature:	0°C to 35°C
Memory Reserve:	none
Display:	none
Program Settings:	none
Boost Settings:	User selectable – ½, 1 or 2 hours
Control Pollution Category:	Normal



Thermostatic Blending Valve

The market leading TMV2 thermostatic mixing valve

Product Features and Benefits

- Rapid fail safe on either hot or cold supply failure.
- Provides stable mixed water temperature.
- Tamperproof setting adjustment.
- Designed to be set with dynamic pressure imbalances of up to 10:1 (cold over hot).
- Simple to service.
- Meets all requirements of BSEN 1111 and BSEN 1287.
- Fully approved to BuildCert to the TMV2 Scheme for basin, shower, bidet and high pressure bath fill.

Description

Thermostatic mixing valves conforming to BSEN 1111 and BSEN 1287, for general purpose applications. Fitted with lockable temperature control which can be re-set.

Technical Data

Materials

Body:	Cast gunmetal
Internal components:	DZR brass
Seals:	EPDM
Spring:	Stainless Steel
Piston:	Polysulfone polymer
Fittings:	DZR brass

Standards

Conforms to BSEN 1111 and BSEN 1287.

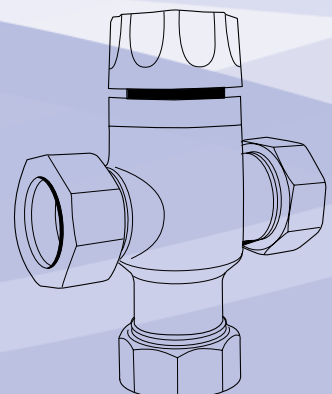
Approvals

WRAS Approval No. 0002080
BuildCert approval number BC/066/10/03

Specifications

Factory set temperature:	50°C
Temperature setting range:	35 - 60°C
Temperature, hot supply:	60 - 85°C
Temperature, cold supply:	5 - 25°C
Minimum temperature differential:	15°C min.

Temperature stability (nominal):	2°C
Static pressure:	14 bar max.
Operating pressure:	0.2 to 6.0 bar
Max. pressure loss ratio:	10:1 (either supply)
(Note: Optimum performance achieved with equal pressure)	

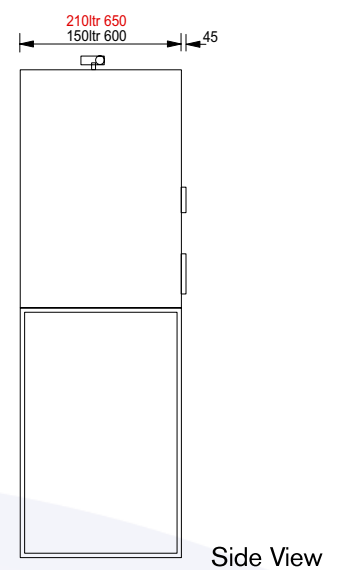
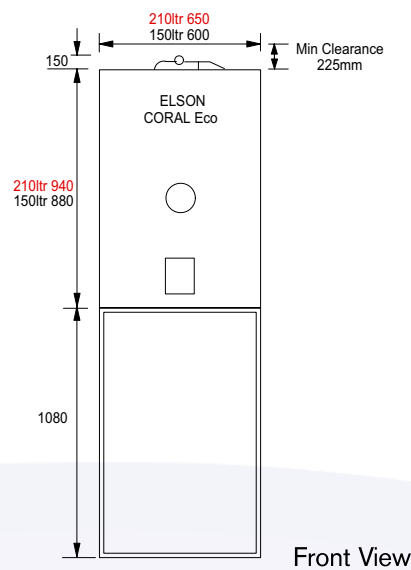


Coral E KIWA approved product - certificate number A040834

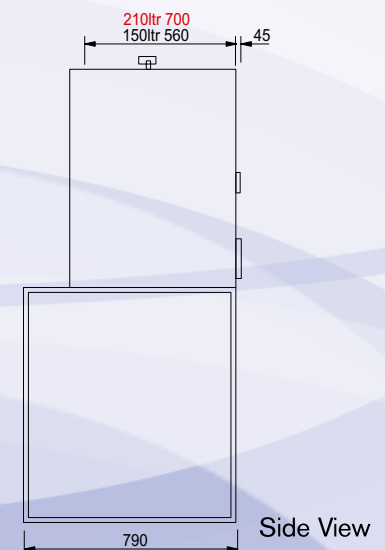
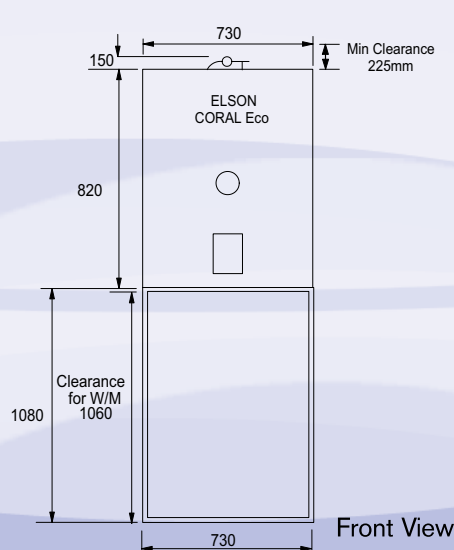
Model	Capacity Litres	Width mm	Depth [†] mm	Height mm	Heat Loss to BS3198 W/Litre (kw/24hrs)	Property Type
Coral 100	100	495	571	865	0.44 (1.18)	1/2 bed with shower
Coral 150	150	495	571	1285	0.33 (1.28)	2/3 bed with bathroom & shower
Coral 210	210	584	571	1285	0.27 (1.48)	3/4 bed with bathroom & shower
Coral 150 WMF	150	730	560	1735	0.33 (1.28)	2/3 bed with bathroom & shower
Coral 210 WMF	210	730	571	1915	0.27 (1.48)	3/4 bed with bathroom & shower

† Allow a minimum of 100 mm on the depth to accommodate the immersion heater cover and plumbing connections.

Coral Eco Frame Mounted Unit



Coral Eco Washing Machine Package



CORAL Eco

elson
hot water

Mains Pressure Hot Water & Heating Packages
with "Renewables" interface for Apartments and Houses



Elsy & Gibbons, Simonside, South Shields, TYNE AND WEAR, NE34 9PE,
Tel: 0191 427 0777 Fax: 0191 427 0888
www.elsonhotwater.co.uk