

Unit Ref: : HRU1

1 No. **EAX244-1/FP-W/EE/LB/G4/CPSC** internally mounted Ecovent Acoustic heat recovery air handling unit.

Supply air volume **0.28m³/s** of air against an external resistance of 100Pa.
Extract air volume **0.28m³/s** of air against an external resistance of 100Pa.

Specific supply fan power **0.7watts/litre/second** at this duty.
Specific extract fan power **0.7watts/litre/second** at this duty.

This unit with low energy, high efficiency fans is constructed from tubular aluminium frame and 50mm double skinned galvanised steel panels, with resin bonded mineral wool slab infill. Mounted on support feet, the unit has the option of floor fixing with self-levelling feet, **purchased separately** or drop rods, **supplied by others**. In this flat configuration, the unit has top or bottom access via a removable panel, with additional access to filters through left or right side panels.

Overall unit dimensions 1850mm long, 1400mm wide, 500mm high. Unit weight: 240kg.

Unit is supplied with EC fans with built in overload and over current safety functions and is fully controllable through 0 to10Volt dc control signals. If purchased with a VES control panel, the air volume can be automatically set using the user interface and pressure measurement sensors.

The unit can be supplied with a fitted, pre-wired and factory commissioned VES control panel or alternatively the electrical components within the unit are pre-wired to integral isolators, with the low voltage components to user terminals.

The supply side comprises the following components:

- a: Circular inlet spigot 313mm diameter, with duct seal.
- b: Pleated filter to grade G4, withdrawal through side access panel.
- c: High efficiency cross flow plate heat exchanger with a reclaim rate of between 65% and 80% depending on conditions.
- d: Supply EC fan, backward curved impellor, single inlet, running at 1816RPM and direct driven by a 0.32kW, 230Volt ac, 1 phase motor, integral speed control, with fitted quick change plug connector to pre-wired control panel or isolator. The fan is also fitted with external pressure ports piped to the outside of the case.
Full load current 1.70amps.

Sound Power Level Spectrum

Hz	63	125	250	500	1k	2k	4k	8k
PWL, dBW	62	64	65	64	63	62	56	49

Casing noise breakout; NR 29 at 1 metre and NR 22 at 3 metres.
dBA 33 at 1 metre and dBA 26 at 3 metres.

- e: Hot water heater battery using low pressure hot water at 82/71°C to raise 0.28m³/s of air from -5°C to 21°C. Coil connections 1" BSP
- f: Circular discharge spigot 313mm diameter, with duct seal.

The exhaust side comprises the following components:

- a: Circular inlet spigot 313mm diameter, with duct seal.
- b: Pleated filter to grade G4, withdrawal through side access panel.
- c: Extract EC fan, backward curved impellor, single inlet, running at 1816RPM and direct driven by a 0.32kW, 230Volt ac, 1 phase motor, integral speed control, with fitted quick change plug connector to pre-wired control panel or isolator. The fan is also fitted with external pressure ports piped to the outside of the case. Full load current 1.70amps.

Sound Power Level Spectrum

Hz	63	125	250	500	1k	2k	4k	8k
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Casing noise breakout; NR 29 at 1 metre and NR 22 at 3 metres.
dBA 33 at 1 metre and dBA 26 at 3 metres.

- d: High efficiency cross flow plate heat exchanger, with galvanised condensate drain pan. The efficiency stated is based on an extract air temperature of 21°C db / 50% RH, providing sensible heat recovery. Bypass damper located onto exhaust side of plate heat exchanger, with 24Volt ac, modulating actuator to enable heating and or cooling recovery. This is controlled automatically when using a VES control panel.
- e: Circular discharge spigot 313mm diameter, with duct seal

Control Panel Option:

Integral control package fitted to the AHU, priced separately and described fully elsewhere. An alternative remote, wall mounted enclosure control panel is available, contact the sales office for details.

<u>Qty</u>	<u>Description</u>	<u>Part Number</u>	<u>Total Price £</u>
1	Fan Unit <i>Please specify left or right handings at time of ordering.</i>	EAX244-1/FP-W/EE/LB/G4/CPSC	4309.56
<u>Ancillaries</u>			
1	Room side silencer **	EAXVA200/1200/P	407.48
1	Atmosphere side silencer **	EAXVA200/1200/P	407.48

** The silencers are designed to match the unit and can be fitted direct to the room and atmosphere sides, fast clamp connectors may be required for other connections beyond the silencers.

Three port valve and actuator, supplied as loose items for fitting by others. The valve has male thread connections and is supplied with a coupling kit, the actuator requires a 0 – 10 Volt dc control signal for modulation and has an 24 Volt ac motor. The valve and actuator are suitable for internal locations only.

Qty	Description	Part Number	Total Price £
1	Valve and Actuator Kit	EAXCWKT200	304.75

Unit Ref: controls

Control package utilising the latest **BlueSense** technology optimised to minimise energy usage over the systems' full life cycle, **to include the following standard features.**

The controls chassis is located within the AHU pre-wired to the electrical components, providing a common connection point thereby reducing site installation time.

Local User Interface. AHU exterior case mounted IP65 controller with LCD display for intuitive user adjustment of temperature set point, time clock programming, automatic start/stop optimisation and hand/off/auto selection. Pin protected access to commissioning levels

Fan control. Supply and extract fan starters with control signals directly connecting to EC fans or inverter speed controllers for demand control and commissioning

Airflow Control. The design air volume may be selected at the user interface, simplifying the commissioning process. The air volumes can be set to individually meet specific supply and extract application requirements. Volumes, temperatures and setback can also be set using the user interface.

The fan pressure sensors also monitor airflow for fault feedback and will calculate the optimal filter change point based upon filter cost, maintenance and extra power required to overcome additional filter resistance.

Temperature control. The temperature control mode can be selected, with accurate control options of supply air, return air or return air with supply limits being available at the user interface.

Heat exchanger control. The face and bypass damper is automatically modulated to achieve temperature set point and hence maximum energy saving. Air temperatures are monitored via three duct sensors that constantly check the fresh air intake, **sensor supplied fitted**, supply air duct, **sensor supplied loose**, and extract temperatures, **sensor supplied fitted**. From these, free heating, heat recovery, free cooling or cooling recovery is optimised prior to mechanical heating or cooling. *Note, at the lower air volume Ecovent size 1 and 2 units, a bypass only damper is fitted.*

Fresh air, return air and air off exchanger temperatures are used to calculate the amount of recovered energy, which can be displayed in real time on the user interface, **if energy monitoring is purchased.**

LPHW heating valve control. 0-10 Volt dc modulating signal together with a 24 Volt ac supply to accurately control valve actuator. A Frost sensor is supplied and fitted to the LPHW coil. **valve and actuator quoted separately**

Damper control. Inlet and return damper open signals, with option of either 24 Volt ac or 230 Volt ac auxiliary power supply.

Auxiliary volt free contacts in the panel for; Set #1, Common trip indication

Remote shut down. Fire alarm shut down, in response to 24 Volt dc input, **supplied by others.**

All necessary fusing, labelling and terminals are located within the panel together with adjacent fixed panel for cable entry to ease installation and maintenance.

<u>Qty</u>	<u>Description</u>	<u>Part Number</u>	<u>Total Price £</u>
1	BlueSense Control Package	CPB0-1/W/P/C	1039.02

Further Additional Options, *each supplied loose*, and priced separately below:

Demand control. Air Quality sensor, monitoring CO₂ and Volatile Organic Compounds, provides a signal directly to the EC fan or inverter varying the air volume to match demand, hence reducing energy usage.

Energy Control. Optional integrated energy monitoring unit for actual energy consumption and saving calculations.

This information is displayed in real time on the user interface.

The user can adjust between comfort and economy, which will automatically adjust parameters to suit and provide real energy feedback.

Additional remote User Interface options.

A remote mounted user interface to simplify end user control. An alternative remote user interfaces are available to suit individual application requirements as follows:-

- 1 EPEL9041 Room unit with built in temperature sensor, LCD display, ON / OFF control, temperature and speed adjustment.

VES provides a number of communication protocols including BACnet, Modbus RTU and TREND. Please contact our sales office for individual price.

<u>Qty</u>	<u>Description</u>	<u>Part Number</u>	<u>Total Price £</u>
1	Additional User Interface 1	EPEL9041	129.99

Exclusions. Controls and commissioning excludes field wiring, integration, air volume measurement and any item not specifically stated above. Estimated commissioning time assumes that the AHUs and controls will be fully installed and ready to operate, aborted visits and additional time will be charged as quoted above. Continuous, unrestricted and safe access to be provided. A standard day is 7.5 hours Monday to Friday 08.00 – 1700. No allowance has been made for out of hours working. A minimum of 7 days notice required prior to site visit.

All prices shown on this quotation are *ex works* and subject to VAT and our latest standard terms and conditions of sale. This quotation is valid for 30 days.

Dispatch date at time of quoting is working days plus delivery period, as detailed below, from receipt of your order and *full* and *final* instructions, *including handings*, thus enabling us to proceed.

Carriage will be charged at 5% of order value on our standard delivery, providing the nett ex works value of the order is not less than £1000.00 and delivery is within the UK mainland. For orders below £1000.00 a minimum carriage charge of £40.00 will be made.

Northern Ireland, Isle of Man, Channel Islands and other UK non-mainland destinations will be charged at 7.5% of order value. For orders below £1000.00 a minimum carriage charge of £100.00 will be made.

Standard delivery assumes a 2 working day delivery period using a National Carrier, the complete order dispatched in one consignment and delivered between 9am to 5.30pm, on a Monday to Friday. All standard delivery vehicles will be fixed roof curtain sided without off loading facilities.

For deliveries to the Highlands of Scotland, Northern Ireland, Channel Islands or the Isle of Man, please contact sales office for delivery period.

Any deviations, such as dedicated vehicles to meet cranes or to suit special site conditions will carry additional charges. Next day or timed delivery will also carry additional charges. Please contact our Sales Office for further details.

We exclude off loading, site storage, electrical controls, installation, commissioning and any item not specifically mentioned.

We trust the above meets with your approval, however should you have any further queries please do not hesitate to contact this office.

Yours Faithfully
VES Andover Ltd.