

ECOSMART BOXER

Consultants Specification

Air Handling Unit specification

The Air Handling Unit shall be configured and arranged as detailed on the drawings and in accordance with the schedule of equipment. The units shall be manufactured from a highly rigid pentapost framework with 25mm double skinned infill panels. The panels shall contain inert high density infill. Panel materials are heavy gauge Aluzinc corrosion resistant steel. The units shall provide exceptional thermal and acoustic insertion. The general construction is to class A leakage.

The fan impeller and motor shall be selected to provide the most energy efficient solution conforming to part L regulations and shall be direct or belt drive with EFF2 high efficiency motors to BS5000 as standard. The fan impeller shall be a high efficiency forward or backward curved centrifugal design, manufactured in galvanised steel.

The Fan unit shall have a 5 year warranty.

The unit and ancillaries shall be of the Ecosmart Boxer type as manufactured by Nuaire Ltd.

All other components shall be in accordance with the manufacturer's specification.

Control Specification

The Air Handling Unit shall be supplied with one of the following control options:-

1. Ecosmart controls -

The compact Ecosmart control system complete with all necessary controls to facilitate the operation of the ventilation system. It shall be come complete with an integral factory fitted Ecosmart PCB which will control the fan unit within the desired design parameters and provide the interface between all external control devices and the unit itself.

The Air Handling Unit shall have the following energy saving components integrally mounted, pre-wired to interface with the purpose made PCB, all components pre-wired, configured and factory fitted by the manufacturer: -

- Integral Frequency inverter/speed controller.
- Integral maximum and minimum speed adjustment for commissioning.
- Integral adjustable run on timer.
- Integral BMS interfaces – summer/winter switching, heating control, 0-10V speed adjustment.
- Volt free failure and status indication.
- Integral air off temperature adjustment.
- Facility for remote temperature control.

- Integral background ventilation switch (trickle switch).
- Multiple IDC sockets for interconnection of sensors or fans using pre-plugged 4-core low voltage cable.
- Volt free frost alarm/heat demand interface.
- Frost protection/hold off stat.

Ecosmart System operation

The Ecosmart controls will enable the unit to automatically vary its speed as it receives signals from one of the interconnected sensors. When the signal is received the fan shall either increase speed gradually until the required level is achieved or it will work on a trickle and boost principle. This will then and move the fan duty point from trickle/background ventilation rate to the required boost ventilation rate. Both the trickle and boost rates are infinitely variable, easy to adjust and remove the need of a main balancing damper.

2. BMS interfaces

– The fan unit shall be provided with the following integrated BMS interfaces

- 0 - 10 volt contacts to provide a full BMS interface. This will enable the following functions:-
 - Switch the unit on/off.
 - Switch from low speed to high speed.
 - Full speed control facility.
 - Switch the heating function on/off.
 - Switch the cooling function on/off.
- 2 No. Volt free contacts to provide fan run and failure indication to provide system status.
- An integrated commissioning/speed control to accurately commission the system, with minimum and maximum speeds easily adjusted via a miniature dial, as recommended in Part L. This will enable the unit to be configured to run between set parameters thus saving motor power and limiting noise.
- Commissioning set up - The fan unit shall be provided with an integrated commissioning/speed control to accurately commission the system, as recommended in Part L, minimum and maximum speeds easily adjusted via miniature dial. The commissioning set up facility directly controls the integrated speed control/frequency inverter.

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Coil types, HX and Controls

The control for the coils shall be fully integrated and shall maintain a constant off coil temperature. The system shall have frost protection which shall, at temperatures below 4 degrees C, fully open the 3-port valve and only start the fan when the temperature at the filter has risen above the designated set point. Unit to have contacts which will act as frost alarm and/or signal boiler to switch on.

- **Heating Coils - Low Pressure Hot Water**

The Low Pressure Hot Water heating coil shall be manufactured from copper tubing with high efficiency aluminium fins contained within a galvanised steel frame, shall be factory fitted with a 3-port motorised diverting valve assembly comprising the 3-port valve, double regulating valve, drain cocks and actuator controlling the 3-port valve shall be control via the on-board PCB by the off coil temperature sensor. All components pre-piped, assembled and tested by the manufacturers.

- **Heating Coils - Electric**

The Electric Heater Battery shall be factory fitted and pre-wired to an integral closed loop thyristor control. The heat output can be configured on site to suit the specific requirements.

- **Cooling Coils - Chilled Water**

The Chilled Water Coil shall be manufactured from copper tubing with high efficiency aluminium fins contained within a galvanised steel frame, it shall be factory fitted with a 3-port motorised diverting valve assembly comprising the 3-port valve, drain cocks and air vents. The actuator controlling the 3-port valve shall be control via the on-board PCB by the off coil temperature sensor. Coil supplied complete with an insulated condensate tray and moisture eliminator. All components pre-piped, assembled and tested by the manufacturer.

- **Cooling Coils – DX Coils**

The DX Coil shall be manufactured from copper tubing with high efficiency aluminium fins and droplet eliminator contained within a galvanised steel frame. The coil shall be filled with dry nitrogen with the pipe connections capped. It shall be factory fitted and tested by the AHU manufacturer.

- **Heat Exchanger**

The cross flow heat exchanger shall be complete with a motorised summer bypass; this will be activated when the heating, cooling or ventilation switch on the user control is switched to the ventilation position.

The Fan unit shall have a 5 year warranty.

All equipment shall be as manufactured by Nuaire Ltd.

*Suitable for 95% RH non condensing.