

# Ecosmart Airmover Product Manual

## I. Installation

2. Setting to Work 3. Maintenance 4. Wiring

### Important Notes to Installers

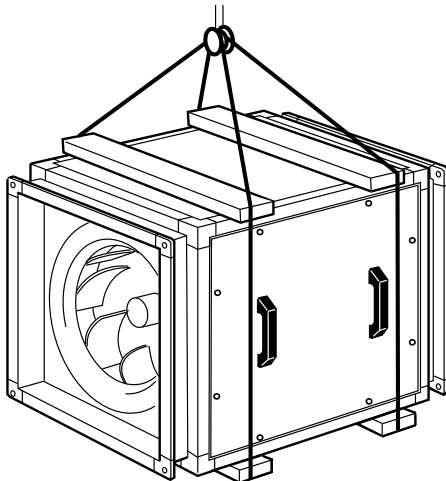
Installation must be carried out by competent personnel in accordance with the appropriate authority and conforming to all statutory and governing regulations e.g. I.E.E., CIBSE, COHSE etc.

### Handling

Before commencement of lifting ensure that normal equipment safety checks have been carried out and the lift/deposit areas are clear of site personnel and traffic.

**Note: the weight of the unit from the rating plate and lift using “spreaders” as shown in (figure 1.)**

Figure 1.



Units are suitable for internal and external use and a canopy cover is available to avoid standing water on external applications.

Prior to installation the impeller should be rotated by hand to check for smooth rotation and that no transit damage has occurred.

**NOTE: The Ecosmart Control Box is a separate item, packed individually.**

It is advisable to fit flexible connectors on either side of the fan unless there is an open ended inlet or discharge and the fans should be supported on A/V mounts (figures 2 and 3).

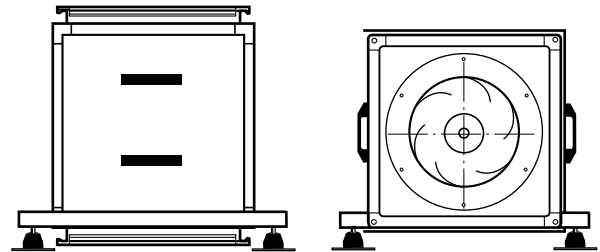
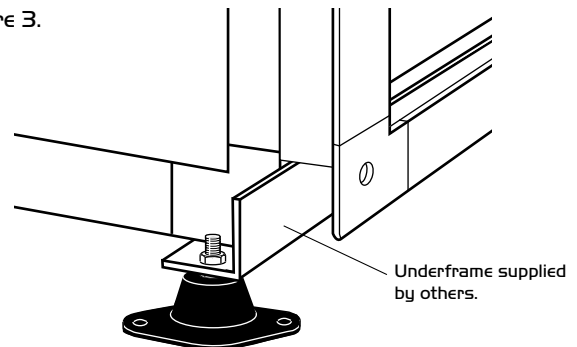


Figure 2.

The A/V mounts should be “levelled off” for satisfactory running and the flexible connectors installed maintaining the line of the ductwork with minimal crimping.

A range of ancillaries including guards and silencers are available from Nuair /Fans Direct.

Figure 3.



### Ecosmart Control Installation

The controller must be fitted indoors (an optional outdoor cover can be purchased) and away from moisture ingress. The operating range is - 10° to 35°C up to 85% relative humidity.

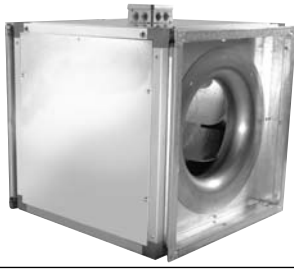
The controller must be fitted to a vertical vibration free wall with appropriate fasteners and for ease of installation the cover should be removed and the casing separated from the base. If cooling fans are fitted they should be disconnected while installation takes place.

The cable connecting the Ecosmart control and the fan must be a screened power cable, max length 25m. It should be earthed at both ends using the special cable glands supplied.

**(Details of wiring connections are shown on sheets 2 and 4).**

#### Warning - Inverter Speed Control

An Inverter is used to provide speed control. When the fan is isolated, allow 5 minutes for the capacitors in the inverter to discharge before commencing any work on the unit.



# Ecosmart Airmover Product Manual

## 2. Setting to Work

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### Getting Started

The Ecosmart Airmover fan is designed for maximum control flexibility. The control should be supplied from a local isolation (by others) and the control connected to the fan by screened cable and suitable glands. (maximum length 50m).

Apart from the power supply an enabling signal is always required to set the fan running. This can be a switched time signal (connect to SL) or an enabling device plugged in the net connection. If an enabling signal is not available, connect a link wire from 'L' to 'SL'. **Note: the unit must be fused in line with the full load current on the fan rating label.**

#### Warning - Inverter Speed Control

An Inverter is used to provide speed control. When the fan is isolated, allow 5 minutes for the capacitors in the inverter to discharge before commencing any work on the unit.

### Ecosmart Compatible Devices

#### Enabling Devices

ES-PIR:	PIR Sensor
ES-TC:	7 Day Timeclock

#### Sensors

ES-TEMP:	Temperature Sensor	ES-CO2
ES-RH:	Humidity Sensor	

#### User Controls

ES-UCF:	Fan Only Control
<b>Others</b>	
ES-JB:	Junction Box (to add extra sensors etc)
ES-AVI:	Audio Visual Fault Control

**Note:** these Ecosmart devices will affect all the fans linked using the SELV data cable. The switched live signal will only affect the fan to which it is connected.

### Control Connections

**Net** - the 4 IDC plug-in connectors are provided for the connection of compatible sensors, manual controls and for linking the fans together under a common control. If more than 4 connections are required, the junction box (product code ES-JB) should be used (see 'data cable installation' below).

**Switch Live (SL) terminal** - A signal of 100-230V ac will activate the fan. **Note that a signal from an isolating transformer will produce unpredictable result and is not recommended.**

### Volt Free Relay Controls

Note that the volt free contacts are not fused. If these are used to power any external equipment, the installer must provide adequate fusing or other protections.

These contacts are rated at 5A resistive, 0.5A inductive.

**Run connections** - These contacts are closed when the fan is running.

**Fault connections** - No fault = the contacts are closed.

Fault = the contacts are opened (this includes no power supply at the unit)

### Data Cable Installation

A 4-core SELV data cable is used to connect devices such as sensors to the fan and interconnecting multiple fan units. Do not run data cable in the same conduit as the mains cables and ensure there is a 50mm separation between the data cable and other cables. The maximum cable run between any two devices is 300m when it is installed in accordance with the instructions.

Please note that the total data cable length used in any system must be less than 1000m. Keep the number of cable joints to a minimum to ensure the best data transmission efficiency between devices.

### Maximum number of devices

The maximum number of devices (including fans) that can be connected together via the cable is 32, irrespective of their functions. Any other low voltage/signal cable connection i.e. BMS follow the guidelines as given in "Data Cable" and keep the cable length as short as possible - less than 50m.

### Settings

#### Setting the maximum air flow

- Ensure the power supply is switched off and that a link wire is connected from the supply L to the SL terminal. Unplug all items connected to the 'Net' connectors.
- Switch on the power supply.
- Wait for the fan to complete its self-test operation. Measure the airflow using standard commissioning instruments at a suitable point in the ductwork. If adjustment is required, rotate the pot marked 'MAX' to obtain the desired airflow.

#### Setting the minimum trickle airflow (nominal 40%)

- Repeat the same procedure as for maximum airflow above but without the link wire between supply L and SL terminal. Ensure the trickle switch is in the 'ON' position. The adjustment must be made on the pot marked 'Min'
- Note that the minimum setting (nominally 40%) must be below the maximum setting, otherwise minimum setting will be automatically set to be the same as the maximum.



# Ecosmart Airmover Product Manual

## 3. Maintenance

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**Isolation - Before commencing work make sure that the unit, switched live and Nuair control are electrically isolated from the mains supply.**

### **Warning - Inverter Speed Control**

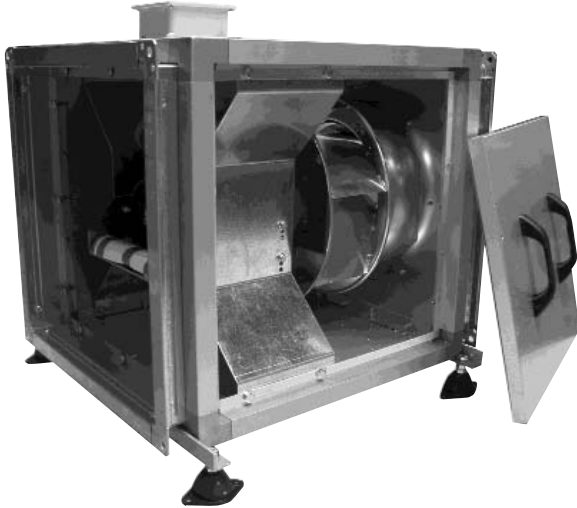
An Inverter is used to provide speed control. When the fan is isolated, allow 5 minutes for the capacitors in the inverter to discharge before commencing any work on the unit.

### **Maintenance Intervals**

The first maintenance should be carried out three months after commissioning and thereafter at twelve monthly intervals. These intervals may need to be shortened if the unit is operating in adverse environmental conditions, or in heavily polluted air.

### **Lubrication**

Motors are fitted with sealed for life bearings and do not require any lubrication.



### **General Cleaning and Inspection**

Clean and inspect the exterior of the fan unit and associated controls etc. Remove the access panel from the fan unit. Inspect and, if necessary, clean the fan impeller and motor assemblies and the interior of the case. Check all parts for security and condition. Check that the impeller rotates freely. Ensure all control components are secure and clean, replace all access doors.

### **Cleaning Control Box and Sensors (if fitted)**

Remove covers and carefully clean out interiors as necessary. Check for damage and security of components. Refit covers.

### **Replacement of Parts**

Should any component need replacing Nuair keep extensive stocks for quick delivery. Ensure that the unit is electrically isolated, before carrying out any work.

When ordering spare parts, please quote the serial number of the unit and the ARC number of the purchase if possible.

**(This information will be available on the fan label).**

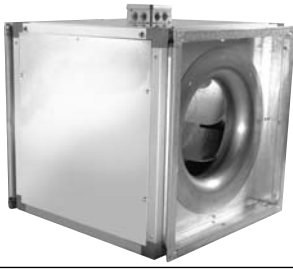
### **Warranty**

The Airmover has a 3 year warranty and Ecosmart Airmover has a 5 year warranty. The warranty starts from the day of delivery and includes parts and labour for the first year. The remaining years covers replacement parts only. This warranty is conditional on planned maintenance being undertaken.

### **Service Enquiries**

Nuair can assist you in all aspects of service. Our service department will be happy to provide any assistance required, initially by telephone and if necessary arrange for an engineer to call within 48 hours if possible.

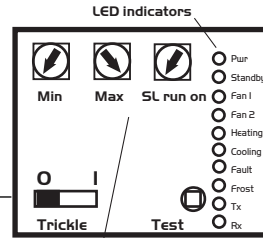
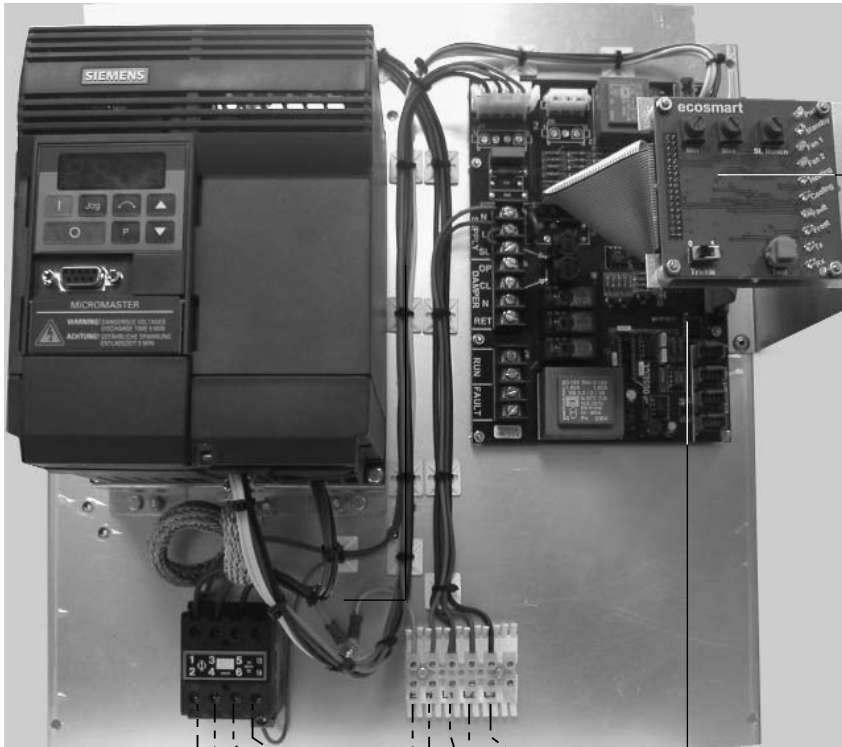
**Telephone 029 2085 8585  
Fax 029 2085 8586**



# Ecosmart Airmover Product Manual

## 4. Wiring

1. Installation 2. Setting to Work 3. Maintenance



**MIN** = Minimum speed adjustment  
**MAX** = Maximum speed adjustment  
**SL Run on** = Switched Live Run-On Timer adjustment  
**TRICKLE** = Selects trickle running: 0 = off, 1 = selected  
**TEST** = Test button

**Warning** - When the fan is isolated, allow 5 minutes for the capacitors in the inverter to discharge before commencing work on the unit.

### LED Indication

**PWR** GREEN: Power on & OK.  
**Standby** LED on when fan is not running. (Not applicable)  
**Fan 1** GREEN: Fan 1 is running, RED: Fan 1 faulty.  
**Fan 2** GREEN: Fan 2 is running, RED: Fan 2 faulty. (Not applicable)  
**Heating\*** Not applicable. See note.  
**Cooling\*** Not applicable. See note.  
**Fault** LED on when a fault is present on unit.  
**Frost\*** Not applicable. See note.  
**Tx** LED on when the controller is transmitting data.  
**Rx** LED on when the controller is receiving data.

\*Note: the control panel is common to all the Ecosmart products. Indicators for functions that are not available in this particular fan will not be illuminated.

### Damper Connections (if required)

**OP** - 230V 50Hz IA max supply to open the damper  
**CL** - 230V 50Hz IA max supply to close the damper  
**N** - Neutral supply to damper  
**RET** - 230V ac return signal from damper limit switch to indicate the damper has reached its operating position. If the return signal is not present, the fan will wait for 1 minute before starting.  
**Note:** If a damper is not fitted, connect a link wire from OP to RET. This will cancel the delay.

### BMS Signal

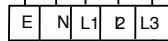
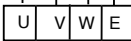
The system's response to a 0-10V dc BMS signal is given in the following table. Note the BMS signal will override any sensors and user control connected in the system. The voltage tolerance is +/- 125mV and is measured at the fans terminal.

	Ventilation mode	Cooling mode*	Heating mode*
Local control	0.00	-	-
OFF / trickle	0.25	-	-
Speed 1	0.50	0.75	1.00
Speed 2	1.50	1.75	2.00
Speed 3	2.50	2.75	3.00
Speed 4	3.50	3.75	4.00
Speed 5	4.50	4.75	5.00
Speed 6	5.50	5.75	6.00
Speed 7	6.50	6.75	7.00
Speed 8	7.50	7.75	8.00
Speed 9	8.50	8.75	9.00
Speed 10	9.50	9.75	10.00

\* Only available on relevant unit

**Enabling** ES - PIR ES - TEMP ES - UCF  
**Sensors** ES - RH ES - CO2  
**User Control** ES - TC

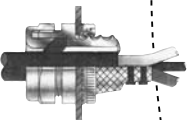
Connection to fan must use screened power cable, max length 50m. Screening must be earthed at both ends.



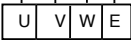
Main Supply 400V 3ph 50Hz



To Fan



Glands supplied.





**Important! This product must be earthed**

## DECLARATION OF INCORPORATION AND INFORMATION FOR SAFE INSTALLATION, OPERATION AND MAINTENANCE

We declare that the machinery named below is intended to be assembled with other components to constitute a system of machinery. The machinery shall not be put into service until the system has been declared to be in conformity with the provisions of the EC Machinery Directive.

**Designation of machinery:** ECOSMART AIRMOVER FAN  
**Machinery Types:** ESAM  
**Relevant EC Council Directives:** 98/37/EC as amended by 98/79/EC (Machinery Directive)  
**Applied Harmonised Standards:** BS EN ISO 12100-1, BS EN ISO 12100-2, EN294, EN60204-1, BS EN ISO 9001  
**Applied National Standards:** BS848 Parts One, Two and Five

**Signature of manufacture representatives:**



Name:	Position:	Date:
1) C. Biggs 	Technical Director	20. 07. 07
2) W. Glover 	Manufacturing Director	20. 07. 07

## CE DECLARATION OF CONFORMITY

We declare that the machine named below conforms to the requirements of EC Council Directives relating to Electromagnetic Compatibility and Safety of Electrical Equipment.

**Designation of machinery:** ECOSMART AIRMOVER FAN  
**Machinery Types:** ESAM  
**Relevant EC Council Directives:** 2004/108/EC (EMC)  
 2006/95/EC (Low Voltage Directive)  
**Applied Harmonised Standards:** EN55014-1, EN55014-2, EN60335-2-80  
**Basis of Self Attestation:** Quality Assurance to BS EN ISO 9001  
 BSI Registered Firm  
 Certificate No. FM 149

**Signature of manufacture representatives:**

Name:	Position:	Date:
1) C. Biggs 	Technical Director	20. 07. 07
2) W. Glover 	Manufacturing Director	20. 07. 07

## INFORMATION FOR SAFE INSTALLATION, OPERATION AND MAINTENANCE OF NUAIRE VENTILATION EQUIPMENT

To comply with EC Council Directives 98/37/EC Machinery Directive and 2004/108/EC (EMC).

To be read in conjunction with the relevant Product Documentation (see 2.1)

### 1.0 GENERAL

- 1.1 The equipment referred to in this Declaration of Incorporation is supplied by Nuairé to be assembled into a ventilation system which may or may not include additional components.  
 The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturers recommendations and with due regard to current legislation and codes of practice.

### 2.0 INFORMATION SUPPLIED WITH THE EQUIPMENT

- 2.1 Each item of equipment is supplied with a set of documentation which provides the information required for the safe installation and maintenance of the equipment. This may be in the form of a Data sheet and/or Installation and Maintenance instruction.
- 2.2 Each unit has a rating plate attached to its outer casing. The rating plate provides essential data relating to the equipment such as serial number, unit code and electrical data. Any further data that may be required will be found in the documentation. If any item is unclear or more information is required, contact Nuairé.
- 2.3 Where warning labels or notices are attached to the unit the instructions given must be adhered to.

### 3.0 TRANSPORTATION, HANDLING AND STORAGE

- 3.1 Care must be taken at all times to prevent damage to the equipment. Note that shock to the unit may result in the balance of the impeller being affected.
- 3.2 When handling the equipment, care should be taken with corners and edges and that the weight distribution within the unit is considered. Lifting gear such as slings or ropes must be arranged so as not to bear on the casing.
- 3.3 Equipment stored on site prior to installation should be protected from the weather and steps taken to prevent ingress of contaminants.

### 4.0 OPERATIONAL LIMITS

- 4.1 It is important that the specified operational limits for the equipment are adhered to e.g. operational air temperature, air borne contaminants and unit orientation.
- 4.2 Where installation accessories are supplied with the specified equipment eg. wall mounting brackets. They are to be used to support the equipment only. Other system components must have separate provision for support.
- 4.3 Flanges and connection spigots are provided for the purpose of joining to ductwork systems. They must not be used to support the ductwork.

### 5.0 INSTALLATION REQUIREMENTS

In addition to the particular requirements given for the individual product, the following general requirements should be noted.

- 5.1 Where access to any part of equipment which moves, or can become electrically live are not prevented by the equipment panels or by fixed installation detail (eg ducting), then guarding to the appropriate standard must be fitted.
- 5.2 The electrical installation of the equipment must comply with the requirements of the relevant local electrical safety regulations.
- 5.3 For EMC all control and sensor cables should not be placed within 50mm or on the same metal cable tray as 230V switched live, lighting or power cables and any cables not intended for use with this product.

### 6.0 COMMISSIONING REQUIREMENTS

- 6.1 General pre-commissioning checks relevant to safe operation consist of the following:  
 Ensure that no foreign bodies are present within the fan or casing.  
 Check electrical safety. e.g. Insulation and earthing.  
 Check guarding of system.  
 Check operation of Isolators/Controls.  
 Check fastenings for security.
- 6.2 Other commissioning requirements are given in the relevant product documentation.

### 7.0 OPERATIONAL REQUIREMENTS

- 7.1 Equipment access panels must be in place at all times during operation of the unit, and must be secured with the original fastenings.
- 7.2 If failure of the equipment occurs or is suspected then it should be taken out of service until a competent person can effect repair or examination. (Note that certain ranges of equipment are designed to detect and compensate for fan failure).

### 8.0 MAINTENANCE REQUIREMENTS

- 8.1 Specific maintenance requirements are given in the relevant product documentation.
- 8.2 It is important that the correct tools are used for the various tasks required.
- 8.3 If the access panels are to be removed for any reason the electrical supply to the unit must be isolated.
- 8.4 A minimum period of two minutes should be allowed after electrical disconnection before access panels are removed. This will allow the impeller to come to rest.  
**NB: Care should still be taken however since airflow generated at some other point in the system can cause the impeller to "windmill" even when power is not present.**
- 8.5 Care should be taken when removing and storing access panels in windy conditions.

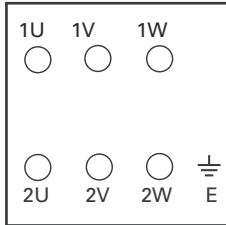
# Airmover

## Two speed motors DOL starting on both speeds

observe the motor plate and connection details.  
**3 phase two speed tap/pam wound motors require a three contactor control.**  
**3 phase Dual wound motors require a two contactor control.**

Motor Terminal Box

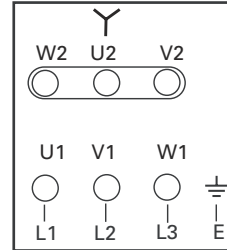
Note: HIGH SPEED -  
 Supply 2U 2V 2W  
 Link 1U 1V 1W  
 LOW SPEED  
 Supply 1U 1V 1W



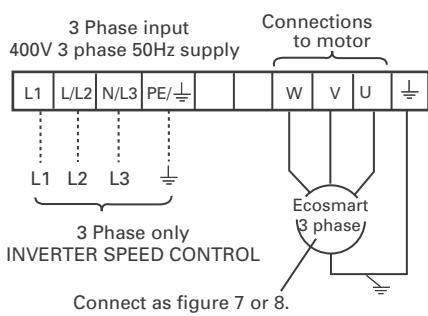
400V 3 phase 50Hz supply

**Three phase motors are connected directly to the Motor Terminal Box.**

## 3 phase units up to 3KW

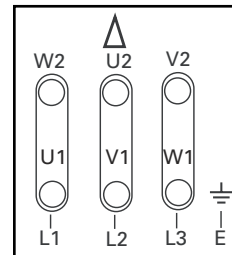


## 3 phase units with matched frequency inverter

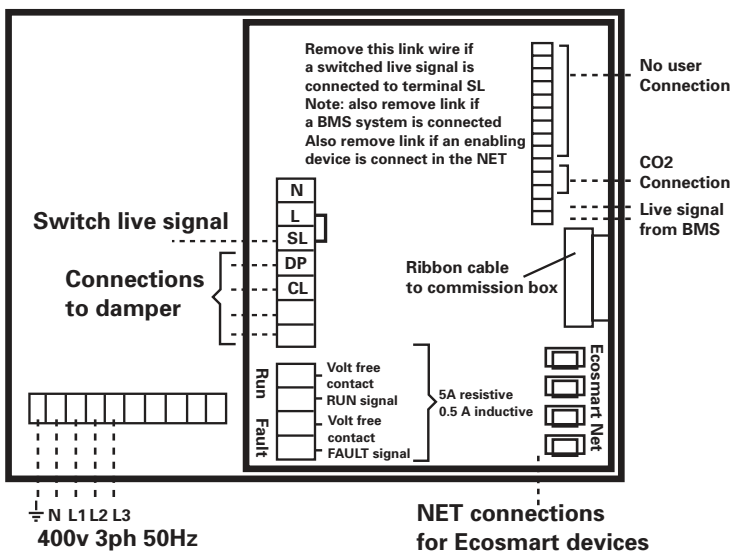


Notes:  
 Total length of motor leads should not exceed 50 mtrs. If a screened motor cable is used, maximum length should be 25 mtrs. Consult our Technical Department if you wish to use longer leads. Inverters are configured to suit specific fans and control applications as described on the Customer Order.

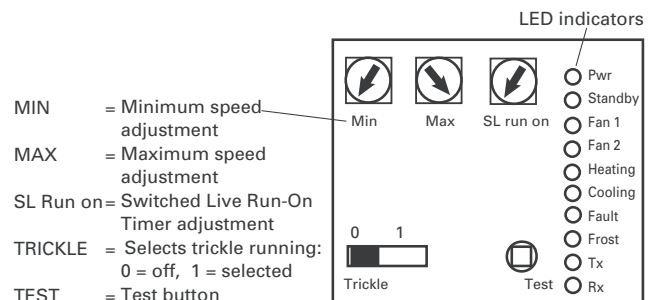
## 3 phase units 4KW and above



## Three Phase (Ecosmart)



## Set Up/Commissioning box





**Nuaire Limited**  
Western Industrial Estate  
Caerphilly United Kingdom  
CF83 INA  
T: 029 2088 5911  
F: 029 2088 7033  
E: [info@nuaire.co.uk](mailto:info@nuaire.co.uk)  
W: [www.nuaire.co.uk](http://www.nuaire.co.uk)

Technical or commercial considerations may, from time to time, make it necessary to alter the design, performance and dimensions of equipment and the right is reserved to make such changes without prior notice.