OPUS(40/60/95)

230V Surface & Recess Mounted
Domestic Single & Twin Fans
Installation Manual

1.0 SAFETY INFORMATION

- The provision of the electrical supply and the connection of the unit to the electrical supply must be carried out by a qualified electrician.
- Isolate from power supply before removing any covers. During installation / maintenance ensure all covers are fitted before switching on the mains supply.
- All-pole disconnection from the mains as shown in the wiring diagram must be incorporated within the fixed wiring and shall have a minimum contact separation of 3mm in accordance with latest edition of the wiring regulations.
- Ducting must be securely fixed with screws to the spigot to prevent access to live parts. Duct runs terminating close to the fan must be adequately protected by suitable guards.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. The replacement cord must be of the same technical specification as the original cord or greater.
- This appliance should not be used by children or persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning the safe use of the appliance by a person responsible for their safety. Children shall not play with the appliance. Cleaning and user maintenance shall not be carried out by children.

1.1 Symbols

GENERAL WARNING

Signifies a general warning regarding hazard specified by supplementary information.

ELECTRIC SHOCK

This unit must be completely electrically isolated before any panels are removed. Check mains supply and control connections.

ROTATING PARTS

This unit contains fast moving rotational parts which may start automatically. It is the sole responsibility of the installer to adequately guard these components.

REFER TO INSTRUCTION MANUAL

Read and understand the installation and maintenance manual before installing, operating or maintaining this product.

1.2 Important Information

This manual contains important information on the safe and appropriate assembly, transport, commissioning, operation, maintenance, disassembly and simple troubleshooting of the product.

While the product has been manufactured according to the accepted rules of current technology, there is still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings contained in these instructions are not complied with.

- **Read these instructions completely and thoroughly before working with the product.**
- **Keep these instructions in a location where they are accessible to all users at all times.**
- **Always include the operating instructions when you pass the product on to third parties.**

1.3 Personal Protective Equipment

The following minimum Personal Protective Equipment (PPE) is recommended when interacting with Nuaire product:

- **Protective Steel Toed Shoes -** when handling heavy objects.
- **Full Finger Gloves (Marigold PU800 or equivalent) -** when handling sheet metal components.
- **Semi Fingerless Gloves (Marigold PU3000 3DO or equivalent)** - when conducting light work on the unit requiring tactile dexterity.
- **Safety Glasses** - when conducting any cleaning/cutting operation or exchanging filters.
- **Reusable Half Mask Respirators** - when replacing filters which have been in contact with normal room or environmental air.

Nuaire would always recommend a site specific risk assessment by a competent person to determine if any additional PPE is required.

2.0 INTRODUCTION

The Nuaire range of Opus 230V fans have been specifically designed to ventilate areas such as the bathroom, toilet, stores, drying rooms, cupboards etc.

The range consists of three duty ranges, 40l/s, 60l/s and 95l/s. The 40 and 60 models are available as single and twin fan variants (twin fans are duty sharing). The 95 model is dual fan only (both fans run simultaneously).

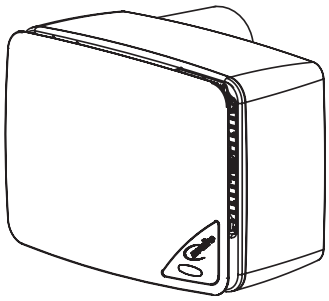
The unit package is supplied to offer the installer 3 alternative mounting options.

The unit discharges air through a 100mm diameter spigot which for a surface mounted unit exits at the rear, and for recessed mounting can be discharge either through the rear or top of the unit (Figures 1 - 3).

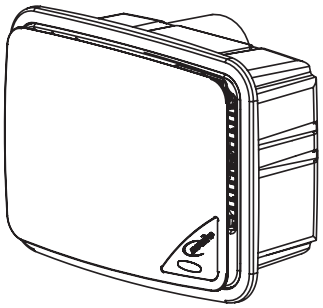
Air entering the unit passes through the front grille and can be filtered via an optional foam filter.

The motor(s) are 24V brushless DC. Bearings are sealed, self-lubricating ball type with integral locked rotor protection. The fan / motor assembly can be fitted in one of two positions (Figures 6 & 9) and is held in place by the yellow fastener located at the rear of the unit.

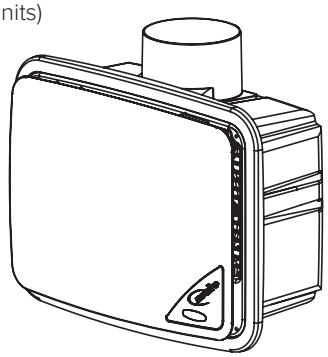
1 Surface Mounted with Rear Spigot



2 Recess Mounted with Rear Spigot



3 Recess Mounted with Top Spigot (Not Suitable for OPUS95D Units)



2.1 Code Description

1	2	3	-	4
OPUS	40	S	-	ESPF

1. Range: **OPUS**
2. Unit Size: **40**, **60** or **95** (l/s at Free Air)
3. Fan Type: **S** = Single Fan
   T = Twin Fan
   D = Dual Fan (2/3rds Duty on Single Fan Failure)
4. Variant: **CF** = Speed Control with Filter
   CRF = Speed Control with Run-On Timer and Filter
   ESF = Ecosmart Control with Filter
   ESPF = Ecosmart Control with PIR Sensor and Filter

2.2 Ancillary Items

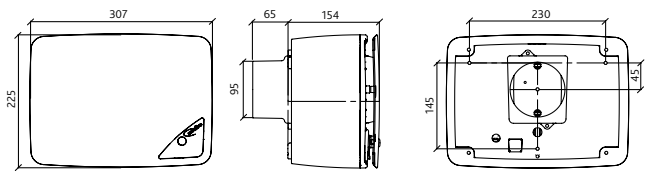
Code	Description
OPUS-RFI	Remote Fail Indicator
OPUS-AV1	Remote Fail Indicator for Ecosmart Models Only
HUMISEN	External Humidistat
ES-HUMIDISTAT	External Humidistat for Ecosmart Models Only

2.3 Dimensions

4 Dimensions

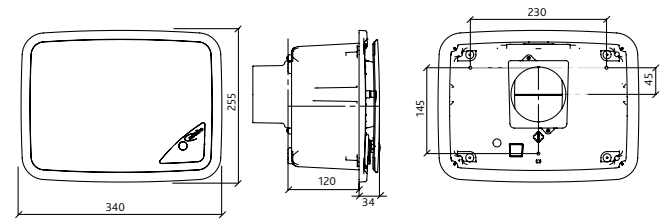
DIMENSIONS (MM) SURFACE MOUNTED UNIT

FRONT VIEW SIDE VIEW BACK VIEW



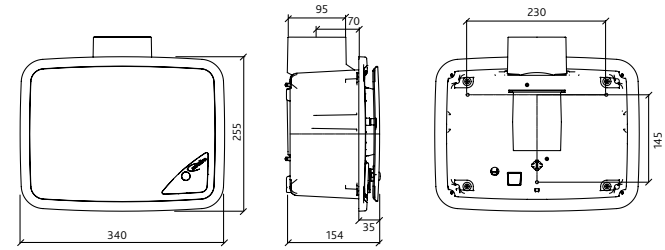
DIMENSIONS (MM) RECESSED MOUNTED UNIT REAR DISCHARGE

FRONT VIEW SIDE VIEW BACK VIEW



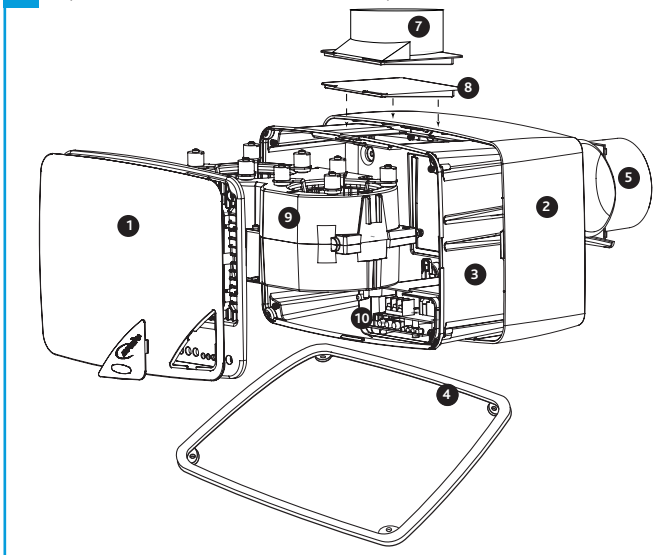
DIMENSIONS (MM) RECESSED MOUNTED UNIT SIDE DISCHARGE

FRONT VIEW SIDE VIEW BACK VIEW



2.4 Fan Component Overview

5 Exploded View of Units and Components

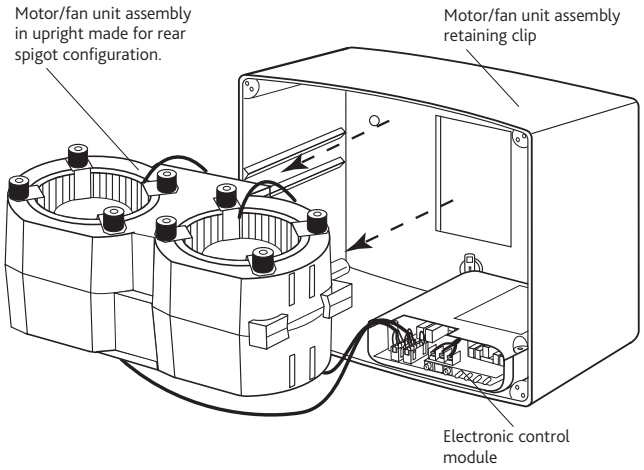


1. Front Cover/Grille - **Part No. 040913/912**	**7.** Circular Top Spigot Option - **Part No. 040918**
2. Outer Casing - **Part No. 040915**	**8.** Top Spigot Blanking Plate - **Part no. 040921**
3. Inner Casing - **Part No. 040914**	**9.** Fan Module
4. Recess Flange Option - **Part No. 040919**	**10.** Control
5. Circular Rear Spigot Option - **Part No. 040954**	**11.** Recessed Frame Mounting Plate (See Figure 9)
6. Rear Spigot Blanking Plate (Not Shown, See Figure 8) - **Part No. 040917**	**12.** Screw Kit

2.5 Fixings Inventory

Outer casing to inner casing screw	**4.2 x 9.5 (4 off)**
Recess flange to inner case screw	**3.5 x 9.5 (4 off)**
Rear spigot to inner case screw	**3.5 x 6.5 (2 off)**
Rear spigot blanking plate to inner case	**3.5 x 6.5 (2 off)**
Grille section to inner case	**3.5 x 19 (4 off)**

6 Internal View of Unit with Components Removed

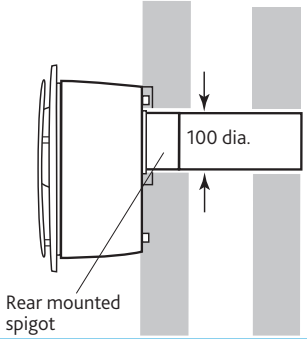


3.0 MECHANICAL INSTALLATION

Installation must be completed by competent persons, in accordance with good industry practice and should conform to all governing and statutory bodies i.e. IEE, CIBSE, etc.

3.1 Surface Mounted Installation

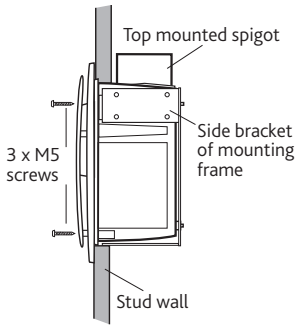
7 Surface Mounted In Cavity Wall



1. Unpack the unit and components. Discard the top spigot (040918), rear blank (040917) and recess flange (040919). Remove the front cover/grille and disconnect the motors from the control circuit board, noting their orientation. Rotate the yellow retaining clip and remove the fan assembly. Leaving the control unit in place, remove the top section only.
2. Use the base is a template mark the discharge spigot and mounting holes onto the surface.
3. Core cut the hole for the spigot to 100mm diameter.
4. Run suitable cable into the unit, noting the wiring should be for a fixed wired installation.
5. Run any ancillary wiring into the knock-out “square”.
6. Secure the case to the surface taking care not to twist or distort the case.
7. Connect all wiring (Section 4.5) and re-fit top section of control unit. Re-fit fan assembly and connect motors to control board. Rotate yellow clip to lock in place.
8. Complete the installation by securing the front cover and fitting any filters and test-run the unit.
9. Adjust control settings as required.

3.2 Recess Mounted With Top Spigot Installation

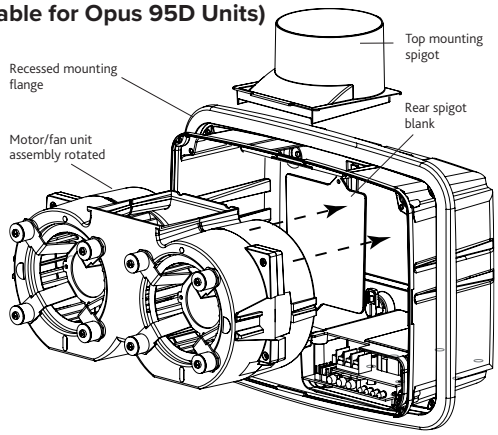
8 Recess Mounted In Stud Wall



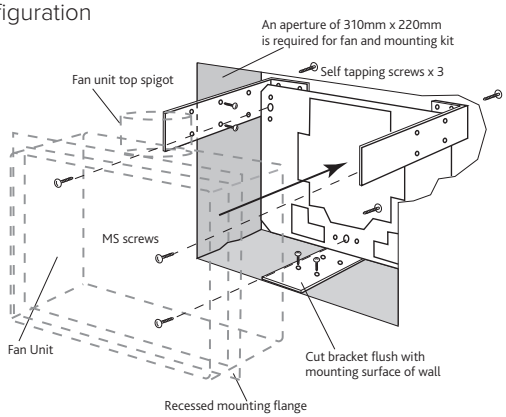
For applications including stud walls and ceilings that require top spigot configuration **(not suitable for Opus 95D units).**

1. Unpack the unit and components. Discard the rear spigot (040954), top spigot blank (040921) and outer casing (040915). Fit the recess flange (040919) and rear spigot blank (040917). Remove the front cover/grille and disconnect the motors from the control circuit board, noting their orientation. Rotate the yellow retaining clip and remove the fan assembly. Leaving the control unit in place, remove the top section only.
2. The unit should not be mounted directly to a partition wall / ceiling but a suitable frame should be erected to secure the mounting frame kit to (Figure 10).
3. Run suitable cable into the unit, noting the wiring should be for a fixed wired installation.
4. Run any ancillary wiring into the knock out “square”.
5. Secure the case to the frame using the machine screws provided taking care not to twist or distort the case.
6. Connect all wiring (Section 4.5) and re-fit top section of control unit. Re-fit fan assembly and connect motors to control board. Rotate yellow clip to lock in place.
7. Complete the installation by securing the front cover and fitting any filters and test-run the unit.
8. Adjust control settings as required.

9 Fan Unit Rotated for Top Spigot Configuration **(Not Suitable for Opus 95D Units)**

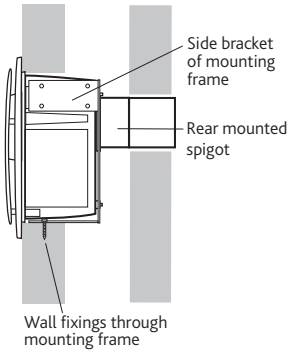


10 Recess Mounting Kit In Wall Aperture With Top Spigot Configuration



3.3 Recess Mounting With Rear Spigot

11 Recess Mounted In Cavity Wall

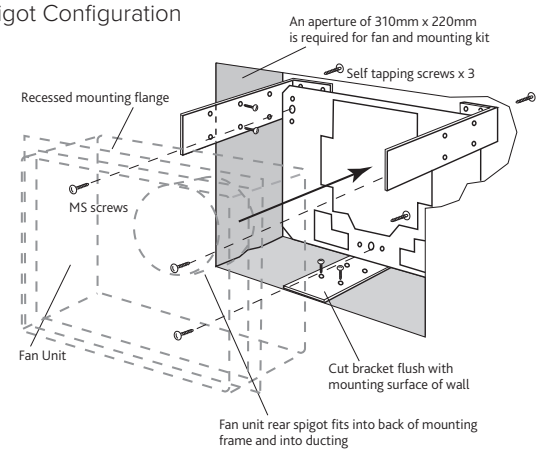


For applications including cavity walls that require rear spigot configuration.

1. Unpack the unit and components. Discard the top spigot (040918), rear spigot blank (040917) and outer casing (040915). Fit the recess flange (040919) and rear spigot (040954). Remove the front cover/grille and disconnect the motors from the control circuit board, noting their orientation. Rotate the yellow retaining clip and remove the fan assembly. Leaving the control unit in place, remove the top section only.
2. The unit should not be mounted directly to partition wall / ceiling but a suitable frame should be erected to secure the mounting frame kit to (Figure 12).
3. Run suitable cable into the unit, noting the wiring should be for a fixed wired installation.
4. Run any ancillary wiring into the knock out “square”.

5. Secure the case to the frame using the machine screws provided taking care not to twist or distort the case.
6. Connect all wiring (Section 4.5) and re-fit top section of control unit. Re-fit fan assembly and connect motors to control board. Rotate yellow clip to lock in place.
7. Complete the installation by securing the front cover and fitting any filters, test-run the unit.
8. Adjust control settings as required.

12 Recess Mounted Frame Kit In Wall Aperture With Rear Spigot Configuration



4.0 ELECTRICAL INSTALLATION

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

For good EMC engineering practice, any sensor cables or switched live cables should not be placed within 50mm of other cables or on the same metal cable tray as other cables.

4.1 Ecosmart Control Connections

4.1.1 Net Connections

The 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 3 connections are required, the junction box (product code ES-JB) should be used.

Do not run the SELV data cable in the same conduit as the mains cable and leave a 50mm separation with any power cables.

4.1.2 Volt Free Relay Contacts

The volt free contacts are not fused. If used to signal low voltage external equipment the switching load must not exceed 200mA.

4.1.3 Run Connections

These contacts are closed when the fan is running.

Fault connections:
No Fault = Contacts Close
Fault = Contacts Open (Including No Power Supply to Unit)

4.1.4 Data Cable Installation

A 4-core SELV data cable is used to connect devices such as sensors to the fan and for 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.

4.1.5 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.

4.1.6 LED Indication

PWR / STANDBY	GREEN: Power on and OK, RED: LED On When Fan is Not Running
Fan 1	GREEN: Fan 1 is running, RED: Fan 1 faulty.
Fan 2	GREEN: Fan 2 is running, RED: Fan 2 faulty.

4.2 Basic Control Connections

4.2.1 Fault (Terminals 2 and 3)

This should only be used with optional OPUS-RFI (remote fail indicator). Connecting mains or any other device will damage the control PCB.

4.2.2 LED Indication

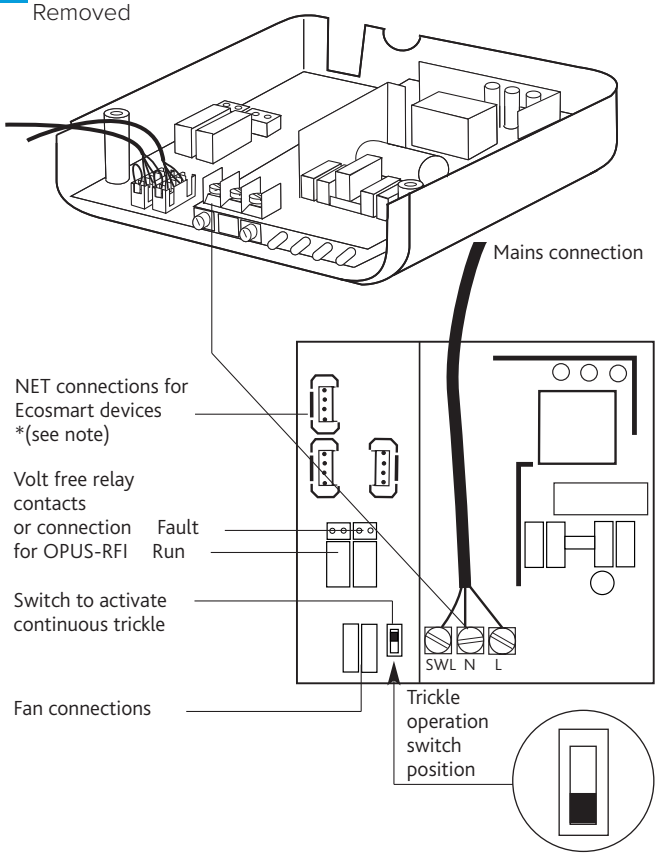
Fan 1	GREEN: Fan 1 is running. RED: Fan 1 faulty.
Fan 2	GREEN: Fan 2 is running. RED: Fan 2 faulty.

4.3 Electrical Consumption

Unit Size	Power Consumption (Watts)	FLC (amps)
OPUS40	14	0.11
OPUS60	43	0.32
OPUS95	72	0.60

4.4 PCB Details

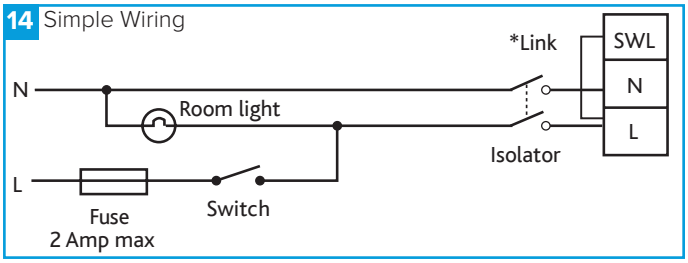
13 View Inside Electronic Control Module With Cover Removed



4.5 Wiring

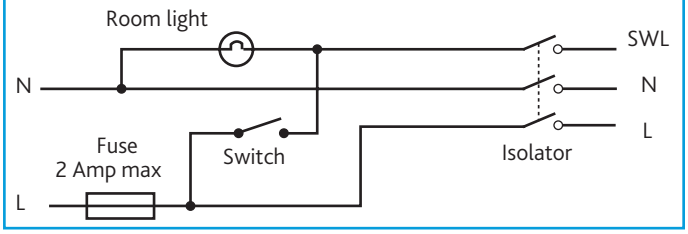
4.5.1 Simple Wiring

14 Simple Wiring



4.5.2 Wiring Using Run-On Timer And Enabler (Integral PIR, Humisen, ES-Humidistat etc.)

15 Wiring Using Run-On Timer And Enabler (Integral PIR, Humisen, ES-Humidistat etc.)



5.0 COMMISSIONING

For commissioning purposes, the unit has a miniature control panel mounted in its fascia hidden behind the front cover facilitating high and low speed adjustment (trickle and boost) together with run on timer (1- 60minutes).

The front cover is removable without the aid of tools. Any adjustments shall be quickly and easily achieved with a standard screwdriver. The control panel also has status indication lamps visible behind the corner “window”.

Run and standby versions shall have auto changeover and duty share as standard, the fan shall changeover every twelve hours of run time to maximise the unit’s effective life span. All models shall have foam filters as standard.

6.0 CONTROLS

The unit has the following functions integrally mounted within on a purpose made PCB, all such components are pre-wired and factory fitted by the manufacturer.

Min speed: disabled	Used to regulate trickle speed. Can be using switch (Figure 13).
Max speed:	Used to regulate full speed. Adjustable.
Run-on timer:	1 to 60 minutes.

7.0 MAINTENANCE

Before any maintenance or cleaning operation, switch off the fan and disconnect from the main power supply.

It is important that maintenance checks are recorded and that the schedule is always adhered to, in all cases, the previous report should be referred to.

Even with optional filtered extract grilles fitted, some dust, fluff etc. will pass through the filter, and which if allowed, will build up internally on motors and impellers, shortening the life of the unit and, in severe cases, leading to overheating of the motors.

Consequently, it is strongly recommended that all units are inspected and cleaned every year.

The front cover can be removed and cleaned with water and a mild detergent using a soft cloth and the motor fan assembly can be cleaned with a dry brush or dry cloth. Ensure the unit does not come into contact with any kind of liquid or solvent. If this should occur, contact a qualified technician before reassembling the fan.

To clean the filter (if fitted), remove from the unit and wash in tepid water to which a little mild detergent has been added. Shake out the excess water and allow the filter to dry naturally, replace when dry.

8.0 WARRANTY

The unit has a 3 year warranty. Ecosmart versions have a 5 year warranty. The warranty starts from the day of delivery and includes parts and labour for the first year. The remaining period covers replacement parts only.

This warranty is void if the equipment is modified without authorisation, is incorrectly applied, misused, disassembled, or not installed, commissioned and maintained in accordance with the details contained in this manual and general good practice.

The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Failure to maintain the unit as recommended will invalidate the warranty.

9.0 END-OF-LIFE AND RECYCLING

Ensure that Nuaire product is made safe from any electrical / water / refrigerant supplies before dismantling commences. This work should only be undertaken by a qualified person in accordance with local authority regulations and guidelines, taking into account all site based risks.

Where possible Nuaire use components which can be largely recycled when the product reaches its end-of-life:

- Fans, motors, controls, actuators, cabling and other electrical components can be segregated into WEEE recycling streams.
- Sheet metal parts, aluminium extrusion, heating/cooling coils and other metallic items can be segregated and fully recycled.
- EPP, plastic ducting, nylon corner pieces, plastic heat exchangers, packaging material and other plastic components can be segregated into mixed plastic and widely recycled.
- Cardboard packaging, wood, used filters and other paper components can be largely recycled or fully processed in energy from waste centres.
- Remaining Items can be further segregated and processed in accordance with the zero waste hierarchy. Please call After Sales Support for further information on items not listed above.

10.0 AFTER SALES AND REPLACEMENT PARTS

For technical assistance or further product information, including spare parts and replacement components, please contact the After Sales Department.

If ordering spares please quote the serial number of the unit together with the part number, if the part number is not known please give a full description of the part required. The serial number will be found on the identification plate attached to the unit casing.

Telephone 02920 858 400
aftersales@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.

NOTES