



XPC PASSIVHAUS

VENTILATION
SOLUTIONS
FOR REDUCING
CARBON EMISSIONS

PASSIVHAUS
CERTIFIED



CONTENTS

3	VENTILATION SOLUTIONS FOR REDUCING CARBON EMISSIONS
4	WHAT IS PASSIVHAUS?
5	WHERE DOES VENTILATION FIT INTO THIS?
6	ABOUT XPC
8	XPC RANGE
10	ABOUT XPC55
12	ABOUT XPC65

PROUD TO BUILD BRITISH



We've been pioneers in new air technology since 1966. Our heritage is in the design and manufacture of fans and ventilation systems. We put our energy into efficient ventilation so you don't waste yours.

Pioneering
We lead the way in product innovation with a stream of ground-breaking products over decades.

Trusted
We have a reputation for our build quality. We establish long term relationships and are always transparent with our test data.

Agile
We're one of the UK's leading manufacturers, covering both residential and commercial air quality. We offer innovative advice and provide flexible solutions.

Sustainable
We're committed to minimising environmental impact by utilising XCarb® recycled steel, working to reduce our CO₂ emissions by 35%.

Personal
We work closely with our customers and can provide bespoke solutions to meet their specific project needs. Many of our product ranges were developed this way.

Attentive
We're expert listeners, rising to any challenge and going the extra mile for our customers. We add value by solving problems. We sell solutions, not fans.

“Our expertise, experience and innovation are what makes us stand out from the rest of the market.” - Nuaire.



For help with selecting a unit, speak to us on 029 2085 8200 or email: enquiries@nuaire.co.uk

PASSIVHAUS VENTILATION SOLUTIONS FOR REDUCING CARBON EMISSIONS

All commercial buildings consume significant amounts of energy each year. This high consumption contributes heavily to carbon emissions, posing a harmful threat to people and the environment.

Emissions generated from buildings and construction hit an all-new high in 2022, making up 37% of total global CO₂ emissions, contributing significantly to global climate change (Global Status Report Buildings and Construction, 2024).

As demand continues to grow, now more than ever, it is fundamental to integrate sustainable solutions into construction projects. Taking essential steps to address these challenges will reduce environmental impact and create a more sustainable future.

PASSIVHAUS CERTIFIED HEAT RECOVERY UNIT

XPC is a range of packaged heat recovery units, with extremely low depth, designed to save energy, improve indoor air quality, and provide the lowest possible noise breakout.

Designed for easy installation, commissioning, and maintenance in mind. The optimised design features innovative spigot arrangement, allowing full design flexibility with unit handing.

The combination of innovative design and flexible control options provides customers with the best possible heat recovery solution.



WHAT IS PASSIVHAUS?

Passivhaus is a global standard with goals of achieving energy efficiency and, therefore, carbon net-zero buildings.

Supported by over 30 years of international evidence, Passivhaus provides a range of tried and tested solutions that reduce carbon emissions for existing and new buildings. Built on the understanding that we can create spaces that provide a high level of occupant comfort and well-being using minimal energy.

Passivhaus adopts a whole-building approach with clear targets certified through a rigorous quality assurance process, delivering measured targets with a strengthened focus on high-quality construction.

Creating a better future with positive change by conforming to the Passivhaus standard, designers are not only creating greener buildings, but are establishing spaces with fresher air, low energy bills, and a high level of occupant comfort.

WHERE DOES VENTILATION FIT INTO THIS?

Ventilation is a fundamental part of a Passivhaus building, with the institute putting a massive emphasis on indoor air quality and occupancy health.

Focusing on clean air, high efficiency, heat recovery and noise levels. Passivhaus state that to achieve the UK standard, you are required to have “a mechanical ventilation system with highly efficient heat recovery”. To be considered part of a Passivhaus Standard project, ventilation units are required to be tested to achieve strict energy-efficiency targets.

Our Passivhaus certified ventilation systems work towards achieving both high levels of IAQ and energy-efficiency. Helping to maintain a healthy, well run internal climate.

5 PRINCIPLES OF PASSIVHAUS

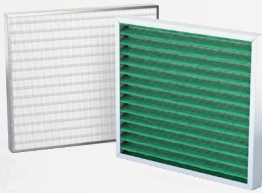
The UK Passivhaus standard is built around five key principles that ensure comfortable indoor environments with low energy consumption.

- 1 Premium insulation solutions
- 2 High performance windows and openings
- 3 Airtight construction
- 4 ‘Thermal bridge free’ construction
- 5 Continuous mechanical ventilation with heat recovery (MVHR)



HIGH-CLASSIFICATION FILTERS

F7 and G4 extract filters have been installed to ensure the unit meets the high Passivhaus air quality standards. Creating a space focused on a high level occupant comfort and wellbeing.



L2 LEAKAGE CLASSIFICATION

Units are tested to meet strict L2 leakage requirements. Airtight seals ensure no heat or air is lost, providing a high build quality product suitable for a Passivhaus build.

CLASS 3 DAMPERS

High-classification dampers have been installed to ensure the unit remains airtight mitigating weak points in a Passivhaus building. Ensuring quality is maintained when the unit is not in use.



XPC, PASSIVHAUS AND TESTING

PHI mandate that the testing is carried out by an independent test laboratory certified to: *BS EN ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories*. This is a complex standard requiring a high standard of technical competence and robust control of the testing process and data management.

Nuaire used the TÜV SÜD laboratories based in Munich, which specialise in large AHU products.

This PHI procedure is applicable to 'large' ventilation units – with air volume flow rates > 600 m³/hr. (A similar process exists for smaller units used in residential projects).

The units are categorised by flow-rate range (I (600 – 2000 m³/hr), to IV at (15000 m³/hr)) within the Non-Residential application area, and the specifications of the unit's principal components are checked and confirmed.

The units are initially tested for airtightness, leakage being a key determinant of overall quality and unit efficiency. In the German DiBt standards applied, internal cross-leakage and the product envelope are considered.

Thermodynamic testing of the product is then carried out. The TÜV SÜD facilities simultaneously setting/measuring

temperature and humidity conditions to all four connections of the unit (Intake, Extract, Supply and Exhaust). Aerodynamic resistance is set at a level determined by the flow-rate category, and this enables the 'real world' range of PHI compliant heat recovery efficiency and specific fan power to be established.

The units are also assessed for their capability to meet a 'comfort' criterion, delivering a supply temperature of at least 16.5°C under extreme cold temperatures.

Acoustic measurements to DIN EN ISO 3743-1 and DIN EN ISO 5136 are carried out for radiated and ducted sound power emissions respectively.

The units are tested for self-protection against the effects of low intake temperatures on water based integral heat emitters and recuperative heat exchangers.

The test report data is passed to PHI for consideration. The manufacturer's data is also scrutinised before PH certification.

The confidence provided by this process ensures that whether the certified products are used in fully Passivhaus compliant projects or not, our clients may be assured that they will perform to the highest standards.

Name		Air Flow Range From (m3/h)	Air Flow Range To (m3/h)	Specific Electric Power (Wh/m3)	Heat Recovery Rate	Heat Recovery Rate on Cooling	Humidity Recovery (Winter)	Humidity Recovery (Summer)	Performance Number	At External Pressure	Available External Pressure (with installed filters)	Climate Zones	Company HQ
Manufacturer	Component												
Nuaire	XPC55	590	1377	0.43	85 %	-	-	-	10	243 Pa	175 Pa	Cool, temp.	UK (GB)
Nuaire	XPC65	430	1390	0.40	84 %	-	-	-	11	243 Pa	174 Pa	Cool, temp.	UK (GB)

The first step in Passivhaus accreditation of a commercial product is the verification of the product technical specification and performance in accordance with the PH procedural document :-

Testing procedure for the energy-relevant and acoustic assessment of large Passive House ventilation units for certification as 'components suitable for Passive Houses'.

PHI mandate that the testing is carried out by an independent test laboratory certified to: *BS EN ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories*. This is a complex standard requiring a high standard of technical competence and robust control of the testing process and data management.

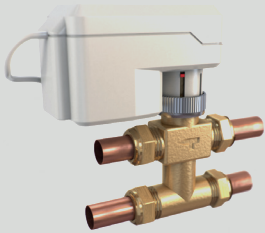
COIL FEATURES

HEATING COIL OPTIONS

Fitted LPHW or electric heater battery options available.

DX AND CHILLED WATER

Bolt-on cooling coil modules available as a matched ancillary.



CONTROL FEATURES

BUILT IN ECOSMART CONTROLS

Ecosmart Classic, Connect or Adapt controls available with XPC units. Allowing simple integration into supervisory control networks using BACnet.

QUICK COMMISSIONING

Integrated supply and extract fan allows precise system duty which can be quickly and accurately set (Ecosmart models only).

100% SUMMER BYPASS

Bypass operates automatically via integrated temperature sensors and pre-defined control programme.

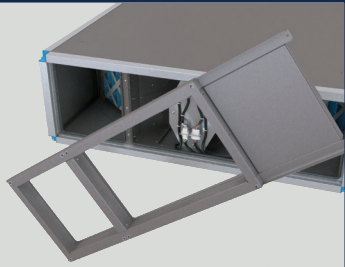
INSTALL FEATURES

SPACE SAVING SOLUTION

Lowest depth by duty on the market and only 260mm side access required for filter removal.

FLEXIBLE LAYOUT DESIGN

Supply/discharge connections are on unit centreline. Intake/extract connections are configurable on site to either side of the unit.



ANCILLARY FEATURES

MATCHED ANCILLARIES

Wide range of ancillaries available, including matched silencers, advanced filtration, and bend silencers.

WEATHERPROOFING

Available factory-fitted or later as an ancillary.



CONSTRUCTION FEATURES

ROBUST CONSTRUCTION

Manufactured from corrosion resistant and extremely durable XCarb®.

LOW NOISE LEVELS

Units have an asymmetric, high mass, double-skinned wall construction (patented) with integral acoustic barrier mat ensuring low breakout noise levels.



EFFICIENCY

UNIT EFFICIENCY'S

High efficiency heat exchanger up to 95%.

HIGH PERFORMANCE

Utilising latest EC motor technology for low specific fan power (SFP).

INSTALL FEATURES

INTEGRAL MOUNTING BRACKETS

Internal units are pre-fitted with mounting brackets for simple drop-rod installation.

SIDE OR BOTTOM ACCESS

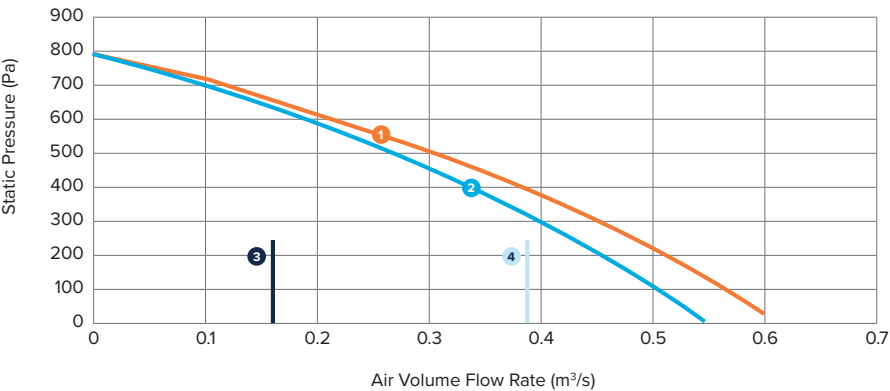
Internal units are available in either side or bottom access for more design flexibility.



XPC55

PERFORMANCE & TECHNICAL

XPC55 PERFORMANCE CHART



The Passivhaus upper and lower flow rate limits define where the unit can operate within a 1.6 W/l/s specific fan power and 75% heat exchanger efficiency envelope - with performance constrained according to the PH pressure / flowrate operating condition table.

XPC55 TECHNICAL INFORMATION

Heater Type	Voltage / Phase / Frequency (Hz)	Input Power (W)	Fan Speed (rpm)	FLC (A)	SC (A)	Max Operating Temperature (°C)	Unit Weight (kg)
LPHW	230 / 1 / 50	1100	2400	6.9	6.9	40	368
Electric*	230 / 1 / 50	10100	2400	46	46	40	375
No Heater	230 / 1 / 50	1100	2400	6.9	6.9	40	364

Relevant to BC, ES, CO or AT control types. *Includes 9kw electric heater

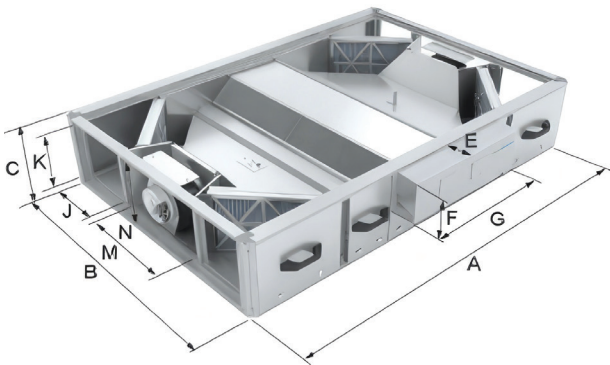
XPC55 SOUND DATA

Sound level data is shown for full speed operation of the unit. For sound level information at the required duty point, please use Nuaire's Fan Selector software or enquire via our Sales Office.

As a general guide (not for selection or specification purposes) Operation at 75% of full speed will reduce the quoted values by 5-7 dB, and at 50% of full speed by around 13-15 dB.

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	72	64	60	47	45	43	39	28	34
Induct Intake	81	73	74	63	64	61	52	41	49
Induct Supply	85	79	83	71	72	70	65	61	57
Induct Discharge	86	80	83	71	72	71	65	63	58
Induct Extract	82	74	74	63	64	62	52	43	49

UNIT DIMENSIONS



Length (mm)			Width (mm)			Internal Height (mm)			
1956			1562			472			
External Height (mm)			Internal Weight (kg)			External Weight (kg)			
571			375			410			
A	B	C	E	F	G	J	K	M	N
1956	1562	472	120	200	670	398	430	588	428



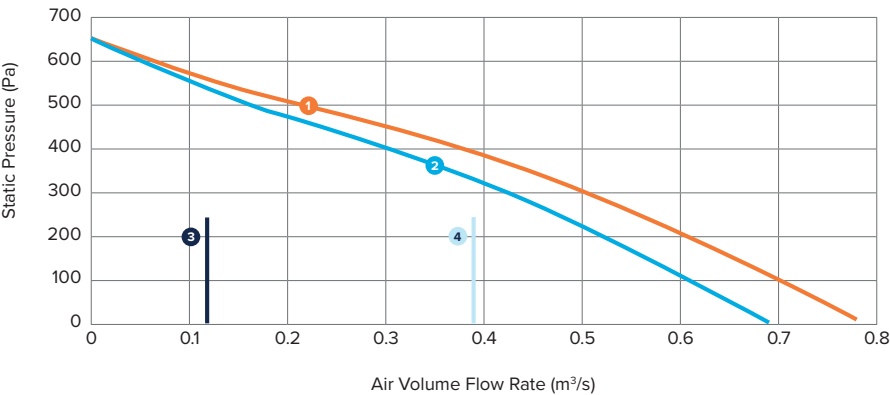
CERTIFICATES

Certificates can be found online on the Passivhaus Institute or Nuaire website.



XPC65 PERFORMANCE & TECHNICAL

XPC65 PERFORMANCE CHART



KEY LABELS

- 1 XPC65 Extract
- 2 XPC65 Supply
- 3 Lower Flow Rate
- 4 Upper Flow Rate

The Passivhaus upper and lower flow rate limits define where the unit can operate within a 1.6 W/l/s specific fan power and 75% heat exchanger efficiency envelope - with performance constrained according to the PH pressure / flowrate operating condition table.

XPC65 TECHNICAL INFORMATION

Heater Type	Voltage / Phase / Frequency	Input Power (W)	Fan Speed (rpm)	FLC (A)	SC (A)	Max Operating Temperature (°C)	Unit Weight (kg)
LPHW	230 / 1 / 50	1540	1700	8	8	40	469
Electric*	230 / 1 / 50	10540	1700	47	47	40	476
No Heater	230 / 1 / 50	1540	1700	8	8	40	465

Relevant to BC, ES, CO or AT control types. *Includes 9k electric heater

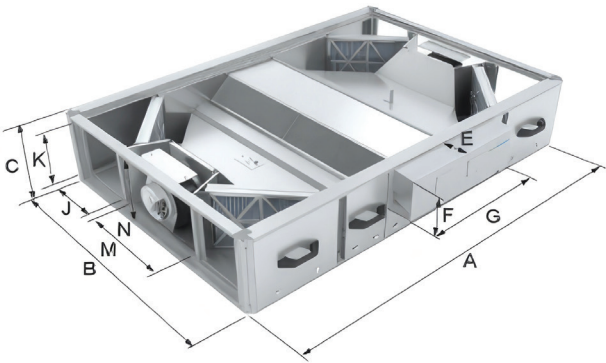
XPC65 SOUND DATA

Sound level data is shown for full speed operation of the unit. For sound level information at the required duty point, please use Nuaire's Fan Selector software or enquire via our Sales Office.

As a general guide (not for selection or specification purposes) Operation at 75% of full speed will reduce the quoted values by 5-7 dB, and at 50% of full speed by around 13-15 dB.

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	71	69	56	51	45	41	35	20	35
Induct Intake	79	79	72	66	64	59	48	34	48
Induct Supply	83	85	79	74	72	68	61	54	56
Induct Discharge	85	85	79	75	72	69	61	55	56
Induct Extract	81	79	70	67	64	60	48	35	49

UNIT DIMENSIONS



Length (mm)			Width (mm)			Internal Height (mm)			
1973			1570			624			
External Height (mm)			Internal Weight (kg)			External Weight (kg)			
725			476			514			
A	B	C	E	F	G	J	K	M	N
1973	1570	624	120	200	670	398	580	588	578



CERTIFICATES

Certificates can be found online on the Passivhaus Institute or Nuaire website.

XPC PASSIVHAUS CODING

The XPC coding is similar to the classic XBC+ coding. This ensures there are no complications when selecting components unique to your specific project requirements. The code is broken down into sections below.

USE OUR 3 STEP XPC CODE GENERATOR TO REDUCE TIME AND ERROR WHEN PLACING AN ORDER

CODING XPC

<p>SECTION 1: UNIT AND CASE</p> <p>The first section of the code dictates what unit is required, including sizing and heat-exchanger option. To denote the end of this section, we put a dash (-).</p>	<p>SECTION 2: HEATING OPTIONS</p> <p>Now you choose your heating options, including valve ports. Again we denote the end of this section with another dash (-).</p>	<p>SECTION 3: ANCILLARIES</p> <p>Finally, choose what ancillary are required such as constant pressure or a weather proof.</p>
<div><div>X P C 55 HA</div><div>1 2 3 4 5</div></div> <div><div>1. XBOXER range</div><div>2. P - Passivhaus certified</div><div>3. C - Counterflow Heat Exchanger</div><div>4. Unit Size</div><div>5. HA - Horizontal Layout</div></div>	<div><div>L H 4 -</div><div>5 6 7</div></div> <div><div>5. L - LPHW Heater</div><div>E - Electric Heater</div><div>N - No Heater</div><div>6. H - High Duty Heater</div><div>L - Low Duty Heater</div><div>N - No Heater</div><div>7. 4 - 4 Port Valve (In-Built)</div><div>E - 2 Port Valve* (supplied loose)</div><div>N - No Valve (Bare Coil)</div></div> <div><div>*2 port valve (supplied loose) is available as ancillary, refer to Nuair Selector.</div></div>	<div><div>E P L S 1 S</div><div>8 9 10 11 12 13</div></div> <div><div>8. E - Ecosmart Classic Controls</div><div>C - Connect Controls</div><div>T - Trend Controls</div><div>9. P - Constant Pressure</div><div>- - No Constant Pressure</div><div>10. L - Left Controls Handing</div><div>R - Right Controls Handing</div><div>11. B - Bottom Filter Access</div><div>S - Side Filter Access</div><div>12. 1 - Standard Unit Finish (XCarb®)**</div><div>4 - Coastal Unit Finish (C4)</div><div>13. S - Standard Internal Unit</div><div>W - External Unit With Weatherproof Roof (Factory Fitted)</div></div>

At this point you should have a completed code. Codes will always be 18 characters long, including any and all dashes. If something is not required that section of the code will always be replaced by something else e.g. Electric heater = E, no heater = N.

This means that if something is missing from the code, our estimating team will be able to quickly spot it and double check with you; rather than potentially missing something from the unit or supplying something that isn't needed.

**This range is offered with XCarb® panelling as standard which provides an industrial finish, enabling enhanced corrosion resistance. Paint finishes are available for aesthetically critical applications.



XPC PASSIVHAUS CONSULTANT SPECIFICATION

XPC

The unit shall be independently third party tested and certified as a Passivhaus compliant component.

The heat recovery ventilation unit will be selected from the 'XBOXER XPC packaged heat recovery range' as manufactured by Nuair in one of the available sizes from XPC55-65.

The unit will be unit constructed from corrosion resistant XCarb®** supported by a bespoke anodised aluminium extrusion system. The standard panel execution will be in a 'natural' XCarb®** finish or as a painted panel option to a specified RAL colour. On request, the XPC will also have the option of additional corrosion protection to withstand an External C4 Atmospheric Corrosivity Category Environment as per BS EN ISO 12944-2:2017 when installed as per the manufacturer's recommendations. The Atmospheric Corrosivity Environment should be determined using BS EN ISO 9223:2012 and BS EN ISO 14713-1:2009. The heat recovery ventilation unit together with matching silencers shall have a maximum depth of 470 / 624 mm (Models XPC 55/65).

The ventilation unit and attenuators shall have an asymmetric, high mass double skinned wall construction (patent applied for) with integral acoustic barrier ensuring low breakout noise levels. The unit and attenuators shall be supplied complete with suspension brackets for inclusion into a drop rod mounting system. The unit shall incorporate a Erp, Eurovent and Passivhaus compliant high efficiency aluminium counterflow plate heat exchanger matrix with a thermal efficiency of up to 93%, fitted with a segmented 100% thermal bypass facility and patented actuator operating under automatic control. The automatic operation of the XPC bypass is determined by an algorithm that varies output based on temperatures, and whether the control system has been set to prioritise heating, ventilation or cooling. All elements of the unit shall be protected from airborne contamination by high capacity ISO 16890 ePM1 50% pleated filters (Supply) and ISO 16890 Coarse 60% (Extract). Two spare filters are provided within the unit for post-construction phase fitting. The unit shall be fitted with ErP 2018 rated, low energy, high efficiency IP54 EC motorised fans providing low specific fan powers and stepless speed control, without tonal noise generation.

Fan/motor assemblies have sealed for life bearings with an anticipated working life of 70,000 hours (L10) and shall be suitable for single phase supply. Impellers shall be of high efficiency, performance and sound optimised backward curved design. The unit shall be fitted with either an electric heater battery with burst fired temperature controller; or a LPHW heater battery complete with factory fitted valve and actuator, terminating at the unit casing.

Both LPHW and Electric heater variants will be available in 'high' and 'low' duty heater options allowing the unit to be better matched to the specified heating load. The system shall have frost protection (Ecosmart models only) which shall, at temperatures below 4°C, fully open the 4-port valve and only start the fan when the temperature within the chamber has risen above the designated set point. The LPHW assembly shall be pressure tested at works to a minimum of 6 Bar. The control for the heaters shall be fully integrated and shall maintain a constant temperature to meet the system design requirements.

The unit is also available without a heater fitted. The unit shall be constructed with removable side panels allowing maintenance access with minimal service space clearance required. The internal units shall also be available in a bottom access variant providing access for routine filter maintenance.

The removable panels shall provide access to the following:

- Supply and extract fan.
- Supply and extract filter.
- Condensate tray.
- All control adjustments (where included).

Bottom access variants are available for internal units (for filter access only).

UNIT CONFIGURATION

Supply/discharge airflow connections are on the unit centreline; Intake/Extract connections are configurable on site to either side of the unit. Unit is supplied as configuration 5 as standard (refer to I&M technical documentation). The ventilation unit shall comprise the following:- Supply and extract fans; high efficiency counterflow plate heat exchanger matrix; supply and extract filters; full 100% automatic heat exchanger bypass; heating coil (as selected) and condensate drip tray; a condensate pump is installed in the unit and has an alarm function (connection by others). If the water level in the condensate tray exceeds a maximum level (for example, as a result of the discharge tube becoming blocked or frozen), the alarm contact will open. This contact is internally connected to the heat exchanger bypass actuator, and the unit will automatically be placed into bypass mode, preventing further condensate production. Unit operation will otherwise be unaffected. Matching high mass double skinned wall construction attenuators can also be provided by Nuair.

For further details on the ErP directive please refer to www.nuair.co.uk



COMMERCIAL

WWW.NUAIRE.CO.UK/COMMERCIAL



RESIDENTIAL

WWW.NUAIRE.CO.UK/RESIDENTIAL



INTERNATIONAL

WWW.NUAIRE.CO.UK/INTERNATIONAL



WESTERN INDUSTRIAL ESTATE | CAERPHILLY | CF83 1NA
T 029 2085 8200 **F** 029 2085 8300 **E** INFO@NUAIRE.CO.UK
WWW.NUAIRE.CO.UK

Part No. 672126
V2 July 2025