

**XBOXER XBC+  
PACKAGED HEAT  
RECOVERY UNITS**

**HAVEN IAQ  
MODULES NOW  
AVAILABLE**



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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.



**Expert**

Our team is made up of over 600 people, 50 of which have over 25 years' experience. We have the skills and knowledge to help find the best solution for our customers.



**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.



**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.

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

Wayne Glover, Managing Director, Nuaire.



For help with selecting a unit, speak to us on **02920 858200** or email: [enquiries@nuaire.co.uk](mailto:enquiries@nuaire.co.uk)

ABOUT PACKAGED HEAT RECOVERY UNITS

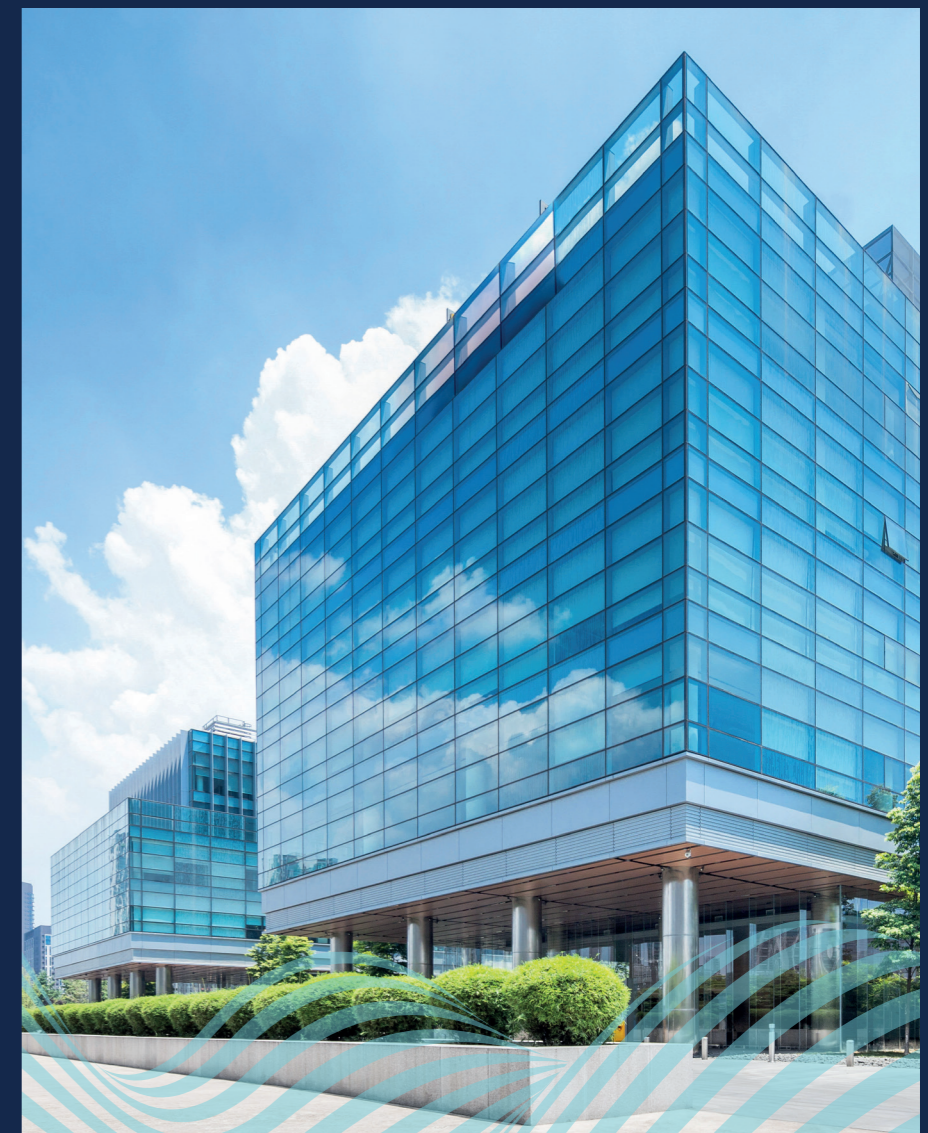
Heat recovery systems are the perfect solution for projects where airflow and occupant comfort needs to be guaranteed.

Heat recovery units are supply and extract systems designed to deliver fresh, filtered air into a building whilst also extracting stale air from the interior. Units contain a heat exchanger, which is capable of retaining heat that would otherwise be lost, and temper incoming air with this energy.

Our pedigree is in the design and manufacture of packaged heat recovery units that contain all the elements of a heat recovery system in a single system. We have been designing and perfecting packaged heat recovery technology for over 20 years - our track record means we can offer low-energy solutions for every commercial application, all manufactured in the UK to the highest standards.



XBOXER XBC+ 10-65



Nuaire XBC+ units are manufactured in a factory production controlled environment using a PAS99:2012 Integrated Management System covering ISO9001:2015 Quality Management, ISO 14001:2015 Environmental Management and ISO 45001:2018 Occupational Health and Safety Management. Our product controls are regularly audited (both internally and by 3rd parties) to ensure our products and services are delivered in a repeatable manner to the highest quality. XBC+ units are CE marked and will fulfil the requirements of the UKCA Mark from 1st Jan 2021.

# ABOUT XBOXER XBC+

XBC is our market-leading range of packaged heat recovery units. Units are extremely low depth and are designed to save energy, improve indoor air quality and provide the lowest possible noise breakout.

XBC+ is our newest innovation in packaged heat recovery. We've taken the award-winning XBC and enhanced the unit further, making it easier still to install, commission, control and maintain. It was these features that earned XBC its leading position in the market, and now the best is better.

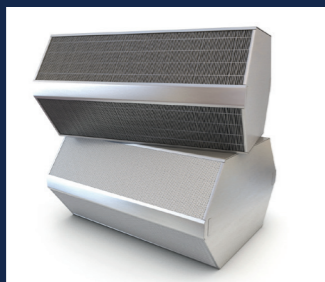
The combination of innovative design and flexible control options provides our customers with the best possible heat recovery solution.



## XBC+ IMPROVES ON THE ORIGINAL WITH...

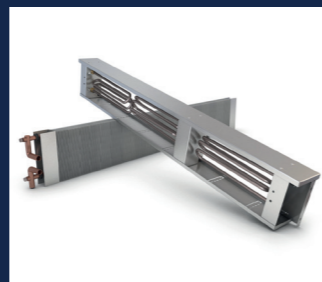
### HIGHEST EFFICIENCY

Counterflow heat exchanger with efficiencies of up to 95%. Enthalpy heat exchanger option now available (sizes 25 and 45 only).



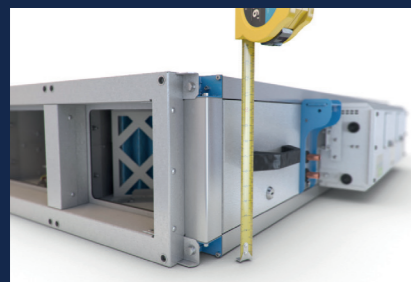
### FLEXIBLE HEATER OPTIONS

Electric and LPHW heater options available with choice of low and high kW output for both.



### SPACE SAVING SOLUTION

Lowest depth by duty on the market.



### EASY MAINTENANCE

Options for either bottom or side filter access as standard.



### FULL CONTROL

Integrated controls for quick and simple commissioning.



# NEW CODING

The new XBC+ coding is longer than the classic XBC coding, giving you more options and choices. This ensures that each unit is selectable with key components unique to your specific project requirements. The new code is broken down into sections.

**USE OUR NEW 3-STEP XBC+ CODE GENERATOR TO REDUCE TIME AND ERROR WHEN PLACING AN ORDER**

## CODING XBC45HA-LH2-EPLS1S

### SECTION 1: UNIT AND CASE

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 (-).

XBC 45 H A -  
1 2 3 4 5

1. XBOXER range
2. C – Counterflow heat exchanger  
E – Enthalpy block heat exchanger
3. Unit size
4. H – Horizontal layout
5. Filter grade (A = G4)

### SECTION 2: HEATING OPTIONS

Now you choose your heating options, including valve ports. Again, we denote the end of this section with another dash (-).

L H 4 -  
6 7 8

6. L – LPHW heater  
E – Electric heater  
N – No heater
7. H – High duty heater  
L – Low duty heater  
N – No heater
8. 4 – 4 port valve (in-built)  
2 – 2 port valve (supplied loose)  
N – No valve (bare coil)

### SECTION 3: ANCILLARIES

Finally, choose what ancillaries are required, such as constant pressure or a weather roof.

E P L S 1 S  
9 10 11 12 13 14

9. E – Ecosmart Classic controls  
C – Connect controls  
T – Trend controls  
S – Siemens controls  
N – No control
10. P – Constant pressure  
- – No constant pressure
11. L – Left controls handing  
R – Right controls handing
12. B – Bottom filter access  
S – Side filter access
13. 1 – Standard unit finish (Aluzinc)  
4 – Coastal unit finish (C4)
14. S – Internal unit  
W – External unit with weather roof (factory fitted)

### 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 quickly be able to spot it and double check with you; rather than potentially missing something from the unit or supplying something that isn't needed.

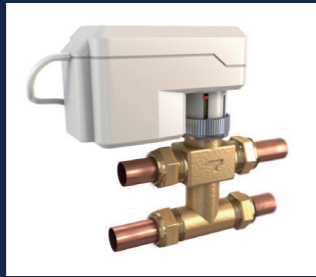
**COIL FEATURES**

Ⓢ **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 XBC+ 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.

Ⓢ **BASIC CONTROL AVAILABLE**

Allowing for a control system to be designed, specified, fitted, and tested by others.

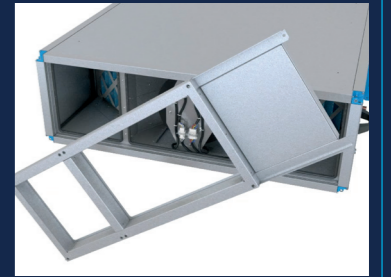
**INSTALL FEATURES**

Ⓢ **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**

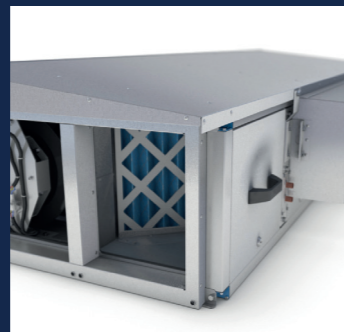
Wide range of ancillaries available, including matched silencers, advanced filtration, and bend silencers.

Ⓢ **HAVEN IAQ MODULE**

In line IAQ module available with filtration from G4, to F7, all the way up to activated carbon.

Ⓢ **WEATHER ROOF**

Available factory-fitted or later as an ancillary.



**CONSTRUCTION FEATURES**

Ⓢ **ROBUST CONSTRUCTION**

Manufactured from corrosion resistant and extremely durable Aluzinc.

Ⓢ **LOW NOISE LEVELS**

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



Ⓢ **HIGH CLASSIFICATION**

Units are tested to meet Class L2 leakage requirements.

Ⓢ **HIGH PERFORMANCE**

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

Ⓢ **5 YEAR WARRANTY**

Ecosmart models come with 5 year warranty for peace of mind.

**INSTALL FEATURES**

Ⓢ **INTEGRAL MOUNTING BRACKETS**

Units come with pre-fitted mounting brackets for simple drop-rod installation.

Ⓢ **SIDE OR BOTTOM ACCESS**

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

# THE HISTORY OF NUAIRE HEAT RECOVERY

Our track record in packaged heat recovery units means we can offer low-energy solutions for every commercial application. All manufactured in the UK to the Nuaire standard.

Our pedigree in commercial heat recovery spans decades - all the way back to 1998 with the launch of our Ecosmart Boxer range. Unlike many units at the time, Ecosmart Boxer combined all the features of a heat recovery system, including supply, extract and heat exchanger sections, into an easy to specify and install packaged solution, rather than supplying them separate to combine on site.

Since then, we've taken our design philosophy to lead the way in commercial heat recovery.



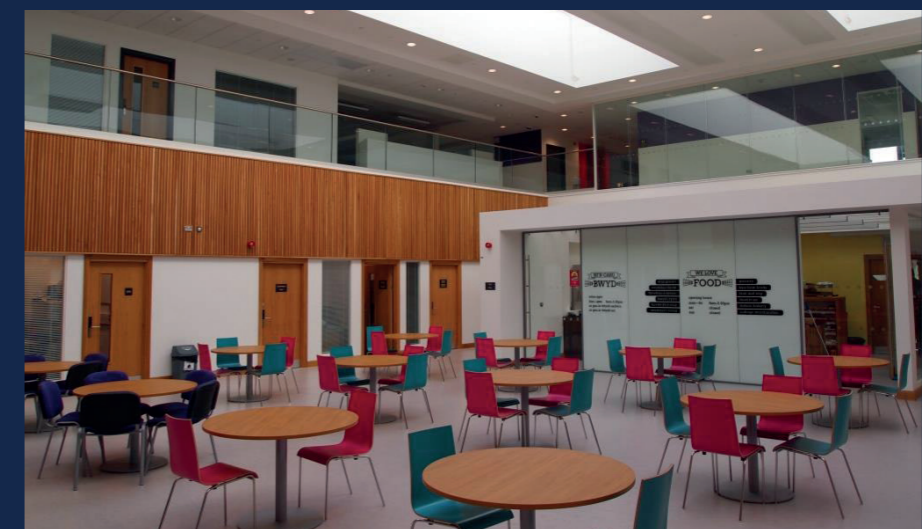
**DID YOU KNOW?**

WE CONTINUE TO DEVELOP OUR OFFERINGS TO MEET MARKET AND CUSTOMER DEMANDS, BUT EVEN OUR OLDER RANGES ARE STILL GOING STRONG.

DESPITE THE FACT IT WAS LAUNCHED OVER 20 YEARS AGO, THE ECOSMART BOXER RANGE IS STILL A HIGHLY SPECIFIED UNIT. NEWLY GRADUATED AND VETERAN CONSULTANTS ALIKE PRAISE ITS ENERGY-EFFICIENCY AND HIGH PERFORMANCE, ALL IN A SINGLE PACKAGE.

# NUAIRE CASE STUDY EASTERN HIGH SCHOOL, CARDIFF

The new facility, which accommodates 1100 pupils and 100 staff members, consists of 59 classrooms, open teaching spaces, dining areas, a gym and an activity studio. Over £26 million has been invested into the project, which is designed to be a modernised and more stimulating space in which to teach and learn.



**THE SCHOOL UTILISES A 'TRAFFIC LIGHT' TYPE NATURAL VENTILATION SYSTEM WITH ENHANCED SINGLE SIDED VENTILATION IN CLASSROOMS. WHERE NATURAL VENTILATION COULD NOT BE PROVIDED, MECHANICAL VENTILATION WITH HEAT RECOVERY WAS SPECIFIED USING NUAIRE XBC UNITS.**

GRAHAM CARR OF MCCANN & PARTNERS

**The challenge**

A major objective throughout all stages of the project was ensuring a high level of energy efficiency; the school intends on having the lowest possible carbon footprint as possible.

Rhys Tatchell, Area Sales Manager for Nuaire worked closely with McCann & Partners on the project. He explained: "Eastern High School has been designed to create a high level of wellbeing and indoor air quality, which will improve the student's ability to concentrate, as well as the standard at which teachers can perform. The XBC range of units has one of the best heat exchangers in the industry, with efficiencies of up to 96% - This will aid the school massively in minimizing its carbon footprint and achieving a committed standard of energy efficiency."

To meet strict SFP energy requirements, a non-standard, larger sized XBC unit was specified for the project. McCann & Partners was able to make use of Nuaire's BIM Level 2 library and collection of Revit families to accurately alter designs and devise a solution to the site's space restrictions. From this, McCann & Partners

coordinated with other building services to ensure the heat recovery system would be the right size and layout for the space available on site.

**The solution**

Nuaire's XBC systems, paired with the natural ventilation, have resulted in a demand ventilation system where with the highest levels of heat are recovered, saving as much energy as possible. The school has achieved an Energy Performance Certificate Grade 'A' and BREEAM 2014 rating of 'Excellent' for its ability to achieve an ambitious level of energy-efficiency. Tony Williamson has stated: "The air quality in the new campus is far superior to what they had in the old school."

While at Eastern High School, Nuaire had the opportunity to use the fantastic facility as the location for our Health Check Video. The Nuaire Health Check service ensures your AHU or Packaged Heat Recovery Unit is set up to the Nuaire standard, prior to airflow commissioning. For more info, please visit: Health-Check



# PRODUCT SELECTION

Nuaire's customers are involved in the development of every type of educational environment with varying complexity including the development of new build and refurbishment projects in live environments.



**NUAIRE'S CUSTOMERS CREATE INSPIRATIONAL LEARNING ENVIRONMENTS AND HELP FACILITATE MAJOR CHANGES IN EDUCATIONAL SPACES.**

Nuaire assists its customers to deliver their projects and to keep within their project programme, quality and cost. Over the years Nuaire's knowledge and understanding of current government education legislation has grown significantly.

The Priority School Building Programme (PSBP) Facilities Output Specification launched by the Education Funding Agency (EFA) has proposed some significant, positive and welcome changes to school ventilation specifications.

We understand the many challenges and regulations that modern building ventilation must meet... and our technical team are on hand to assist with product selections.

Building Information Modelling (BIM) is both a new technology and a new way of working. BIM is a term that has been around for a while in manufacturing and engineering industries, and is now beginning to make an impact in the construction sector.

Nuaire has a dedicated BIM Team offering libraries of Revit® compatible BIM models to meet customers' exact specification.

Nuaire's libraries offer collision detection through geometry, connection positions and weights. Project specific performance criteria and support for design, project management and building operations can be requested which will result in improved design efficiency.

To find out more visit: [www.gov.uk/government/collections/priority-school-building-programme-psbp](http://www.gov.uk/government/collections/priority-school-building-programme-psbp).

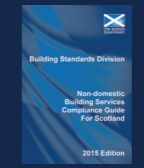
To download Nuaire's Revit® compatible BIM models simply scan the QR code or visit [www.nuaire.co.uk/BIM](http://www.nuaire.co.uk/BIM) and click on the library. Alternatively, simply email the team [BIM@nuaire.co.uk](mailto:BIM@nuaire.co.uk) with your request.



# COMPLYING WITH BUILDING REGULATIONS



The following information is relevant to the selection of fans for Ventilation Systems, indicating the maximum specific fan powers allowed under Part L (Refer to the Non-domestic Building Services Compliance Guide: 2013 Edition for further details). The SFP for the entire system (including both supply & extract fans) shall be less than that allowed by these figures. The following tables are the maximum values allowed under Building Regulations when finally commissioned.



Section 6 (2015 Edition) Permissible maximum specific fan power and pressure drop in air distribution systems. Maximum specific fan powers in air distribution systems new and existing buildings.

Air distribution system	Specific fan power (W/(l/s))	
	New Buildings	Existing Buildings
Central balanced mechanical ventilation system with heating and cooling	1.6	2.2
Central balanced mechanical ventilation system with heating only	1.5	1.8
All other central balanced mechanical ventilation systems	1.1	1.6
Zonal supply system where the fan is remote from the zone, such as ceiling void or roof mounted units	1.1	1.4
Zonal extract system where fan is remote from zone	0.5	0.5
Zonal supply and extract ventilation system such as ceiling void or roof units serving a single room or zone with heating and heat recovery	1.9	1.9
Local balanced supply and extract ventilation system / such as wall roof units serving a single area with heating and heat recovery	1.6	1.6
Local supply or extract ventilation units such as window / wall / roof units serving a single area (eg. toilet extract)	0.3	0.4
Other local ventilation supply or extract units	0.5	0.5
Fan assisted terminal (VAV) unit	1.1	1.1
Fan coil units (rating weighted average*)	0.5	0.5
Kitchen extract, fan remote from zone with grease filter	1.0	1.0

\*Note: The weighted average is calculated by the following formula:  

$$\frac{P_{mains,1} \cdot SFP_1 + P_{mains,2} \cdot SFP_2 + P_{mains,3} \cdot SFP_3 + \dots}{P_{mains,1} + P_{mains,2} + P_{mains,3} + \dots}$$
 where  $P_{mains}$  is useful power supplied from the mains in W

Extending SFP for additional components in new and existing buildings	
Component	(SFP (W/(l/s)))
Additional return filter for heat recovery	+0.1
HEPA filter	+1.0
Heat recovery - thermal wheel system	+0.3
Heat recovery - other systems	+0.3
Humidifier / dehumidifier (air conditioning system)	+0.1

Example: For a central mechanical ventilation system with heating and cooling, and heat recovery via a plate heat exchanger plus return filter:  

$$SFP = 1.6 + 0.3 + 0.1 \text{ W/(l/s)}$$

$$= 2.0 \text{ W/(l/s)}$$

Recommended minimum dry heat recovery efficiency for heat exchangers in new and existing buildings	
Heat exchanger type	Dry Heat recovery efficiency
Plate heat exchanger	50%
Heat pipes	60%
Thermal wheel	65%
Run around coil	45%

System type	Specific fan power (W/(l/s))	
	New Buildings	Existing Buildings
Central balanced mechanical ventilation system with heating and cooling	1.6	2.2
Central balanced mechanical ventilation system with heating only	1.5	1.8
All other central balanced mechanical ventilation systems	1.1	1.6
Zonal supply system where the fan is remote from the zone, such as ceiling void or roof mounted units	1.1	1.4
Zonal extract system where fan is remote from zone	0.5	0.5
Zonal supply and extract ventilation units, such as ceiling void or roof units serving single room or zone with heating and heat recovery	1.9	1.9
Local balanced supply and extract ventilation system such as wall / roof units serving single area with heat recovery	1.6	1.6
Local supply or extract ventilation units such as window / wall / roof units serving a single area (eg. toilet extract)	0.3	0.4
Other local ventilation supply or extract units	0.5	0.5
Fan assisted terminal (VAV) unit	1.1	1.1
Fan coil units (rating weighted average*)	0.5	0.5
Kitchen extract, fan remote from zone with grease filter	1.0	1.0

The weighted average is calculated by the following formula:  

$$\frac{P_{mains,1} \cdot SFP_1 + P_{mains,2} \cdot SFP_2 + P_{mains,3} \cdot SFP_3 + \dots}{P_{mains,1} + P_{mains,2} + P_{mains,3} + \dots}$$
 where  $P_{mains}$  is useful power supplied from the mains in W

Extending SFP for additional components in new and existing buildings	
Component	(SFP (W/(l/s)))
Additional return filter for heat recovery	+0.1
HEPA filter	+1.0
Heat recovery - thermal wheel system	+0.3
Heat recovery - other systems	+0.3
Humidifier / dehumidifier (air conditioning system)	+0.1

Recommended minimum dry heat recovery efficiency for heat exchangers in new and existing buildings

Heat exchanger type	Dry Heat recovery efficiency
Plate heat exchanger	50%
Heat pipes	60%
Thermal wheel	65%
Run around coil	45%

# ECOSMART CONTROL PLATFORM

## IT'S SO SMART IT'S SIMPLE

### Nuaire and ventilation controls have history.

Back in the early 1970s it was standard practice to specify fans as close to the design duty as possible, but without any speed controllers. Understanding the inefficiency this can cause, Nuaire, headed by our then owner and CIBSE Chairman, Brian Moss, developed the first twin fan controller – a cost-effective way to save energy and reduce running costs. Since then, the Nuaire brand has become synonymous with energy-saving controls.



#### Demand Ventilation Solutions

Below is a conventional ventilation system compared to one using Ecosmart controls.

### CONVENTIONAL SUPPLY & EXTRACT VENTILATION SYSTEM

1. PVC ducting
2. Filter
3. Air pressure switch
4. Temperature switch
5. Control panel
6. User control
7. 230V Electricity supply
8. Electrical cabling 230V
9. Electrical heater
10. Time clock

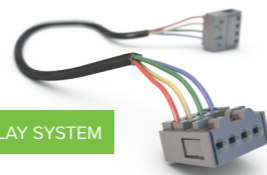
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### ECOSMART SUPPLY & EXTRACT VENTILATION SYSTEM

1. Integrated control
2. Optional CO<sub>2</sub> sensor
3. User control
4. (SELV) 12V cable
5. Optional PIR sensor
6. 230V Electricity supply

An Ecosmart system combines systems into a simple package, saving space but also time spent installing and commissioning. Alternatively, we offer 'Basic Control' – a simple terminal box for supply and extract fan motor wiring for interfacing to custom-built control panels (by others).

#### SIMPLE PLUG-AND-PLAY SYSTEM



Designed to meet all project requirements, Ecosmart Adapt (with Trend) is the standard for control.

Trend IQ422/12/LAN/BAC/230 inside with full BMS integration via BACNET.

Ecosmart Adapt with Trend provides control of the ventilation including the heating, or cooling allowing unitary control and full BMS integration via BACnet IP. The Ecosmart Adapt with Trend control system includes an IQ422/12/LAN/BAC/230 controller which is pre-configured and the unit and control assembly is functionally tested at Nuaire before customer delivery.

*"The management and control of modern buildings grow ever more sophisticated. A Building Energy Management system (BEMS) must be tailored to suit each customer's specific control requirements. It must provide efficient HVAC control, coupled with the flexibility to accommodate changes in occupancy status and staff relocation at short notice; whilst simultaneously delivering improved comfort conditions. A BEMS must also provide real time management information and control, enabling customers to achieve significant energy savings" (TREND).*

**Reduced installation and on-site commissioning time on new and retrofit projects.**

Advanced tools within the control automate many tasks, simple to use displays minimise data input, whilst reducing commission time and potential human error.

- **Ease of use** - Using Ecosmart Adapt with Trend will deliver substantial savings on utility costs.
- **Peace of mind** - Ecosmart Adapt with Trend has a 5 year warranty.



Energy-efficient demand based control providing network connectivity and advanced functionality.

Ecosmart Connect provides control of the ventilation including the heating, or cooling allowing unitary control and full BMS integration via BACnet (MS/TP) (Upgrade to IP network available).

The Ecosmart Connect controller is pre-configured and the unit and control assembly is functionally tested at Nuaire before customer delivery.

**Reduced installation and on-site commissioning time on new and retrofit projects.**

Advanced tools within the control automate many tasks, simple to use displays minimise data input, whilst reducing commission time and potential human error.

**Ease of use** - Using Ecosmart Connect will deliver substantial savings on utility costs.

**Peace of mind** - Ecosmart Connect has a 5 year warranty.



The UK's leading energy-efficient plug-and-play solution. Demand ventilation at your fingertips.

Varying the ventilation rate in a building to suit changing occupant levels used to be an expensive option – Ecosmart brings this within everyone's pocket. Minimising energy losses through re-heating (or cooling) the air replaced through ventilation is at the top of the agenda; building regulations make this a necessity. Ecosmart not only saves energy and carbon emissions it prolongs the life of the heat recovery unit.

Choosing Ecosmart is your reliable option, used by design engineers for many years and is now an integral feature of most Nuaire fans.

• **Saves time on site** - Ecosmart controls are all pre-assembled, configured and installed directly into the heat recovery units, this includes valves and actuators, pipework etc. which helps significantly reduce the time spent on site.

• **Simpler system** - No need for VCD (directly on the fan) no wasted energy or noise generation because air volume can be precisely set via integrated speed control.

	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.

• **Simple & precise commissioning** - As recommended in Part L, Ecosmart enables the system to be accurately commissioned via integrated speed control. If the unit is controlled by 0-10V BMS the system's response to a 0-10V dc BMS signal is given in the table above.

#### Basic Control

Basic control is fan speed only and are suitable for 2-10V adjustment (by others). The heat recovery unit will have a side mounted terminal box for connection to the fans (230V, 50Hz LNE and 2-10V\*) and bypass actuator (where applicable). Basic control is for BMS by others. Basic control has a 2 year warranty.

# ECOSMART CONTROLS SELECTION GUIDE






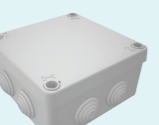
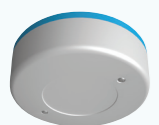

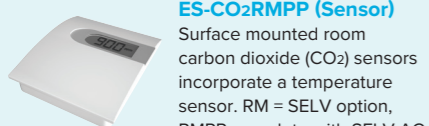
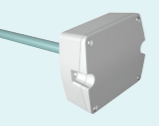
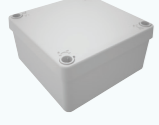

	BASIC CONTROL	ecosmart classic	ecosmart CONNECT	ecosmart adapt
	(BC)	(ES)	(CO) BACnet (MS/TP)	(AT) Based on TRENDS IQ422 BACnet (IP)
<b>CONTROLLER SOFTWARE</b>				
Controller Software		N/A	Advanced Software	Basic Software (can be re-written by others)
Heat Exchange Bypass Control Strategy		Basic	Optimised	Basic
Supply Temperature Control Strategy		Yes	Yes	Yes
Room Temperature Control Strategy		No	Yes	No
Switched Live Enable Input		Yes	Yes	Yes
Switched Live Fan Boost		No	No	Yes
Switched Live Configurable Input (Heat or Fan Boost)		No	Yes	No
Volt Free Enable Input		No	Yes	Yes
Volt Free Fan Boost		No	No	Yes
Volt Free Configurable Input (Heat or Fan Boost)		No	Yes	No
Trickle Mode		Yes	Yes	Yes
Fan Run-On		Yes	Yes	Yes
Fan Run-On (Intelligent)		No	Yes	No
Run/Fault/Heat/Cool Volt Free Outputs		Yes	Yes	Yes
I/O Damper Control		Yes	Yes (via run relay)	Yes (via run relay)
Heat Dissipation Run-on		Yes	Yes	Yes
Frost Protection Routine		Yes	Yes	Yes
Low Supply Temp Fan Cut-out		No	Yes	Yes
Scheduling		Yes (via ES-LCD)	Yes	Yes
CO <sub>2</sub> Based Fan PID Loop		ES CO <sub>2</sub>	Yes	Yes
Humidity Based Fan PID Loop		ES-HUM	Yes	No
Pressure Based Fan PID Loop		CP version available	Yes	No
Night Cooling Mode		No	Yes	Yes
Purge Mode		No	Yes	Yes
Hibernate Mode (open all valves)		No	Yes	No
Fan Speed Adjustment		Yes	Yes	Yes
Fan Speed Control Only	Yes	No	No	No
0 - 10V Fan Speed Input		Yes	Yes	Yes
0 - 10V Temperature Sensor Input		No	Yes	No
0 - 10V Humidity Sensor Input		No	Yes	No
0 - 10V Pressure Sensor Input		No	Yes	No
0 - 10V CO <sub>2</sub> Sensor Input		No	Yes	No



	BASIC CONTROL	ecosmart classic	ecosmart CONNECT	ecosmart adapt
	(BC)	(ES)	(CO) BACnet (MS/TP)	(AT) Based on TRENDS IQ422 BACnet (IP)
<b>CONTROLLER HARDWARE</b>				
Fail Safe Thermal Trip		Yes	Yes	Yes
Condensate Pump Monitoring		Yes	Yes	Yes
Din Rail Mounted Control		No	Yes	Yes
Quick Connect Terminals		No	Yes	Yes
24VAC Auxiliary		No	Yes	Yes
<b>HMI</b>				
Commissioning Display		Yes only via commissioning PCB	Yes	By others
BACnet LCD Touch Screen Display		No	Yes	By others
<b>ROOM MODULES</b>				
Plug & Play Sensors		Yes	Yes	No
Max Number of Sensors		31 devices on any system	4 sensor modules*	By others
Quick Connect Plugs		Yes	Yes	By others
Twisted Pair Cable Compatible		No	Yes	By others
Commissioning Port		No	Yes	By others
Temperature		Yes	Yes	By others
CO <sub>2</sub>		Yes	Yes	By others
Humidity		Yes	Yes	By others
3-Speed Override		No	Yes	By others
PIR		Yes	Yes	By others
Setpoint Adjust		Yes (on sensor)	Yes	By others
Multiple Setpoints Supported		No	Yes	By others
Room Temperature Display		No	Yes	By others
Room Humidity Display		No	Yes	By others
Fan Speed Display		No	Yes	By others
Occupancy Status Display		No	Yes	By others
Network Error Display		Yes	Yes	By others
<b>NETWORKING</b>				
BEMS Compatible		No	Yes	Yes
BMS Compatible		0-10V Input	BACnet via MS/TP (BACnet via IP optional)	(BACnet via IP)
<b>MONITORING</b>				
Web Connectivity		N/A	Yes	Yes
Energy Monitoring		N/A	Yes	Participation via TRENDS network
Energy Metering		N/A	Yes	Participation via TRENDS network

\*Each sensor module can have multiple sensors.(up to 3 per module). For further details of Ecosmart Controls Platform, refer to website: www.nuaire.co.uk



**ecosmart classic** **SENSORS & ENABLERS**  
 All Ecosmart Classic Systems must include at least one enabler.  
 (N.B. when used, BMS control and time clocks take over all other enablers).

 <p><b>ES-PIR2 (Enabler)</b>                  Detects movement and activates system. Incorporates a system status LED, overrun timer and timer adjustment.</p>	 <p><b>ES-TEMP2 TEMPERATURE (Sensor)</b>                  Modulate fan speed based on room temperature. Incorporates two system status LEDs. (Green = OK, Red = Failure) and temperature set point level adjustment.</p>
 <p><b>ES-THERMOSTAT2 (Enabler)</b>                  Activates the system when the temperature is above set point. Incorporates two system status LEDs. (Green = OK, Red = Failure) and temperature set point level adjustment.</p>	 <p><b>ES-RH2 RELATIVE HUMIDITY (Sensor)</b>                  Modulate fan speed based on RH level. Incorporates two system status LEDs. (Green = OK, Red = Failure) and RH set point level adjustment.</p>
 <p><b>ES-AV12 (Enabler)</b>                  When fan failure occurs the AVI will flash a warning. Supplied with pre-plugged 10m length of communication cable.</p>	 <p><b>ES-CI SEMI-AUTOMATIC USER CONTROL</b>                  Fan, heating &amp; cooling selected by external volt free switch, speed selected by 0-10V signal.</p>
 <p><b>ES-HUMIDISTAT2 (Enabler)</b>                  Activates the system when the RH level is above set point. Incorporates two system status LEDs. (Green = OK, Red = Failure) and RH set point level adjustment.</p>	 <p><b>ES-JB JUNCTION BOX</b>                  Designed to be compatible with Ecosmart System this unit is supplied with a pre-plugged 10 metre length of communications cable and has 8 further ports.</p>
 <p><b>ES-CO2RM (Sensor)</b>  <b>ES-CO2RMPP (Sensor)</b>                  Surface mounted room carbon dioxide (CO2) sensors incorporate a temperature sensor. RM = SELV option, RMPP complete with SELV AC powers supply.</p>	 <p><b>ES-CO2 (Sensor)</b>                  Duct mounted sensor to modulate fan speed based on CO2 levels. Connect to fan directly. Pre-wired with 2m cable (not adjustable).</p>
 <p><b>ES-HTCSIG (Enabler)</b>                  Signal conditioning circuit for humidity, temperature and CO2 sensors.</p>	 <p><b>SWITCHED LIVE (by others)</b>                  Any mains voltage signal connected to the switched live terminal (S/L) in the unit. This affects the connected fan only.</p>

 <p><b>ES-LCD (Enabler)</b>                  Touch screen user control in white incorporating time clock facility. This can control the function of the fan by manual setting or using a set of timed programs.</p>	 <p><b>ES-UCF Manual 'on' and 'off' system user/speed control.</b>                  Incorporates two system status LEDs (Green = OK, Red = Failure).</p>
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**ecosmart ROOM MODULES CONNECT**

 <p><b>ESCO-TPL2</b>                  Ecosmart Connect Room Module - Temperature and PIR.</p>	 <p><b>ESCO-TS2</b>                  Ecosmart Connect Room Module - Temperature.</p>
 <p><b>ESCO-THS2</b>                  Ecosmart Connect Room Module - Temperature and Humidity.</p>	 <p><b>ESCO-CL2</b>                  Ecosmart Connect Room Module - CO2.</p>
 <p><b>ESCO-TDPL2</b>                  Ecosmart Connect Room Module - Temperature, Display and PIR.</p>	 <p><b>ESCO-TDFS2</b>                  Ecosmart Connect Room Module - Temperature, Display and Fan Speed Override.</p>
 <p><b>ESCO-TDHS2</b>                  Ecosmart Connect Room Module - Temperature, Display and Humidity. (Humidity is not displayed)</p>	 <p><b>ESCO-THPL2</b>                  Ecosmart Connect Room Module - Temperature, Humidity and PIR.</p>
 <p><b>ESCO-TDHPL2</b>                  Ecosmart Connect Room Module - Temperature, Humidity, Display, Fan Speed Override and PIR#</p>	




 <p><b>ESCO-LCD Touch screen display.</b>                  The ESC-LCD is a user friendly operator interface featuring BACnet® communication and a colourful, graphic display with touch screen interface. It is powered by 12-24VAC / VDC.</p>	 <p><b>ESCO-IPN</b>                  The BACnet IP to MS/TP Router exchanges information between networks and allows the controller to communicate on an IP network. One router is required for each MS/TP network.</p>
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ASHRAE **BACnet (MS/TP)**

**ecosmart adapt** **SENSORS**



ASHRAE **BACnet (IP)**

<p><b>THERMISTOR TEMPERATURE SENSORS</b></p>  <p>Code: TB/T1/S – For duct or immersion use. Short 150mm. TB/T1/L – For duct use only. Long 400mm.</p>	<p>Low cost thermistor sensors comprising insertion, clamp-on, and outside air versions. The insertion sensor may be used for duct or immersion purposes. It has a 6 mm diameter brass probe which is suitable for retrofit immersion applications and will fit most existing pockets (universal fitting kit option).</p> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Low cost</li> <li>• High quality thermistors</li> <li>• Brass probes</li> <li>• M20 conduit entry with M16 cable gland</li> <li>• IP67 housing</li> <li>• Quarter turn quick release lid</li> <li>• Easy to wire</li> <li>• Universal kit option for retrofit of immersion sensors</li> <li>• Adjustable insertion depth flange option for duct sensors</li> </ul>
<p><b>DUCT HUMIDITY &amp; TEMPERATURE SENSORS</b></p>  <p>Code: HT/D – Duct and thermistor sensor (+/-3%).</p>	<p>Duct mounted relative humidity and temperature sensors for HVAC applications. The certified 2% high accuracy (±2%) and standard 3% versions offer excellent linearity and stability over a wide humidity range (10 to 90%RH).</p> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Pre-calibrated for ease of commissioning</li> <li>• IP65</li> <li>• Operates over 10 to 100%RH non-condensing</li> <li>• ± 3% accuracy versions</li> <li>• 2 part connectors for ease of installation</li> <li>• Humidity sensor element protected by replaceable filter</li> <li>• Capacitive humidity sensing element provides excellent long term stability</li> <li>• Adjustable depth duct mounting flange option</li> </ul>
<p><b>CO2 SENSORS</b></p>  <p>Code: CO2/T/D – Duct sensor.                  Code: CO2/T/S – Space carbon dioxide concentration and temperature sensor.</p>	<p>The CO2 duct and space sensors monitor the carbon dioxide concentration and temperature of the air. The space sensors have additional options of humidity monitoring and a 4 digit display. The display will show the measured values in succession. The duct sensor has a quick-release lid to facilitate installation.</p> <p><b>FEATURES</b></p> <ul style="list-style-type: none"> <li>• Low cost, high quality thermistor temperature sensor</li> <li>• Humidity monitoring option for space sensor</li> <li>• Optional digital display for space sensor</li> <li>• IP67 housing (duct sensor)</li> <li>• Quarter turn quick release lid (duct sensor)</li> <li>• Two part terminals to facilitate wiring</li> <li>• 24 Vac/dc supply</li> <li>• Adjustable depth duct mounting flange option</li> </ul>

 <p><b>IQVIEW4 Touch screen display. (6 x 4 inch).</b>                  FPK/Plate – Mounting plate. IQVIEW4/SM BOX – Surface mount box for wall or panel. Transformer for IQVIEW4 included. ACC/24V - 230/24 VAC, 36 VA.</p>	 <p><b>IQVIEW8 Touch screen display. (10 x 6 inch).</b>                  IQVIEW8/SM BOX – Surface mount box for flat surfaces. Transformer for IQVIEW8 included. ACC/24V – 230/24 VAC, 36 VA</p>	 <p><b>SDU Display.</b>                  RD/SDU-IQ2COMMSCABLE/3m – RJ11 plug to RJ11 plug cable (3m) for SDU.</p>
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# XBOXER XBC+ 10-65 COUNTERFLOW HORIZONTAL

XBC+ is the successor to the UK's number one energy-efficient range of packaged heat recovery unit.

Smaller, quieter and easier to install than the current market offering, our award-winning range has earned its leading position by saving energy and time on site. The combination of innovative design and state-of-the-art controls ensure the best possible indoor air quality, whilst helping them reduce energy and save money.



# XBOXER XBC+ 10-65 COUNTERFLOW HORIZONTAL

		Page	Duty Range (Free Air)	Case Size (L x W x H mm)
Size 10		20	Up to 100 l/s	1600 x 1000 x 260
Size 15		22	Up to 200 l/s	1600 x 1000 x 260
Size 25		24	Up to 400 l/s	1713 x 1160 x 346
Size 45		26	Up to 500 l/s	1913 x 1262 x 405
Size 55		28	Up to 600 l/s	1900 x 1560 x 470
Size 65		30	Up to 800 l/s	1913 x 1570 x 624



**HIGH EFFICIENCY**

Counterflow heat exchanger efficiency of up to 95%.



**ADJUSTABLE DUCT OPTIONS**

Inlet positions can be changed at installation stage for complete install flexibility.



**EASY MAINTENANCE**

Choice of either bottom or side filter access as standard.



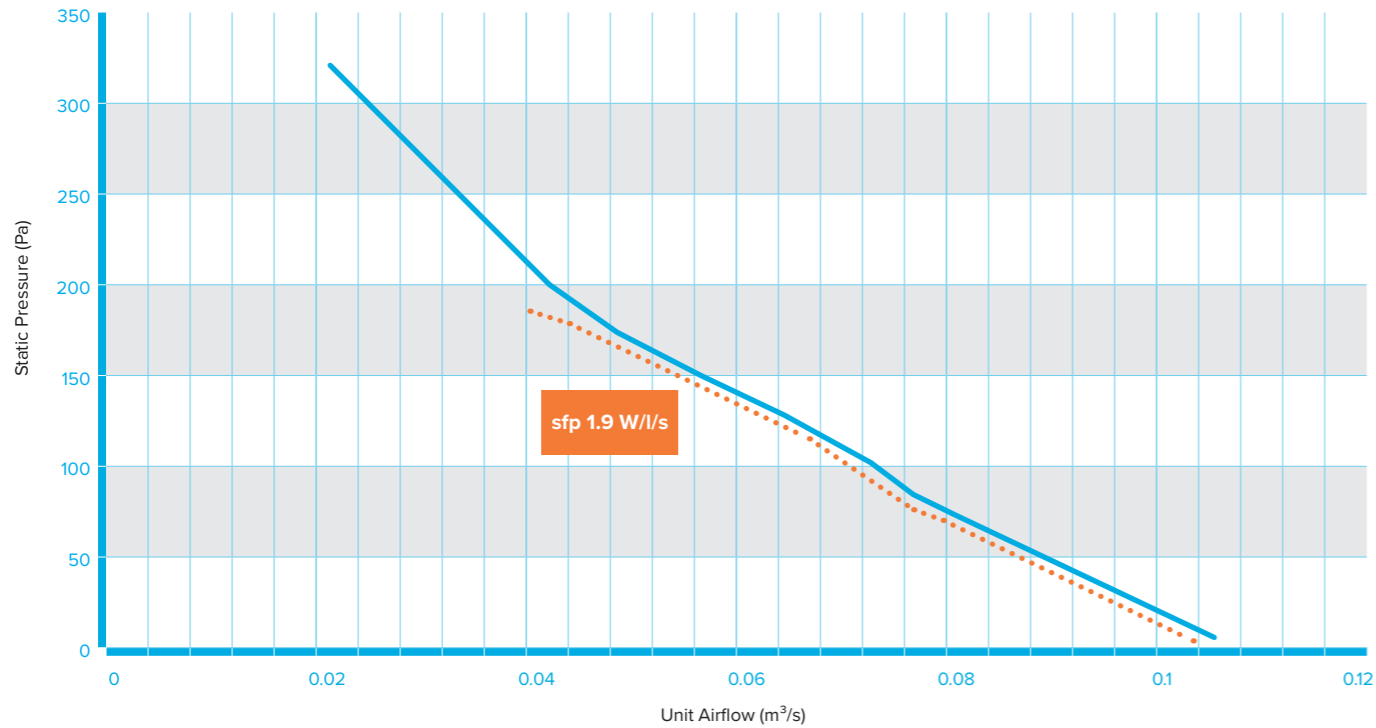
**FULL CONTROL**

Integrated controls for quick and easy commissioning.

# XBOXER XBC+ 10

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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	160	3200	1.5	1.5	40	147
Electric*	230	1	50	160	3200	9	9	40	155
None	230	1	50	160	3200	1.5	1.5	40	143

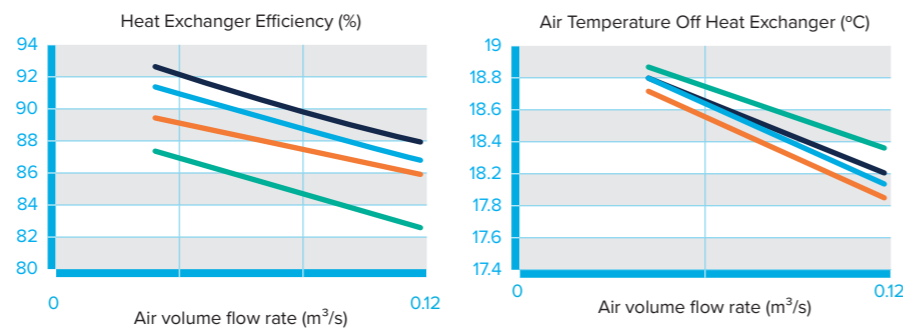
Relevant to BC, ES, CO or AT control types. \*Includes 1.5kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)



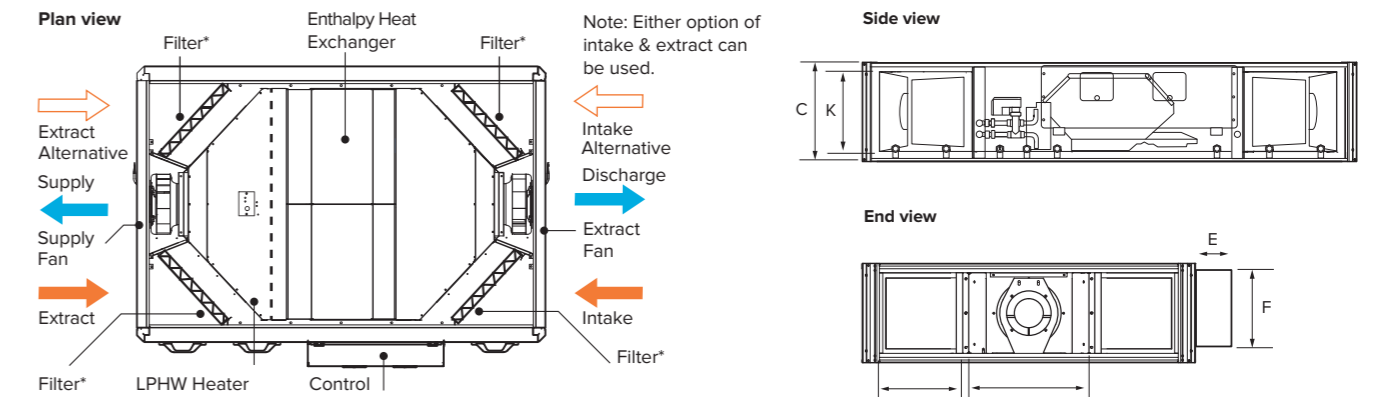
### PIONEERING NEW AIR TECHNOLOGY

### LPHW DATA

WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔPj (kPa)
82/71	0.09	3	38	0.07	1	1.4	2.4
80/60	0.09	2.3	32	0.03	0.2	0.5	0.7
60/40	0.09	1.3	22	0.02	0.1	0.5	0.6

Based on air on temperature of 10°C.

### FAN CONFIGURATION

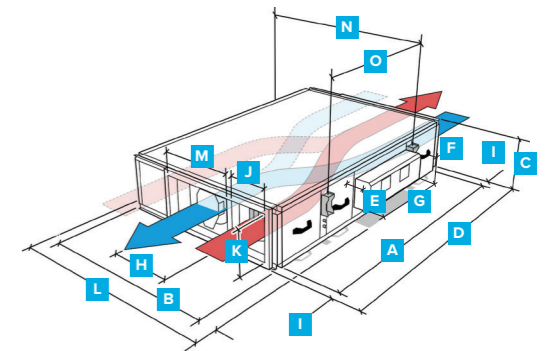


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE						HANGING BRACKET CENTRES	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1600	1000	260	1660	140	210	640	334	30	238	220	1205	347	1068	832

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



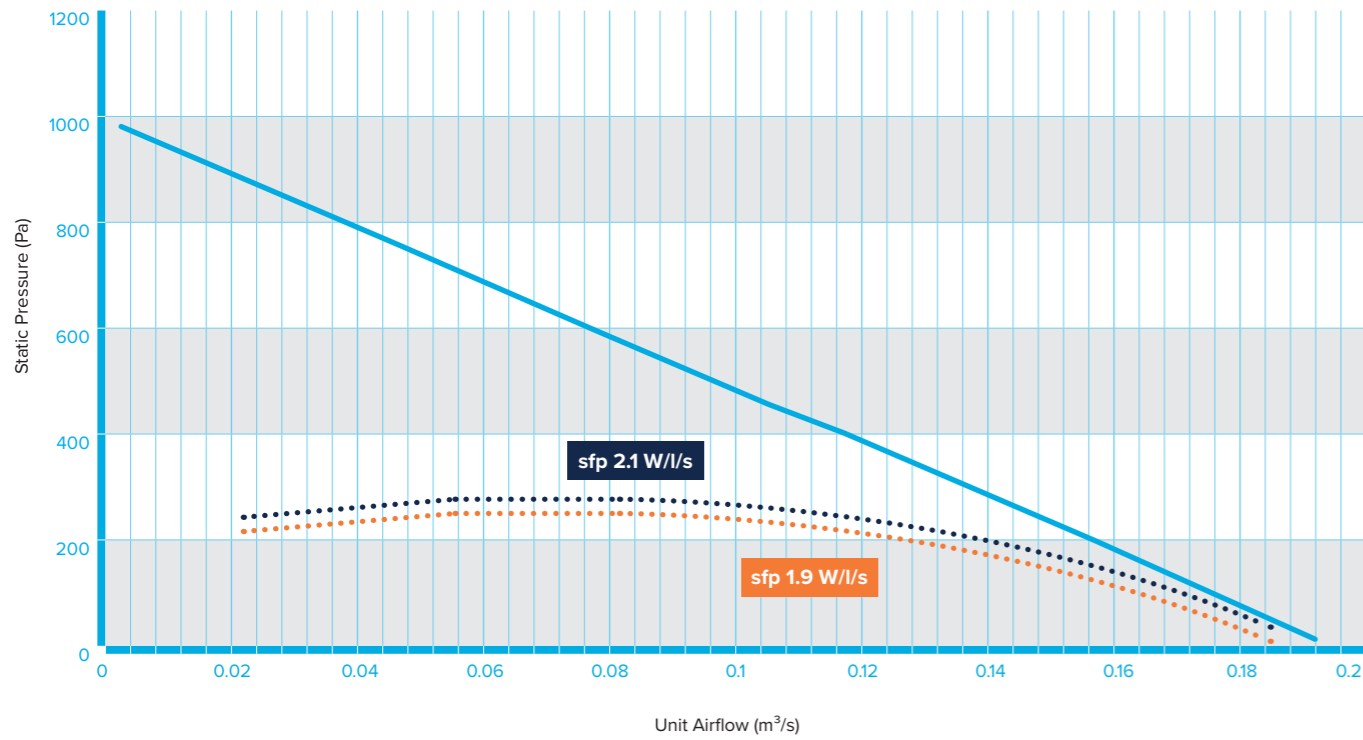
### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	68	57	50	51	57	50	42	38	24
	Induct Supply	73	69	60	61	63	59	54	52	
	Induct Discharge	73	70	60	62	63	60	55	53	
	Induct Extract	67	56	50	50	56	50	54	36	
	Casing Radiated	59	55	40	41	39	35	32	21	

# XBOXER XBC+ 15

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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	340	4000	2.8	2.8	40	187
Electric*	230	1	50	3340	4000	16	16	40	195
None	230	1	50	340	4000	2.8	2.8	40	183

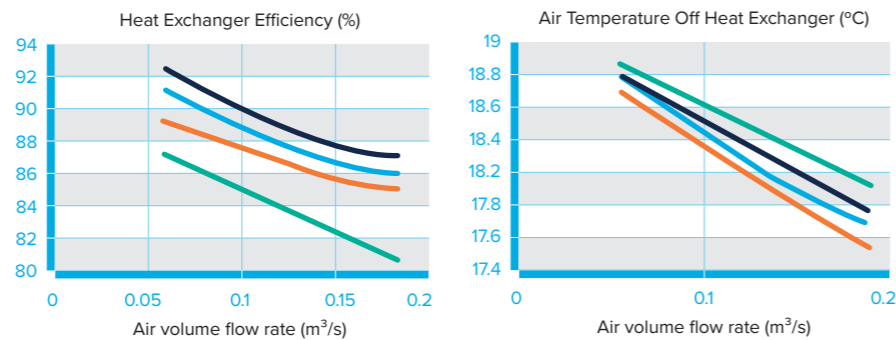
Relevant to BC, ES, CO or AT control types. \*Includes 3kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)

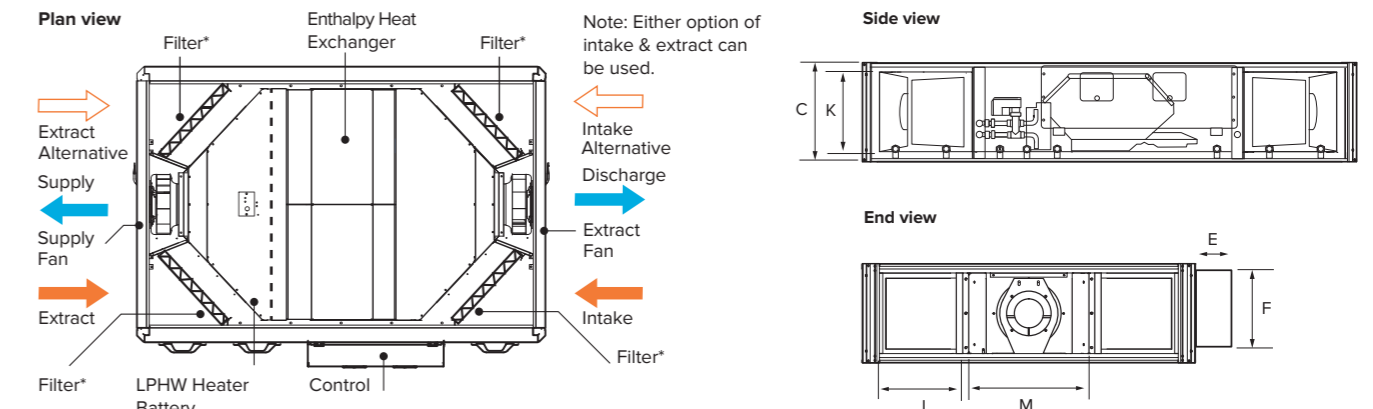


### LPHW DATA

WATER TEMP (°C)	AIRFLOW (m <sup>3</sup> /s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP <sub>T</sub> (kPa)
82/71	0.17	4.1	30	0.09	1.8	2.5	4.3
	0.13	3.9	35	0.08	1.6	2.2	3.8
	0.09	3	38	0.07	1	1.4	2.4
80/60	0.17	3.3	26	0.04	0.4	1	1.4
	0.13	3	29	0.04	0.3	0.9	1.2
	0.09	2.3	32	0.03	0.2	0.5	0.7
60/40	0.17	1.9	19	0.02	0.1	1	1.1
	0.13	1.7	21	0.02	0.1	0.8	0.9
	0.09	1.3	22	0.02	0.1	0.5	0.6

Based on air on temperature of 10°C.

### FAN CONFIGURATION

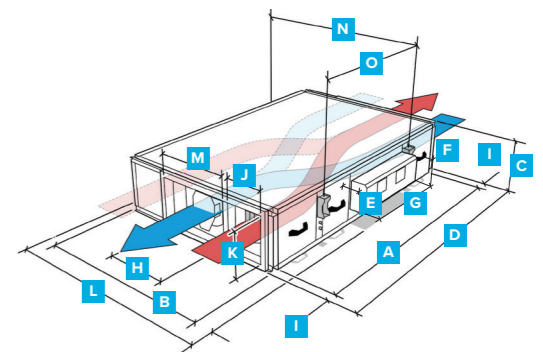


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE						HANGING BRACKET CENTRES	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1600	1000	260	1660	140	210	640	334	30	238	220	1205	347	1068	832

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



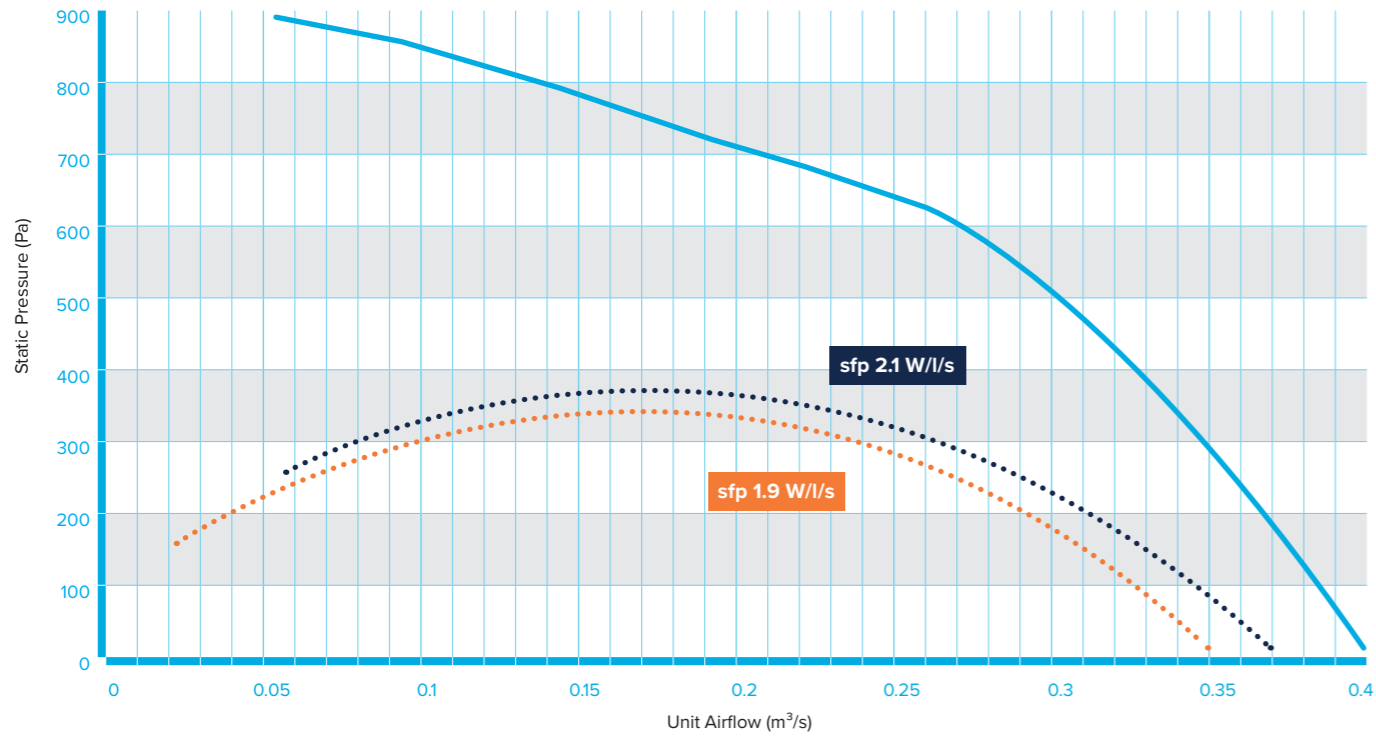
### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	70	60	55	56	62	55	47	43	26
	Induct Supply	75	72	65	66	668	64	59	57	
	Induct Discharge	75	73	65	67	68	65	60	58	
	Induct Extract	69	59	55	55	61	55	45	41	
	Casing Radiated	61	57	42	43	41	37	34	23	

# XBOXER XBC+ 25

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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	1000	4000	6.4	6.4	40	235
Electric*	230	1	50	5500	4000	19.4	19.4	40	242
None	230	1	50	1000	4000	6.4	6.4	40	231

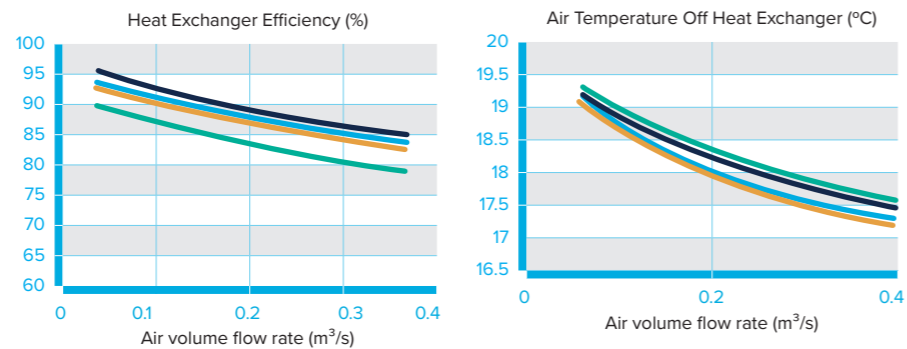
Relevant to BC, ES, CO or AT control types. \*Includes 4.5kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)

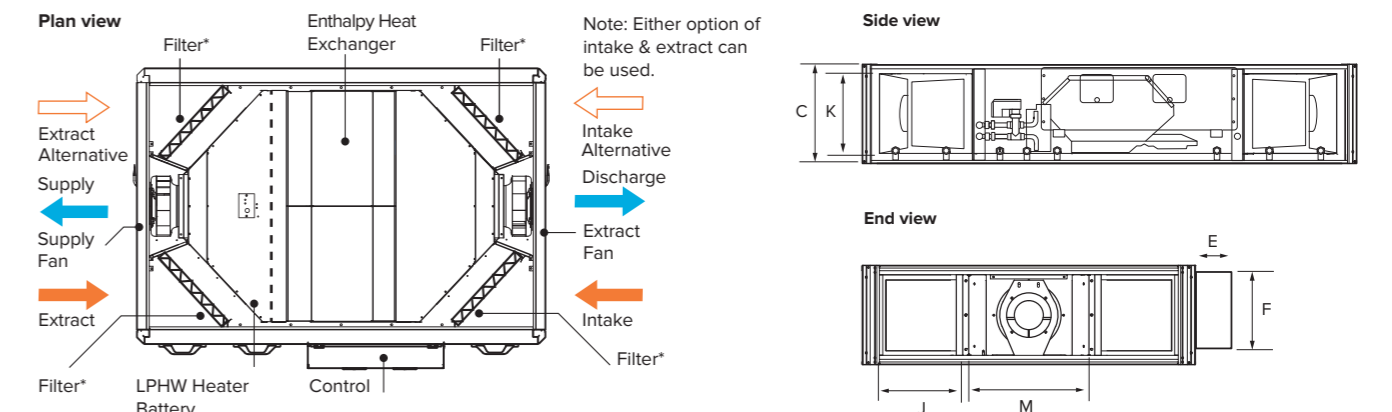


### LPHW DATA

WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP] (kPa)
82/71	0.25	6	30	0.134	7.3	9	16.3
	0.1875	5.6	35	0.13	6.5	8	14.5
	0.125	4.4	40	0.1	4	4.9	8.9
80/60	0.25	4.8	26	0.06	1.4	2	3.4
	0.1875	4.3	29	0.05	1.3	1.8	3.1
	0.125	3.4	33	0.04	0.8	1.1	1.9
60/40	0.25	2.8	19	0.03	0.5	1	1.5
	0.1875	2.6	21	0.03	0.4	0.8	1.2
	0.125	2	23	0.02	0.3	0.5	0.8

Based on air on temperature of 10°C.

### FAN CONFIGURATION

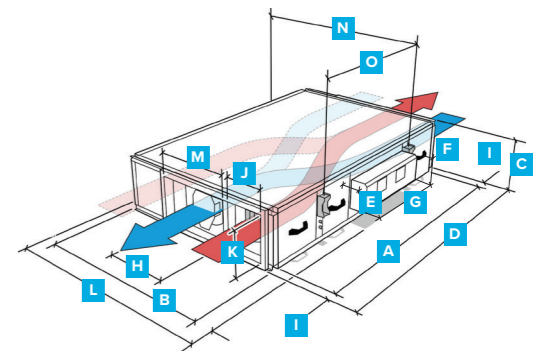


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE					HANGING BRACKET CENTRES		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1713	1160	346	1773	140	210	640	413	30	252	302	1350	471	1232	884

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



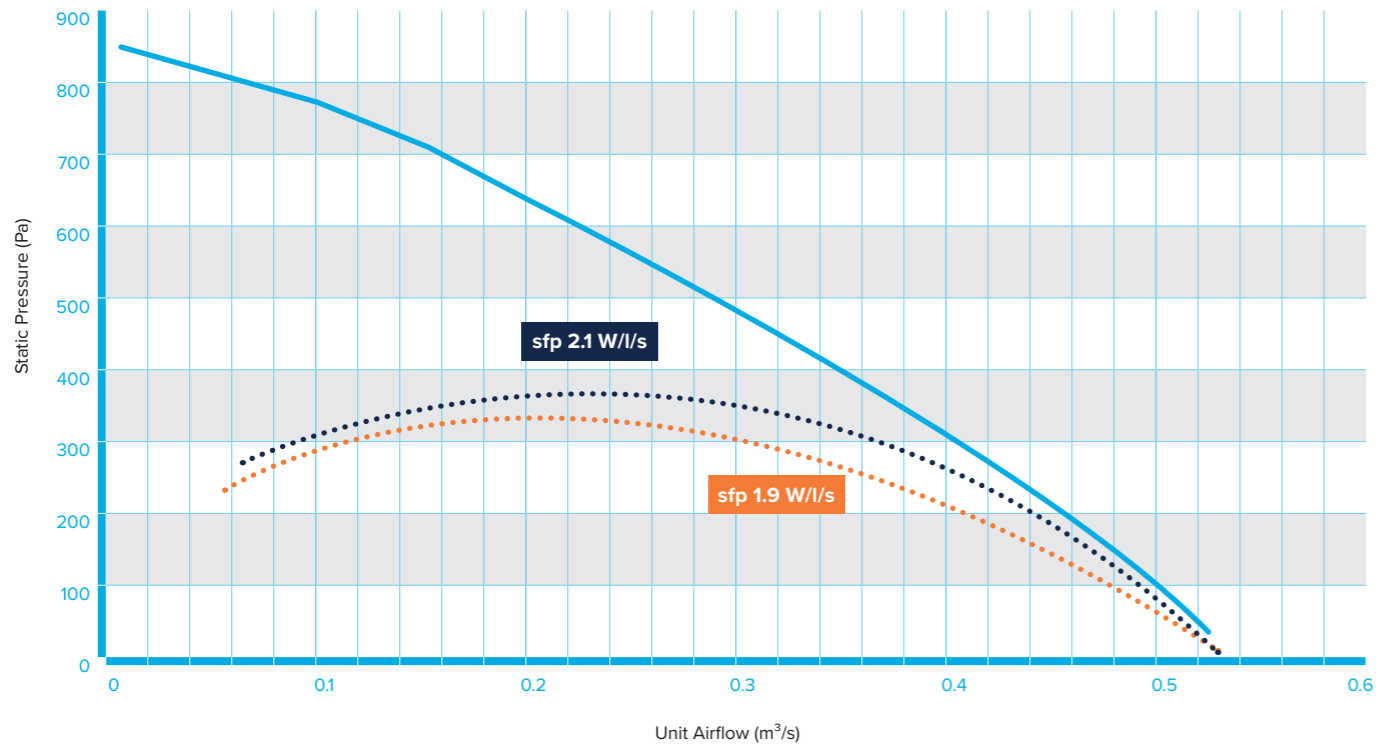
### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	77	71	69	71	66	62	54	53	37
	Induct Supply	82	83	78	82	72	72	68	70	
	Induct Discharge	83	84	78	81	72	72	70	71	
	Induct Extract	76	70	68	71	65	62	54	54	
	Casing Radiated	69	68	55	58	45	44	44	36	

# XBOXER XBC+ 45

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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	1100	2400	6.9	6.9	40	291
Electric*	230	1	50	5600	2400	27	27	40	298
None	230	1	50	1100	2400	6.9	6.9	40	287

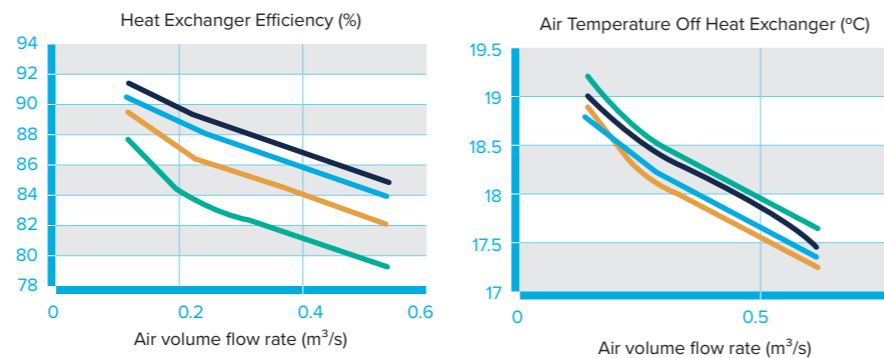
Relevant to BC, ES, CO or AT control types. \*Includes 4.5kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)

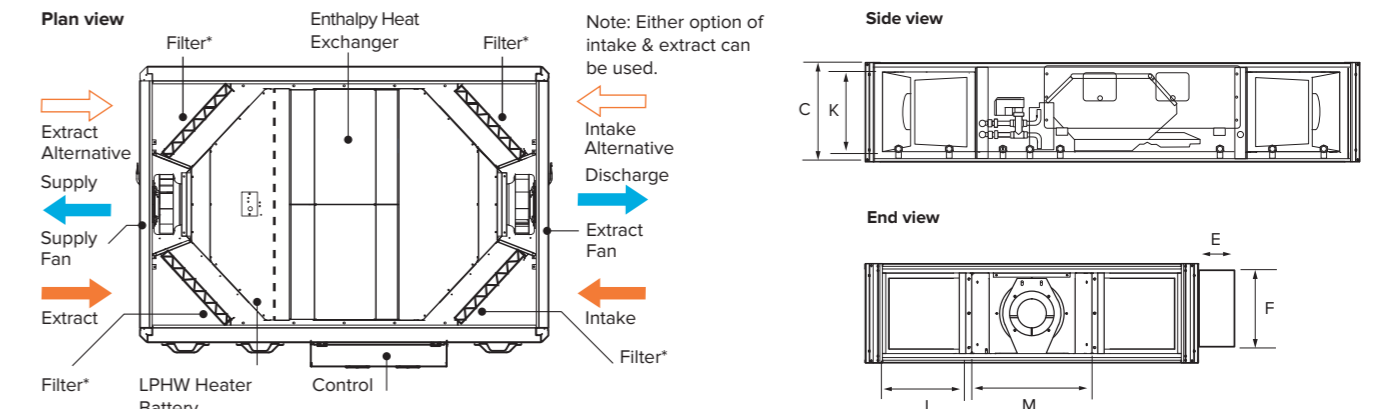


### LPHW DATA

WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
82/71	0.37	8.9	30	0.2	16	16	32
	0.2775	8.4	35	0.19	14.1	14.1	28.2
	0.185	6.6	40	0.15	8.8	8.8	17.6
80/60	0.37	7.2	26	0.09	3.2	3	6.2
	0.2775	6.5	29	0.08	2.8	2.7	5.5
	0.185	5.1	33	0.06	1.8	1.6	3.4
60/40	0.37	4.2	19	0.05	1	1	2
	0.2775	3.9	22	0.05	0.8	0.8	1.6
	0.185	3	23	0.04	0.5	0.5	1

Based on air on temperature of 10°C.

### FAN CONFIGURATION

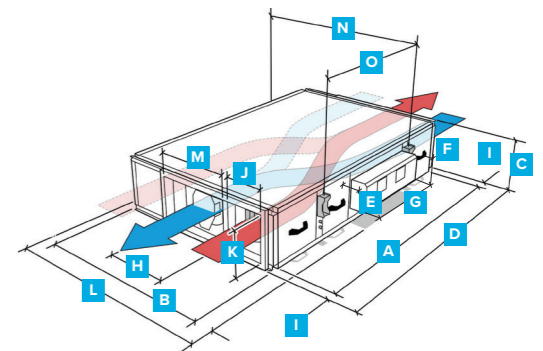


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE					HANGING BRACKET CENTRES		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1913	1262	405	1973	140	210	640	443	30	270	360	1461	531	1332	1020

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



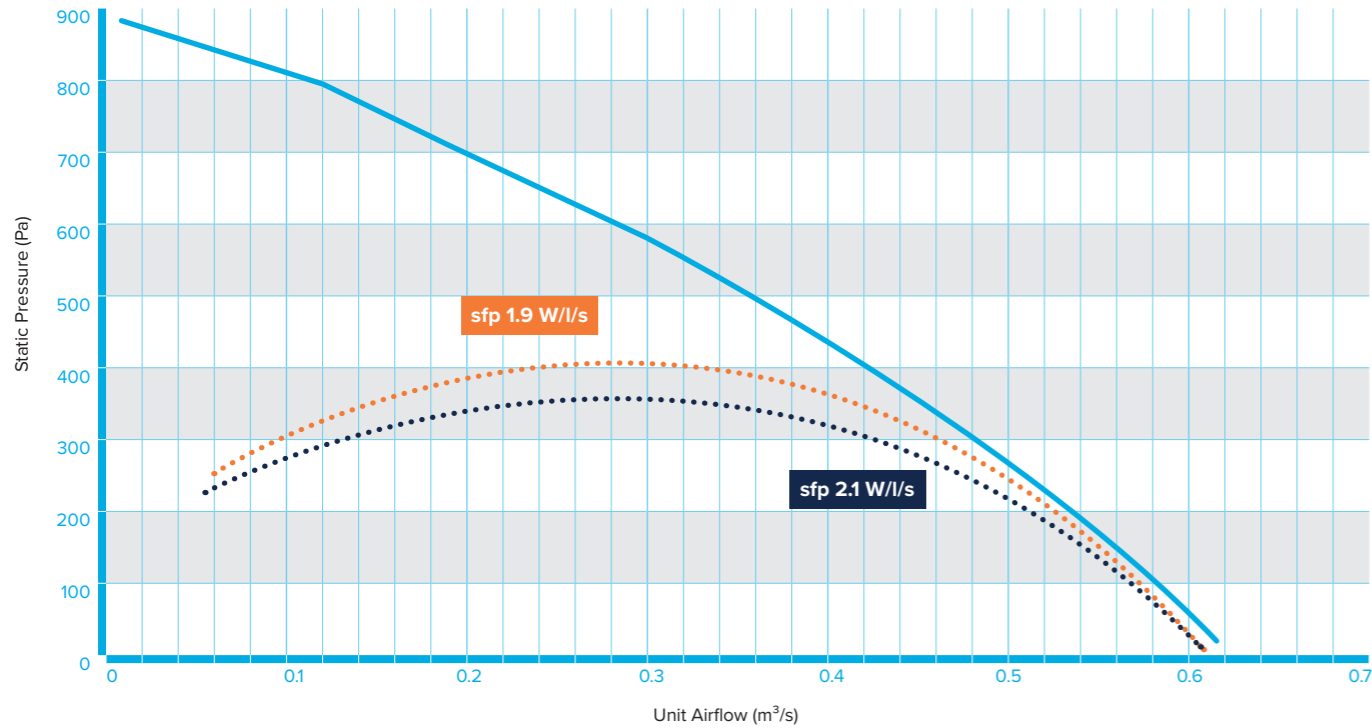
### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	83	75	75	64	64	62	54	45	35
	Induct Supply	87	80	85	71	72	71	66	62	
	Induct Discharge	88	81	85	71	72	72	66	64	
	Induct Extract	84	75	76	63	64	63	53	44	
	Casing Radiated	74	65	62	47	45	44	40	29	

# XBOXER XBC+ 55

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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	1100	2400	6.9	6.9	40	368
Electric*	230	1	50	10100	2400	46	46	40	375
None	230	1	50	1100	2400	6.9	6.9	40	364

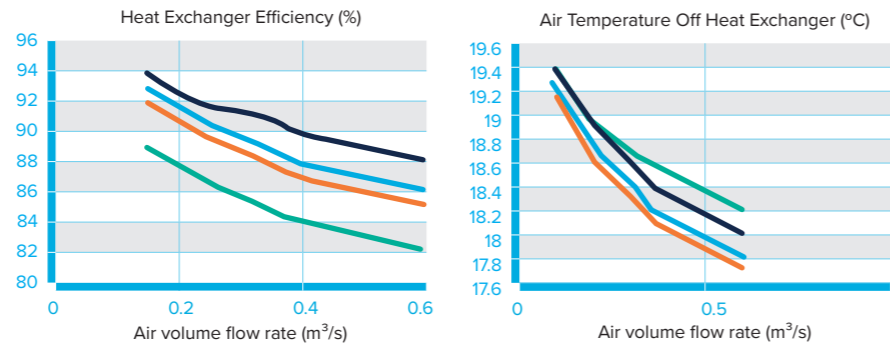
Relevant to BC, ES, CO or AT control types. \*Includes 9kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

#### Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)



### LPHW DATA

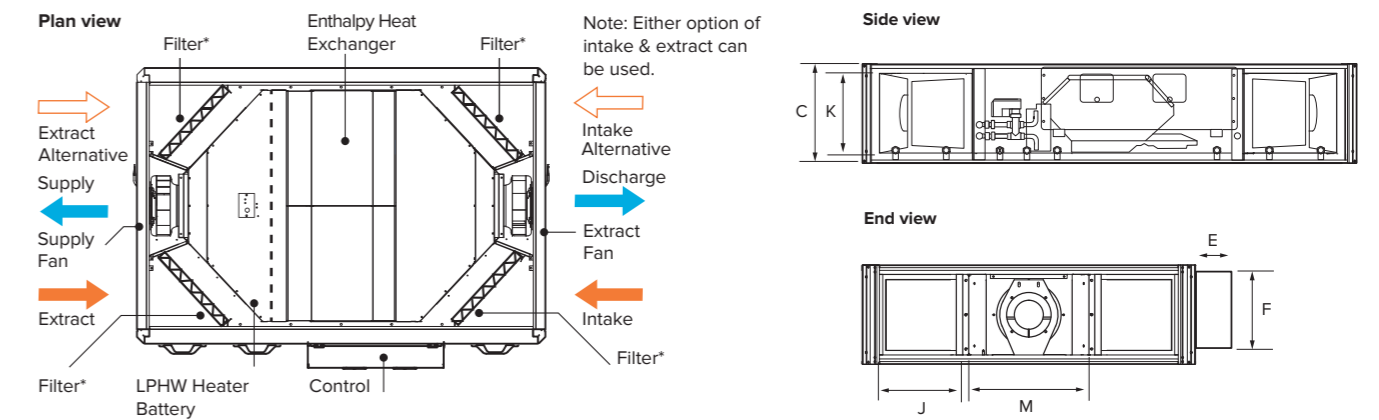
WATER TEMP (°C)	AIRFLOW (m <sup>3</sup> /s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
82/71	0.5	12	30	0.27	8.6	9	17.6
	0.375	11.3	35	0.25	7.6	8	15.6
	0.25	8.9	40	0.2	4.7	4.9	9.6
80/60	0.5	9.7	26	0.12	1.7	1.7	3.4
	0.375	8.7	29	0.11	1.5	1.5	3
	0.25	6.9	33	0.09	0.9	0.9	1.8

Based on air on temperature of 10°C.

WATER TEMP (°C)	AIRFLOW (m <sup>3</sup> /s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
60/40	0.5	5.6	19	0.07	0.6	0.6	1.2
	0.36	5.2	18.4	0.018	0.5	0.5	1
	0.25	4	23	0.05	0.3	0.3	0.6

Based on air on temperature of 15°C.

### FAN CONFIGURATION

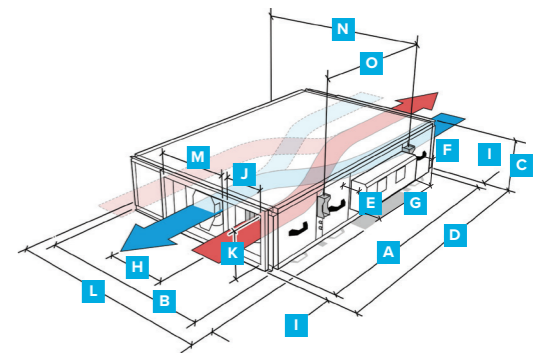


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE						HANGING BRACKET CENTRES	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1900	1560	470	1960	140	210	640	535	30	397	430	1751	587	1632	1052

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



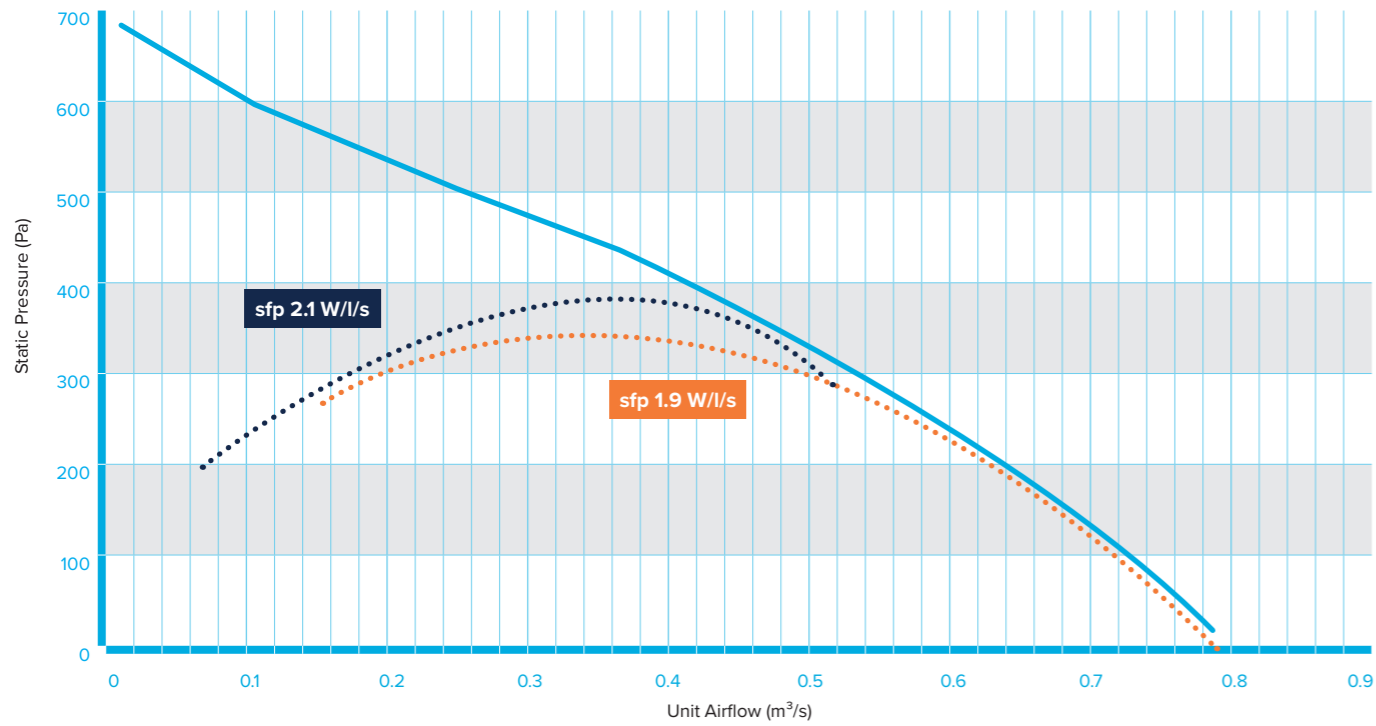
### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	81	74	75	63	64	61	53	41	35
	Induct Supply	85	80	84	71	72	70	66	61	
	Induct Discharge	86	81	84	71	72	71	66	63	
	Induct Extract	82	75	75	63	64	62	53	43	
	Casing Radiated	72	65	61	47	45	43	40	28	

# XBOXER XBC+ 65

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### 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
None	230	1	50	1540	1700	8	8	40	465

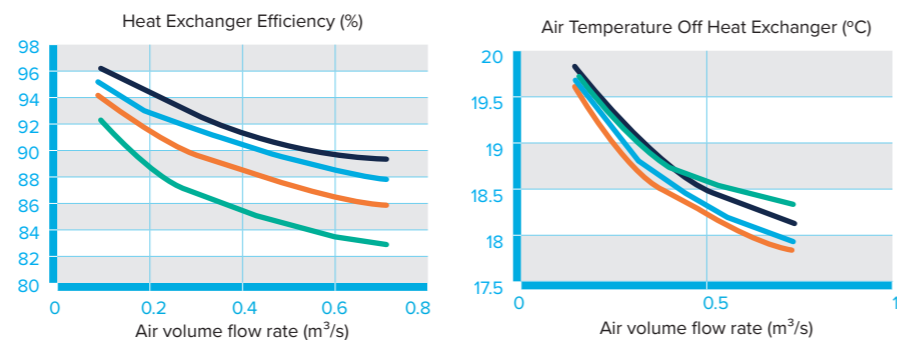
Relevant to BC, ES, CO or AT control types. \*Includes 9kW electric heater.

### COUNTERFLOW HEAT EXCHANGER EFFICIENCY

Performance based on:  
Indoor conditions 21°C / 50% RH

Key to performance curves:

- Intake temperature (°C)**
- 5°C Intake**  
Typical specified values
- 3°C Intake**  
Typical specified values
- 1°C Intake**  
Typical specified values
- 6°C Approx.**  
Average outdoor temperature (UK heating season)

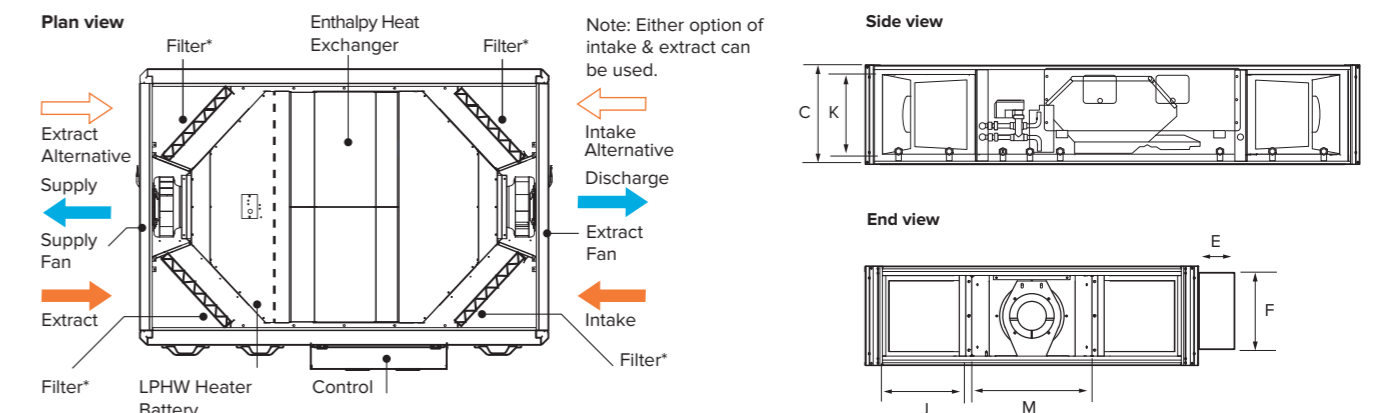


### LPHW DATA

WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
82/71	0.6	14.4	30	0.32	15	15	30
	0.45	13.5	35	0.3	13.3	13.3	26.6
	0.3	10.7	40	0.24	8.2	8.2	16.4
80/60	0.6	11.6	26	0.15	3	3	6
	0.45	10.4	29	0.13	2.7	2.7	5.4
	0.3	8.2	33	0.1	1.6	1.6	3.2
60/40	0.6	6.7	19	0.08	1	1	2
	0.45	6.2	21	0.07	0.8	0.8	1.6
	0.3	4.8	23	0.06	0.5	0.5	1

Based on air on temperature of 10°C.

### FAN CONFIGURATION

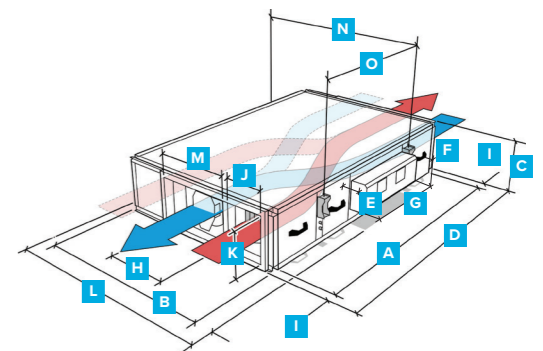


\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE					HANGING BRACKET CENTRES		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1913	1570	624	1973	140	210	640	535	30	398	580	1774	588	1644	1054

2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.



### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	79	79	72	66	64	59	48	34	35
	Induct Supply	83	85	79	74	72	68	61	54	
	Induct Discharge	85	85	79	75	72	69	61	55	
	Induct Extract	81	79	70	67	64	60	48	35	
	Casing Radiated	71	69	56	51	45	41	35	20	



## XBOXER XBC+ ENTHALPY

XBC+ enthalpy heat exchanger units are well suited in premises with low indoor humidity.\* These units maintain a comfortable level of indoor air quality, especially supply air through a suitable increase in humidity.

Due to how they recover heat, enthalpy units do not require a condensate drain as they do not produce condensation like a standard heat recovery block. Because of this, units can be installed at any orientation.



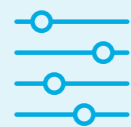
## XBOXER XBC+ ENTHALPY

		Page	Duty Range (Free Air)	Case Size (L x W x H mm)
Size 25		34	Up to 150 l/s	1713 x 1160 x 346
Size 45		36	Up to 240 l/s	1913 x 1262 x 405



### FLEXIBLE INSTALLATION

Enthalpy Units can be mounted horizontally or vertically.



### ADJUSTABLE DUCT OPTIONS

Inlet positions can be changed at installation stage for complete install flexibility.



### NO CONDENSATE DRAIN

Enthalpy units do not require a condensate drain unlike a standard heat recovery block.



### FULL CONTROL

Integrated controls for quick and easy commissioning.

AIR POLLUTANTS

WATER VAPOUR

ENTHALPY MEMBRANE

### How does an Enthalpy Heat Exchanger work?

Enthalpy heat exchangers recover heat through humidity from extract air.

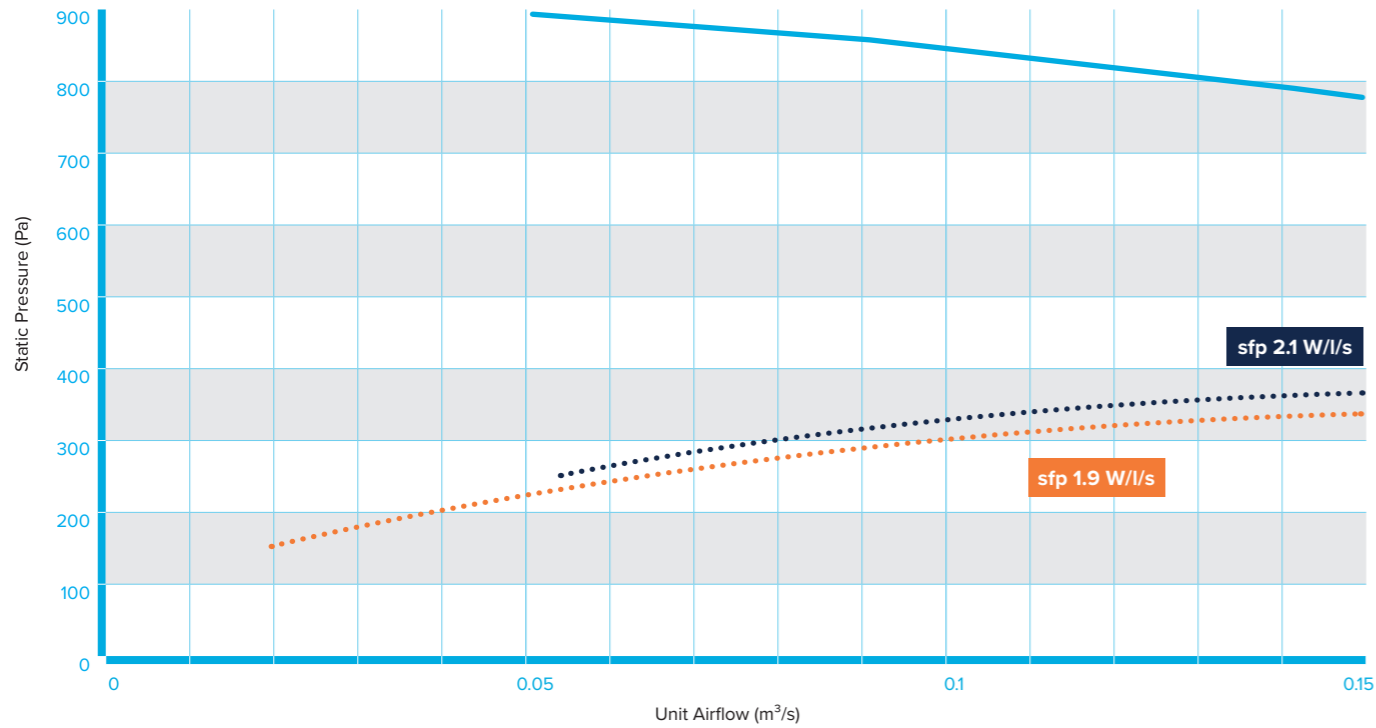
This process is possible due to a unique polymer membrane with a microporous structure that enables transition of water vapour molecules, but blocks transition of air pollutants, such as bacteria, germs, mould, gases and smells.

This enables you to keep high hygienic standards, with no transition of smells and toxins – only heat and water vapours and transferred.

# XBOXER XBC+ 25 ENTHALPY

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### TECHNICAL INFORMATION

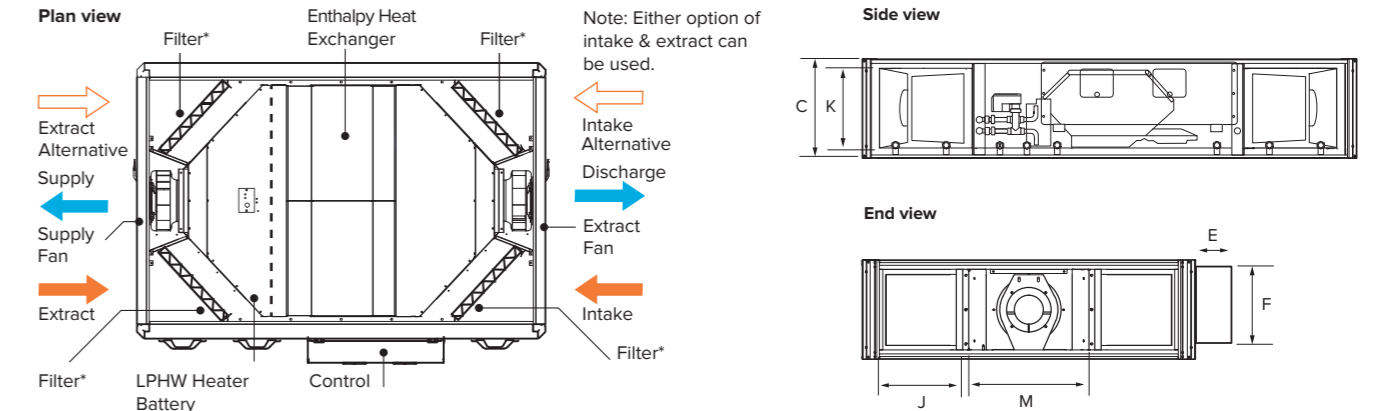
HEATER TYPE	VOLTAGE	PHASE	FREQUENCY	INPUT POWER (W)	FAN SPEED (rpm)	FLC (A)	SC (A)	MAX OPERATING TEMPERATURE (°C)
LPHW	230	1	50	1000	4000	6.4	6.4	40
None	230	1	50	1000	4000	6.4	6.4	40

Relevant to BC, ES, CO or AT control types.

### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	77	71	69	71	66	62	54	53	37
	Induct Supply	82	83	78	82	72	72	68	70	
	Induct Discharge	83	84	78	81	72	72	70	71	
	Induct Extract	76	70	68	71	65	62	54	54	
	Casing Radiated	69	68	55	58	45	44	44	36	

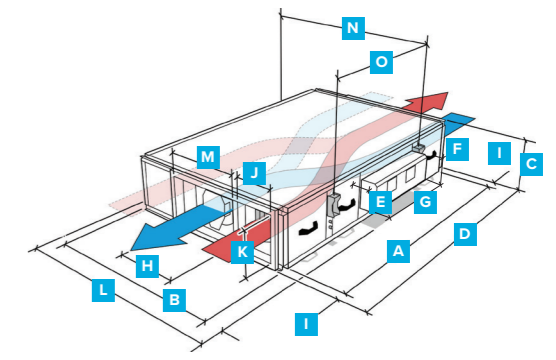
### FAN CONFIGURATION



\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE					HANGING BRACKET CENTRES		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1713	1160	346	1773	140	210	640	413	30	252	302	1350	471	1232	884



2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.

### LPHW HEATING COIL DATA

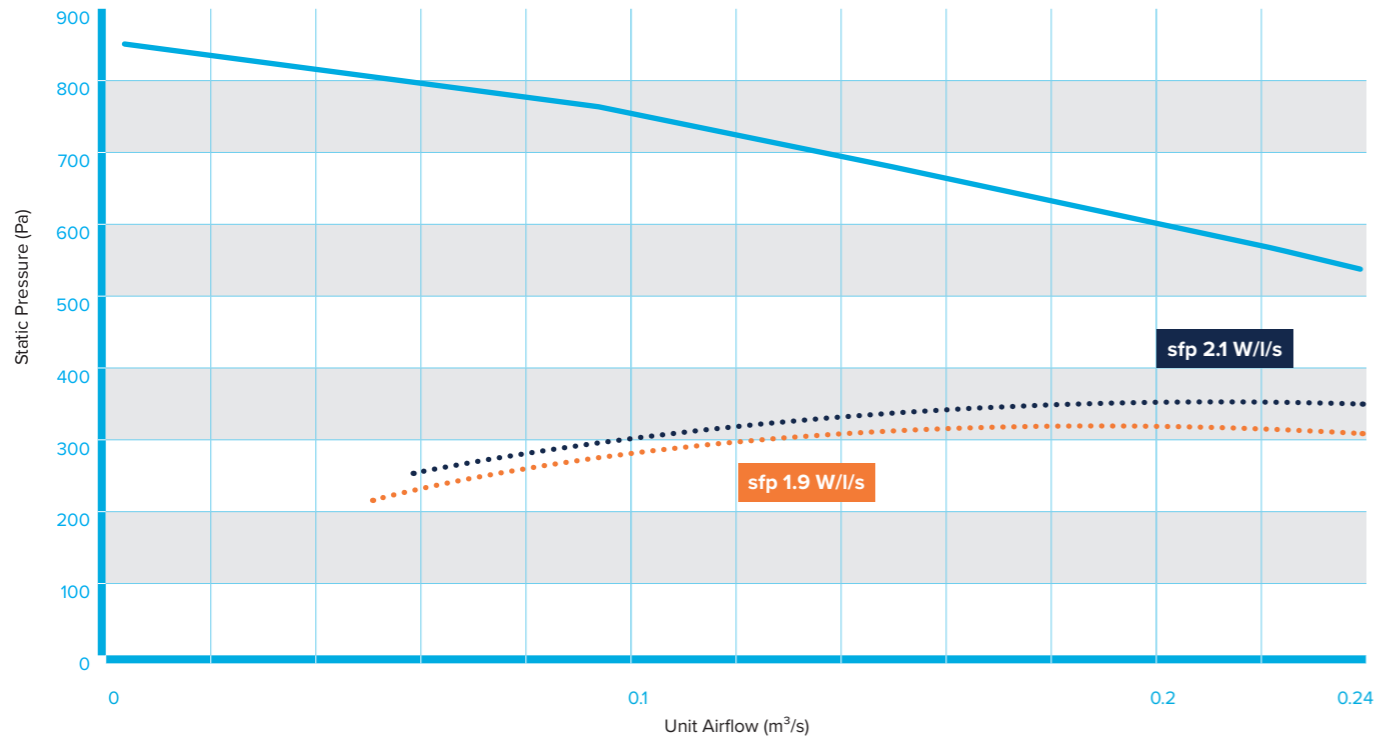
WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
82/71	0.25	6	30	0.134	7.3	9	16.3
	0.1875	5.6	35	0.13	6.5	8	14.5
	0.125	4.4	40	0.1	4	4.9	8.9
80/60	0.25	4.8	26	0.06	1.4	2	3.4
	0.1875	4.3	29	0.05	1.3	1.8	3.1
	0.125	3.4	33	0.04	0.8	1.1	1.9
60/40	0.25	2.8	19	0.03	0.5	1	1.5
	0.1875	2.6	21	0.03	0.4	0.8	1.2
	0.125	2	23	0.02	0.3	0.5	0.8

Based on air on temperature of 10°C.

# XBOXER XBC+ 45 ENTHALPY

## PERFORMANCE & TECHNICAL INFORMATION

### PERFORMANCE CHART



### TECHNICAL INFORMATION

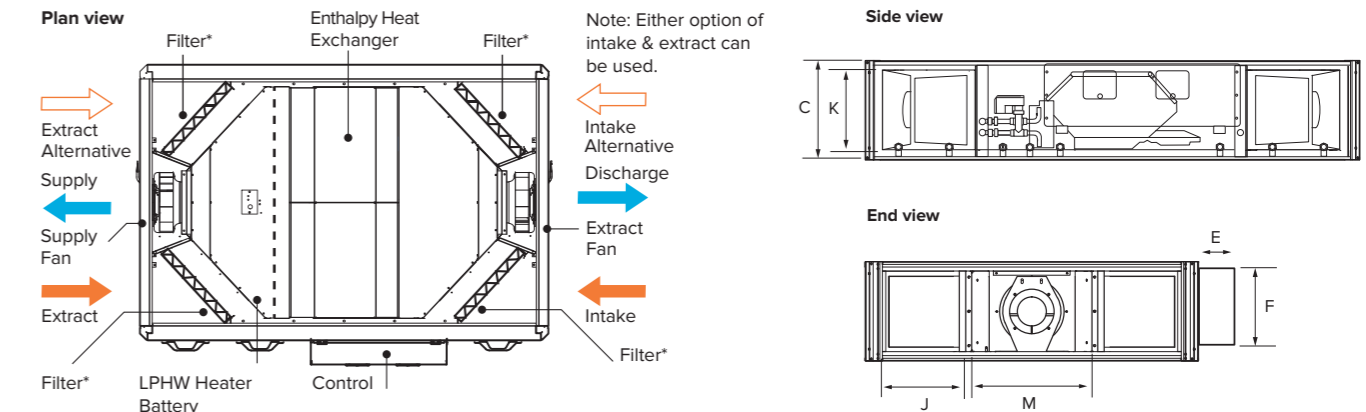
HEATER TYPE	VOLTAGE	PHASE	FREQUENCY	INPUT POWER (W)	FAN SPEED (rpm)	FLC (A)	SC (A)	MAX OPERATING TEMPERATURE (°C)
LPHW	230	1	50	1100	2400	6.9	6.9	40
None	230	1	50	1100	2400	6.9	6.9	40

Relevant to BC, ES, CO or AT control types.

### SOUND DATA

FAN SPEED	SOUND POWER LEVELS (db re 1 pW)	FREQUENCY (Hz)								SPHERICAL dBA@3m
		63	125	250	500	1K	2K	4K	8K	
100%	Induct Intake	83	75	75	64	64	62	54	45	35
	Induct Supply	87	80	85	71	72	71	66	62	
	Induct Discharge	88	81	85	71	72	72	66	64	
	Induct Extract	84	75	76	63	64	63	53	44	
	Casing Radiated	74	65	62	47	45	44	40	29	

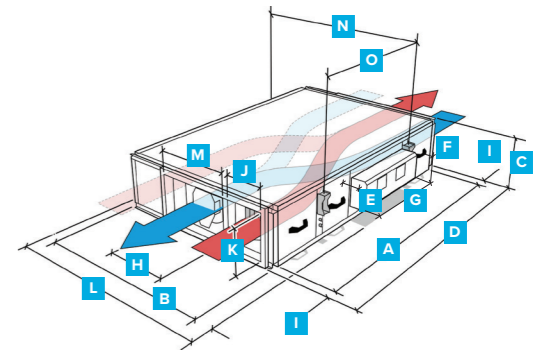
### FAN CONFIGURATION



\*G4 (EN779:2012) / ISO Coarse 75% (ISO 16890).

### DIMENSIONS (mm)

FAN UNIT				CONTROLS BOX			RECTANGULAR APERTURE						HANGING BRACKET CENTRES	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1913	1262	405	1973	140	210	640	443	30	270	360	1461	531	1332	1020



2 attenuator flanges are attached to every unit. Add 50mm to length dimension to include both flanges. Weather roof is separate code and can be retro fitted on site. Units must be installed with a minimum clearance of 260mm from a wall or barrier. This will provide access to filters, coil, fan, heat exchanger, condensate tray and pump.

### LPHW HEATING COIL DATA

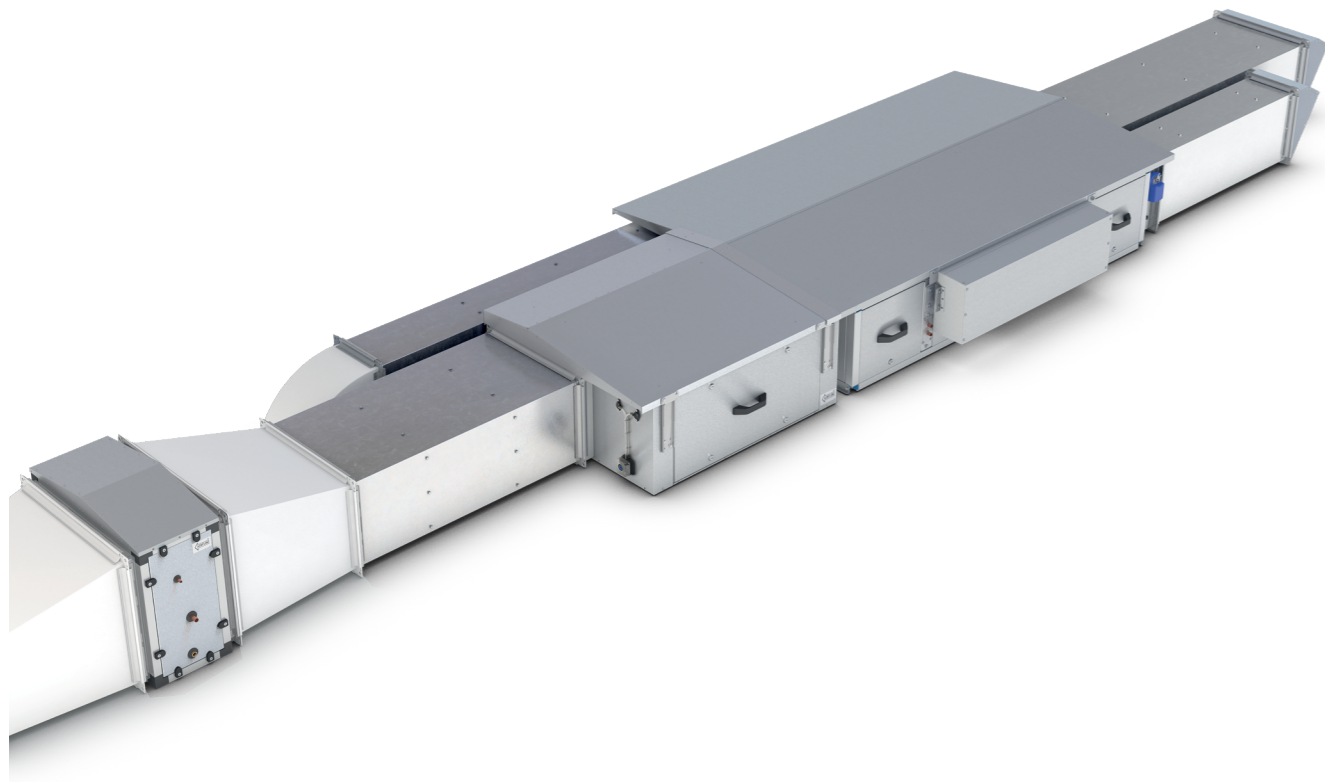
WATER TEMP (°C)	AIRFLOW (m³/s)	OUTPUT (kW)	AIR OFF TEMP (°C)	WATER FLOW (l/s)	COIL ΔP (kPa)	VALVE ΔP (kPa)	TOTAL WATER ΔP (kPa)
82/71	0.37	8.9	30	0.2	16	16	32
	0.2775	8.4	35	0.19	14.1	14.1	28.2
	0.185	6.6	40	0.15	8.8	8.8	17.6
80/60	0.37	7.2	26	0.09	3.2	3	6.2
	0.2775	6.5	29	0.08	2.8	2.7	5.5
	0.185	5.1	33	0.06	1.8	1.6	3.4
60/40	0.37	4.2	19	0.05	1	1	2
	0.2775	3.9	22	0.05	0.8	0.8	1.6
	0.185	3	23	0.04	0.5	0.5	1

Based on air on temperature of 10°C.

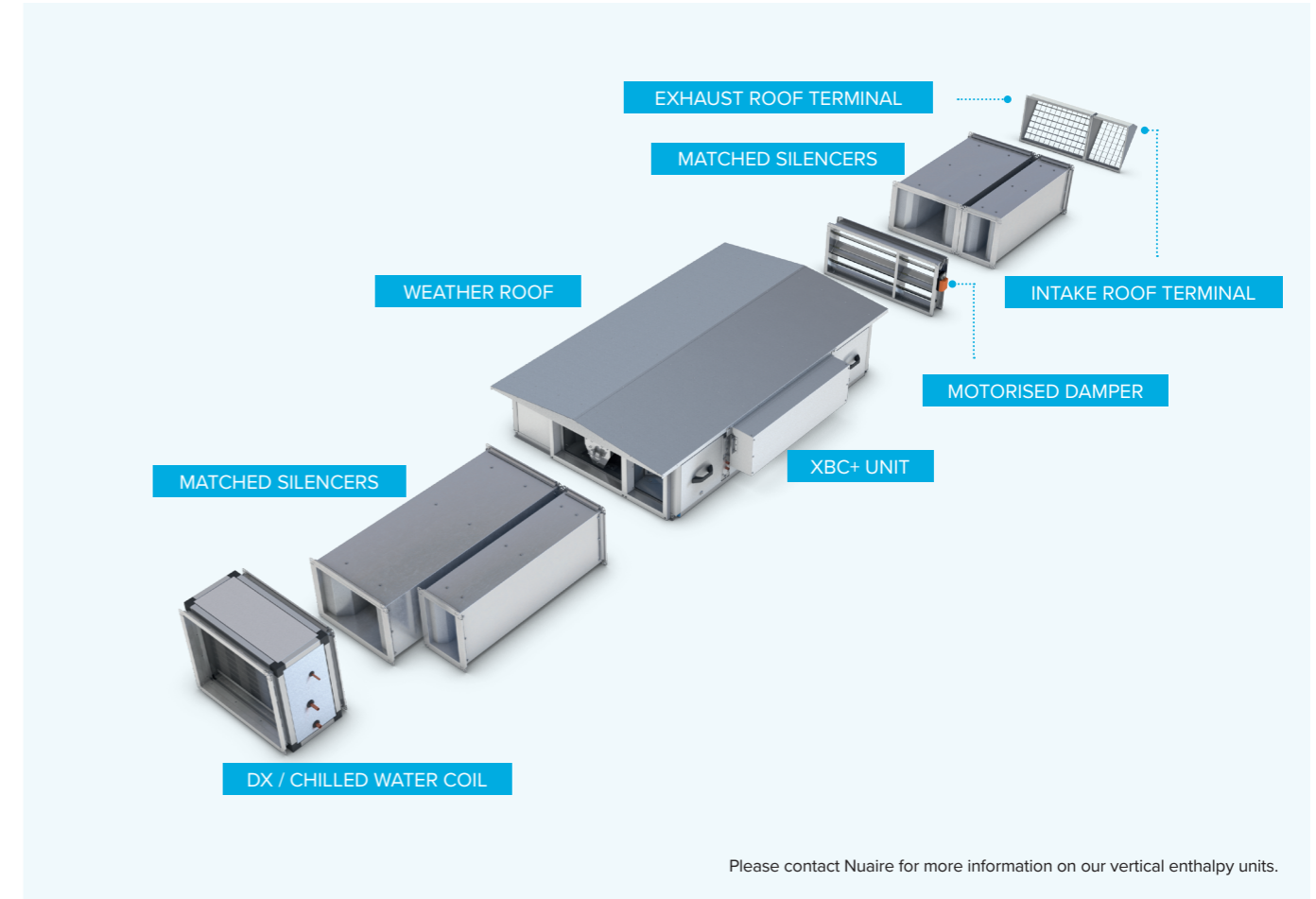
# XBOXER XBC+ ANCILLARIES

A wide range of ancillaries and filters are available to meet your specific project requirements.

Ancillaries include matched bend and straight silencers, weather roofs, F7 filters, and the Haven IAQ Module – designed to provide advanced filtration to a system.



## XBC+ HORIZONTAL INSTALLATION



### MATCHED ANCILLARIES

Designed to seamlessly integrate with any XBC+ system.



### ADVANCED FILTRATION

Haven IAQ Module provides filtration from G4 up to F7 or carbon.



### SUPERIOR ACOUSTICS

Silencers help reduce noise and are matched for simple installation.



### COOLING OPTIONS

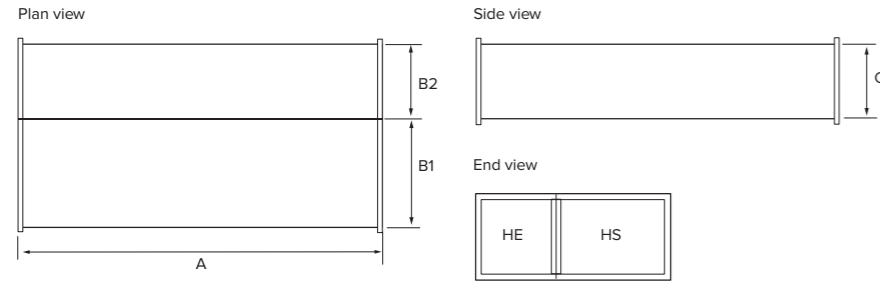
Cooling coil modules are available in both chilled water and DX.

## QUICK SELECTION GUIDE

WEATHER ROOF	EXHAUST ROOF TERMINAL	INTAKE ROOF TERMINAL	MOTORISED DAMPER (INTERNAL)		MOTORISED DAMPER (EXTERNAL)	
			ECOSMART CLASSIC AND BASIC CONTROLS	OTHER CONTROLS	ECOSMART CLASSIC AND BASIC CONTROLS	OTHER CONTROLS
XBC10H-WP	XBC10-EXHAUST-RT	XBC10-INTAKE-RT	XBC10-MD	XBC10-MD-**	XBC10-MD-WP	XBC10-MD-**-WP
XBC15H-WP	XBC15-EXHAUST-RT	XBC15-INTAKE-RT	XBC15-MD	XBC15-MD-**	XBC15-MD-WP	XBC15-MD-**-WP
XBC25H-WP	XBC25-EXHAUST-RT	XBC25-INTAKE-RT	XBC25-MD	XBC25-MD-**	XBC25-MD-WP	XBC25-MD-**-WP
XBC45H-WP	XBC45-EXHAUST-RT	XBC45-INTAKE-RT	XBC45-MD	XBC45-MD-**	XBC45-MD-WP	XBC45-MD-**-WP
XBC65H-WP	XBC65-EXHAUST-RT	XBC65-INTAKE-RT	XBC65-MD	XBC65-MD-**	XBC65-MD-WP	XBC65-MD-**-WP

Replace \*\* with required control option: CO - Connect control; AT - Adapt with Trend control. Add '4' to the end of the code for coastal protection coating. Please note, base frames are not included with ancillaries. All ancillaries need to be supported by others.

## XBOXER XBC+ 10-65 ANCILLARIES - STRAIGHT SILENCERS



### CODING XBC10HS-MS-10

XBC 10 - HS - MS - 10  
 1 2 3 4 5

#### SAMPLE CODING

1. XBOXER XBC+ Range
2. Unit size
3. HE - Intake/Extract  
HS - Supply/Discharge
4. Matched Silencer
5. 10 - 1050mm length  
12 - 1250mm length  
16 - 1600mm length

### STRAIGHT SILENCER DIMENSIONS (MM) - XBC+ 10-45

CODE	DIMENSIONS (mm)				AIR PATH	DYNAMIC INSERTION LOSS (dB)								WEIGHT (kg)	Z' FACTOR
	LENGTH A	WIDTH B1	WIDTH B2	HEIGHT C		63	125	250	500	1K	2K	4K	8K		
XBC10-HS-MS10	1050	347	238	220	S / D	5	11	12	19	27	28	24	19	30	1142
XBC10-HE-MS10					I / E	2	2	3	10	17	10	6	3	24	622
XBC10-HS-MS12	1250	347	238	220	S / D	7	13	16	26	35	34	27	21	35	1142
XBC10-HE-MS12					I / E	4	4	7	17	25	16	9	5	29	622
XBC10-HS-MS16	1600	347	238	220	S / D	9	15	20	33	41	40	30	23	44	1142
XBC10-HE-MS16					I / E	6	6	11	24	31	22	12	7	36	622
XBC15-HS-MS10	1050	347	238	220	S / D	5	11	12	19	27	28	24	19	30	1142
XBC15-HE-MS10					I / E	2	2	3	10	17	10	6	3	24	622
XBC15-HS-MS12	1250	347	238	220	S / D	7	13	16	26	35	34	27	21	35	1142
XBC15-HE-MS12					I / E	4	4	7	17	25	16	9	5	29	622
XBC15-HS-MS16	1600	347	238	220	S / D	9	15	20	33	41	40	30	23	44	1142
XBC15-HE-MS16					I / E	6	6	11	24	31	22	12	7	36	622
XBC25-HS-MS10	1050	471	252	302	S / D	5	8	15	30	41	31	21	16	29	468
XBC25-HE-MS10					I / E	4	4	10	22	26	15	10	8	29	277
XBC25-HS-MS12	1250	471	252	302	S / D	7	10	18	36	51	39	26	20	34	468
XBC25-HE-MS12					I / E	5	6	12	27	34	20	13	9	34	277
XBC25-HS-MS16	1600	471	252	302	S / D	9	13	23	42	55	49	32	25	42	468
XBC25-HE-MS16					I / E	6	8	15	33	43	25	15	11	42	277
XBC45-HS-MS10	1050	531	270	360	S / D	5	9	16	13	11	8	7	6	32	80
XBC45-HE-MS10					I / E	3	5	11	13	15	11	6	4	32	205
XBC45-HS-MS12	1250	531	270	360	S / D	7	11	20	20	19	14	10	8	40	80
XBC45-HE-MS12					I / E	5	7	15	20	23	17	9	6	37	205
XBC45-HS-MS16	1600	531	270	360	S / D	9	13	24	27	25	20	13	10	47	80
XBC45-HE-MS16					I / E	7	9	19	27	29	23	12	8	47	205

### STRAIGHT SILENCER DIMENSIONS (MM) - XBC+ 55-65

CODE	DIMENSIONS (mm)				AIR PATH	DYNAMIC INSERTION LOSS (dB)								WEIGHT (kg)	Z' FACTOR
	LENGTH A	WIDTH B1	WIDTH B2	HEIGHT C		63	125	250	500	1K	2K	4K	8K		
XBC55-HS-MS10	1050	588	398	430	S / D	4	10	17	19	23	18	15	11	32	108
XBC55-HE-MS10					I / E	3	6	12	15	15	11	6	4	36	84
XBC55-HS-MS12	1250	588	398	430	S / D	6	12	21	26	31	24	18	13	37	108
XBC55-HE-MS12					I / E	5	8	16	22	23	17	9	6	42	136
XBC55-HS-MS16	1600	588	398	430	S / D	8	14	25	33	37	30	21	15	47	108
XBC55-HE-MS16					I / E	7	10	20	29	29	23	12	8	52	136
XBC65-HS-MS10	1050	588	398	580	S / D	4	11	14	23	23	22	14	9	43	89
XBC65-HE-MS10					I / E	3	8	12	15	10	6	3	2	46	78
XBC65-HS-MS12	1250	588	398	580	S / D	6	13	18	30	31	28	17	11	51	89
XBC65-HE-MS12					I / E	5	10	16	22	18	12	6	4	54	78
XBC65-HS-MS16	1600	588	398	580	S / D	8	15	22	37	37	34	20	13	63	89
XBC65-HE-MS16					I / E	7	12	20	29	24	18	9	6	67	78

### QUICK SELECTION GUIDE

UNIT SIZE	MATCHING SILENCERS S/D (SUPPLY)			MATCHING SILENCERS I/E (EXTRACT)		
	1050MM LONG	1250MM LONG	1600MM LONG	1050MM LONG	1250MM LONG	1600MM LONG
Size 10	XBC15-HS-MS10	XBC15-HS-MS12	XBC15-HS-MS16	XBC15-HE-MS10	XBC15-HE-MS12	XBC15-HE-MS16
Size 15	XBC15-HS-MS10	XBC15-HS-MS12	XBC15-HS-MS16	XBC15-HE-MS10	XBC15-HE-MS12	XBC15-HE-MS16
Size 25	XBC25-HS-MS10	XBC25-HS-MS12	XBC25-HS-MS16	XBC25-HE-MS10	XBC25-HE-MS12	XBC25-HE-MS16
Size 45	XBC45-HS-MS10	XBC45-HS-MS12	XBC45-HS-MS16	XBC45-HE-MS10	XBC45-HE-MS12	XBC45-HE-MS16
Size 55	XBC55-HS-MS10	XBC55-HS-MS12	XBC55-HS-MS16	XBC55-HE-MS10	XBC55-HE-MS12	XBC55-HE-MS16
Size 65	XBC65-HS-MS10	XBC65-HS-MS12	XBC65-HS-MS16	XBC65-HE-MS10	XBC65-HE-MS12	XBC65-HE-MS16

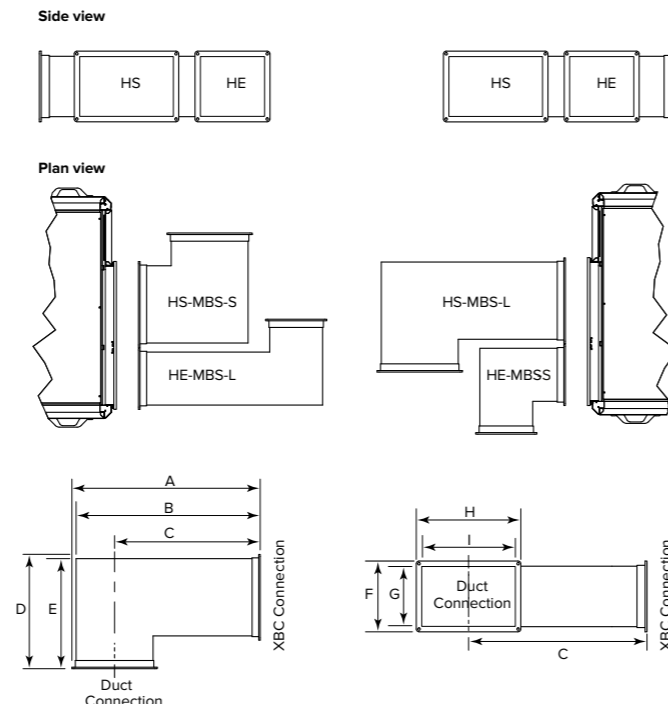
Matched attenuators can be flipped to suit left/right side (1050/1250/1600mm lengths). \*Contact Nuair for details of these variants. Please note, base frames are not included with ancillaries. All ancillaries will need to be supported by others.

## XBOXER XBC+ 10-65 ANCILLARIES - BEND SILENCERS

### Where to use bend attenuators.

Bend matched silencers are ideal for projects where space is limited and the straight matched silencers cannot be fitted. The bend silencers are fitted with the matching flange at either end allow for additional straight silencers to also be added if required.

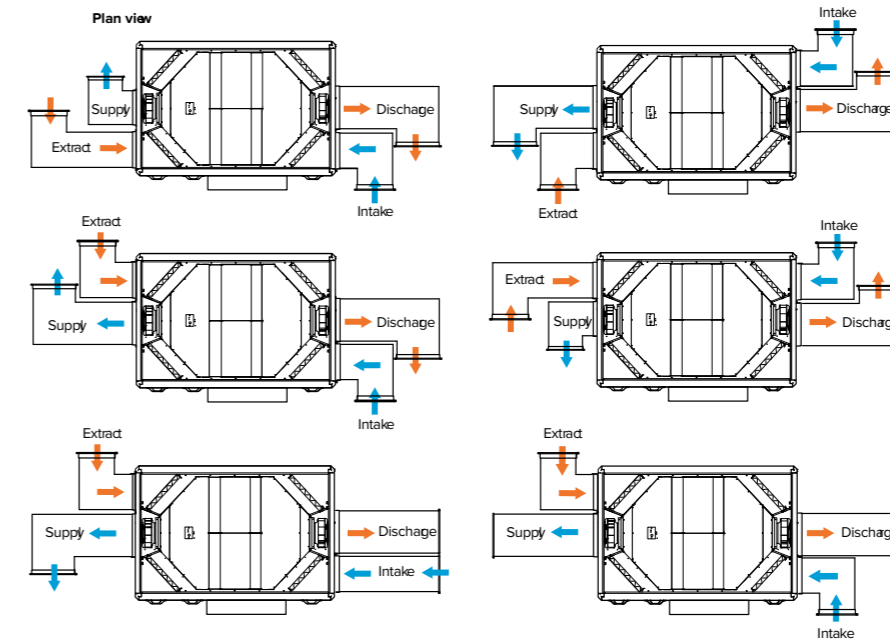
### XBC10 - 65 HORIZONTAL UNITS BEND ATTENUATOR DIMENSIONS



### XBC+ 10-65 BEND SILENCER - DIMENSIONS (mm)

XBC+ UNIT SIZE	ATTENUATOR CODE	ATTENUATOR DIMENSIONS								
		A	B	C	D	E	F	G	H	I
XBC+ 10	XBC15-HS-MBS-S	515	496	322	515	496	260	220	386	346
	XBC15-HS-MBS-L	852	833	659	515	496	260	220	386	346
	XBC15-HE-MBS-S	406	387	268	406	387	260	220	277	237
	XBC15-HE-MBS-L	852	833	714	406	387	260	220	277	237
XBC+ 15	XBC15-HS-MBS-S	515	496	322	515	496	260	220	386	346
	XBC15-HS-MBS-L	852	833	659	515	496	260	220	386	346
	XBC15-HE-MBS-S	406	387	268	406	387	260	220	277	237
	XBC15-HE-MBS-L	852	833	714	406	387	260	220	277	237
XBC+ 25	XBC25-HS-MBS-S	640	621	385	640	621	342	302	511	471
	XBC25-HS-MBS-L	992	973	737	640	621	342	302	511	471
	XBC25-HE-MBS-S	421	402	275	421	402	342	302	292	252
	XBC25-HE-MBS-L	992	973	846	421	402	342	302	292	252
XBC+ 45	XBC45-HS-MBS-S	700	681	415	700	681	400	360	571	531
	XBC45-HS-MBS-L	1070	1051	785	700	681	400	360	571	531
	XBC45-HE-MBS-S	439	420	284	439	420	400	360	310	270
	XBC45-HE-MBS-L	1070	1051	915	439	420	400	360	310	270
XBC+ 55	XBC55-HS-MBS-S	756	737	443	756	737	470	430	627	587
	XBC55-HS-MBS-L	1253	1234	940	756	737	470	430	627	587
	XBC55-HE-MBS-S	566	547	348	566	547	470	430	437	397
	XBC55-HE-MBS-L	1253	1234	1035	566	547	470	430	437	397
XBC+ 65	XBC65-HS-MBS-S	756	737	443	756	737	620	580	627	587
	XBC65-HS-MBS-L	1253	1234	940	756	737	620	580	627	587
	XBC65-HE-MBS-S	566	547	348	566	547	620	580	437	397
	XBC65-HE-MBS-L	1253	1234	1035	566	547	620	580	437	397

### ACOUSTIC BEND ATTENUATOR COMBINATION EXAMPLES



### BEND SILENCER CODING

XBC+ 15 - HE - MBS - S  
 1 2 3 4 5

1. XBOXER XBC Range
2. Unit size: 15, 25, 45, 55 or 65
3. HE = Extract/Intake  
HS = Supply/Discharge
4. Matched Bend Silencer
5. S = Short (refer to dimensions)  
L = Long (refer to dimensions)

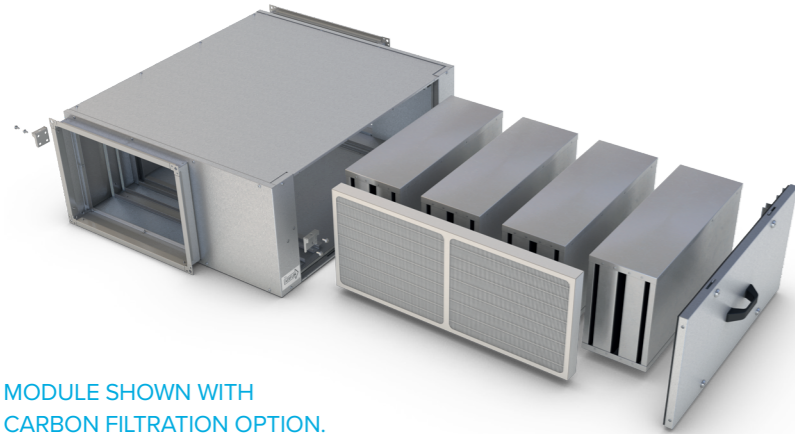
### XBC+ 10-65 BEND SILENCER - SOUND DATA

	DYNAMIC INSERTION LOSS (dB)								ATTENUATOR WEIGHT (kg)	'Z' FACTOR
	63	125	250	500	1000	2000	4000	8000		
2	4	9	17	30	33	25	19	36	900.0	
2	5	12	22	38	39	28	22	46	1100.0	
2	4	10	18	32	35	25	20	36	2000.0	
3	5	13	24	42	41	29	23	44	2300.0	
2	4	9	17	30	33	25	19	36	2300.0	
2	5	12	22	38	39	28	22	46	2300.0	
2	4	10	18	32	35	25	20	36	2300.0	
3	5	13	24	42	41	29	23	44	2300.0	
2	4	8	16	29	22	14	10	50	156.3	
2	5	10	21	38	25	17	13	64	173.6	
2	4	8	16	29	22	14	10	40	208.3	
2	5	10	38	25	17	13	50	54	225.7	
3	6	9	17	29	21	13	7	60	116.9	
4	7	10	21	37	26	15	8	76	116.9	
3	6	9	17	29	21	13	7	42	146.1	
4	7	10	21	37	26	15	8	58	160.7	
3	7	10	21	37	26	15	8	68	80.0	
4	10	18	31	39	24	12	7	96	92.0	
3	6	10	18	24	16	9	6	48	80.0	
4	10	18	31	39	24	12	7	72	100.0	
3	8	14	23	22	14	7	4	76	44.4	
14	10	19	31	30	18	9	5	106	50.0	
3	8	14	23	22	14	7	4	54	55.6	
4	10	19	31	30	18	9	5	86	63.9	

# HAVEN IAQ MODULE

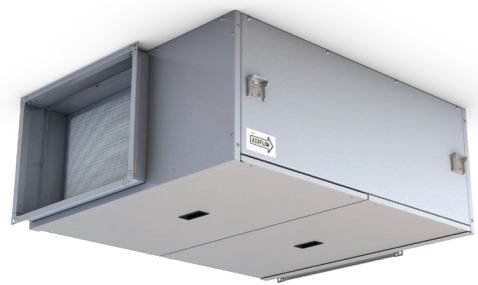
Indoor air quality has always been at the core of our thinking. Haven leads the way in filtration solutions, ensuring maximum occupant comfort and wellbeing.

The Haven IAQ Module is an in-line duct-mounted filtration solution, allowing for advanced filtration to a space. Modules have multiple filter options – from G4 all the way up to activated carbon. Modules are matched for use with the XBC+ range but can be used as an in-duct filtration solution with other Nuair ranges, such as DAVE Supply.



MODULE SHOWN WITH CARBON FILTRATION OPTION.

Carbon filtration available with side access units only.



MODULE SHOWN WITH BOTTOM ACCESS

## CODING HIAQM-015-S-A-A-1W

HIAQM - 015 - S - A - A - 1W  
 1 2 3 4 5 6 7

1. Haven IAQ Module.
2. Module size.
3. S – Side access.  
B – Bottom access.
4. Primary stage panel filter (see filter options).
5. Secondary stage bag filter (see filter options).
6. 1 – Standard Aluzinc finish.  
4 – Coastal (C4\*) finish.
7. 1 – Standard unit (no roof).  
W – Twin-pitched roof (factory fitted).

\*This units coastal finish has been designed to withstand an External C4 Atmospheric Corrosivity Category as per BS EN ISO 12944-2:2017 providing that it is installed and maintained as per the manufacturer's instructions and general Warranty Guidance Notes found in our conditions of sale.

## FILTER OPTIONS

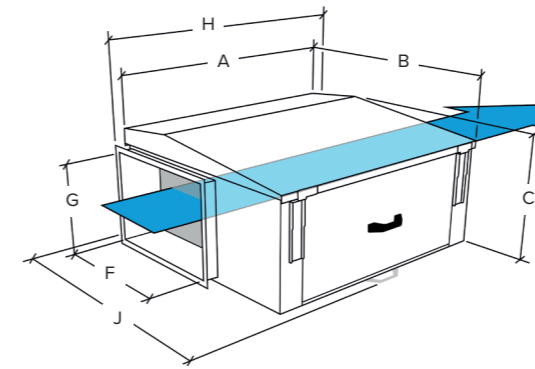
### CODING HIAQM-015-S-A-A-1W

Primary stage panel filter  
 Secondary stage bag filter

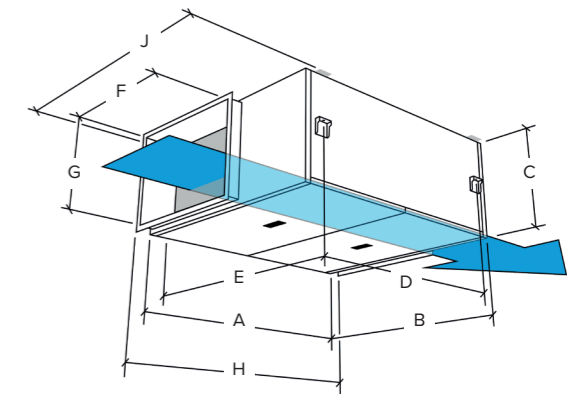
CODING	FILTER TYPE
A	G4 / ISO coarse
B	M5 / PM10 50%
C	M6 / PM2.5 50%
D	F7 / PM1 50%
E	F8 / PM1 70%
F	F9 / PM1 80%
G	Rigid carbon panel unit (RCP)
H	No Filter

## PIONEERING NEW AIR TECHNOLOGY

## PERFORMANCE & TECHNICAL INFORMATION



EXAMPLE UNIT: SIDE ACCESS UNIT WITH WEATHER ROOF



EXAMPLE UNIT: BOTTOM ACCESS INTERNAL UNIT

## DIMENSIONS (mm) & WEIGHT (kg)

MODULE	CASING			BRACKET CENTRES		FLANGE CONNECTIONS		TOTAL LENGTH	TOTAL WIDTH	WEIGHT		
	A	B	C	D	E	F	G	H	J*	MODULE	CARBON FILTER	TOTAL
Size 15	890	665	259	755	690	351	218	1010	727	28	22	50
Size 25	990	809	339	855	830	481	298	1110	868	34	41	75
Size 45	990	885	399	855	907	536	358	1110	944	45	56	101
Size 55	990	1068	469	855	1090	592	428	1110	1127	55.4	75.6	131
Size 65	890	1068	622	755	1090	592	578	1010	1127	64	87	151

\*Minus 20mm to dimension B for bottom access units.

## WEATHERPROOF ROOF OPTION

MODULE	A	B	C	WEIGHT
Size 15	902	695	334	60
Size 25	1002	839	424	88
Size 45	1002	915	489	116
Size 55	1002	1098	574	148
Size 65	902	1098	727	168

## SPARE FILTERS

### CODING HIAQM-015-1A-FILTER

HIAQM - 015 - 1A - FILTER  
 1 2 3 4 5

1. Haven IAQ Module.
2. Module size.
3. 1 – Primary stage panel filter.  
2 – Secondary stage bag filter.
4. Filter (see filter options).
5. Replacement filter.

## CARBON FILTER WEIGHT (kg)

WEIGHT
22
41
56
75.6
87

Bag and panel filter weights negligible, please contact Nuair for more information.

## CONSULTANT SPECIFICATION

### OPERATION

The Haven IAQ Module range of ancillaries has been specially designed to complement the existing range of XBC+ units as well as providing a general function of high-grade filtration to any commercial ventilation units which require it. The unit shall be manufactured from Aluzinc with double-skin panels filled with insulation to provide thermal and acoustic barriers. The units will come as standard with pressure monitoring for the filtration and give a relay output for alarm signalling when a pre-determined pressure value is exceeded. The units will be available with different access options (bottom or side access) as well as weatherproofing and coastal varieties depending on installation location. The unit is unhandled with different operations to suit it for different installations (please refer to I&M for details).



### CLEANER AIR

Advanced filtration aids in achieving higher levels of indoor air quality (IAQ).



### LOW DEPTH

Ideal for projects with space restrictions or shallow ceiling voids.



### HIGH CLASSIFICATION

Tested to meet L2 leakage and F9 filter bypass leakage.



### RETROFIT SOLUTION

Can be added later to help stop outside pollutants entering the space.



### PROJECT SPECIFIC

Various filter options available allowing you to specify to your project requirements.

# HAVEN IAQ MODULES

## RESISTANCE DATA

Z FACTORS  $R=Z*Q^2$

MODULE	A	B	C	D	E	F
XBC15	1083	1818	1939	2303	3345	3296
XBC25	396	653	697	827	1215	1202
XBC45	228	438	467	554	806	806
XBC55	106	204	218	259	376	376
XBC65	58	113	120	143	207	207

### SECONDARY FILTERS

MODULE	A	B	C	D	E	F	G
XBC15	1054	1555	1568	2634	3535	3995	2126
XBC25	421	627	564	873	1286	1465	1229
XBC45	404	605	375	495	768	824	761
XBC55	183	274	175	231	358	384	361
XBC65	93	137	96	125	197	210	179

#### EXAMPLE FROM THE GRAPH

$R = Z * Q^2$  Q = airflow in m<sup>3</sup>/s

Resistance of HIAQM-025 – F7 Primary stage filter @ 0.25m<sup>3</sup>/s is 51 Pa

Resistance of HIAQM-025 – Carbon Secondary stage filter @ 0.25m<sup>3</sup>/s is 77 Pa

Combined resistance of HIAQM-025-S-D-G-11 @ 0.25m<sup>3</sup>/s is 128 Pa

$R = (827 * 1229) * (0.25)^2 = 128$  Pa

#### FILTER TYPE

G4 / ISO coarse

M5 / PM10 50%

M6 / PM2.5 50%

F7 / PM1 50%

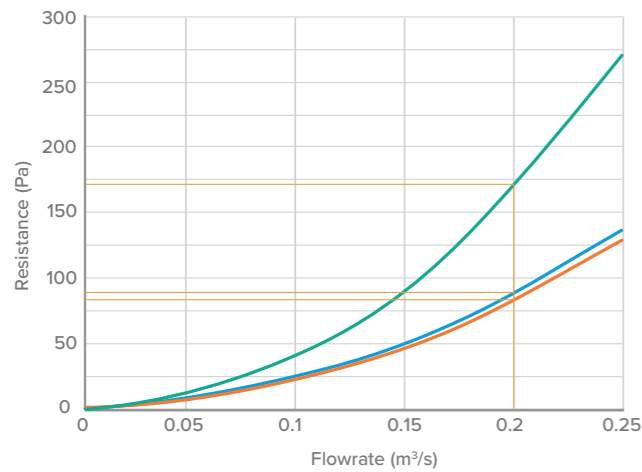
F8 / PM1 70%

F9 / PM1 80%

Rigid carbon panel unit (RCP)

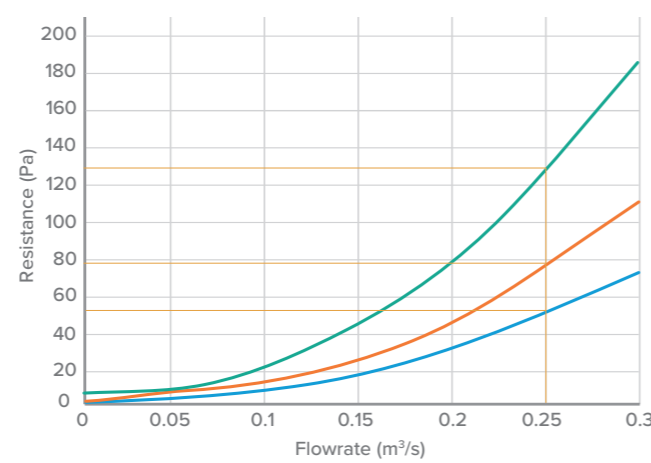
No Filter

### FILTER RESISTANCE - HIAQM-015



- HIAQM-015 Panel Filter
- HIAQM-015 Carbon Filter
- HIAQM-015-S-D-G-11

### FILTER RESISTANCE - HIAQM-025

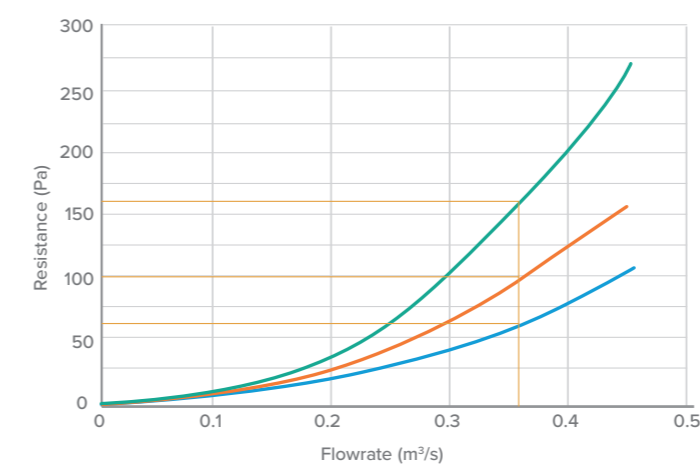


- HIAQM-025 Panel Filter
- HIAQM-025 Carbon Filter
- HIAQM-025-S-D-G-11

# HAVEN IAQ MODULES

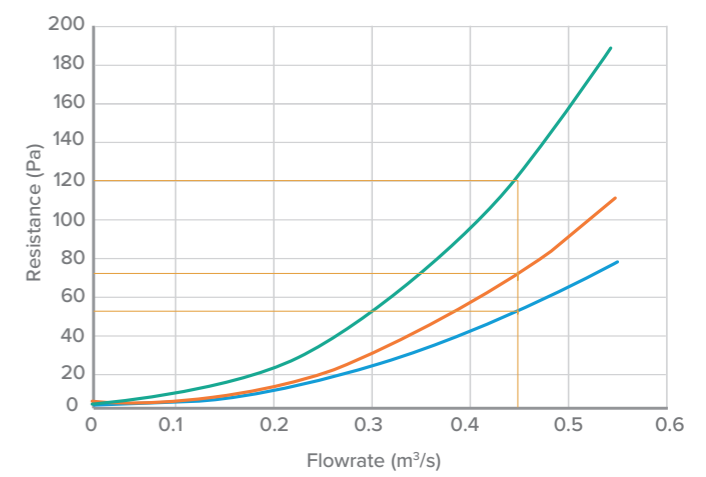
## RESISTANCE DATA

### FILTER RESISTANCE - HIAQM-045



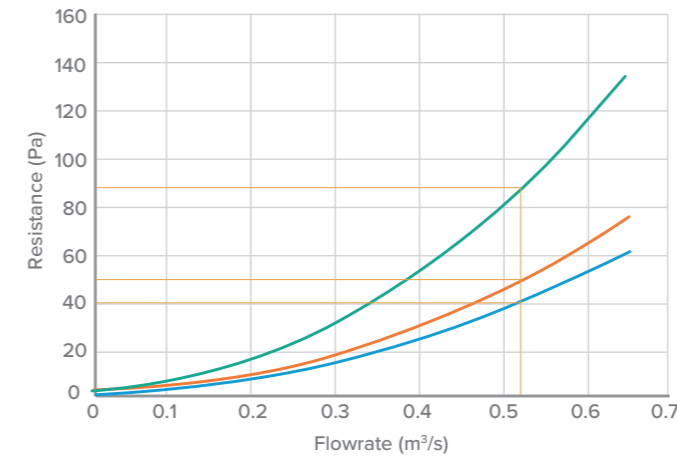
- HIAQM-045 Panel Filter
- HIAQM-045 Carbon Filter
- HIAQM-045-S-D-G-11

### FILTER RESISTANCE - HIAQM-055



- HIAQM-055 Panel Filter
- HIAQM-055 Carbon Filter
- HIAQM-055-S-D-G-11

### FILTER RESISTANCE - HIAQM-065

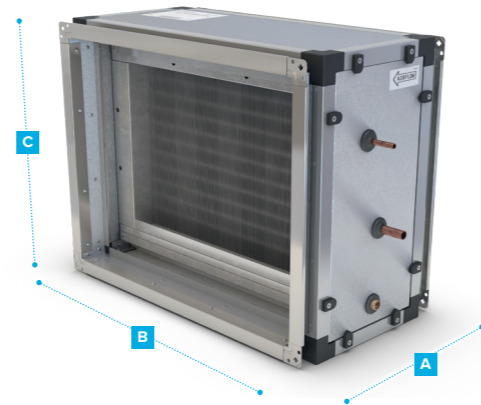


- HIAQM-065 Panel Filter
- HIAQM-065 Carbon Filter
- HIAQM-065-S-D-G-11



## XBOXER XBC+ 10-65 ANCILLARIES – COOLING COIL MODULES

XBC+ units are available with bolt-on cooling modules as a matched ancillary. Cooling coil modules are available in both DX and chilled water cooling options.



### CODING XBC25H-DX-DUCTM-LWP

XB C 25 H – DX – DUCT M – L WP  
1 2 3 4 5 6 7 8 9

#### SAMPLE CODING

1. XBOXER range
2. C – Counter flow heat exchanger
3. Unit size
4. H – Horizontal layout
5. DX – Direct expansion cooling
6. DUCT – Duct-mounted module
7. M – For use with Mitsubishi condenser\*  
O – For use with other manufacturer condenser
8. L – Left controls handing  
R – Right controls handing
9. WP – Weather roof (optional)

\* Controls, sensors, piping and gas by others.

### CODING XBC25H-CW-DUCTM-LWP

XB C 25 H – CW – DUCT L – WP  
1 2 3 4 5 6 7 8

#### SAMPLE CODING

1. XBOXER range
2. C – Counter flow heat exchanger
3. Unit size
4. H – Horizontal layout
5. CW – Chilled water cooling
6. DUCT – Duct-mounted module
7. L – Left controls handing  
R – Right controls handing
8. WP – Weather roof (optional)

### CHILLED WATER COOLING COILS

Chilled water coil shall be manufactured from copper tubing with high efficiency aluminium fins contained within a galvanised steel frame. Coil supplied complete with an insulated condensate tray and moisture eliminator. All components pre-piped, assembled and tested by the manufacturer.

### DX (DIRECT EXPANSION) COOLING COILS

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

### DX COOLING MODULE DIMENSIONS (mm) AND WEIGHT (kg)

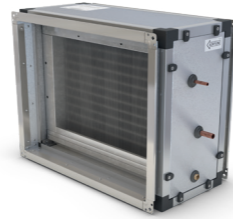
CODE	A	B	C	WEIGHT
XBC10H-DX-DUCTM-*	325	390	365	12
XBC10H-DX-DUCTO-*	425	460	370	16
XBC10H-DX-DUCTM-*WP	325	390	390	13
XBC10H-DX-DUCTO-*WP	425	460	400	18
XBC15H-DX-DUCTM-*	325	440	415	14
XBC15H-DX-DUCTO-*	670	460	370	23
XBC15H-DX-DUCTM-*WP	325	440	443	15
XBC15H-DX-DUCTO-*WP	670	460	400	26
XBC25H-DX-DUCTM-*	375	650	465	20
XBC25H-DX-DUCTO-*	670	580	450	28
XBC25H-DX-DUCTM-*WP	375	650	506	22
XBC25H-DX-DUCTO-*WP	670	580	487	32
XBC45H-DX-DUCTM-*	375	690	545	23
XBC45H-DX-DUCTO-*	643	640	500	30
XBC45H-DX-DUCTM-*WP	375	690	590	25
XBC45H-DX-DUCTO-*WP	643	640	542	34
XBC55H-DX-DUCTM-*	375	665	620	23
XBC55H-DX-DUCTO-*	643	690	580	34
XBC55H-DX-DUCTM-*WP	375	665	663	25
XBC55H-DX-DUCTO-*WP	643	690	624	38
XBC65H-DX-DUCTM-*	375	765	670	26
XBC65H-DX-DUCTO-*	643	690	730	38
XBC65H-DX-DUCTM-*WP	375	765	719	28
XBC65H-DX-DUCTO-*WP	643	690	774	41

Replace \* with L for left controls handing units and R for right controls handing units.

### CHILLED WATER COOLING MODULE DIMENSIONS (mm) AND WEIGHT (kg)

CODE	A	B	C	WEIGHT
XBC10H-CW-DUCT-*	425	460	370	16
XBC10H-CW-DUCT-*WP	425	460	400	18
XBC15H-CW-DUCT-*	670	460	370	23
XBC15H-CW-DUCT-*WP	670	460	400	26
XBC25H-CW-DUCT-*	670	580	450	28
XBC25H-CW-DUCT-*WP	670	580	487	32
XBC45H-CW-DUCT-*	643	640	500	30
XBC45H-CW-DUCT-*WP	643	640	542	34
XBC55H-CW-DUCT-*	643	690	580	34
XBC55H-CW-DUCT-*WP	643	690	624	38
XBC65H-CW-DUCT-*	643	690	730	38
XBC65H-CW-DUCT-*WP	643	690	774	41

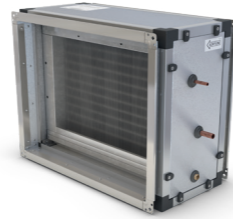
Replace \* with L for left controls handing units and R for right controls handing units.



# DX COIL DATA

## TECHNICAL INFORMATION

SIZE	COIL INFORMATION			AIR INFORMATION				REFRIGERANT R410A				
SIZE 15 Reverse Cycle DX Coil	Internal Coil Volume (l)	Evaporating Temperature (°C)	Condensing Temperature (°C)	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Moisture Extraction Rate (kg/hr)
				100%	0.17	28.0	50.0	16.90	93.0	2.7	2.3	0.5
				75%	0.13	28.0	50.0	16.00	95.0	2.3	1.9	0.6
				50%	0.09	28.0	50.0	15.00	97.0	1.8	1.4	0.6
SIZE 25 Reverse Cycle DX Coil	Internal Coil Volume (l)	Evaporating Temperature (°C)	Condensing Temperature (°C)	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Moisture Extraction Rate (kg/hr)
				100%	0.25	28.0	50.0	15.20	95.0	5.2	3.9	1.7
				75%	0.19	28.0	50.0	14.60	96.0	4.2	3.1	1.5
				50%	0.13	28.0	50.0	14.20	97.0	3.0	2.2	1.1
SIZE 45 Reverse Cycle DX Coil	Internal Coil Volume (l)	Evaporating Temperature (°C)	Condensing Temperature (°C)	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Moisture Extraction Rate (kg/hr)
				100%	0.37	28.0	50.0	16.20	93.0	6.6	5.3	1.8
				75%	0.28	28.0	50.0	15.40	94.0	5.6	4.3	1.8
				50%	0.19	28.0	50.0	14.80	95.0	4.2	3.0	1.5
SIZE 55 Reverse Cycle DX Coil	Internal Coil Volume (l)	Evaporating Temperature (°C)	Condensing Temperature (°C)	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Moisture Extraction Rate (kg/hr)
				100%	0.55	28.0	50.0	16.20	93.0	9.7	7.8	2.5
				75%	0.41	28.0	50.0	15.80	95.0	7.7	6.1	2.4
				50%	0.28	28.0	50.0	15.10	96.0	5.8	4.4	1.8
SIZE 65 Reverse Cycle DX Coil	Internal Coil Volume (l)	Evaporating Temperature (°C)	Condensing Temperature (°C)	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Moisture Extraction Rate (kg/hr)
				100%	0.60	28.0	50.0	15.70	94.0	11.4	8.7	3.6
				75%	0.45	28.0	50.0	15.10	95.0	9.2	6.9	3.2
				50%	0.30	28.0	50.0	14.70	96.0	6.5	4.7	2.4



# XBC+ CHILLED WATER COIL DATA

## TECHNICAL INFORMATION

SIZE	COIL INFORMATION	AIR INFORMATION				FLOW / RETURN TEMPERATURES (°C)																	
						6 / 12							7 / 14										
						Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Water Flowrate (l/s)	Water Pressure Drop (kPa)	Moisture Extraction Rate (kg/hr)	Air Temperature After Coil (°C)	Air Humidity After Coil (%RH)	Total Cooling Output (kW)	Sensible Cooling Output (kW)	Water Flowrate (l/s)	Water Pressure Drop (kPa)	Moisture Extraction Rate (kg/hr)				
15	Connection Size (")	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)																		
						100%	0.17	28.0	50.0	17.4	85.1	2.80	2.2	0.10	17.4	1.0	18.5	84.7	2.30	2.0	0.10	8.5	0.5
						75%	0.13	28.0	50.0	16.4	88.0	2.50	1.8	0.10	13.6	1.0	17.6	87.5	2.00	1.6	0.10	6.7	0.5
						50%	0.09	28.0	50.0	15.4	90.6	1.90	1.4	0.10	8.4	0.8	16.8	90.0	1.50	1.2	0.10	4.1	0.5
25	Connection Size (")	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)																		
						100%	0.25	28.0	50.0	15.4	89.6	5.40	3.8	0.20	15.9	2.3	16.6	89.0	4.50	3.4	0.20	8.5	1.5
						75%	0.19	28.0	50.0	14.8	91.2	4.40	3.0	0.20	10.8	2.1	16.1	90.5	3.70	2.7	0.10	5.8	1.3
						50%	0.13	28.0	50.0	14.2	82.7	3.20	2.2	0.10	6.1	1.4	15.6	92.1	2.60	1.9	0.10	3.2	0.9
45	Connection Size (")	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)																		
						100%	0.37	28.0	50.0	16.6	86.8	7.00	5.1	0.30	21.2	2.7	17.7	86.3	5.70	4.6	0.20	11.4	1.6
						75%	0.28	28.0	50.0	15.9	88.7	5.80	4.1	0.20	15.5	2.4	17.1	88.1	4.70	3.7	0.20	8.1	1.5
						50%	0.19	28.0	50.0	12.1	90.6	4.20	3.0	0.20	8.8	1.8	16.4	89.9	3.50	2.7	0.10	4.7	1.2
55	Connection Size (")	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)																		
						100%	0.55	28.0	50.0	16.4	87.5	9.60	7.0	0.40	18.2	3.9	17.6	86.9	7.80	6.3	0.30	10.4	2.2
						75%	0.41	28.0	50.0	15.8	89.1	7.90	5.6	0.30	12.7	3.4	17.0	88.6	6.50	5.1	0.20	7.4	2.1
						50%	0.28	28.0	50.0	15.0	91.0	5.60	3.9	0.20	7.6	2.7	16.4	90.4	4.60	3.5	0.10	4.0	1.7
65	Connection Size (")	Airflow Rate (%)	Airflow Rate (l/s)	Air Temperature Before Coil (°C)	Air Humidity Before Coil (%RH)																		
						100%	0.60	28.0	50.0	16.1	88.2	11.90	8.6	0.50	17.0	4.8	17.3	87.6	9.70	7.8	0.30	9.0	2.9
						75%	0.45	28.0	50.0	15.5	89.7	9.60	9.6	0.40	11.6	4.0	16.8	89.1	7.80	6.1	0.30	7.3	2.5
						50%	0.30	28.0	50.0	14.9	91.4	6.80	6.8	0.30	7.5	3.0	16.3	90.7	5.50	4.2	0.20	4.1	1.9

## XBOXER XBC+ 10-65

### CONSULTANT SPECIFICATION

#### OPERATION

The supply and extract ventilation unit shall be configured as indicated on the drawings. The heat recovery ventilation unit shall enable the room design conditions to be maintained by the effective and continuous control of ventilation rate, the integrated counterflow heat exchanger matrix with bypass feature, and heating facility. The ventilation unit shall automatically vary the ventilation rate in the space dependent upon the signals received from the interconnected sensors and user interface (where provided). When signals are received, the unit shall vary its fan speeds proportionally until the desired set points are met. The unit shall have the facility to commission the supply and extract fans individually via inbuilt maximum, minimum and offset speed adjustments. Each fan shall have stepless variable speed control (20 – 100% of maximum). The unit shall be the XBC+ 10-65 as manufactured by Nuair.

#### UNIT SPECIFICATION

The heat recovery ventilation unit will be selected from the 'XBOXER XBC+ packaged heat recovery range' as manufactured by Nuair in one of the available sizes from XBC10-65.

The unit will be unit constructed from corrosion resistant aluzinc supported by a bespoke anodised aluminium extrusion system. The standard panel execution will be in a 'natural' aluzinc finish or as a painted panel option to a specified RAL colour. On request, the XBC+ 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 manufacturers 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 260 / 346 / 405 / 470 / 624 mm (Models XBC+ 10-65). The ventilation unit and attenuators shall have an asymmetric, high mass double skinned wall construction (patent applied for) with integral acoustic barrier mat\* 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 high efficiency aluminium counterflow plate heat exchanger matrix with a thermal efficiency of up to 96%, fitted with a segmented 100% bypass facility and patented actuator operating under automatic control. The automatic operation of the XBC+ 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 pleated G4 (EN779:2012) / ISO Coarse 75% (ISO 16890) panel filters (supply and 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 degrees 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 unit 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 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 A as standard (refer to technical documentation). The ventilation unit shall comprise the following:- Supply and extract fans; high efficiency counterflow plate heat exchanger matrix also available as an Enthalpy variant; supply and extract filters; full 100% automatic heat exchanger bypass; heating coil (as selected) & 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](http://www.nuair.co.uk)

#### NO CONTROL OPTION

Unit is provided with side access terminal boxes for direct supply and extract fan motor wiring and for interfacing to custom built control panels. The control assembly is side mounted with a 90° rotation facility for wiring and commissioning adjustments in restricted access conditions. (260mm access allowance is required). A side mounted terminal box is provided for the connections to the fans (230V 50Hz LNE and 2-10V), and Electric heater terminal and thermal protection (where specified). For this option, no sensors are fitted to the unit, but note that the plate heat exchanger bypass damper actuator is included suitable for 230V standard (24V available).

Units fitted with 'No Control' option have a 2 year warranty: first year parts & labour and then the remaining year parts only.

#### ECOSMART CLASSIC OPTION - DEMAND CONTROLLED VENTILATION

Provides the facility for energy saving via an intelligent stand-alone AHU function with local diagnostic status indication, or allows convenient integration with the client BMS with a minimal co-ordination requirement. The factory fitted Ecosmart Classic control includes:- integral infinitely variable speed / duty control for the supply and extract fans, with independent minimum, maximum and offset adjustment (up to 40%) for accurate commissioning. The control assembly is side mounted with a 90° rotation facility for wiring and commissioning adjustments in restricted access conditions. (260mm access allowance is required). The control features a run on timer and "background" ventilation function, and is provided with unit status indication, run and fail relays and interface connections for Ecosmart Classic sensors/enablers and system dampers. The heat exchanger bypass is automatically operated according to temperature and a pre-defined strategy.

The Ecosmart control module can additionally be connected to provide the following integrated BMS interfaces.

- 0 - 10 volt inputs. This will enable the following functions:- Switch the unit ON/OFF. Variable speed / duty control, Switch from low speed to high speed, Enable heating/cooling.
- 2 No. Volt free contacts give fan run and failure unit status indication.

Units fitted with 'Ecosmart Classic' control have a 5 year warranty: first year parts & labour and then the remaining four years parts only.

#### ECOSMART CONNECT OPTION - ENHANCED DEMAND CONTROLLED VENTILATION

A comprehensive unit control specification - factory fitted and tested to provide guaranteed operation from a single supplier. The unit integrated Ecosmart Connect system provides the facility for operational efficiency and energy saving by allowing a comprehensive range of unitary control functions and / or full BMS integration (by others) via standard BACnet (MS/TP). The system incorporates a web access enabled controller, and is augmented by application specific unit interface and diagnostic circuits. Controller software is optimised and pre-configured, and each unit / control assembly is fully functionally tested at works (Refer to technical documentation for full controller functional specification).

Units fitted with 'Ecosmart Connect' control have a 5 year warranty: first year parts & labour and then the remaining four years parts only.

#### ECOSMART ADAPT WITH TREND OPTION - ENHANCED DEMAND CONTROLLED VENTILATION

A comprehensive unit control specification - factory fitted and tested to provide guaranteed operation from a single supplier. The unit integrated Ecosmart Adapt system provides the facility for operational efficiency and energy saving by allowing a comprehensive range of unitary control functions and / or full BMS integration (by others) via standard BACnet IP configuration. The system incorporates a web access enabled Trend IQ422/12/LAN/ BAC/230 controller, and is augmented by application specific unit interface and diagnostic circuits. Controller software is optimised and pre-configured, and each unit / control assembly is fully functionally tested at works (Refer to technical documentation for full controller functional specification).

Units fitted with 'Ecosmart Adapt' control have a 5 year warranty: first year parts & labour and then the remaining four years parts only.

\*Note: XBC+10 contains specialist acoustic treatment.

\*\*\*The heating output (LPHW or electric) is automatically regulated to control the Air - Off condition.



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