Ecotel™ Outdoor Free Cooling Unit

5-15kW

ET05D

ET10D

ET15D

Technical Manual

FM00542 EMS52086

Customer Services

Warranty, Commissioning & Maintenance

As standard, Airedale guarantees all non consumable parts only for a period of 12 months, variations tailored to suit product and application are also available; please contact Airedale for full terms and details.

To further protect your investment in Airedale products, Airedale can provide full commissioning services, comprehensive maintenance packages and service cover 24 hours a day, 365 days a year (UK mainland). For a free quotation contact Airedale or your local Sales Engineer.

All Airedale products are designed in accordance with EU Directives regarding prevention of build up of water, associated with the risk of contaminants such as legionella.

For effective prevention of such risk it is necessary that the equipment is maintained in accordance with Airedale recommendations.

SafeCool™

In addition to commissioning, a 24 hour, 7 days a week on-call service is available throughout the year to UK mainland sites. This service will enable customers to contact a duty engineer outside normal working hours and receive assistance over the telephone. The duty engineer can, if necessary, attend site, usually within 24 hours or less. Full details will be forwarded on acceptance of the maintenance agreement.

CAUTION ⚠	Warranty cover is not a substitute for maintenance. Warranty cover is conditional to maintenance being carried out in accordance with the recommendations provided during the warranty period. Failure to have the maintenance procedures carried out will invalidate the warranty and any liabilities by Airedale International Air Conditioning Ltd.

Spares

A spares list for 1, 3 and 5 years will be supplied with every unit and is also available from our Spares department on request.

Training

As well as our comprehensive range of products, Airedale offers a modular range of Refrigeration and Air Conditioning Training courses, for further information please contact Airedale.

Customer Services

For further assistance, please e-mail: connect@airedale.com or telephone:

UK Sales Enquiries	+ 44 (0) 113 239 1000	connect@airedale.com
International Enquiries	+ 44 (0) 113 239 1000	connect@airedale.com
Spares Hot Line	+ 44 (0) 113 238 7878	spares@airedale.com
Airedale Service	+ 44 (0) 113 239 1000	service@airedale.com
Technical Support	+ 44 (0) 113 239 1000	tech.support@airedale.com
Training Enquiries	+ 44 (0) 113 239 1000	marketing@airedale.com

For information, visit us at our web site: www.airedale.com

Health and Safety

IMPORTANT

The information contained in this manual is critical to the correct operation and maintenance of the unit and should be read by all persons responsible for the installation, commissioning and maintenance of this Airedale unit.

Safety

The equipment has been designed and manufactured to meet international safety standards but, like any mechanical/ electrical equipment, care must be taken if you are to obtain the best results.

CAUTION ⚠	When working with any air conditioning units ensure that the electrical isolator is switched off prior to servicing or repair work and that there is no power to any part of the equipment. Also ensure that there are no other power feeds to the unit such as fire alarm circuits, BMS circuits etc. Electrical installation commissioning and maintenance work on this equipment should be undertaken by competent and trained personnel in accordance with local relevant standards and codes of practice.

A full hazard data sheet in accordance with COSHH regulations is available should this be required.

Personal Protective Equipment

Airedale recommends that personal protective equipment is used whilst installing, maintaining and commissioning equipment.

Manual Handling

Some operations when servicing or maintaining the unit may require additional assistance with regard to manual handling. This requirement is down to the discretion of the engineer.

Remember do not perform a lift that exceeds your ability.

Environmental Policy

It is our policy to:

- Take a proactive approach to resolve environmental issues and ensure compliance with regulatory requirements.
- Train personnel in sound environmental practices.
- Pursue opportunities to conserve resources, prevent pollution and eliminate waste.
- Manufacture products in a responsible manner with minimum impact on the environment.
- Reduce our use of chemicals and minimise their release to the environment.
- Measure, control and verify environmental performance through internal and external audits.
- Continually improve our environmental performance.

CE Directive

Airedale certify that the equipment detailed in this manual conforms with the following EC Directives:

Electromagnetic Compatibility Directive (EMC)	2014/30/EU
Low Voltage Directive (LVD)	2014/35/EU
Machinery Directive (MD)	89/392/EEC version 2006/42/EC

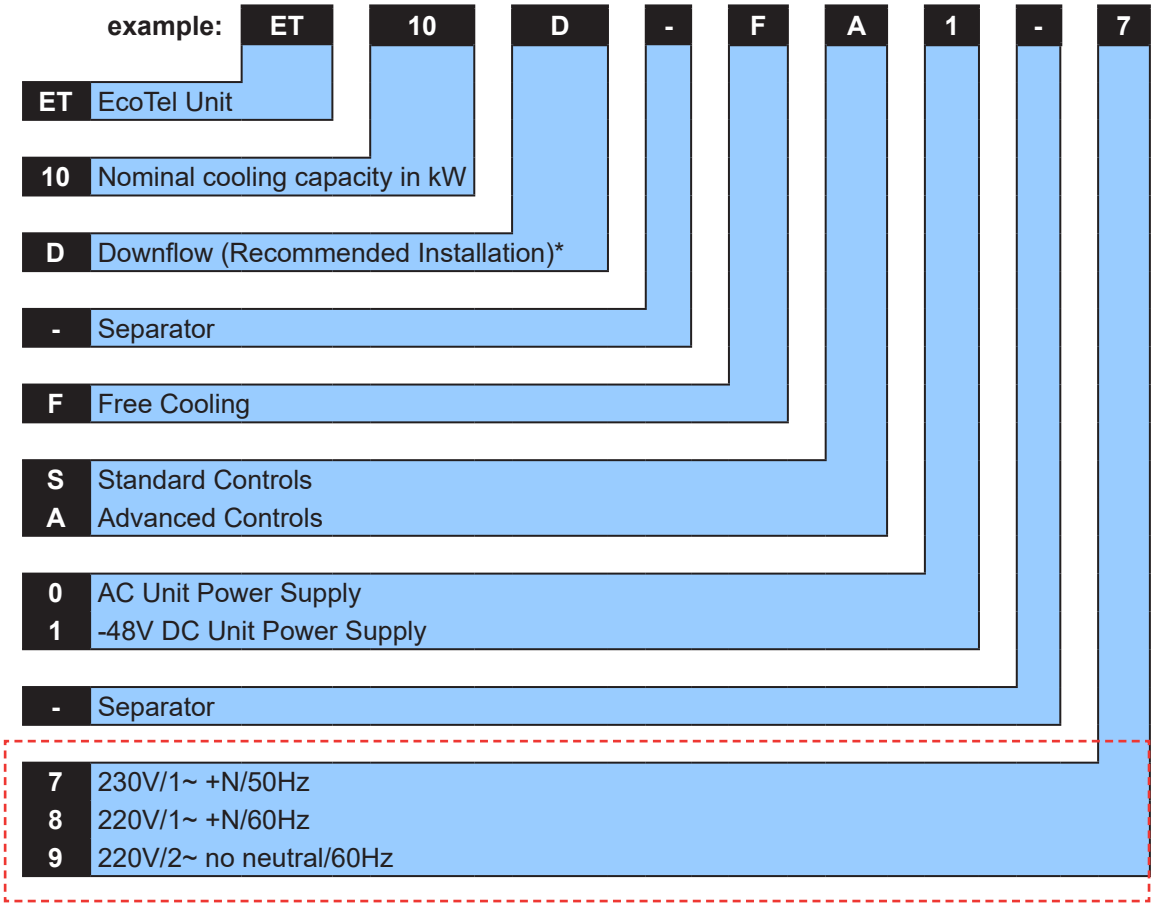
To comply with these directives appropriate national & harmonised standards have been applied. These are listed on the Declaration of Conformity, supplied with each product.

This system has been designed to be connected to a TN type distribution system. For alternate distribution type systems, contact Airedale.

Contents

Specifier's Guide

Nomenclature



*Denominates airflow delivered to the lower portion of the room

- - - - - - - - Not applicable when DC power supply is selected (refer to Voltage Options for further information)

Introduction

The Ecotel FreeCool is a self contained packaged outdoor unit designed to cool areas such as outdoor cabins, shelters and telecom base stations. The unit range is available with 5kW, 10kW and 15kW and offers the following features:

- Standalone fresh air free cooling ability
- Efficient EC centrifugal fan
- -48VDC unit power supply

Construction

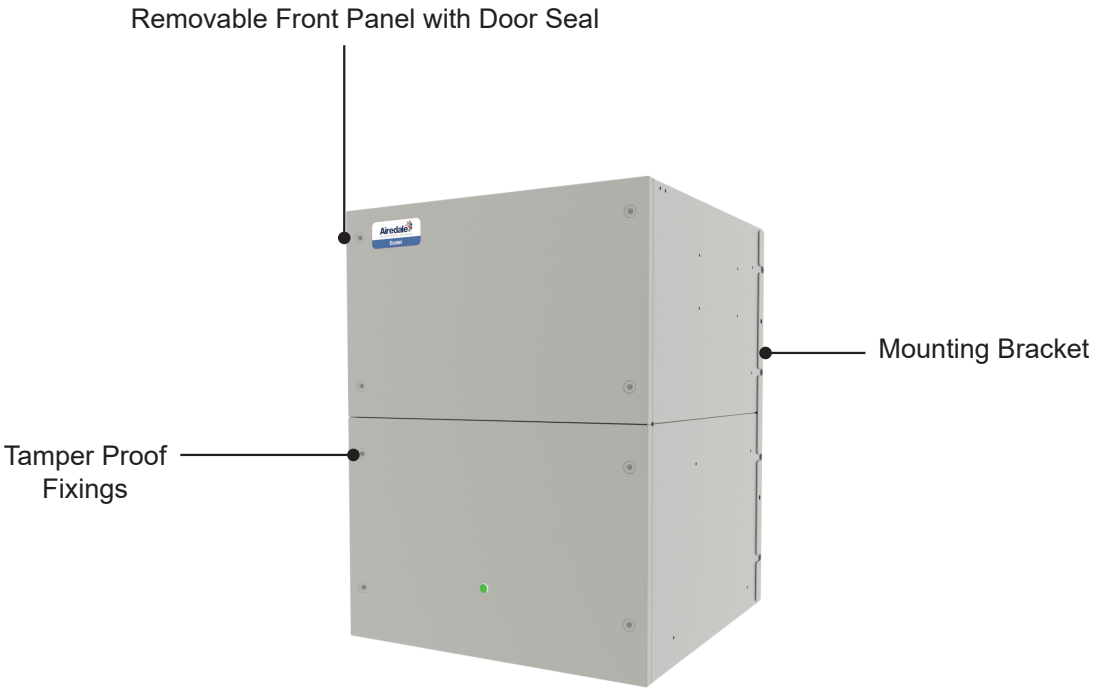
There shall be 2 case sizes in the Ecotel Free Cooling Only unit product range; each case in the range shares a common design.

The case shall be constructed from sheet metal. The front panels shall be fixed with tamper proof fixings and is removable to allow access to the centrifugal fan, filter panel, and control panel. The sheet metal as standard shall be painted RAL7038 (Agate Grey) or RAL 6014 (Yellow Olive), but can be available in other colours as per optional extra.

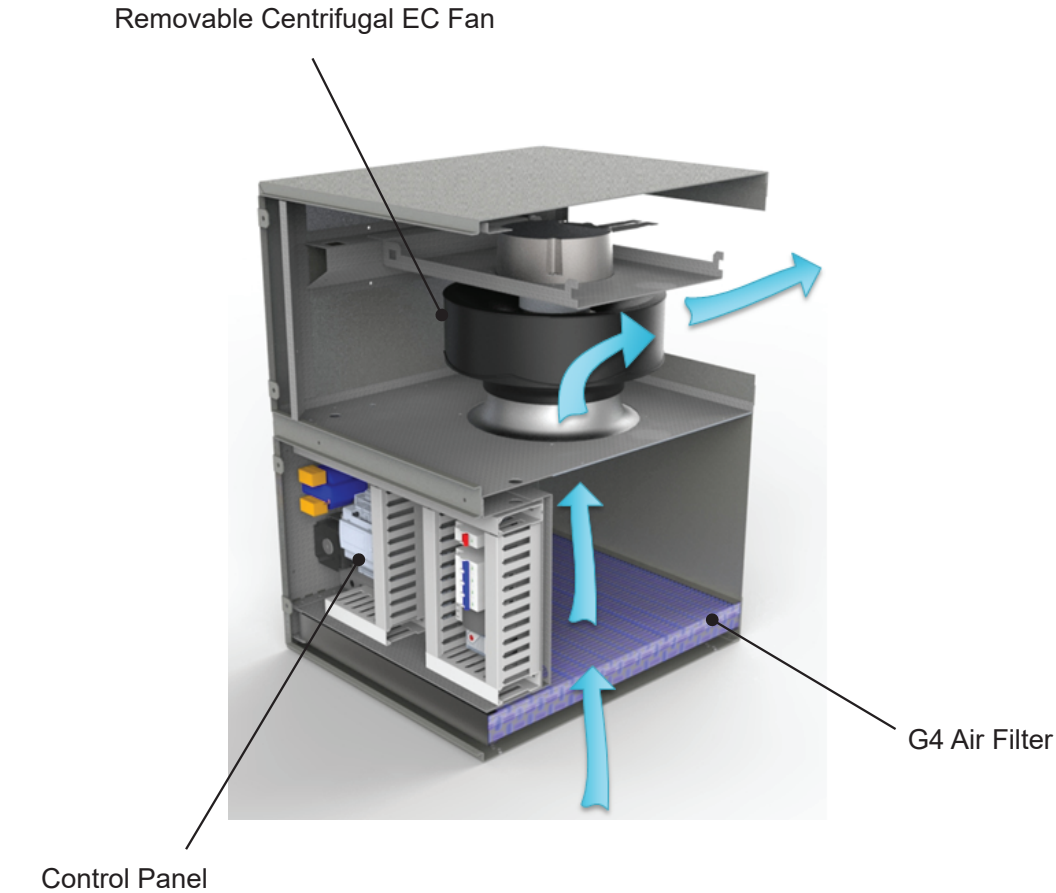
A backward-curved plug fan shall be mounted horizontally at the top of the unit and is accessible from the front for easy serviceability. The unit shall be supplied loose with a pressure relief damper as standard to exhaust the warm air out of the cabin when the unit is operating. This requires no control from the unit and works via pressure in the cabin space created by the unit forcing the damper blades open.

Unit Overview

Front View

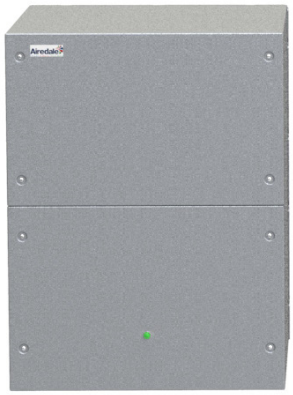


Rear View



Case Sizes

The Ecotel range shall have a total of 2 case sizes. 5kW & 10kW utilise the same case dimensions, the 15kW has a larger case size to house a larger fan.



Case Size		ET05D	ET10D	ET15D
Width	**(mm)**	570	570	730
Height	**(mm)**	775	775	883
Depth	**(mm)**	560	560	730
Cooling Capacity*	**(kW)**	5	10	15
Design Air Volume	**(m^3/s)**	0.41	0.83	1.24
Number of Fans		1	1	1

*At 10°C Delta T

Airflow Components

EC centrifugal fan

Spring Return Air Damper Actuator

Fire Rated Damper

	Features	System Configuration		
		ET05D	ET10D	ET15D
Airflow	Backward Curved EC Fan	●	●	●
	-48VDC Centrifugal Fan	○	○	○
	ISO-C-80 Filtration	●	●	●
	ISO-C-95 Filtration	○	○	○
	Air Flow Switch	○	○	○
	Filter Change	○	○	○
	Fire Rated Dampers	○	○	○
	Double Deflection Grille	●	●	●
	Pressure Relief Exhaust Dampers	●	●	●
	Actuated Exhaust Damper*	○	○	○
	Ambient Weather Louvres	●	●	●

● Standard Features ○ Optional Features – Feature Not Available
*Optional with Advanced Controls Unit

Fan & Motor Assembly

Backward curved impellers, direct drive centrifugal fan assemblies shall be used with integral EC motors. They shall be dynamically balanced for quiet operation.
Fan speed and air flow shall be controlled by the use of a voltage controller which shall maintain optimised performance and reduce energy consumption.
Designed for high corrosion resistance, the impellers shall be composite plastic with a galvanised rotor.

ISO-C-80 Filtration

The unit shall be fitted with pleated disposable panel filters in a rigid metal frame. Conform to ISO16890:2016 (ISO-C-80). Access and removal from unit front. As standard the microprocessor shall provide an alarm following a pre set run time limit being exceeded.

High Efficiency Filters

45mm, pleated disposable panel filters conforming to ISO16890:2016 (ISO-C-95) shall be provided. To maintain design pressure fan selection may alter with high efficiency filters. Access and removal from unit front. As standard the microprocessor shall provide an alarm following a pre set run time limit being exceeded.

Air Flow Switch

An adjustable differential pressure switch shall activate a visual alarm at the status panel and switch the unit off in the event of a fan or motor failure.

Filter Change

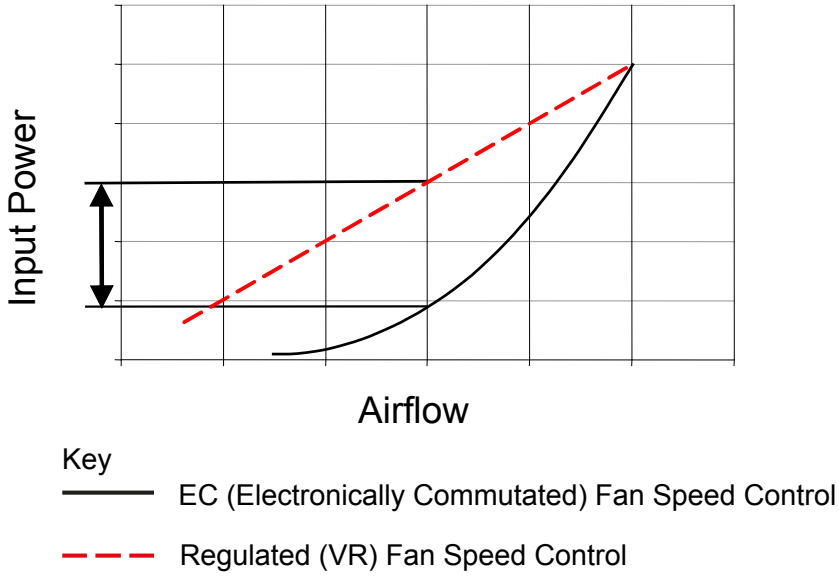
A filter change software timer shall be included to record the time since the filter was changed and give an alarm if the time is exceeded. This must be manually reset when the filters are changed.

Electronically Commutated (EC) Fan Motor

EC motors incorporate integrated electronics to convert AC power to DC for efficient and accurate speed control and are adjustable via the microprocessor display keypad.

The fans offer maximum air flow performance while keeping sound levels to a minimum.
It gives the flexibility of connecting to AC mains with the efficiency and simple speed control of a DC motor. The EC fan offers significant power reduction in comparison with equivalent AC fan at both full and modulated fan speeds. The inbuilt EC fan control module allows for fan speed modulation from 15-100%. A standard AC fans modulating range is typically 40 -100% of full fan speed.

Standard voltage regulated (VR) fan speed controllers offer a linear response. The following illustration shows a comparison of the typical power input required by each method.



Fire Rated Dampers

Optional curtain type fire dampers shall be fitted to supply and exhaust, with galvanised steel construction as standard. Fire tested to BS EN 1366-2:1999 and classified to BS EN 13501-3:2005 + A1:2009.

Double Deflection Grille

The unit shall have a double deflection grille to deflect air inside the cabin to high priority equipment and ensure even air distribution.

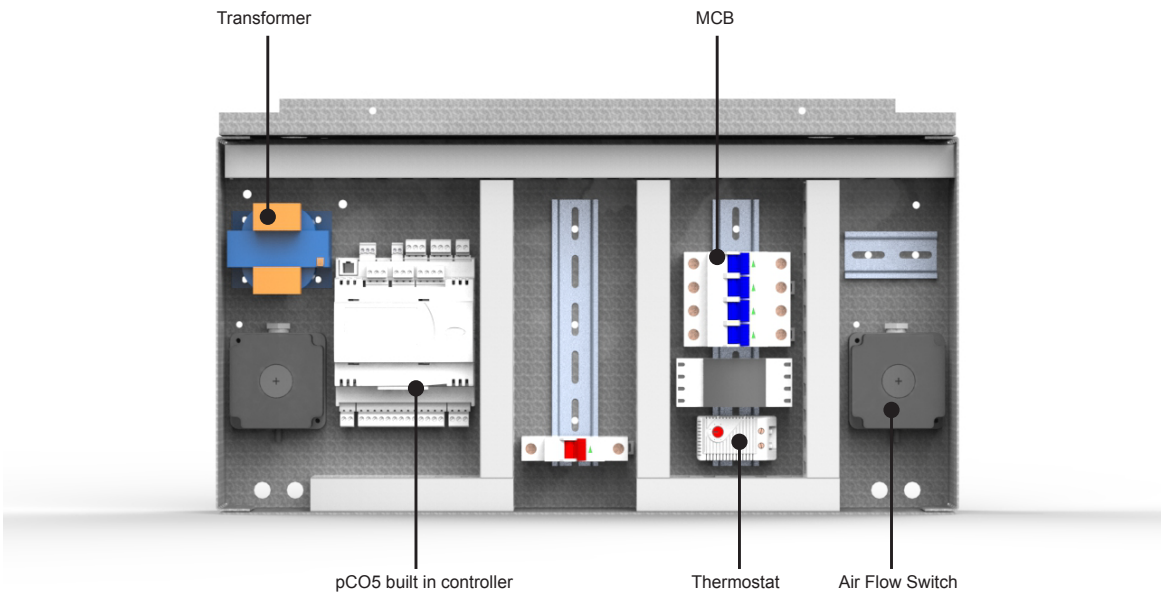
Pressure Relief Exhaust Damper

A pressure relief exhaust damper shall be fitted at the exhaust air of the unit, to regulate cooling performance. This shall open or close depending on cabin pressure.

Actuated Exhaust Damper

An optional actuated exhaust damper shall be fitted at the exhaust air of the unit, to regulate cooling performance. The damper shall be fitted with a spring return actuator.

Electrical Components



Advanced Control Panel

	Features	System Configuration		
		ET05D	ET10D	ET15D
Electrical	Mains Isolator	●	●	●
	Energy Manager*	○	○	○
	230V/1PH + N/50Hz	●	●	●
	220V/1PH + N/60Hz	○	○	○
	220V/2PH No Neutral/60Hz	○	○	○
	-48VDC Unit Power Supply	○	○	○

● Standard Features ○ Optional Features – Feature Not Available

*Does not communicate with IR33 on a unit configured for Standard Controls

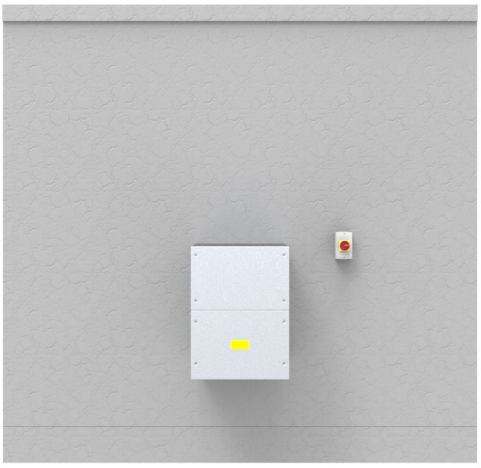
Electrical

The control panel shall contain the transformer, sub circuit protection, volt free contacts for a common alarm, mains and sensor terminals. The panel shall be situated within the unit and can be opened to allow for essential maintenance of other components within the unit. The electrical control panels shall be wired to the latest European standards and codes of practice.

Energy Manager

Analysis of system energy consumption shall be monitored via a dedicated LCD display. Unit parameters shall be adjusted via the unit microprocessor control to affect energy usage in line with the system need. To communicate with the energy manager option on a standard controls unit the user will have to connect direct to the Energy Manager via Modbus.

Isolator



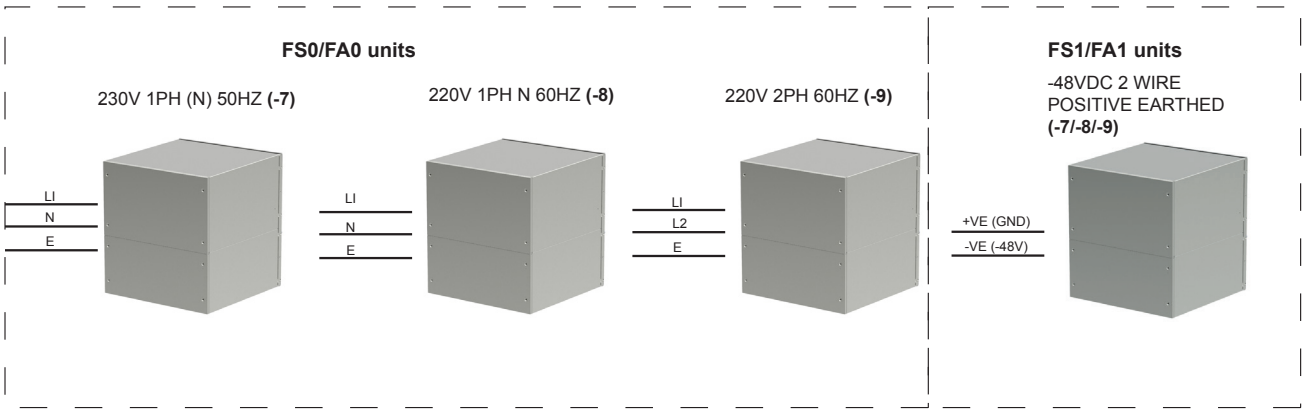
Local Isolator (Typical Placement)

Mains Isolator

To comply with BS EN 6024-1:2006 Safety of Machinery – Electrical Equipment Machines, each unit should have an accompanying isolator (switch disconnecting device). The supply disconnecting device shall isolate the electrical equipment of the telecoms unit from the electrical supply when required.
The isolator shall be easily accessible and mounted between 0.6m and 1.9 above the service level. An upper limit of 1.7m is recommended.

Voltage Options

The image below illustrates the voltage options for different unit configurations. Where -48VDC is used, the -7/-8/-9 suffix should be disregarded.



Controls

pCO5 Compact Controller

IR33 Controller

	Features	System Configuration		
		ET05D	ET10D	ET15D
Controls	IR33 inbuilt microcontroller	●	●	●
	pCO5 compact microcontroller*	●	●	●
	Remote Display*	○	○	○
	LED Alarm Indicator*	○	○	○
	BMS Interface Cards*	○	○	○
	Advanced Cabin Temperature Control**	○	○	○

● Standard Features ○ Optional Features – Feature Not Available
*option only available with Advanced Controls Unit **up to 4 extra sensors

IR33 Inbuilt Microcontroller

The IR33 is a basic, compact and cost effective parametric controller. Preloaded with a standard software strategy, it allows limited programming through defining various options and parameters that give it the ability to perform a range of common operating modes.
The semi-programmable nature of the IR33 makes it an ideal quick solution for simple applications where basic PID control is required.

PCO5 Compact Microcontroller

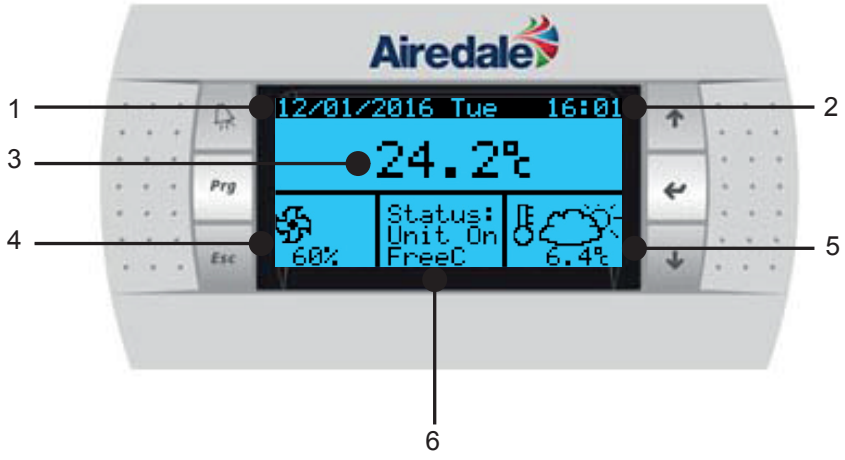
The units shall be supplied with a European ROHS Directive 2002/95/EC compatible microprocessor controller.
The microprocessor controller shall offer powerful analogue and digital control to meet a wide range of monitoring and control features including a real time clock and industry standard communication port and network connections.
All the boards feature a 16 bit microprocessor, and consequently the calculation power and operation processing speed have been significantly increased. A visual alarm and the facility to adjust and display control settings by local operator for information and control shall also be featured.
The pCO5 Compact is designed for use in space sensitive applications. and is fully programmable.
Fully programmable controller.

- 10 inputs (8 analogue, 2 digital)
- 9 outputs (2 analogue, 7 digital)
- Programmable modbus interface

IMPORTANT ⚠	The control system integrity shall be maintained by restricting access with a password PIN number. To change the PIN , please contact Airedale at time of order with the preferred 4 digit number.

Display/Keypad

The display keypad shall feature a simple array of keys to navigate through the in built menus.
With an 8 x 22 character (132 x 64 pixel) screen size, back lit in white for improved contrast, the larger screen shall provide for user friendly viewing and easy status recognition by displaying a combination of text and icons.
The default screen shall show the unit status and room condition (°C) without the need for interrogation and an easy to navigate menu structure for further interrogation and adjustment shall be provided.



LCD Unit Display

No.	Description
1	Date
2	Time
3	Cabin Temperature (max./avg.)
4	Fan Speed & Heating Status
5	Additional Information (ambient temp./setpoint)
6	Unit Status

Display Icons - PC05

To ensure the software is easy to read at a glance and to make translations easier, the Ecotel user interface is largely graphical, containing a large number of icons to represent different modes, actions or components. The following table is a glossary of icons to use as a reference:

Icon	Name/Description	Used To Represent
	Ticked box	Yes, enabled, active, on etc.
	Unticked box	No, disabled, inactive, off etc.
	Setpoint	Setpoint
	Alarm	Alarm, off by alarm
	Unit Off	Unit off by external factor (i.e. PLAN, digital input)
	Unit On/Off	Off by display
	Unit Standby	Standby – on but no action required
	Unit Sleep	Unit off by timer
	Service	Manual mode, overrides, attend mode
	Fan	Fans, freecooling mode

LED Alarm Indicator

Similar to the full Ecotel product, the freecooling only unit shall be fitted with an alarm indicator as an option. Due to the simplicity of the freecooling only unit, the alarm indicator for this product is a tri-colour LED mounted to the outer case. The following table shows what colour the LED illuminates to indicate different operating states.

LED Colour	Unit Status
OFF	LED or Power Fault
GREEN	Unit OK
YELLOW	Non Critical/General Alarm
RED	Critical Alarm

IMPORTANT ⚠	Upon start-up of the unit (i.e. connecting power or power restart), the LED will indicate red for 30 seconds until the controller is ready, and then will turn green. While the LED is showing red, the unit is not ready.

BMS Interface Cards

BMS Interface Card controlled units can be interfaced with most BMS. These shall be factory fitted, please contact Airedale for further information.

A wide range of protocols shall be accommodated through the use of interface devices. Available as a standard option are: ModBus/Jbus, and Carel. For interfaces such as SNMP, LonWorks, Metasys and BACnet, please contact Airedale.

Also available shall be Airedale's own supervisory plug-in BMS card pCOWEB, based on Ethernet TCP/IP secure technology with SNMP features. It shall require no proprietary cabling or monitoring software and be supplied pre-programmed with an IP address for ease of set up. Cables to the BMS to be supplied by others.

Temperature Control

A temperature sensor shall be mounted in the inlet of the unit to sense the outdoor air condition. The temperature sensor shall be an NTC type thermistor with an accuracy of not less than +/ - 5% at 25°C at the sensor. The microprocessor shall sense the cabin temperature at exhaust air. Up to four extra sensors shall be fitted with Advanced Controls.

The microprocessor shall monitor and display the following values as a minimum:

- Ambient Air Temperature (°C)
- Exhaust Temperature (°C)
- Fan run hours (hr)

The maintenance of key components such as air filters shall be monitored via a service indicator which visually demonstrates the status relative to the component service intervals.

External

Tamper Proof Fixings

	Features	System Configuration		
		ET05D	ET10D	ET15D
External	Mounting Bracket	●	●	●
	M8/M5 Tamper Proof Fixings	●	●	●
	Mounting Template	○	○	○
	Anti Vandal Cage	○	○	○

● Standard Features ○ Optional Features – Feature Not Available

Mounting Bracket
The unit shall be supplied with a mounting bracket as standard. Fixings supplied by others.

M8/M5 Tamper Proof Fixings
The unit shall have M5 tamper proof fixings employed to all externally removable service panels. Including M8 side tamper proof fixings for mounting bracket.

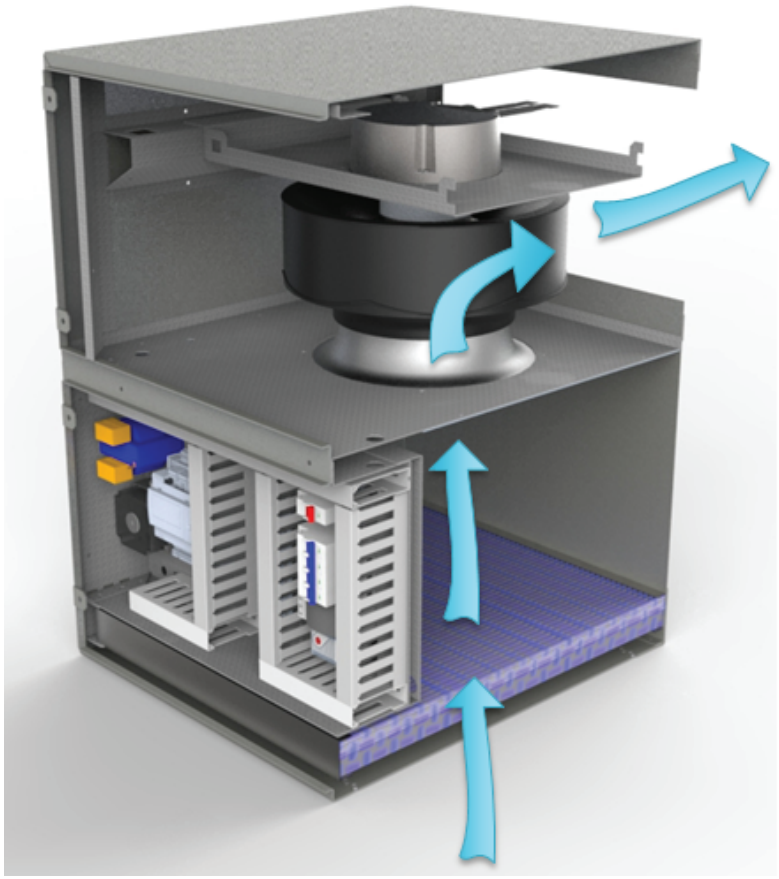
Mounting Template
The unit shall have the option to be supplied with a mounting template.

Anti Vandal Cage
The unit shall have the option of a protective wire cage to prevent vandalisation.

Product Operation

Free Cooling Mode

The temperature sensor for the unit shall measure the exhaust air temperature of the cabin at the opposite cabin wall to the unit. The unit shall vary the fan speed to increase/decrease the air volume to maintain a constant room temperature set point. When the temperature of the cabin reaches a minimum set point, the unit shall stop the fan and close the exhaust damper, to avoid over cooling the cabin space.



Free Cooling Mode

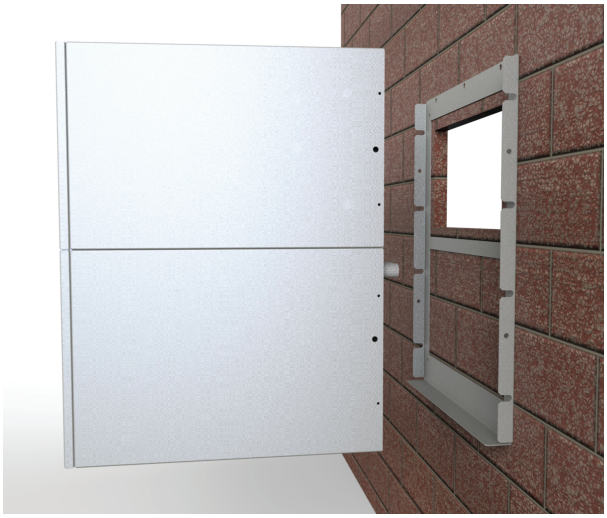
The exhaust damper shall be either pressure regulated or mechanically actuated.

Installation

General

Lifting/Positioning

- Remove packing and check that the unit is exactly as ordered. Any discrepancy to order, or transit damage, should be reported to Airedale immediately
- Airedale recommends that whenever possible, the packaging is left covering the unit, to protect it from damage and general site debris
- Care should be taken during handling and lifting, that the unit is well supported and properly balanced
- Care should be taken that there are no obstructions to free airflow, particularly in the discharge air (indoor)



CAUTION ⚠	Airedale will accept no responsibility for mishandling during the positioning of the equipment.

Installation

- Check all services are present and accessible
- Unpack the unit and remove securing straps, leaving unit on its pallet
- Using the supplied mounting template and unit mounting bracket, cut apertures into wall and fix the mounting bracket to the wall using M8 fixings (supplied by others)
- Using appropriate lifting equipment, lift the unit on its pallet and ease into position of the bracket
- External fixing: Once the unit is aligned with the mounting bracket, secure the unit with M8 tamper-proof screws in the sides of the unit and bracket
- The discharge air opening has a foam surround to provide a seal between the wall and the unit. A bead of sealant should be used to provide an air and water tight seal*
- Where a cavity wall exists between unit and wall, a wall sleeve will be required (not supplied)

*Airedale recommend the use of Dow Corning 794 or equivalent

Electrical

- A fused and isolated electrical supply of the appropriate phase, frequency and voltage should be installed
- Each unit requires an independently fused and isolated power supply
- Install the remote room sensor in an appropriate position and run the interconnecting wire back to the unit control panel - refer to site Wiring requirements
- Install mains supply - refer to Wiring (and optional -48VDC. NOTE: – Connect the poles correctly)
- Pass through the set holes located on the back of the fan section, feed through the into the electrical control panel
- Route via trunking and terminate in supplied terminals - refer to supplied wiring diagram

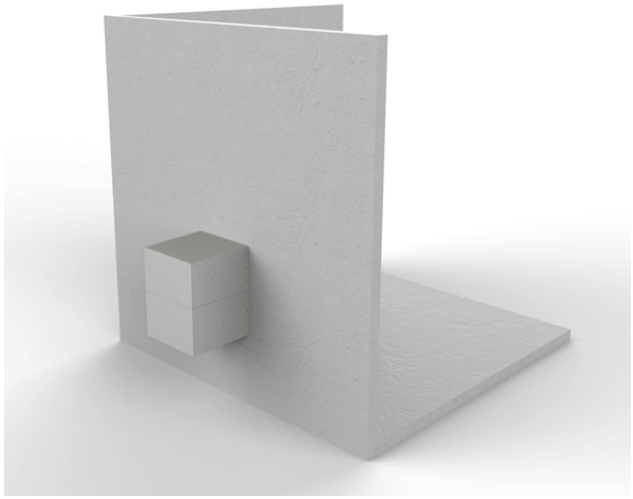
Airflow Switch

The airflow fail switch is set for the fans to operate at the standard design airflow and external static, as quoted in the Technical manual or if customer specified. However the following procedure must be carried out when commissioning the unit on site to ensure the correct operation. It may also be needed to be adjusted if cabin loads change.

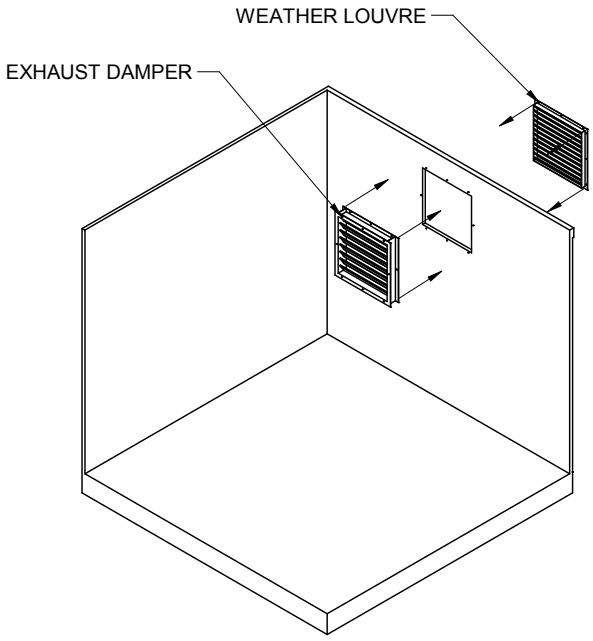
- Set airflow to required operating parameter with the use of microprocessor.
- Turn airflow switch to maximum setting to test electrical control. Controls circuit contacts should switch open.
- Adjust switch downwards until the control circuit contact closes.
- Switch off fan (1 fan only on twin fan units) controls circuit should open (switch off).
- Turn on fan and re set unit.

If during low cooling demand and the airflow is reduced below the standby speed (40%) the controller ignores the alarm.

Installation
Positioning



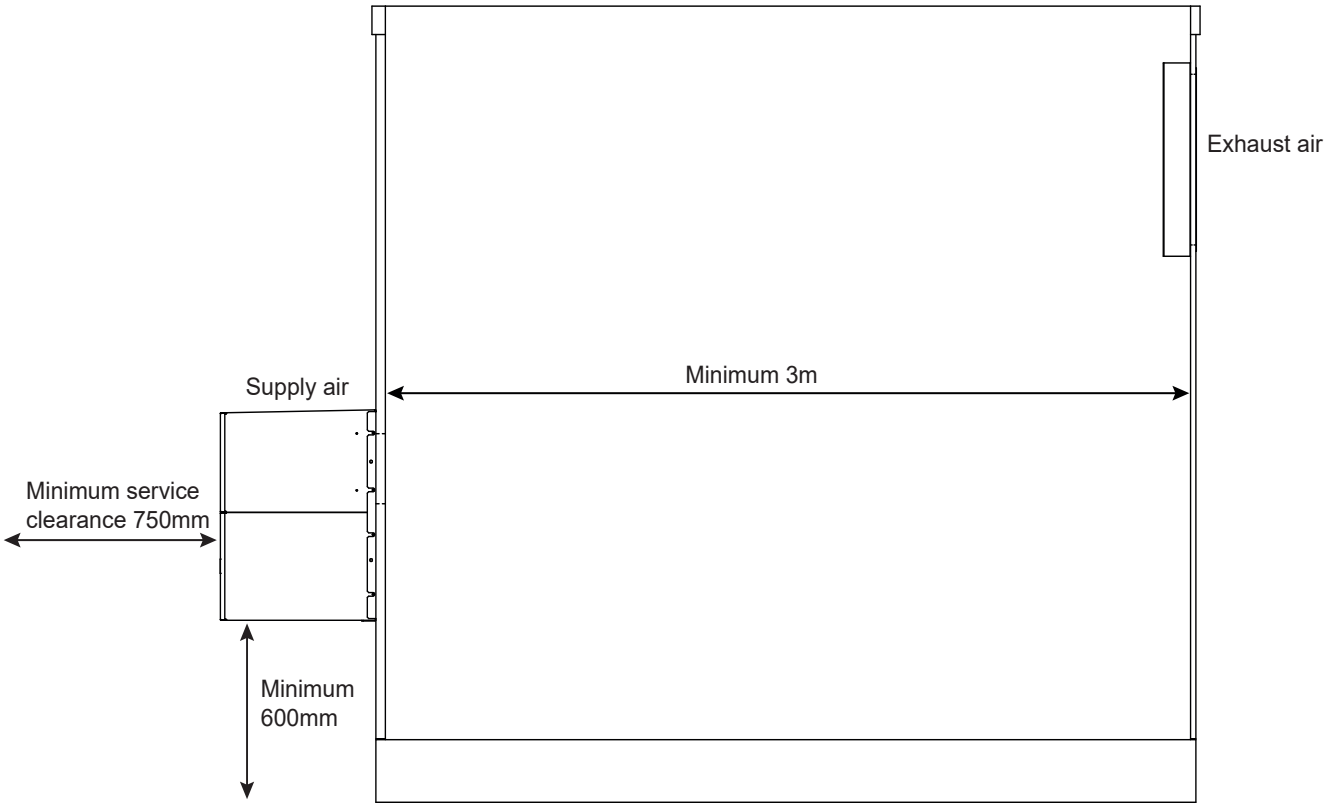
Supply air



Exhaust air

The unit must be positioned at least 600mm from the ground to supply the cabin space with cool air at a lower point and allow the warm air rise to up to a higher exhaust on the opposite side of the cabin. This should allow even air distribution and maximise performance of the unit's application.

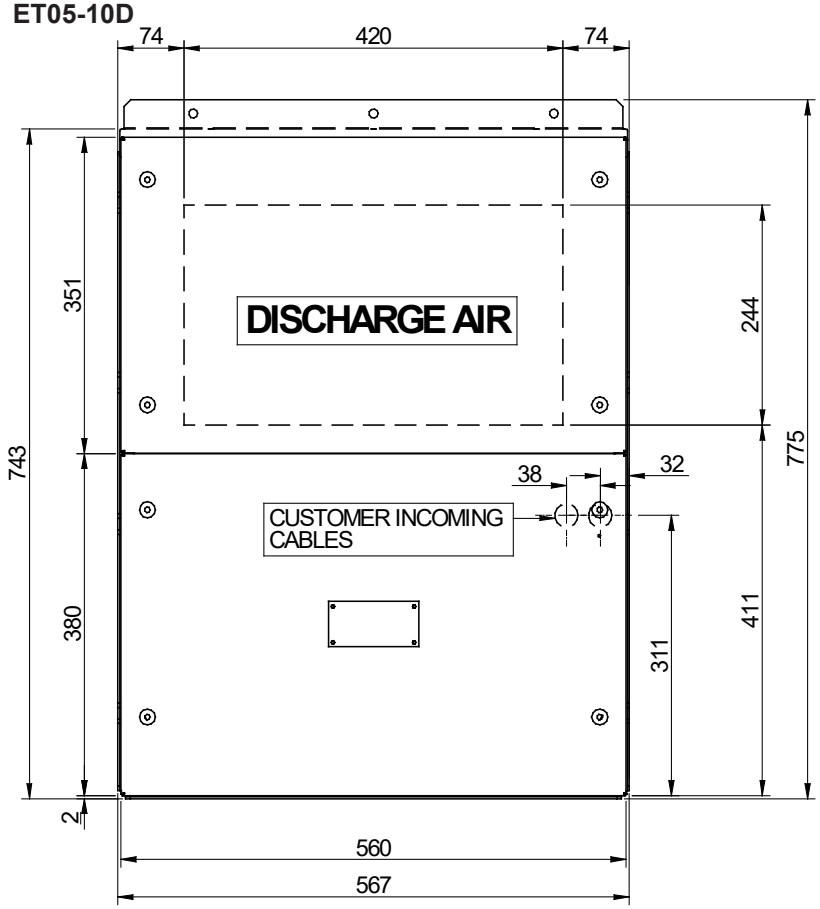
There must be a minimum of 3 metres between the unit and the exhaust damper and a minimum service clearance of 750mm is required in front of the unit for filter removal.

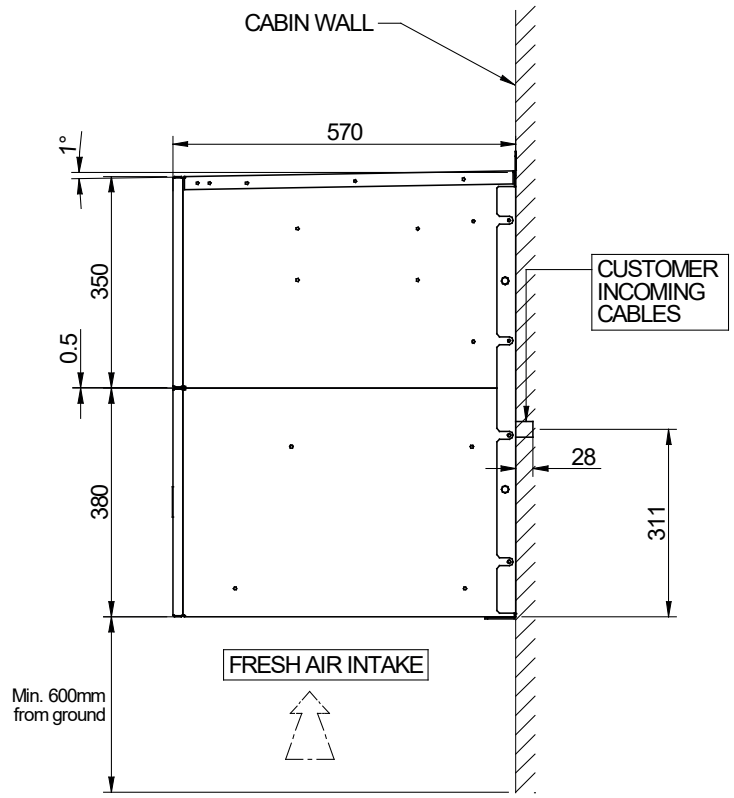


Installation

Dimensions

ET05-10D

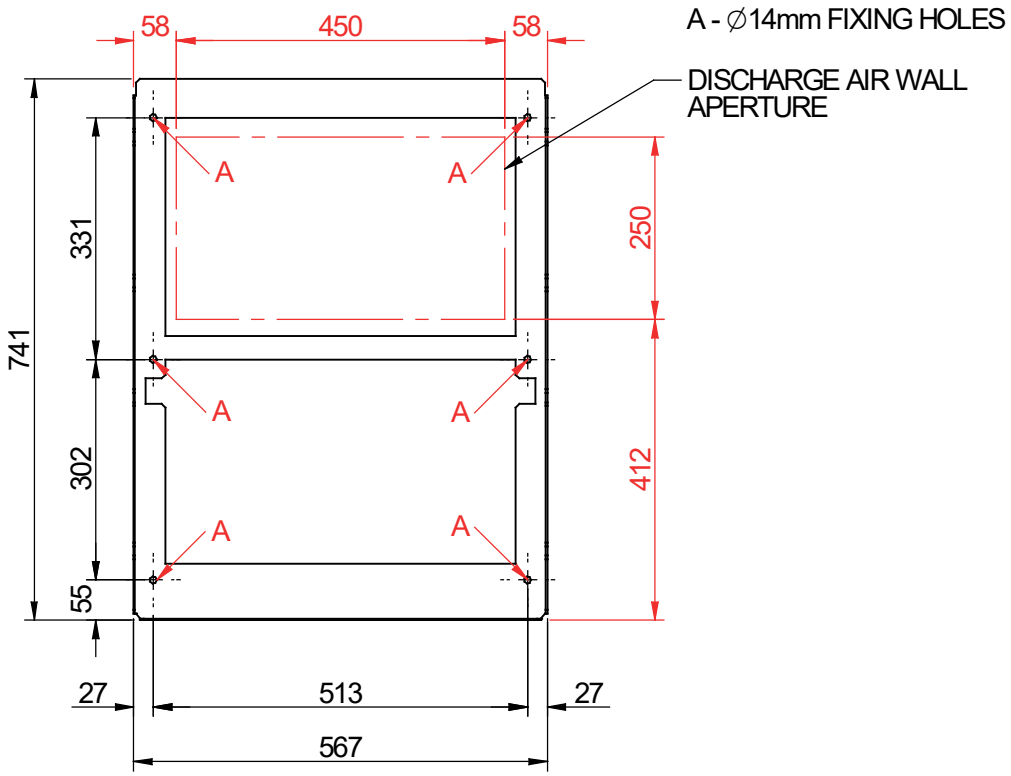


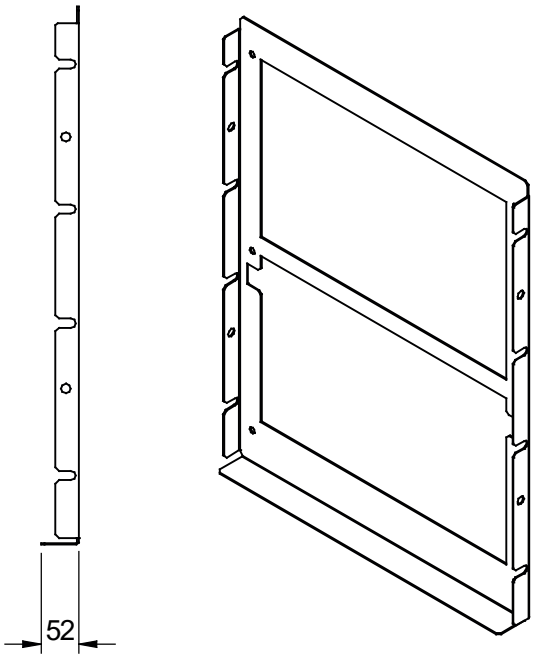


Installation

Dimensions

ET05-10D - Wall Mount Bracket



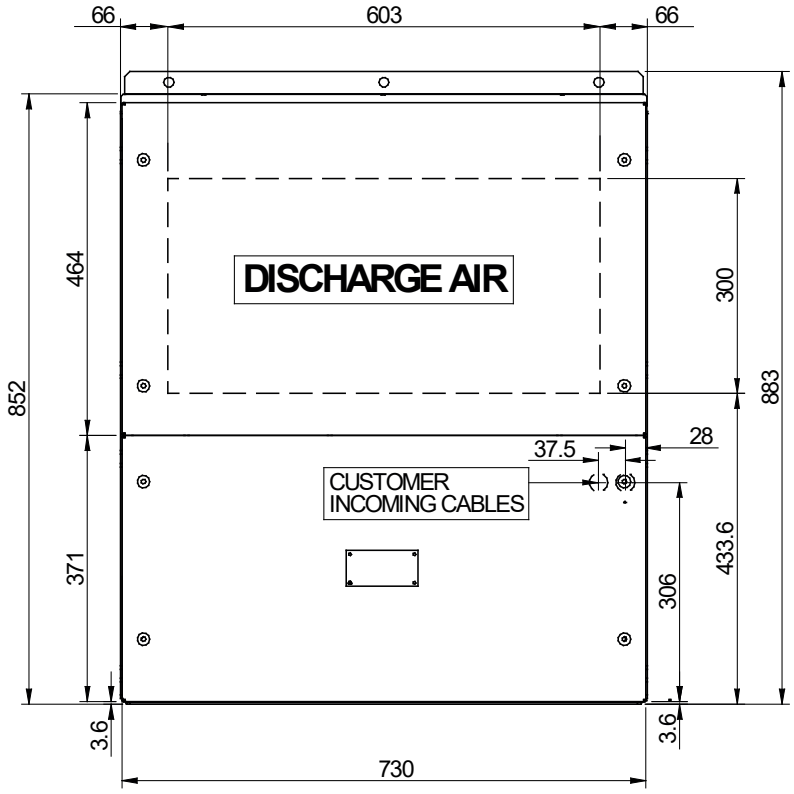


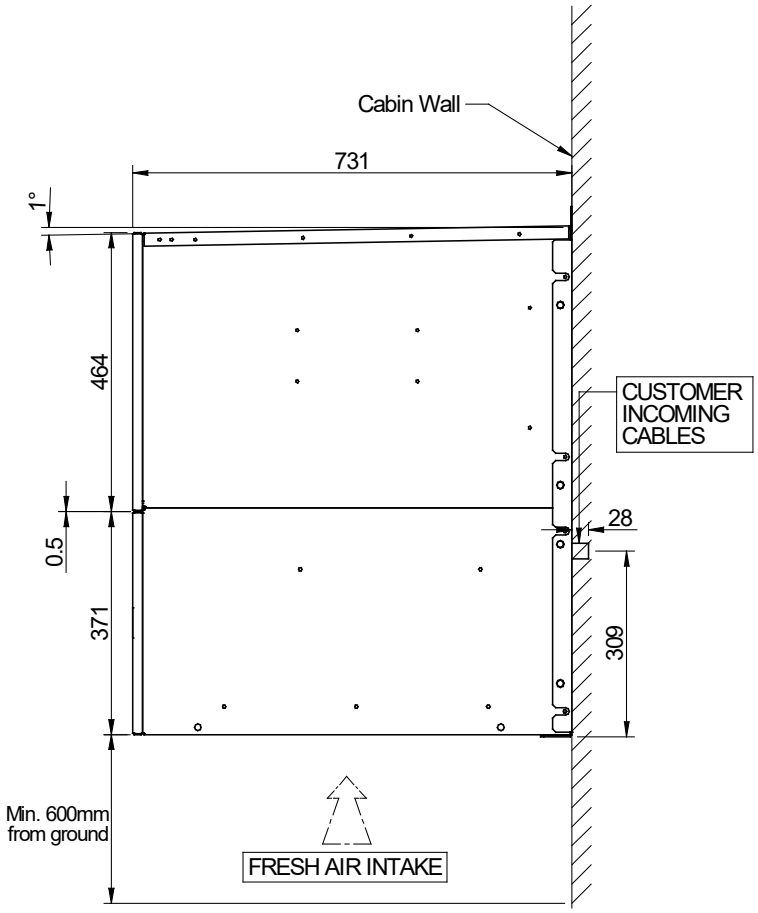
Bracket Mass = 3.2kg

Installation

Dimensions

ET15D

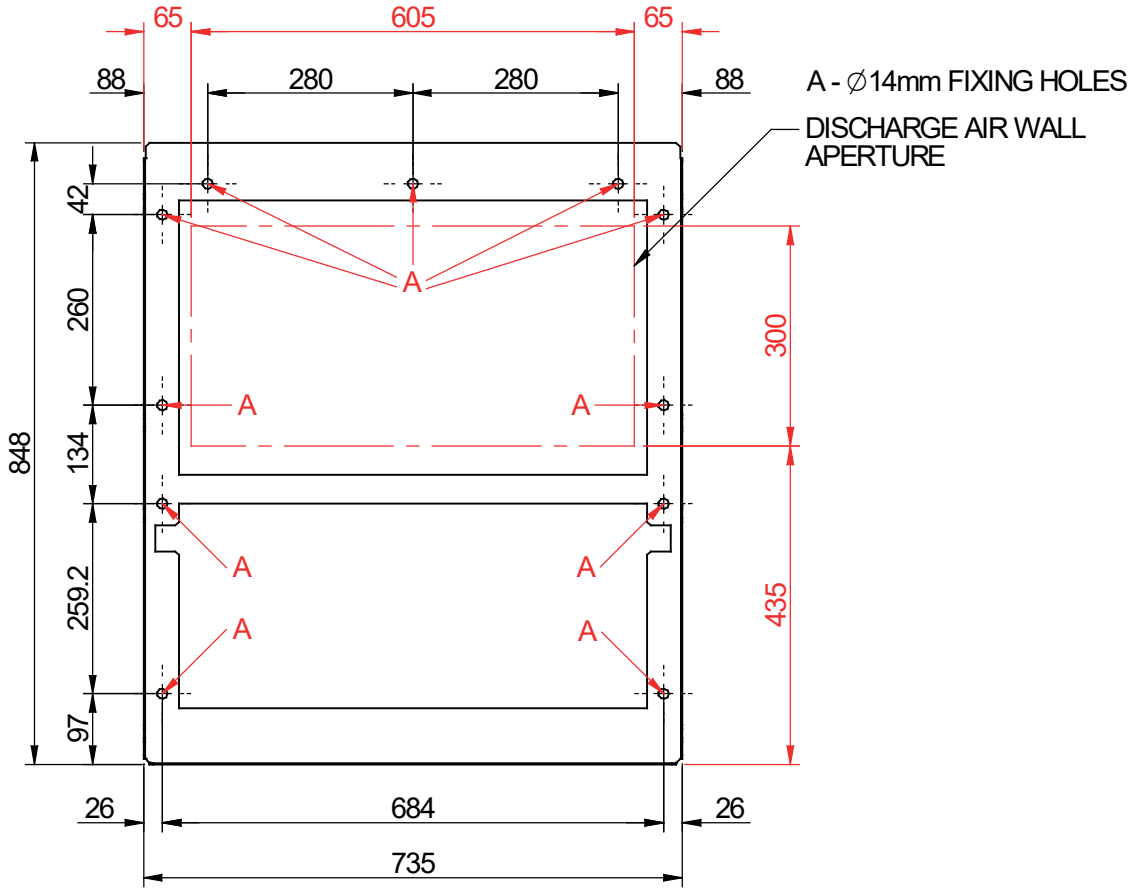


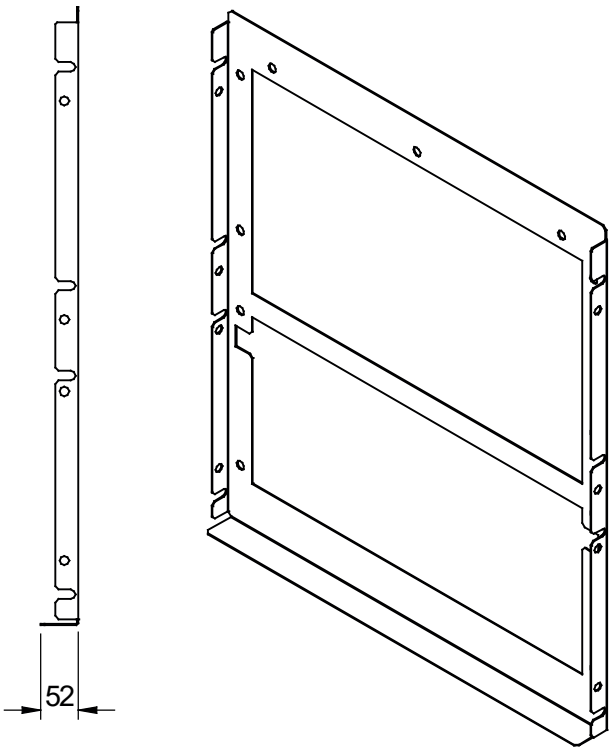


Installation

Dimensions

ET15D - Wall Mount Bracket





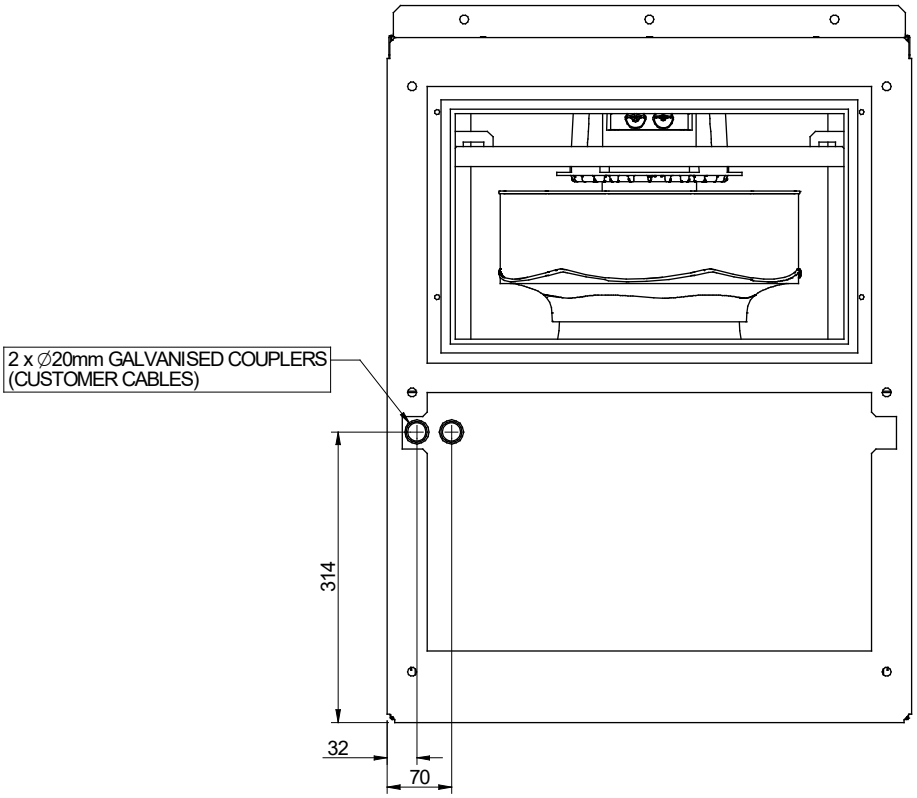
Bracket Mass = 4.4kg

Installation

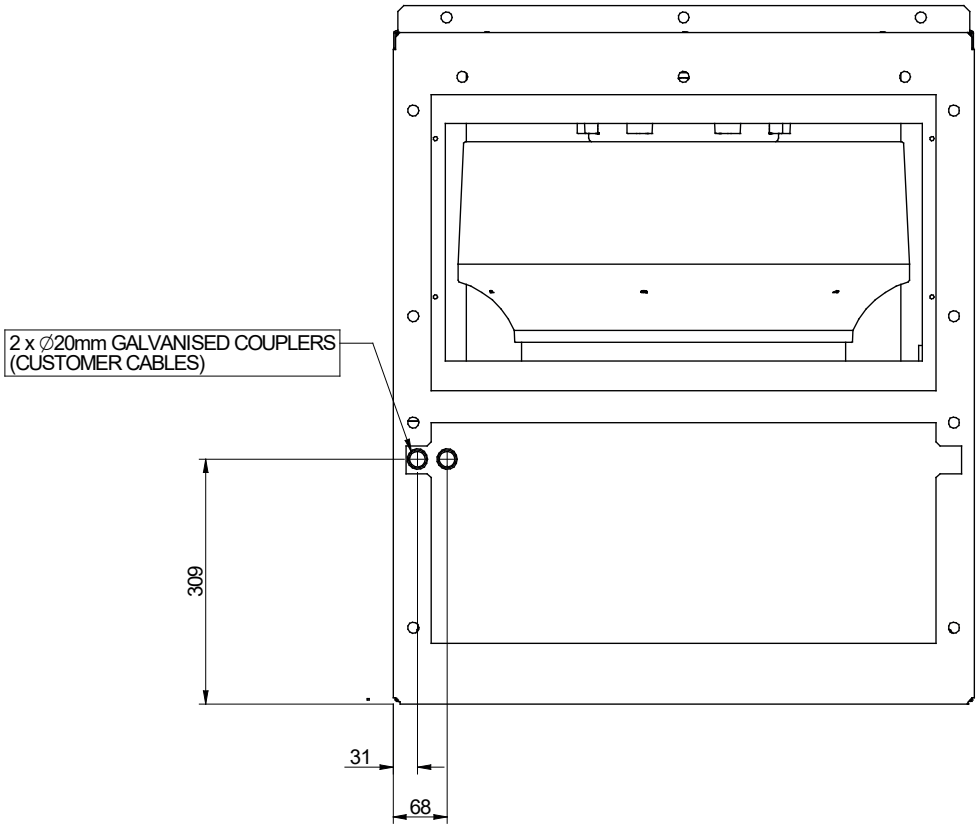
Incoming Services

ET05-10D REAR SIDE

A minimum of 2mm clearances is required for all incoming services.



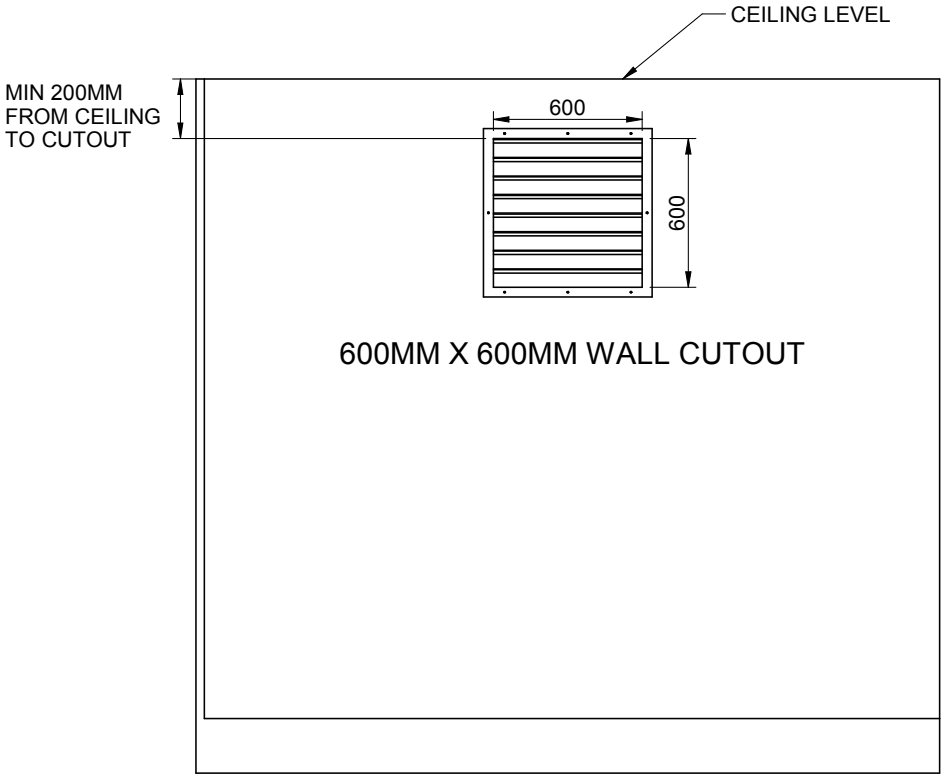
ET15D REAR SIDE



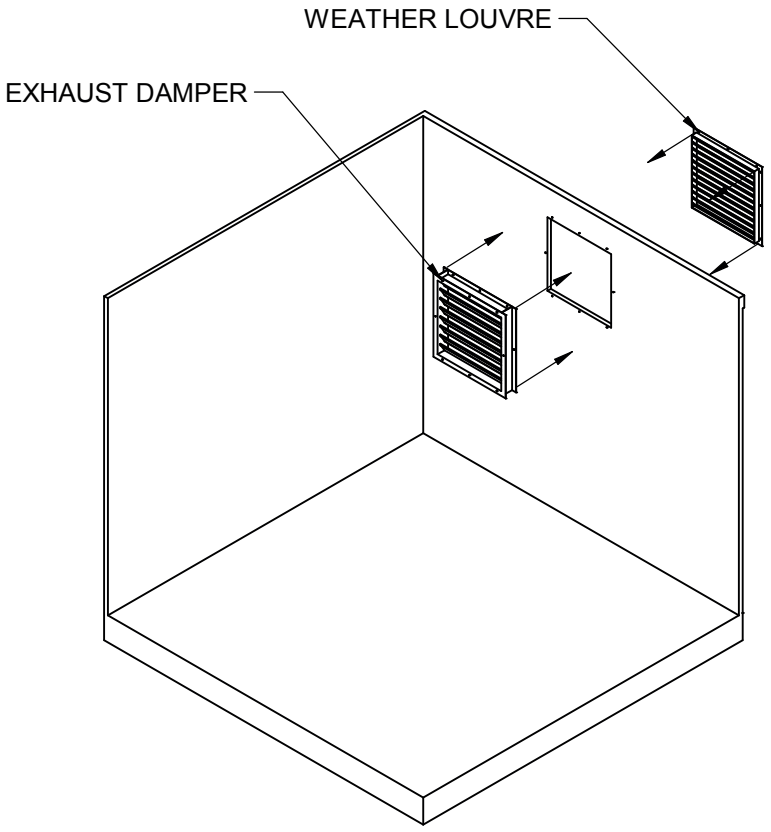
Installation

Exhaust Installation

ET05-15D

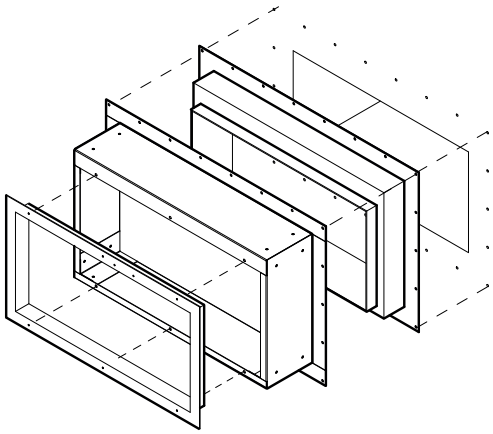


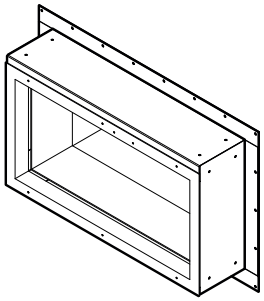
Flanges shall be 25mm wide.



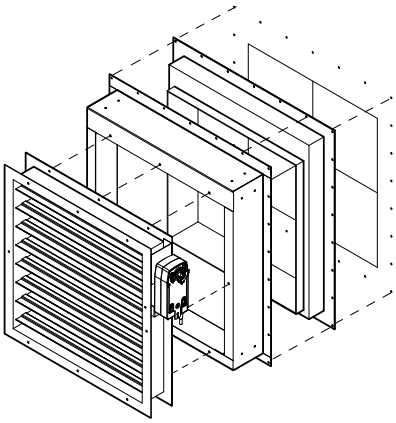
Installation - Fire Rated Damper Option

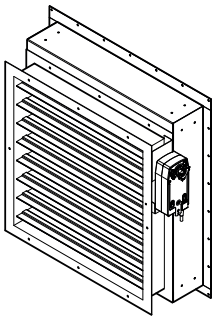
Freecool Supply and Return Deflection Grille





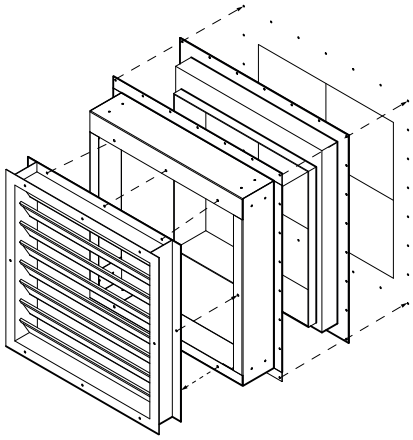
Actuated Exhaust Damper

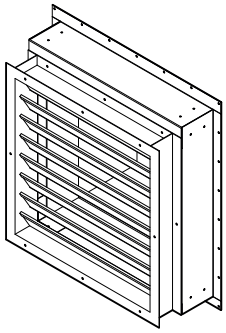




Installation - Fire Rated Damper Option

Pressure Relief Exhaust Damper





Technical Data

ET05D-FS0-7 - ET05D-FS0-8 - ET05D-FS0-9

ET05D

Mechanical Data

			ET05D-FS0-7	ET05D-FS0-8	ET05D-FS0-9
Capacity - Nominal Cooling					
Total	(1)	kW	5.0	5.0	5.0
Sensible		kW	5.0	5.0	5.0
EER			55.6	55.6	55.6
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max Airflow	(2)	m³/s	0.5	0.5	0.5
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	66	66	66
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	310	310	310
Maximum Speed		rpm	1525	1525	1525
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	310	310	310
Maximum Speed		rpm	2360	2360	2360
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	230VAC	220VAC	220VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	1.7	1.7	1.7
Maximum Start Amps	A	1.7	1.7	1.7
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.15	0.15	0.15
Full Load Amps	A	1.2	1.2	1.2
Locked Rotor Amps	A	1.2	1.2	1.2
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.5	0.5	0.5
Full Load Amps	A	2.2	2.2	2.2
Locked Rotor Amps	A	2.2	2.2	2.2

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET05D-FS1-7 - ET05D-FS1-8 - ET05D-FS1-9

ET05D

Mechanical Data

			ET05D-FS1-7	ET05D-FS1-8	ET05D-FS1-9
Capacity - Nominal Cooling					
Total	(1)	kW	5.0	5.0	5.0
Sensible		kW	5.0	5.0	5.0
EER			47.7	47.7	47.7
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.8	0.8	0.8
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	68	68	68
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	355	355	355
Maximum Speed		rpm	2020	2020	2020
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.6	6.6	6.6
Maximum Start Amps		A	6.6	6.6	6.6
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6.1	6.1	6.1
Locked Rotor Amps		A	6.1	6.1	6.1

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET05D-FA0-7 - ET05D-FA0-8 - ET05D-FA0-9

ET05D

Mechanical Data

			ET05D-FA0-7	ET05D-FA0-8	ET05D-FA0-9
Capacity - Nominal Cooling					
Total	(1)	kW	5.0	5.0	5.0
Sensible		kW	5.0	5.0	5.0
EER			55.6	55.6	55.6
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max Airflow	(2)	m³/s	0.5	0.5	0.5
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	67	67	67
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	310	310	310
Maximum Speed		rpm	1525	1525	1525
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	310	310	310
Maximum Speed		rpm	2360	2360	2360
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	24VAC	24VAC	24VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	1.7	1.7	1.7
Maximum Start Amps	A	1.7	1.7	1.7
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.15	0.15	0.15
Full Load Amps	A	1.2	1.2	1.2
Locked Rotor Amps	A	1.2	1.2	1.2
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.5	0.5	0.5
Full Load Amps	A	2.2	2.2	2.2
Locked Rotor Amps	A	2.2	2.2	2.2

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET05D-FA1-7 - ET05D-FA1-8 - ET05D-FA1-9

ET05D

Mechanical Data

			ET05D-FA1-7	ET05D-FA1-8	ET05D-FA1-9
Capacity - Nominal Cooling					
Total	(1)	kW	5.0	5.0	5.0
Sensible		kW	5.0	5.0	5.0
EER			47.7	47.7	47.7
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.8	0.8	0.8
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	69	69	69
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	355	355	355
Maximum Speed		rpm	2020	2020	2020
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.6	6.6	6.6
Maximum Start Amps		A	6.6	6.6	6.6
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6.1	6.1	6.1
Locked Rotor Amps		A	6.1	6.1	6.1

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET10D-FS0-7 - ET10D-FS0-8 - ET10D-FS0-9

ET10D

Mechanical Data

		ET10D-FS0-7	ET10D-FS0-8	ET10D-FS0-9
Capacity - Nominal Cooling				
Total	(1) kW	10.0	10.0	10.0
Sensible	kW	10.0	10.0	10.0
EER		18.0	18.0	18.0
Capacity Steps	%	Variable	Variable	Variable
Capacity - Free Cooling				
Max. Airflow	(2) m³/s	0.94	0.94	0.94
Dimensions				
W x H x D	mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights				
Operating	kg	69	69	69
Fan - Free Cool				
Quantity		1	1	1
Diameter	mm	310	310	310
Maximum Speed	rpm	2640	2640	2640
Filtration				
Quantity		1	1	1
Size W x H x D	mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool				
Quantity		1	1	1
Diameter	mm	355	355	355
Maximum Speed	rpm	2400	2400	2400
Filtration				
Quantity		1	1	1
Size W x H x D	mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	230VAC	220VAC	220VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	3.7	3.7	3.7
Maximum Start Amps	A	3.7	3.7	3.7
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.73	0.73	0.73
Full Load Amps	A	3.2	3.2	3.2
Locked Rotor Amps	A	3.2	3.2	3.2
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	1.35	1.35	1.35
Full Load Amps	A	6.8	6.8	6.8
Locked Rotor Amps	A	6.8	6.8	6.8

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET10D-FS1-7 - ET10D-FS1-8 - ET10D-FS1-9

ET10D

Mechanical Data

			ET10D-FS1-7	ET10D-FS1-8	ET10D-FS1-9
Capacity - Nominal Cooling					
Total	(1)	kW	9.5	9.5	9.5
Sensible		kW	9.5	9.5	9.5
EER			27.6	27.6	27.6
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.8	0.8	0.8
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	68	68	68
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	355	355	355
Maximum Speed		rpm	2020	2020	2020
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.6	6.6	6.6
Maximum Start Amps		A	6.6	6.6	6.6
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6.1	6.1	6.1
Locked Rotor Amps		A	6.1	6.1	6.1

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET10D-FA0-7 - ET10D-FA0-8 - ET10D-FA0-9

ET10D

Mechanical Data

			ET10D-FA0-7	ET10D-FA0-8	ET10D-FA0-9
Capacity - Nominal Cooling					
Total	(1)	kW	10.0	10.0	10.0
Sensible		kW	10.0	10.0	10.0
EER			18.0	18.0	18.0
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.94	0.94	0.94
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	70	70	70
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	310	310	310
Maximum Speed		rpm	2640	2640	2640
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	355	355	355
Maximum Speed		rpm	2400	2400	2400
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	24VAC	24VAC	24VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	3.7	3.7	3.7
Maximum Start Amps	A	3.7	3.7	3.7
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.73	0.73	0.73
Full Load Amps	A	3.2	3.2	3.2
Locked Rotor Amps	A	3.2	3.2	3.2
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	1.35	1.35	1.35
Full Load Amps	A	6.8	6.8	6.8
Locked Rotor Amps	A	6.8	6.8	6.8

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET10D-FA1-7 - ET10D-FA1-8 - ET10D-FA1-9

ET10D

Mechanical Data

			ET10D-FA1-7	ET10D-FA1-8	ET10D-FA1-9
Capacity - Nominal Cooling					
Total	(1)	kW	9.5	9.5	9.5
Sensible		kW	9.5	9.5	9.5
EER			27.6	27.6	27.6
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.8	0.8	0.8
Dimensions					
W x H x D		mm	560 x 775 x 560	560 x 775 x 560	560 x 775 x 560
Weights					
Operating		kg	69	69	69
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	355	355	355
Maximum Speed		rpm	2020	2020	2020
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	506 x 540 x 45	506 x 540 x 45	506 x 540 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.6	6.6	6.6
Maximum Start Amps		A	6.6	6.6	6.6
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6.1	6.1	6.1
Locked Rotor Amps		A	6.1	6.1	6.1

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET15D-FS0-7 - ET15D-FS0-8 - ET15D-FS0-9

ET15D

Mechanical Data

			ET15D-FS0-7	ET15D-FS0-8	ET15D-FS0-9
Capacity - Nominal Cooling					
Total	(1)	kW	14.2	14.2	14.2
Sensible		kW	14.2	14.2	14.2
EER			19.5	19.5	19.5
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max Airflow	(2)	m³/s	1.23	1.23	1.23
Dimensions					
W x H x D		mm	730 x 883 x 730	730 x 883 x 730	730 x 883 x 730
Weights					
Operating		kg	105	105	105
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	450	450	450
Maximum Speed		rpm	1440	1440	1440
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45
Upgraded Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	560	560	560
Maximum Speed		rpm	1340	1340	1340
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	230VAC	220VAC	220VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	3.8	3.8	3.8
Maximum Start Amps	A	3.8	3.8	3.8
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.75	0.75	0.75
Full Load Amps	A	3.3	3.3	3.3
Locked Rotor Amps	A	3.3	3.3	3.3
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	1.59	1.59	1.59
Full Load Amps	A	7	7	7
Locked Rotor Amps	A	7	7	7

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET15D-FS1-7 - ET15D-FS1-8 - ET15D-FS1-9

ET15D

Mechanical Data

			ET15D-FS1-7	ET15D-FS1-8	ET15D-FS1-9
Capacity - Nominal Cooling					
Total	(1)	kW	10.8	10.8	10.8
Sensible		kW	10.8	10.8	10.8
EER			28.9	28.9	28.9
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.9	0.9	0.9
Dimensions					
W x H x D		mm	730 x 883 x 730	730 x 883 x 730	730 x 883 x 730
Weights					
Operating		kg	98	98	98
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	400	400	400
Maximum Speed		rpm	1430	1430	1430
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.5	6.5	6.5
Maximum Start Amps		A	6.5	6.5	6.5
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6	6	6
Locked Rotor Amps		A	6	6	6

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET15D-FA0-7 - ET15D-FA0-8 - ET15D-FA0-9

ET15D

Mechanical Data

			ET15D-FA0-7	ET15D-FA0-8	ET15D-FA0-9
Capacity - Nominal Cooling					
Total	(1)	kW	14.2	14.2	14.2
Sensible		kW	14.2	14.2	14.2
EER			19.5	19.5	19.5
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	1.23	1.23	1.23
Dimensions					
W x H x D		mm	730 x 883 x 730	730 x 883 x 730	730 x 883 x 730
Weights					
Operating		kg	106	106	106
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	450	450	450
Maximum Speed		rpm	1440	1440	1440
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45
Upgraded Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	560	560	560
Maximum Speed		rpm	1340	1340	1340
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply	V	230 / 1PH / + N / 50Hz	220 / 1PH / + N / 60Hz	220 / 2PH / 60Hz
Controls Circuit	V	24VAC	24VAC	24VAC
Maximum Mains Incoming Cable Size	mm²	2.5	2.5	2.5
Free Cooling Mode				
Nominal Run Amps	A	3.8	3.8	3.8
Maximum Start Amps	A	3.8	3.8	3.8
Recommended Mains Fuse	A	10	10	10
Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	0.75	0.75	0.75
Full Load Amps	A	3.3	3.3	3.3
Locked Rotor Amps	A	3.3	3.3	3.3
OPTIONAL EXTRAS				
Upgraded Fan - Free Cool				
Quantity		1	1	1
Motor Rating	kW	1.59	1.59	1.59
Full Load Amps	A	7	7	7
Locked Rotor Amps	A	7	7	7

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

Electrical

(1) Free cooling values are based upon the maximum airflow

Technical Data

ET15D-FA1-7 - ET15D-FA1-8 - ET15D-FA1-9

ET15D

Mechanical Data

			ET15D-FA1-7	ET15D-FA1-8	ET15D-FA1-9
Capacity - Nominal Cooling					
Total	(1)	kW	10.8	10.8	10.8
Sensible		kW	10.8	10.8	10.8
EER			28.9	28.9	28.9
Capacity Steps		%	Variable	Variable	Variable
Capacity - Free Cooling					
Max. Airflow	(2)	m³/s	0.9	0.9	0.9
Dimensions					
W x H x D		mm	730 x 883 x 730	730 x 883 x 730	730 x 883 x 730
Weights					
Operating		kg	99	99	99
Fan - Free Cool					
Quantity			1	1	1
Diameter		mm	400	400	400
Maximum Speed		rpm	1430	1430	1430
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45
Upgraded Fan - Free Cool			N/A	N/A	N/A
Quantity			N/A	N/A	N/A
Diameter		mm	N/A	N/A	N/A
Maximum Speed		rpm	N/A	N/A	N/A
Filtration					
Quantity			1	1	1
Size W x H x D		mm	676 x 700 x 45	676 x 700 x 45	676 x 700 x 45

Electrical Data				
Electrical Supply Data				
Mains Supply		V	-48VDC	-48VDC	-48VDC
Controls Circuit		V	24VDC	24VDC	24VDC
Maximum Mains Incoming Cable Size		mm²	2.5	2.5	2.5
Free Cooling Mode					
Nominal Run Amps		A	6.5	6.5	6.5
Maximum Start Amps		A	6.5	6.5	6.5
Recommended Mains Fuse		A	10	10	10
Fan - Free Cool					
Quantity			1	1	1
Motor Rating		kW	0.29	0.29	0.29
Full Load Amps		A	6	6	6
Locked Rotor Amps		A	6	6	6

Mechanical

(1) The nominal cooling capacity is based upon gross total cooling capacity at 10°C delta T.

(2) The maximum airflow is based upon total free cooling

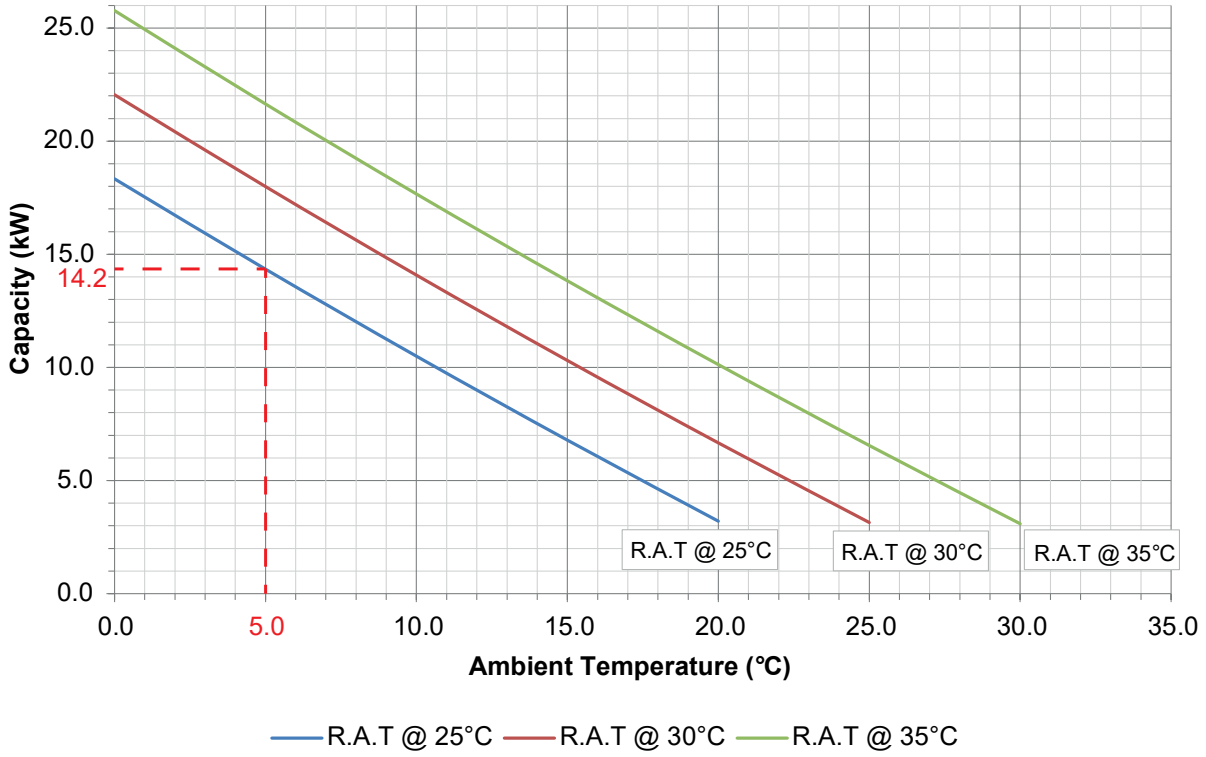
Electrical

(1) Free cooling values are based upon the maximum airflow

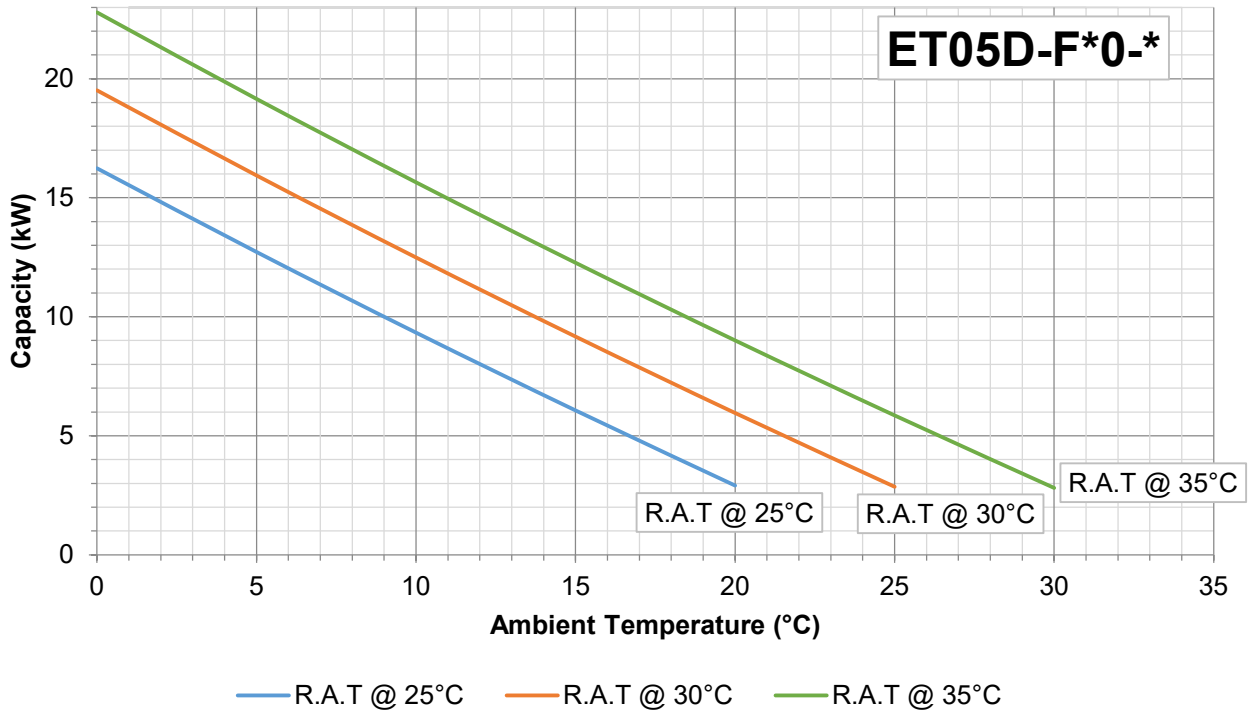
Performance Data

Example

At 5°C ambient and 25°C Room air temperature the cooling capacity will be 14.2kW*
*values based on fans running at full speed

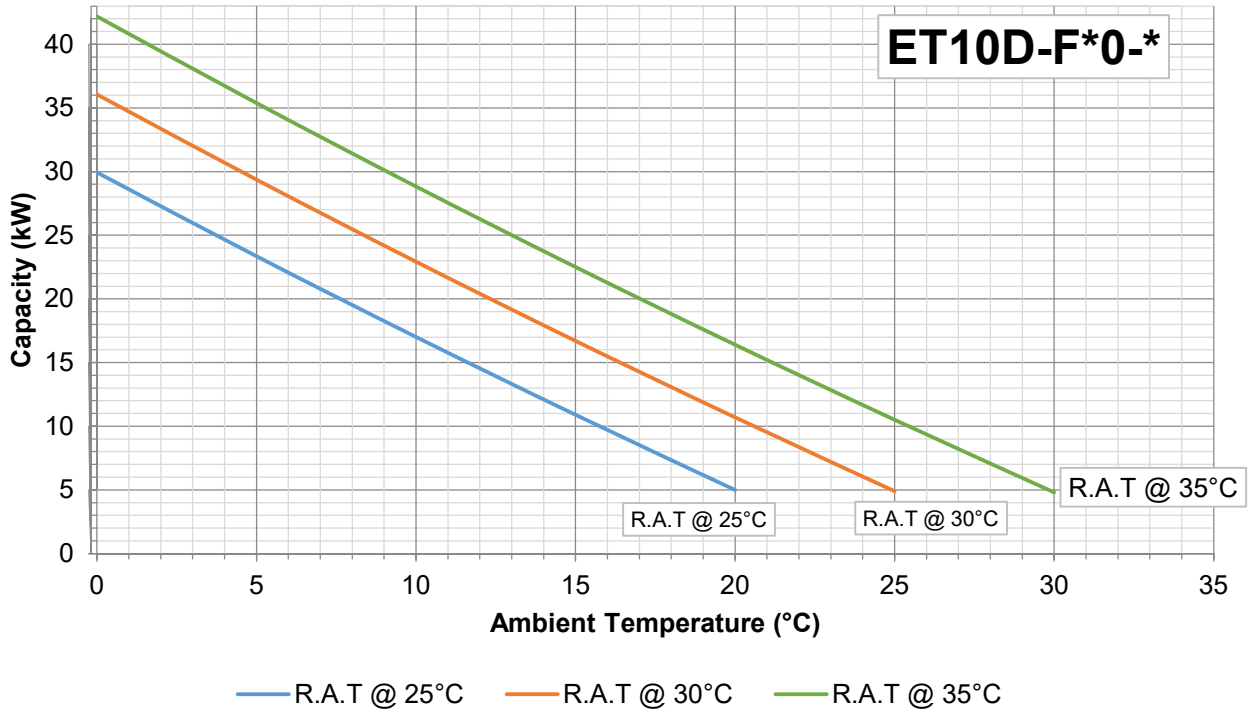


ET05D

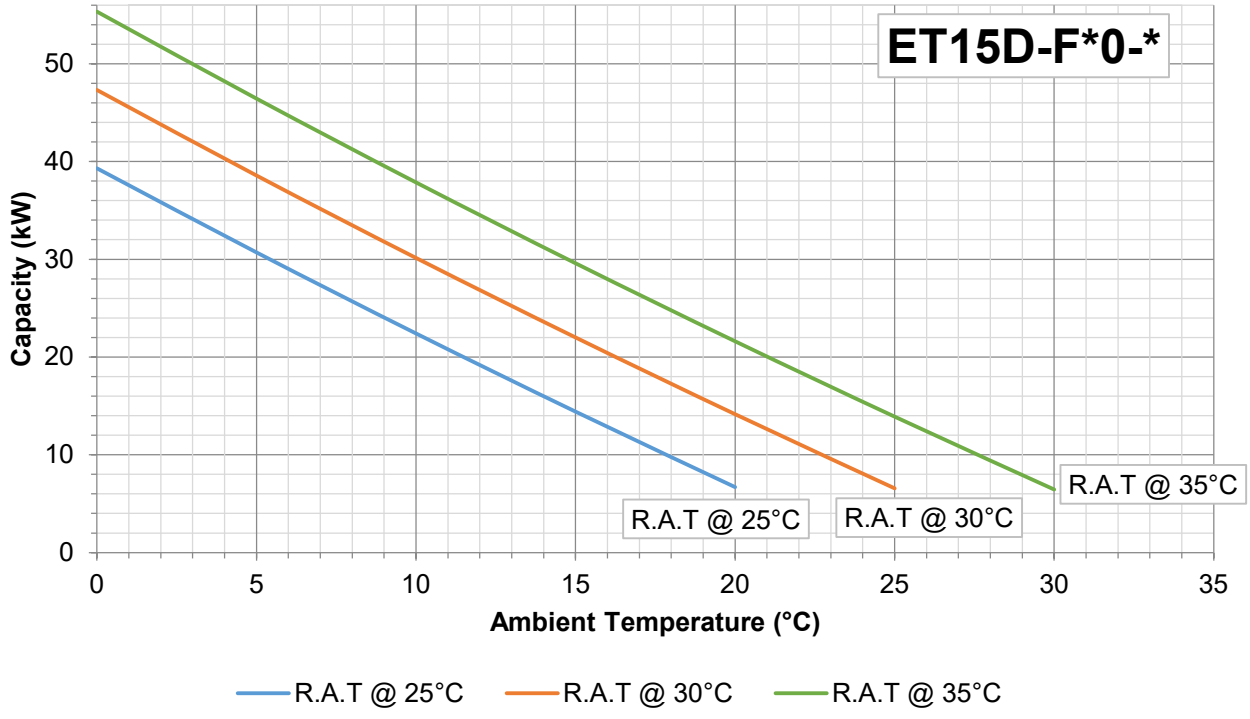


Performance Data

ET10D



ET15D



Sound Data

SOUND MEASUREMENT

All sound data quoted has been measured in the third-octave band, limited values using a Real Time Analyser calibrated sound pressure in accordance with BS 3744:2010.
Sound Power Levels calculated from measured sound pressure according to BS 3744:2010.

dB(A) is the overall sound level, measured on the A scale.

If the equipment is placed adjacent to a reflective wall, values may vary to those stated in our Performance Data section, typically you can add 3dB(A) for each side added.

AC Power Supply

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
ET05D-FS0	Power	61	33	56	53	56	55	47	50	26
	Sound pressure @1m	56	28	51	48	51	50	42	45	21
	Sound pressure @3m	50	22	45	41	45	44	36	39	15
	Sound pressure @10m	37	9	32	28	32	31	23	26	2
ET10D-FS0	Power	80	48	67	72	75	74	67	69	47
	Sound pressure @1m	75	43	62	67	70	69	62	64	42
	Sound pressure @3m	69	37	56	61	64	63	56	58	36
	Sound pressure @10m	56	24	43	48	51	50	43	45	23
ET15D-FS0	Power	75	41	62	65	68	70	66	65	37
	Sound pressure @1m	70	36	57	60	63	65	61	60	32
	Sound pressure @3m	64	30	51	54	57	59	55	54	26
	Sound pressure @10m	51	16	38	41	44	46	42	40	13
ET05D-FA0	Power	61	33	56	53	56	55	47	50	26
	Sound pressure @1m	56	28	51	48	51	50	42	45	21
	Sound pressure @3m	50	22	45	41	45	44	36	39	15
	Sound pressure @10m	37	9	32	28	32	31	23	26	2
ET10D-FA0	Power	80	48	67	72	75	74	67	69	47
	Sound pressure @1m	75	43	62	67	70	69	62	64	42
	Sound pressure @3m	69	37	56	61	64	63	56	58	36
	Sound pressure @10m	56	24	43	48	51	50	43	45	23
ET15D-FA0	Power	75	41	62	65	68	70	66	65	37
	Sound pressure @1m	70	36	57	60	63	65	61	60	32
	Sound pressure @3m	64	30	51	54	57	59	55	54	26
	Sound pressure @10m	51	16	38	41	44	46	42	40	13

1. Sound Power Levels calculated from measured sound intensity according to BS EN ISO9614 Part 1: 2009.
2. dB(A) is the overall sound level, measured on the A scale.
3. The above data is based on unit typical running conditions.

Sound Data

DC Power Supply

Sound Measurement		Overall dB(A)	Frequency (Hz) dB							
			63	125	250	500	1000	2000	4000	8000
ET05D-FS1	Power	56	30	50	46	51	48	42	46	16
	Sound pressure @1m	51	25	45	41	46	43	37	41	11
	Sound pressure @3m	45	19	39	35	40	37	31	35	5
	Sound pressure @10m	32	6	26	22	27	24	18	22	-9
ET10D-FS1	Power	69	40	61	61	64	61	56	61	30
	Sound pressure @1m	64	35	56	56	59	56	51	56	25
	Sound pressure @3m	58	29	50	50	53	50	45	50	19
	Sound pressure @10m	45	16	37	36	40	37	32	37	6
ET15D-FS1	Power	70	50	65	62	64	61	54	55	41
	Sound pressure @1m	65	45	60	57	59	56	49	50	36
	Sound pressure @3m	59	39	54	51	53	50	43	44	30
	Sound pressure @10m	46	26	41	38	40	37	30	31	17
ET05D-FA1	Power	56	30	50	46	51	48	42	46	16
	Sound pressure @1m	51	25	45	41	46	43	37	41	11
	Sound pressure @3m	45	19	39	35	40	37	31	35	5
	Sound pressure @10m	32	6	26	22	27	24	18	22	-9
ET10D-FA1	Power	69	40	61	61	64	61	56	61	30
	Sound pressure @1m	64	35	56	56	59	56	51	56	25
	Sound pressure @3m	58	29	50	50	53	50	45	50	19
	Sound pressure @10m	45	16	37	36	40	37	32	37	6
ET15D-FA1	Power	70	50	65	62	64	61	54	55	41
	Sound pressure @1m	65	45	60	57	59	56	49	50	36
	Sound pressure @3m	59	39	54	51	53	50	43	44	30
	Sound pressure @10m	46	26	41	38	40	37	30	31	17

1. Sound Power Levels calculated from measured sound intensity according to BS EN ISO9614 Part 1: 2009.
2. dB(A) is the overall sound level, measured on the A scale.
3. The above data is based on unit typical running conditions.

Installation Wiring

Power Connections

Indoor Unit	200	←	Mains Incoming Supply (230V / 1PH / + N / 50Hz or 220V / 1PH / +N / 60Hz)
	N	←	
	PE	←	
Indoor Unit	200	←	Mains Incoming Supply (220V / 2PH / 60Hz)
	201	←	
	PE	←	
Indoor Unit	910 (M)	←	Mains Incoming Supply (-48VDC 2-wire positive earthed)
	911 (L-)	←	
Exhaust Damper	200	←	Mains Incoming Supply (230V / 1PH / + N / 50Hz or 220V / 1PH / +N / 60Hz)
	N	←	
	PE	←	

Controls Connections

Standard Controls

Standard	855	→	Exhaust Temperature Sensor
	846	→	
Option	855/857	→	Cabin Temperature Sensor 1
	835	→	
Standard	855	→	Exhaust Temperature Sensor
	846	→	
Standard	570	←	General Alarm - Common
	571	→	General Alarm - N/O
	572	→	General Alarm - N/C

Note: - () Bracketed numbers refer to terminal numbers associated with the -48VDC type power supply

Intstallation Wiring

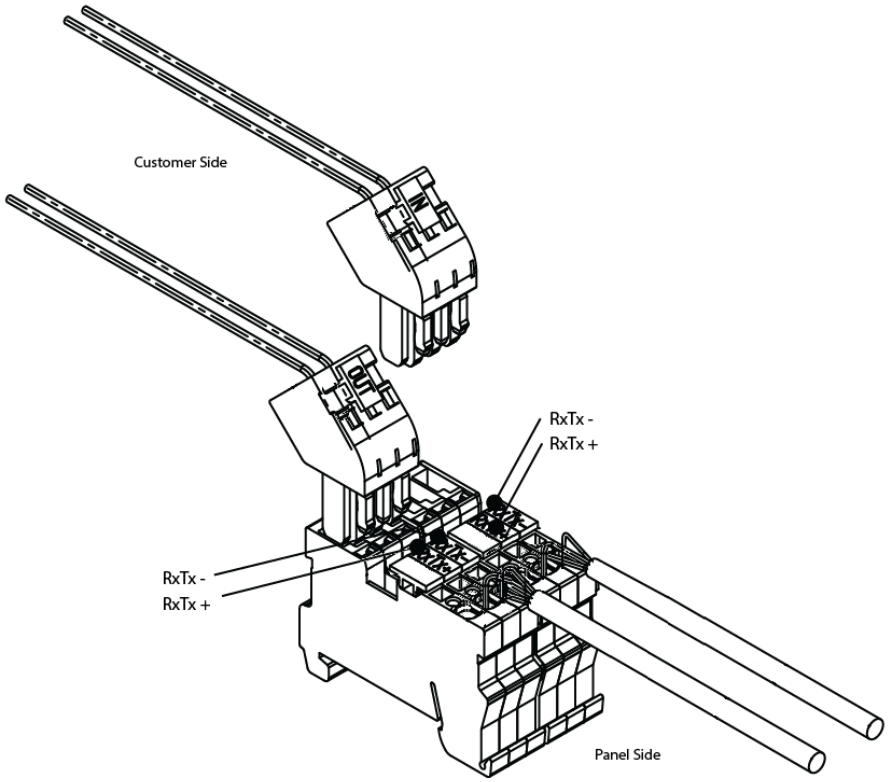
Advance Control Connections

Option	500 (800)	→	Cabin Temperature Sensor 1
	835	→	
	500 (800)	→	Cabin Temperature Sensor 2
	836	→	
	500 (800)	→	Cabin Temperature Sensor 3
	837	→	
	500 (800)	→	Cabin Temperature Sensor 4
	838	→	
	500 (907)	→	Exhaust Actuated Damper
	561 (910)	→	
Standard	500 (800)	→	Exhaust Temperature
	846	→	
Standard	570	←	Alarm - Common
	571	→	General Alarm - N/O
	573	→	35°C Alarm
	574	→	40°C Alarm
	575	→	Filter Change Alarm
	RX/TX-	←	Network In (pLAN)
	RX/TX+	←	
	GND	←	
	RX/TX-	→	Network Out (pLAN)
	RX/TX+	→	
	GND	→	
Option	BMS Interface	←	BMS Interface

Note: - () Bracketed numbers refer to terminal numbers associated with the -48VDC type power supply
Network cable should not run parallel to mains voltage cables. If network cables are to cross other cables they should be at 90°. All screen cables must be earth bonded correctly.
2 Core Beldon 8762 or equivalent

pLAN Termination

The plugged termination ensures that the connections are made simultaneously. Failure to attach the cables this way may cause damage to the controller.



Maintenance

Owner's Responsibility

To ensure that the unit can be maintained correctly ensure the following requirements are met.
Maintain a safe working environment around the unit, free from obstructions and debris.
The unit shall follow the following maintenance regime as a minimum:

IMPORTANT ⚠	The equipment contains live electrical and moving parts, ISOLATE prior to maintenance or repair work. Ensure lock off procedures are carried out accordingly.

CAUTION ⚠	Inputs or outputs not required will not be connected nor will they appear on the display keypad.

SERVICE INDICATOR

The maintenance of key components such as fans and air filters can be monitored via a service indicator which visually demonstrates the status relative to the component service intervals.

Inputs and outputs can be located by the labels to the microprocessor controller.

Maintenance

General Inspections

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
General Inspections	Check for visible mechanical damage to unit.	●		
	Visually inspect the unit for general wear and tear, treat metalwork.	●		
	Rust should be inhibited, primed and touched up with matching paint.			
	Check for excess vibration from other rotating equipment.	●		

Service Tools/Test Equipment

- Touch up paint
- Stiff Brush

Safety Equipment

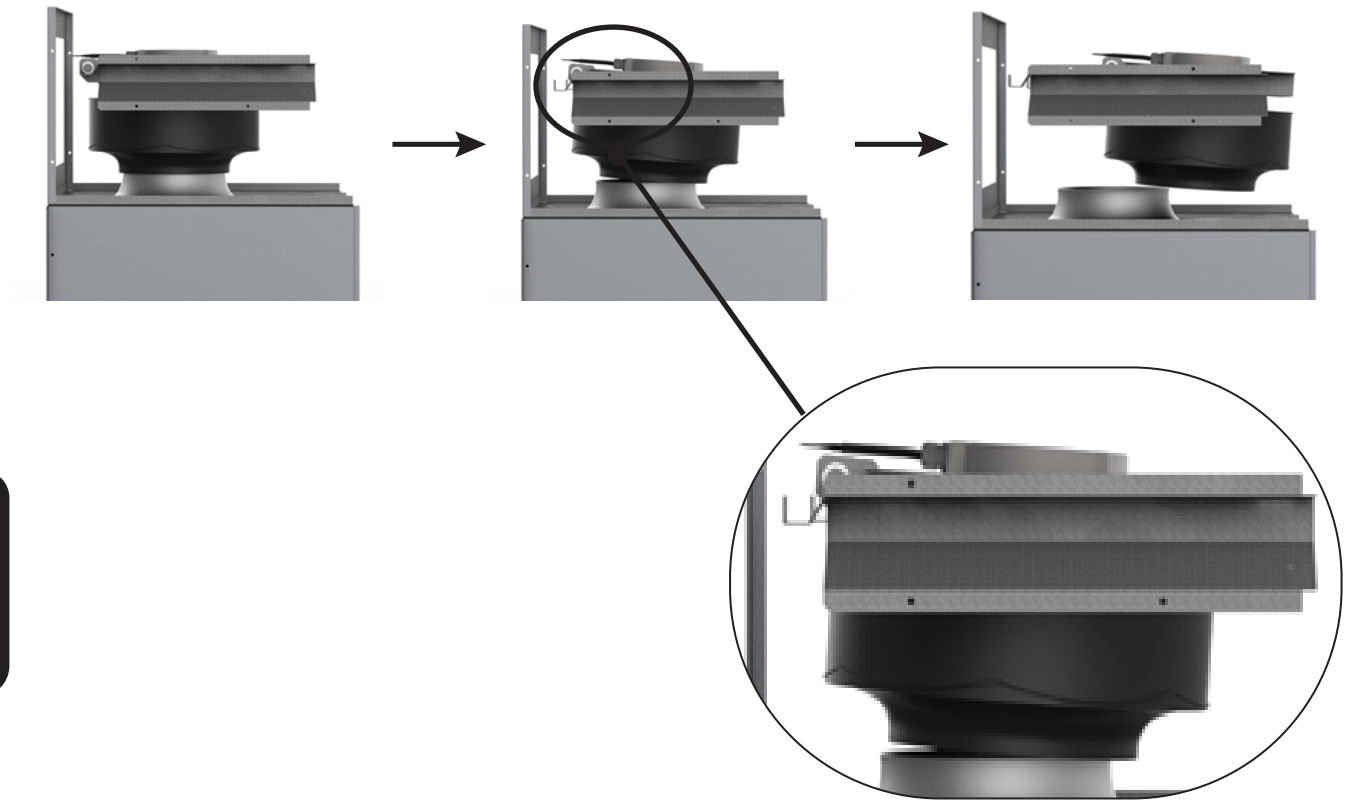
- Safety Glasses/Goggles/footwear

Procedures

Fan Removal

The unit fan is fixed to a mount with nylon wheels. This allows the fan to be removed with ease and clear the inlet ring, eliminating the need for the fan inlet ring to be removed during fan replacement.

The fan is wired to the unit via plug connectors, these are easy to disconnect for fast fan removal.



Maintenance

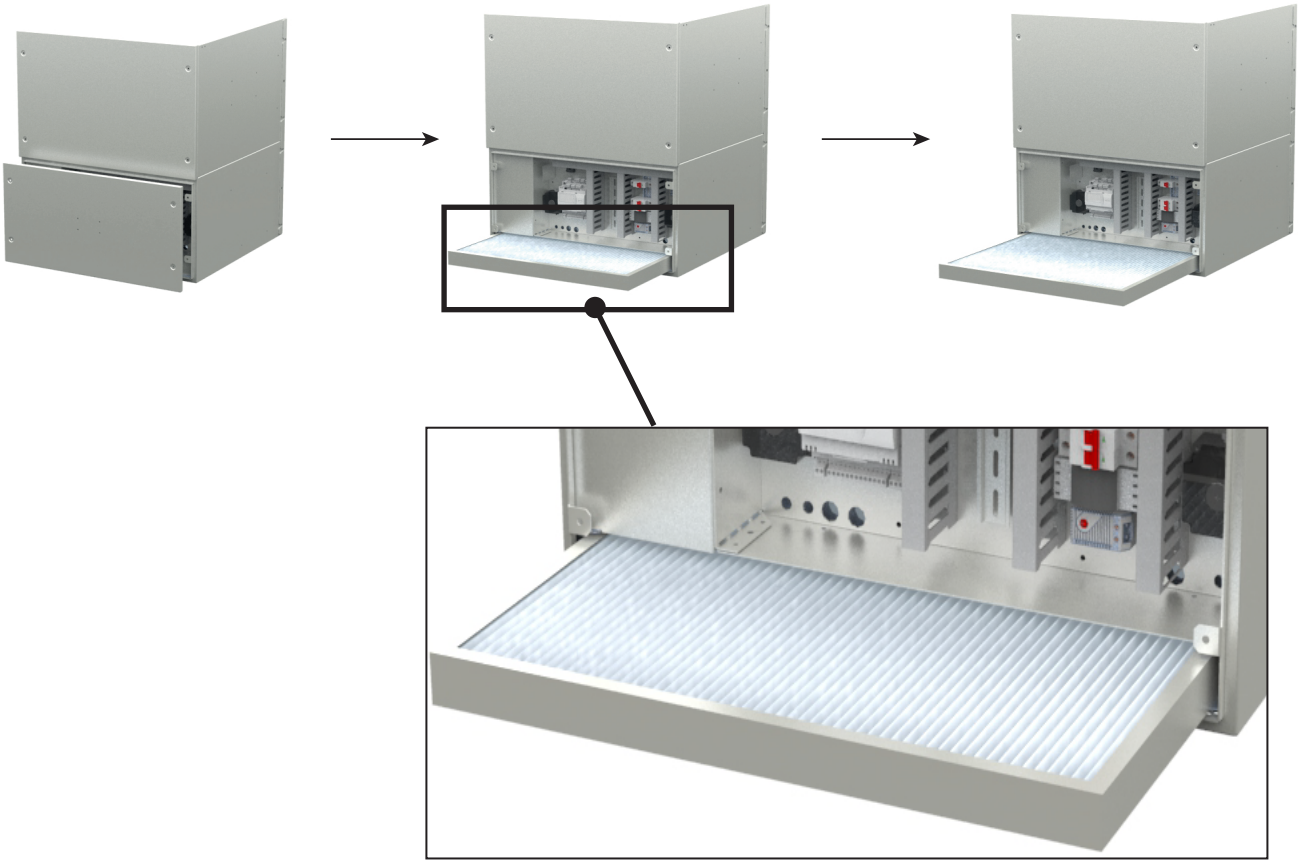
General Inspections

Procedures

Filter Removal

The procedure outlined below should be followed to remove the unit filter:

- Check all services are isolated and the unit is safe to work on.
- Remove the tamper proof fixings from the sides of the front panel and remove.
- Lower the filter section away and dispose of accordingly. (local codes and regulations should be observed).



LED Disconnection

When removing panels, carefully disconnect LED INDICATION. Be careful of polarity. Replace with correct polarity.

Controls Access Panel

The removable panel must be earthed. Careful consideration must be taken to ensure cables are not trapped.

Maintenance

Electrical Inspections

	Task	Frequency		
		3 Mths	12 Mths	60 Mths
Electrical Inspections	Check main power supply voltages		●	
	Check electrical terminals are tight.		●	
	Check for signs of hot spots/discolouration on power cables.		●	
	Check amperages are as per design.	●		

Service Tools/Test Equipment

- Voltmeter
- Screwdrivers/Allen Keys (4mm tamper-proof)
- Ammeter

Safety Equipment

- Safety Glasses/Goggles/footwear

Procedures

Electrical Connections

Ensure all electrical connections are tight and correctly terminated.

Electrical Earthing

Check that the unit is correctly earthed.

Voltage

Measure the voltage at the following points and record on the maintenance sheet

- Voltage at busbar/isolator
- Dedicated power supply
- Control voltage at transformer (min 21.6V, max 26.4V)

The voltage measurements should be carried out with the unit MCBs turned off.

Maintenance

Controls

Controls	Task	Frequency		
		3 Mths	12 Mths	60 Mths
	Change controller battery.*		•	

Service Tools/Test Equipment
- Small Terminal Screwdriver

Safety Equipment
- Electrostatic Wristband

*The controller will keep the strategy for a short period of time with no battery.

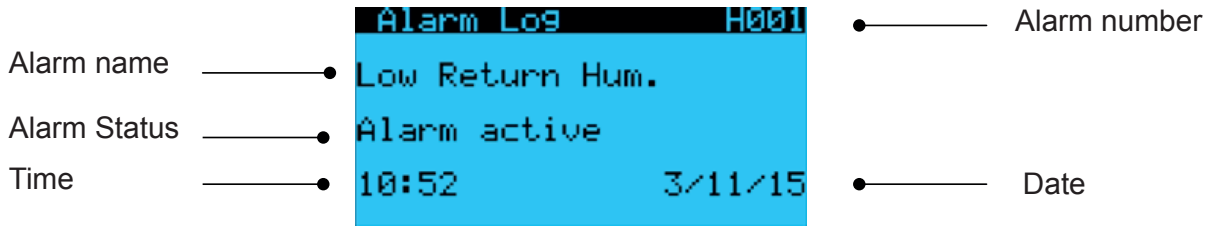
Troubleshooting

FAULT	POSSIBLE CAUSE	REMEDY/ACTION
Unit not operating - Power Off.	Main/local isolator off	Check all isolators from mains to unit.
	Mains Fuse(s) failed.	Check all mains fuses. Replace after correcting fault. Check for loose wire.
Unit not operating - Power On.	Unit not switched on.	Check isolator and power supply.
	Fault Alarm	Check volt free contacts, investigate and clear fault.
	Fire detection or external interlock fault no feed on wire.	Investigate and correct.
	Control MCB tripped.	Reset after investigating and correcting fault.
	Loose wire in control circuit	Investigate and tighten connector.
	Motor/Fan Assembly jammed.	Isolate unit and check free rotation of motor/ fan assembly. If faulty - replace.
	Fan internal protection tripped.	Investigate internal protection, which is self-resetting. Check fan for correct operation. Replace if faulty.
	Faulty motor windings/capacitor.	Motor humming would indicate fault in motor or capacitor.
	Safety device or internal relay switch open circuit.	Check through circuitry starting at control MCB - action faults. Check primary and secondary voltage.

Alarms

PC05 Compact Only

Alarm Menu Display



Alarm Log

The alarm page offers a log of the last 150 alarm messages in a scrolling log, pressing the alarm button will enter the alarm page.
Consequently the most recent alarm has the lowest log number (001) and will be displayed upon entering the alarm page. As another alarm occurs, the alarm number increases until 150 alarms have occurred. From this point on, alarm 001 moves to 002 and any new alarm will reside in position 001.

As new alarms are generated and cleared, the highest number logs (150) in the scroll will be lost.

Viewing the Alarm Log

By using the arrow keys, the last 150 alarms generated can be reviewed in chronological order. The display provides the alarm type information and the time and date of each alarm occurrence.

Alarm Detection

When the controller detects an alarm an output is generated to the relevant alarm relay which in turn illuminates the button. To see which alarm has accrued press the button and the most recent alarm will be displayed.
If the alarm light is on, the alarm page can be interrogated to identify which alarm is active.

Resetting the Alarm

The auto reset alarms will automatically reset once the conditions are within the set parameters.

To clear a manual alarm press the button twice and the red LED will disappear.

Alarms

The following lists display all alarms available in the Ecotel FreeCool. Some of these alarms may not be available depending on unit type and selected options.

Code	Name	Description	Action	Reset	Importance
1	Power Restart	Mains power restarted	For information	Auto	Non-Critical
2	Airflow Fail	No airflow detected	For information	Auto	Critical
4	Filter Change	Dirty filter	For information	Manual	Non-Critical
7	Probe Failure U1	Probe reading error on U1	Ignore reading from probe	Auto	Critical
8	Probe Failure U2	Probe reading error on U2	Ignore reading from probe	Auto	Critical
9	Probe Failure U3	Probe reading error on U3	Ignore reading from probe	Auto	Critical
10	Probe Failure U4	Probe reading error on U4	Ignore reading from probe	Auto	Critical
11	Probe Failure U5	Probe reading error on U5	Ignore reading from probe	Auto	Critical
12	Probe Failure U6	Probe reading error on U6	Ignore reading from probe	Auto	Critical
13	Probe Failure U7	Probe reading error on U7	Ignore reading from probe	Auto	Critical
14	Probe Failure U8	Probe reading error on U8	Ignore reading from probe	Auto	Critical
19	Low Return Air Temperature	Return air temperature below critical threshold	Force heating mode	Auto	Critical
20	High Ambient Temperature	Ambient temperature above	For information	Auto	Non-Critical
21	Low Ambient Temperature	Ambient temperature below	For information	Auto	Non-Critical
63	Fan Maintenance Alarm	Fan maintenance run time reached	For information	Manual	Non-Critical
66	High Cabin Temperature Alarm	High cabin temperature (35°C + default)	Switches the high cabin temperature output	Auto	Critical
67	High Cabin Temperature Alarm - Critical	Critical cabin temperature (40°C + default)	Switches the critical cabin temperature output	Auto	Critical
68	Critical Probe Failure	All connected cabin temperature probes have failed	Defaults to maximum freecooling	Auto	Critical

After Sales

Warranty

All Airedale products or parts (non consumable) supplied for installation within the UK mainland and commissioned by an Airedale engineer, carry a full Parts & Labour warranty for a period of 12 months from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.
Parts or Equipment supplied by Airedale for installation within the UK or for Export that are properly commissioned in accordance with Airedale standards and specification, not commissioned by an Airedale engineer; carry a 12 month warranty on non consumable Parts only from the date of commissioning or 18 months from the date of despatch, whichever is the sooner.
Parts or equipment installed or commissioned not to acceptable Airedale standards or specification invalidate all warranty.

Warranty is only valid in the event that

In the period between delivery and commissioning the equipment:

- is properly protected & serviced as per the Airedale installation & maintenance manual provided
- where applicable the glycol content is maintained to the correct level.

In the event of a problem being reported and once warranty is confirmed* as valid under the given installation and operating conditions, the Company will provide the appropriate warranty coverage (as detailed above) attributable to the rectification of any affected Airedale equipment supplied (excluding costs for any specialist access or lifting equipment that must be ordered by the customer).

*Once warranty is confirmed, maintenance must be continued to validate the warranty period.

Any spare part supplied by Airedale under warranty shall be warranted for the unexpired period of the warranty or 3 months from delivery, whichever period is the longer. To be read in conjunction with the Airedale Conditions of Sale - Warranty and Warranty Procedure, available upon request.

Procedure

When a component part fails, a replacement part should be obtained through our Spares department. If the part is considered to be under warranty, the following details are required to process this requirement. Full description of part required, including Airedale's part number, if known. The original equipment serial number. An appropriate purchase order number.
A spares order will be raised under our warranty system and the replacement part will be despatched, usually within 24 hours should they be in stock. When replaced, the faulty part must be returned to Airedale with a suitably completed and securely attached "Faulty Component Return" (FCR) tag. FCR tags are available from Airedale and supplied with each Warranty order.
On receipt of the faulty part, suitably tagged, Airedale will pass to its Warranty department, where it will be fully inspected and tested in order to identify the reason for failure, identifying at the same time whether warranty is justified or not.
On completion of the investigation of the returned part, a full "Report on Goods Returned" will be issued. On occasion the release of this complete report may be delayed as component manufacturers become involved in the investigation. When warranty is allowed, a credit against the Warranty invoice will be raised. Should warranty be refused the Warranty invoice becomes payable on normal terms.

Exclusions

Warranty may be refused for the following reasons.

- Misapplication of product or component
- Incorrect site installation
- Incomplete commissioning documentation
- Inadequate site installation
- Inadequate site maintenance
- Damage caused by mishandling
- Replaced part being returned damaged without explanation
- Unnecessary delays incurred in return of defective component

Returns analysis

All faulty components returned under warranty are analysed on a monthly basis as a means of verifying component and product reliability as well as supplier performance. It is important that all component failures are reported correctly.

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