Welcome to the world of

Sentinel Demand Energy Recovery Ventilation

Sentinel Totus Demand Energy Recovery Ventilation, D-ERV, is a new heat recovery demand ventilation system designed to meet modern building management control principles. It responds to the exact ventilation requirements of a room at any one time providing airflow only when it is required and to the level that is required – therefore using only the energy that is needed; no more no less, whilst recovering maximum energy from the extracted air and transferring it to the fresh supply air. This overcomes many of the issues encountered with a traditional fixed volume ventilation system that is either on or off irrespective of the occupancy of the room, risking over ventilation, burning valuable money and a wasteful use of energy.

In support of Sentinel Totus D-ERV, Vent-Axia's dedicated HEVAC team offers:

- ✔ Practical advice on HEVAC selection and installation
- ✔ Guidance on solutions to meet legislation requirements
- ✔ Project management and site deliveries
- ✔ After sales support and maintenance information

The need to recover energy

The high efficiency cell incorporated within the Totus range achieves a market leading 90% efficiency (EN308 independently tested). This enables Sentinel Totus to recover 30% more energy, than a 70% efficient device. This high efficiency means that heating and cooling loads associated with 'extract to waste' type systems can be reduced by up to 25% in both heating and cooling seasons. The high efficiency also means that expensive after heaters, often required in lower efficiency heat recovery devices, are not required.

The need to save costs

Rising fuel prices are placing an increasing burden on organisations as they seek to reduce consumption.

- ✔ High efficiency heat exchanger – up to 90% energy recovery offering savings of up to 25% on heating and cooling loads
- ✔ Integral automatic summer bypass - provides free cooling during summer
- ✔ Double skin construction with high thermal acoustic insulation – 60kg/m^3
- ✔ Low stand by power only 0.6W
- ✔ Energy efficient EC/DC motors - 1/3 less energy lost to heat than a conventional AC motor

The need for system integration

With the drive towards 'whole building' philosophy costing information, maintenance schedules and costs are all now essential elements of the project in addition to the initial capital costs. Sentinel Totus D-ERV incorporates a number of integrated features to offer maximum flexibility during design, build and operation including:-

- ✔ Air conditioning interlock – to optimise energy recovery
- ✔ Heating system interlock – summer bypass optimisation
- ✔ Interfaces for BMS control and monitoring
- ✔ EC/DC motors with lower maintenance requirements and longer service life
- ✔ Plastisol coated case – suitable for external installation as standard
- ✔ Optional cowl for roof mounting
- ✔ Integral condensate pump – reduces installation costs and space requirements
- ✔ In-built automatic frost protection – prevents heat exchanger freezing at very low temperatures
- ✔ In-built backlit LCD user control interface which can be remotely mounted to suit site requirements
- ✔ Night time purge facility to reduce overheat during warm summer periods

The need for better health

Removal of pollutants, such as moisture, carbon dioxide and external fumes are all important factors in maintaining indoor air quality. Studies within schools have demonstrated that maintaining lower carbon dioxide levels helps create a better learning environment.

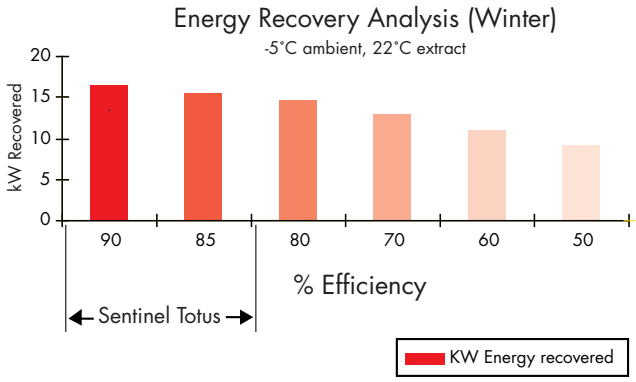
- ✔ Hierarchical control maintains CO_2 levels within levels described in Building Bulletin 101
- ✔ Low sound levels meet requirements of Building Design
- ✔ Automatic summer bypass providing free summer cooling
- ✔ Demand control optimising indoor air quality
- ✔ Closed loop control system ensures maximum comfort levels at minimum energy levels

The need to meet legislation

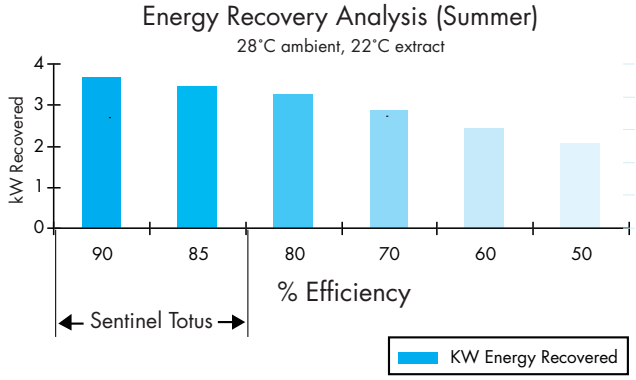
Through the Energy Performance of Building Directive, the EU is aiming for over 20% saving in building energy consumption by 2010.

- ✔ Meets Building Regulations Part L2A and L2B – achieving a specific fan power at 25% of design flow rate no greater than that achieved at 100% design flow rate.
- ✔ Market leading 90% heat exchange efficiency independently tested to EN 308
- ✔ Meets carbon footprint reduction targets
- ✔ Lowest Specific Fan Power figures of any D-ERV product

Sentinel Totus D-ERV



Airflow m³/s	Efficiency %	kW Heat recovered	Supply temp °C
0.555	90	16.51	19.3
	85	15.59	18.0
	80	14.67	16.6
	70	12.84	13.9
	60	11.00	11.2
	50	9.17	8.5



m³/s	Efficiency %	kW Cool Recovered	Supply temp °C
0.555	90	3.67	22.6
	85	3.46	22.9
	80	3.26	23.2
	70	2.85	23.8
	60	2.45	24.4
	50	2.04	25.0

The need for energy recovery

Rising fuel prices are placing an increased burden on organisations as they seek to reduce consumption.

Sentinel Totus D-ERV incorporates a number of market leading technologies and control strategies to take commercial heat recovery ventilation to the next level and further reduce energy consumption and waste.

✔ **Sentinel demand ventilation control** - matching air quality with low power consumption using high efficiency, low energy EC/DC motor technology.

✔ **Energy saving control functions** -

i. Automatic summer bypass - provides free cooling during summer

ii. Low standby power - 0.6 watts

iii. Night time purge facility - reducing air conditioning start up loads

✔ **System interfaces** - to optimise interface with environmental control systems.

i. Air conditioning interlock - to maximise energy recovery opportunities

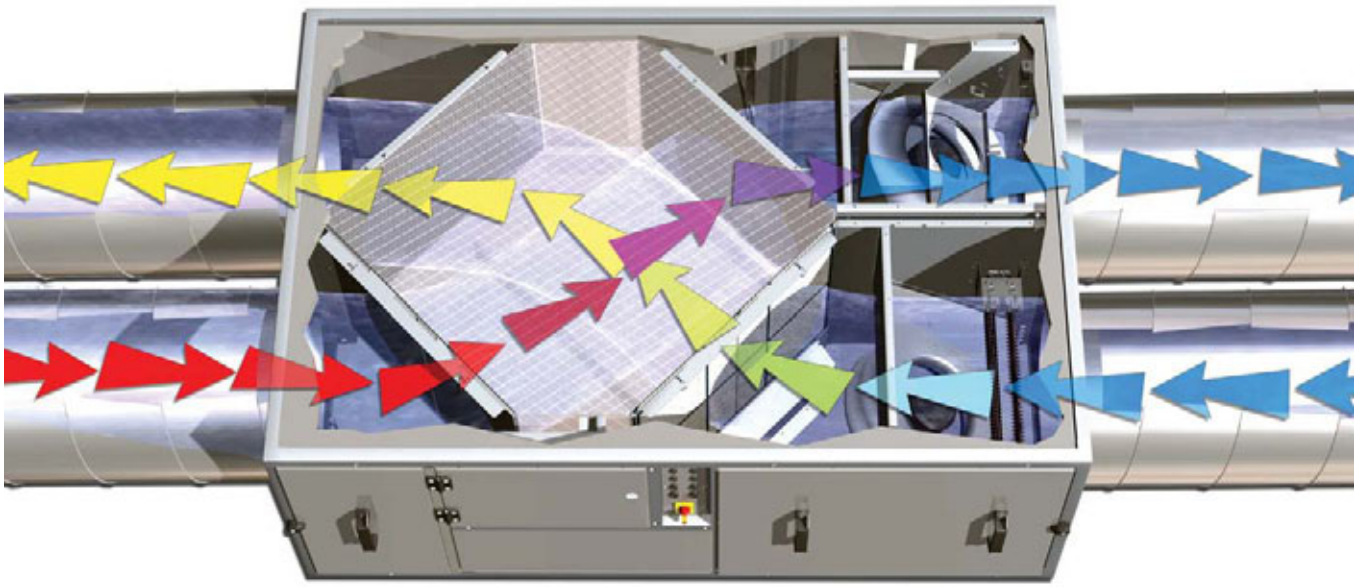
ii. Heating system interlock - to optimise summer bypass functionality

iii. BMS interfaces - control and monitoring

✔ **High efficiency energy recovery cell**

i. Up to 90% energy recovery - reducing associated heating and cooling loads by up to 25%

ii. High efficiency eliminates the need for re-heaters eg. typically at -5°C ambient, 22°C room conditions the supply air temperature is maintained above 19°C.



The Sentinel Totus D-ERV units incorporate a brand new market leading counterflow heat exchanger.

The Sentinel Totus D-ERV range has been independently tested to EN 308 to achieve energy savings of up to 90% and higher in the case of condensation.

The plate heat exchanger is a true counterflow device, incorporating a special plate edge seal, to enhance air tightness and stability, eliminating the transfer of odours or humidity and ensuring the highest efficiency levels.

The aluminium construction make it insensitive to frost and heat damage and tolerant to pressure in-balance conditions, unlike equivalent plastic variants.

This high efficiency energy recovery ventilation system also includes further functions to reduce energy usage and maintain high levels of indoor air quality.

- ✔ High efficiency EC/DC motors and backward curved impellers with 'Sentinel' demand control logic to optimise IAQ, whilst using the minimum amount of energy.
- ✔ Built-in automatic summer bypass, to take advantage of free cooling opportunities (with air conditioning interlock).
- ✔ Heating system interlock to ensure free cooling is optimised.
- ✔ Low standby power 0.6 watts (PIR actuation).
- ✔ Night time purge facility to reduce overheat during the operational day and reduce air conditioning start up loads.

Sentinel Totus Mini/Midi D-ERV Unit

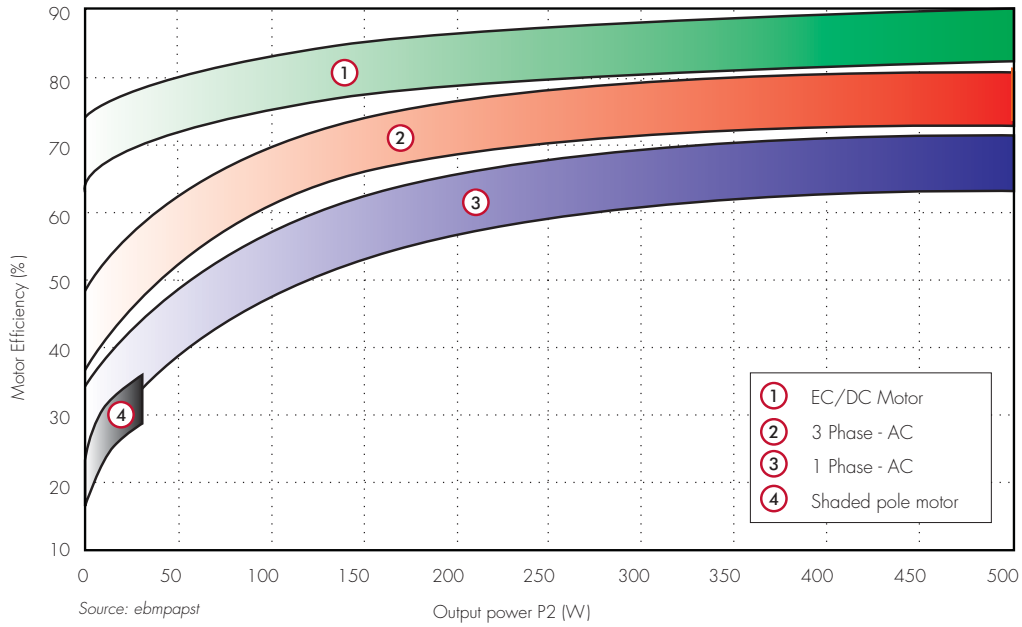
Sentinel Totus Maxi D-ERV Unit

Sentinel Totus D-ERV

EC/DC energy saving fan motor benefits

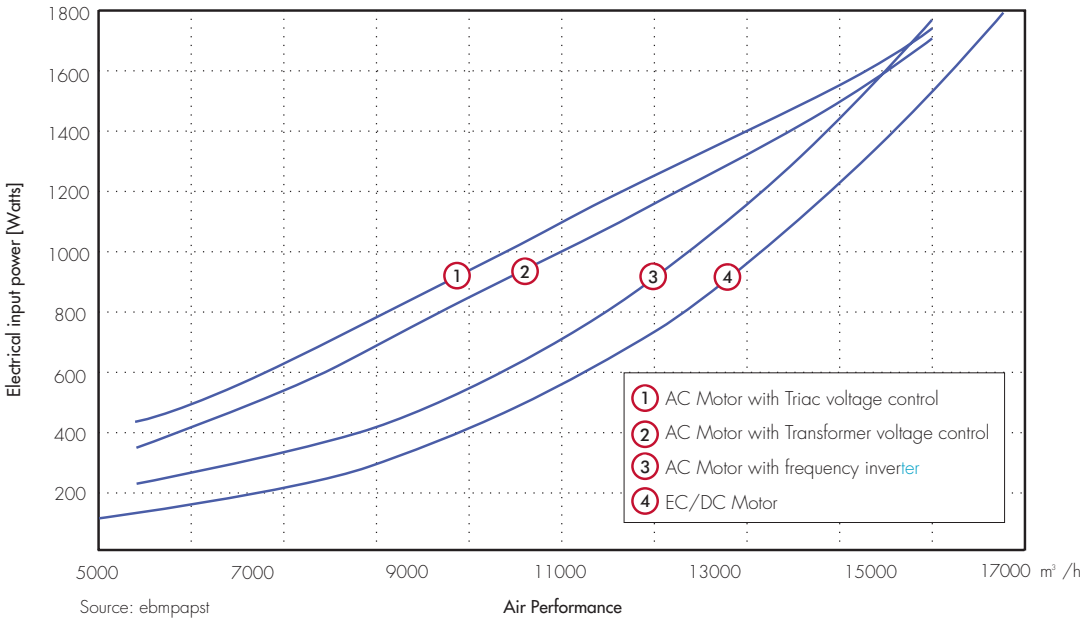
- ✔ Higher efficiency at full speed - at 50% reduction in motor speed gives an 88% reduction in power usage.
- ✔ Continuous speed control across the full operating range giving an increased tolerance to high and low pressure.
- ✔ Low noise compared to a step control motor.
- ✔ Improved service life.
- ✔ Power input lost as heat is reduced by $^1/_3$ compared to a conventional AC motor.
- ✔ Lower maintenance requirements and longer service life.

Highest Motor Efficiency



Source: ebmpapst

Typical EC/AC Motor Speed Control Comparison



Source: ebmpapst

As can be seen from above motor comparisons, the EC/DC motor offers higher efficiencies when compared to AC motors, and also consumes less power under speed control, giving both the highest motor efficiency and lowest power consumption across the speed control range.

Demand Control

The precise control of the Sentinel Totus D-ERV system, driven by the ventilation requirements of the room at any one time, means that the system is only running to the level required, using energy when it is needed. A range of sensors are employed to determine the occupancy of the rooms, and manage the system ventilation rates accordingly. This optimises the use of energy whilst meeting the legislation requirements of the building.

This compares to a 'traditional' fixed volume system, which in general is either 'ON' or 'OFF' often using energy to ventilate an empty or half occupied room, over ventilating and wasting energy.

System Overview

The Sentinel Totus D-ERV system is made up of 4 parts:

- ✔ Up to 90% energy recovery (EN 308)
- ✔ Low energy EC/DC motors
- ✔ Sentinel Totus D-ERV, Demand Energy Recovery control
- ✔ Sensors and Controls

The ventilation demands of the room are detected by the wall or ceiling mounted Sentinel Totus D-ERV sensors/switches. These communicate with the Sentinel Totus D-ERV unit, which in turn drives the fan to the required speed to deliver the airflow. As the ventilation is provided to the room, the sensors continuously feedback to the control unit, driving the fan motor to the exact level required in the room at any one time.

Hierarchical Control

The system is controlled by on board electronics, with an LCD display showing fan status and allowing for simple commissioning and installation, whether as a local sensor control unit or linked into a building management system. The LCD display unit can be remotely mounted if required.

1. Switched on/off or minimum/maximum level control

In an environment such as an office, the system is activated and runs between minimum and maximum levels by a choice of sensors.

- PIR Detector
- Thermostat
- Humidistat
- BMS (remote enable)

2. Hierarchical – maximum demand multi sensor input used with a combination of sensors, with a defined level of priorities to simultaneously control a number of atmospheric conditions within a room, such as a meeting room.

- CO_2/temperature – room mounted
- CO_2 – duct mounted
- Building Management System (0-10V)

Constant Pressure extract

Applied in a discreet central extract system, such as hotel bathrooms or apartment blocks, the system grilles and/or duct dampers are controlled by the presence of a person in the room or by achieving required levels of humidity. The central system will respond to the demand depending on the number of active rooms.

- PIR/Humidity Extract Grille 125mm
- PIR 12 - 70m^3/h
- Humidity: 12m^3/h – 30% RH
  70m^3/h - 75% RH
- Motorised Duct Dampers 100mm - 315mm Dia
  Built in end stop adjustment for setting minimum and maximum volume.
  24V Min/Max or 0-10V proportional control options.
  Motorised Duct Dampers – Sensor Control options
  Each 24V powered extract damper can by controlled by one of the following sensors:-

Min-Max (DVDxxx/MM)

- AQS- Air Quality Sensor – Room (432953)
- PIR Detector – Room (433162)
- Thermostat - Room (563502B)
- Humidistat - Room (432945)

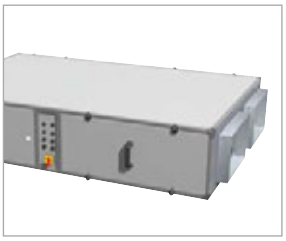
Proportional 0-10V (DVDxxx/PC)

- Carbon Dioxide Sensor – Room (433259)
- Carbon Dioxide Sensor – Duct (433259)
- Temperature Sensor - Room (434749)

Note Local 24V power supply required to power dampers & Sensors (426526)

Sentinel Totus D-ERV

Totus Units



Mini fan unit

Midi fan unit

Maxi fan unit

The Sentinel Totus D-ERV units are plastisol finished as standard and are suitable for internal or external mounting.

System Technology

Sentinel Totus D-ERV is a closed loop controlled ventilation system. Employing a range of sensors to manage the system, demand is sensed by PIR, temperature, humidity, air quality or carbon dioxide sensors. Depending on the levels in the rooms, Sentinel Totus D-ERV's fan speed is ramped up or down to control the parameters within the required limits. If the room is unoccupied, the system switches off, saving energy and cost to the business.

The unit standby power consumption is only 0.6 watts.

The EC/DC Energy Saving Fan Motor Technology

- ✔ Higher efficiency at full speed - at 50% reduction in motor speed gives an 87.5% reduction in power usage.
- ✔ Continuous speed control across the full operating range giving an increased tolerance to high and low pressure.
- ✔ Low noise compared to a step control motor.
- ✔ Improved service life.
- ✔ Power input lost as heat is reduced by $^{1}/_{3}$ compared to a conventional AC motor.
- ✔ Lower maintenance requirements and longer service life.

Sentinel Totus D-ERV utilises the latest EC/DC motor technology, which provides energy saving benefits even over DC motors.

This technology is also infinitely speed controllable and offers increased energy savings across the complete speed control range when compared with conventional inverter drive solutions. The result is higher efficiency, reduced noise, accurate controllability, better speed control drawing less power and as a result better overall system performance. Volume reduction also increases energy recovery efficiency beyond the published figures.

Sentinel Totus D-ERV can be used in a hierarchical system where maximum demand, for example temperature and/or CO_2 gives priority control of the fan speed or a constant pressure system with room mounted PIR/grilles or in-line damper control.

Heart of EC/DC Motor

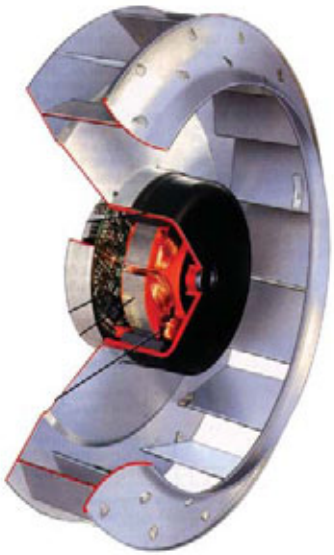
Rotor with magnet

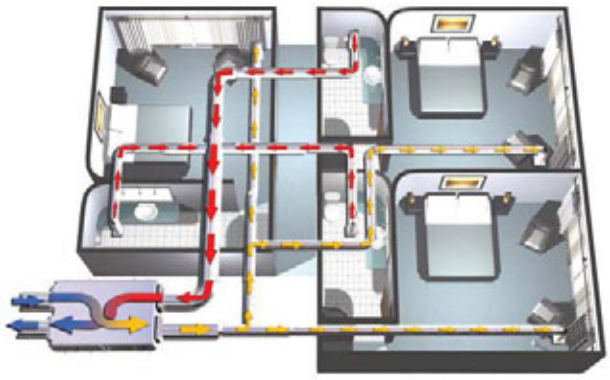
Stator with bearing

Integrated electronics

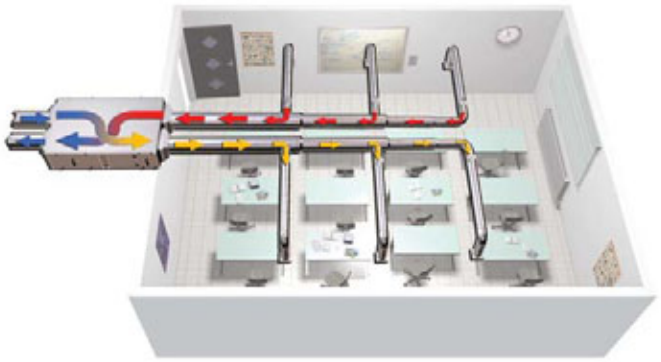
Stator lamination

Stator winding





Typical network of hotel bathrooms/flats/apartments



Typical school classroom

Mini/Midi fan unit

Maxi fan unit

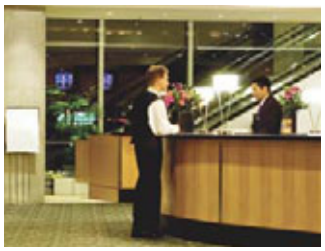
Sentinel Totus D-ERV is a new range of energy recovery ventilation systems for multi occupancy and variable demand rooms. Using energy efficient EC/DC fans, 90% HR with intelligent sensing and control, the system meets the ventilation requirements of both new builds and refurbishment projects.

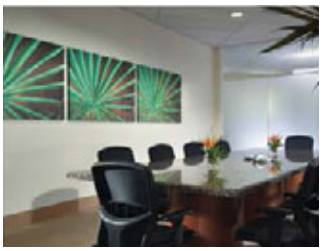
Ideal for applications where the rooms are used at different times of the day by a variable number of people, the Sentinel Totus D-ERV system will monitor occupancy, ventilation rate and air quality, and respond accordingly to maintain the atmosphere within preset limits and recovery up to 90% of extracted energy.

Typical applications include:

- ✔ A network of hotel bathrooms, flats or apartments, which require ventilation, but are only used in limited periods particularly in the morning and in the evening.
- ✔ School classrooms and lecture theatres which are only occupied during lesson time by a variable number of students, but when used must keep CO_2 levels within prescribed limits.
- ✔ Office meeting rooms or open plan areas which again are used periodically during the day by a variable number of staff and visitors, but when occupied must meet required airflow rates.

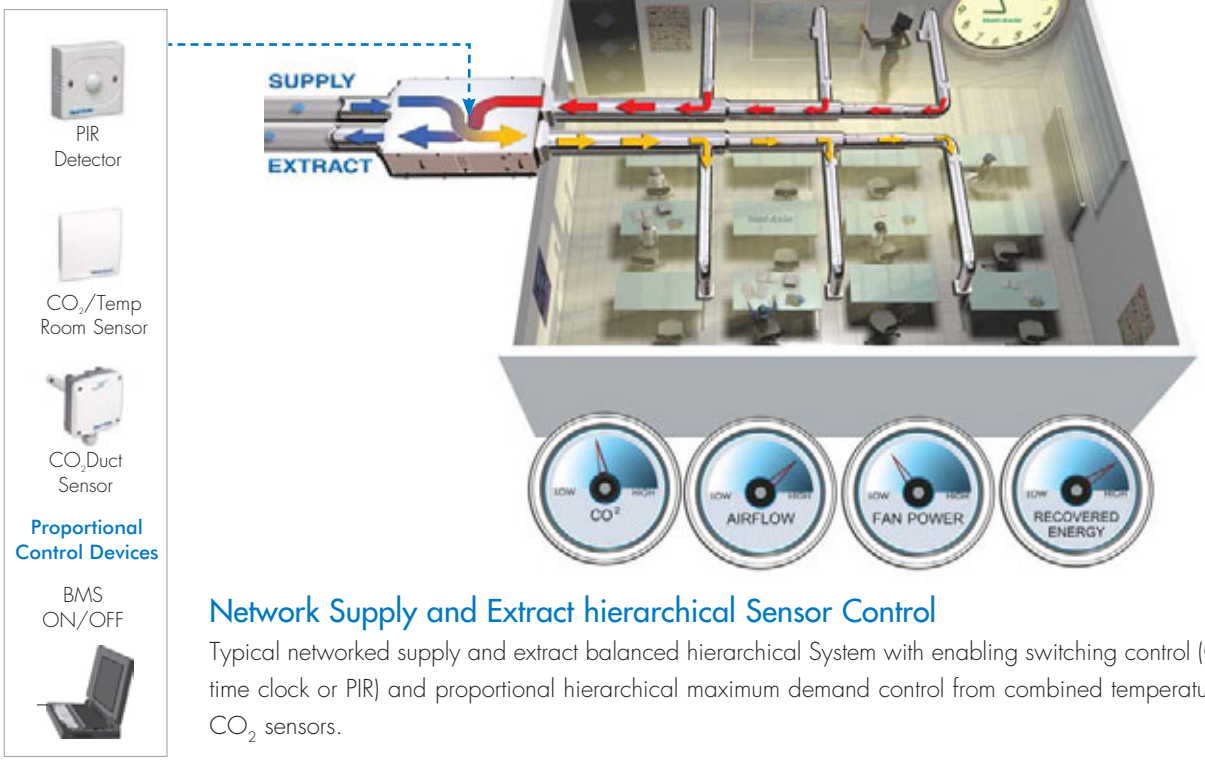
Automatic sensing and control runs the system according to the maximum demand requirements of the building zone, whether it be carbon dioxide levels, temperature, humidity or air quality – triggered by people entering or leaving the rooms. Common configurations include Electronic Static Pressure (ESP) controllers for constant pressure systems.





Sentinel Totus D-ERV

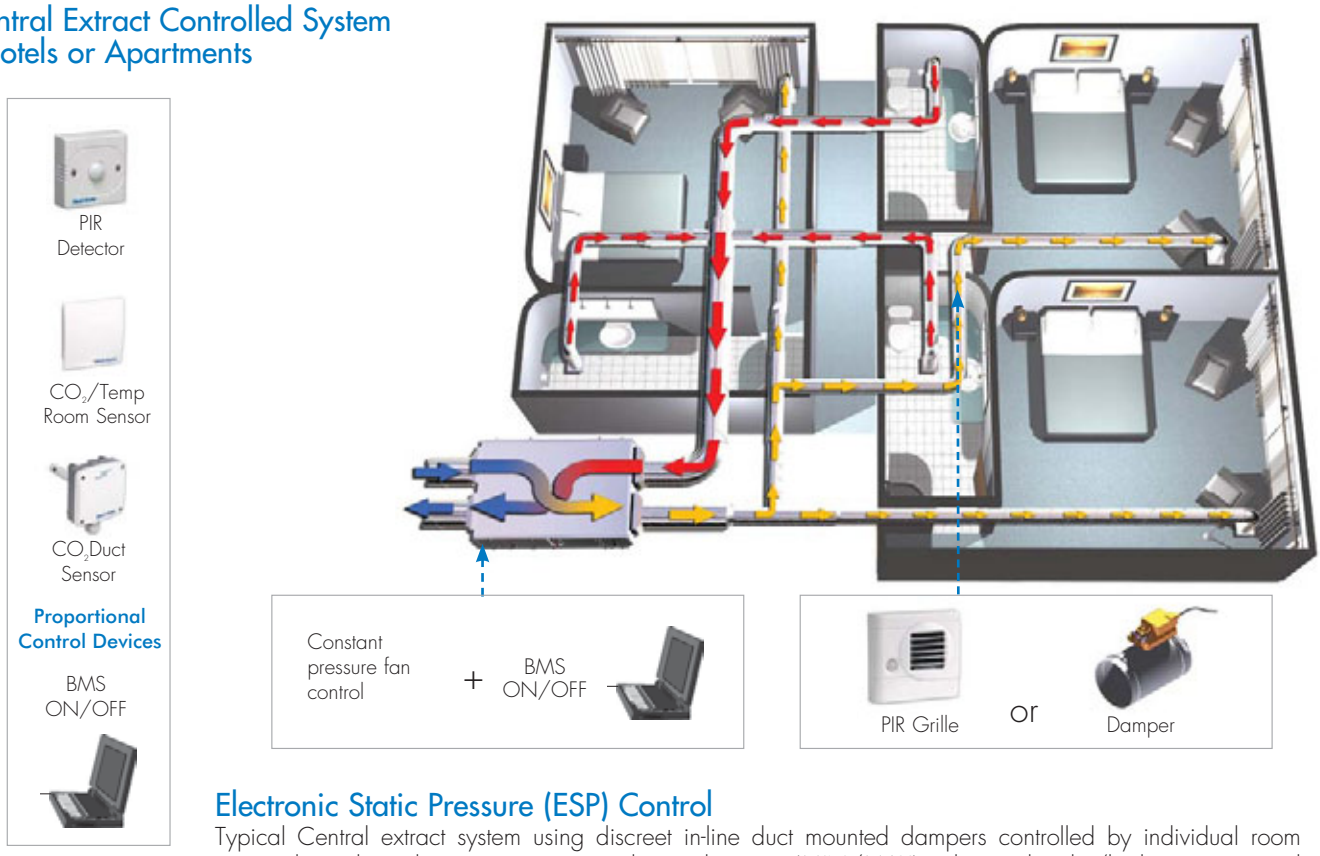
Meeting Rooms and Classrooms



Network Supply and Extract hierarchical Sensor Control

Typical networked supply and extract balanced hierarchical System with enabling switching control (ON/OFF, time clock or PIR) and proportional hierarchical maximum demand control from combined temperature and/or CO_2 sensors.

Central Extract Controlled System - Hotels or Apartments



Electronic Static Pressure (ESP) Control

Typical Central extract system using discreet in-line duct mounted dampers controlled by individual room mounted switching devices or proportional control sensors (MIN/MAX) within each toilet/bathroom to control individual extract zones. Fan speed control with electronic static pressure control (ESP) maintaining target pressure set point as individual zones open/close based on presence of occupants

Operation

The supply and extract ventilation unit shall be as Sentinel Totus D-ERV, as manufactured by Vent-Axia and shall be sized as indicated on the drawings and shall be in accordance with the particular specification.

Supply air to the room shall be pre-heated by the extract air via the integrated aluminium counterflow heat recovery cell. The D-ERV unit shall automatically vary the ventilation rate via EC/DC motors, as it receives signals from one of the optional interconnected sensors. When a signal is received, the fans shall either vary their speed proportionally or on a trickle and boost principle.

The unit shall have the facility to commission the supply and extract fans individually via in-built minimum and maximum speed adjustment, the fans themselves shall have infinitely variable speed control.

Sentinel Totus D-ERV - Unit specification

The unit shall be manufactured with an aluminium frame construction, and incorporate double skinned panels with a plastisol outer coating making the unit suitable for internal or external mounting. The double skinned panels shall incorporate 60kg/m^3 infill giving high thermal and acoustic performance.

The unit shall have a high efficiency aluminium counterflow heat exchanger, supply and extract filters, automatic summer bypass, integral minimum and maximum infinitely variable speed controls with facia mounted failure indication.

The unit shall have low energy, high efficiency EC/DC fan/motor assemblies with sealed for life bearings. The impellers shall be high efficiency backward curved centrifugal type.

The unit shall have a heat exchanger cell with a thermal efficiency of up to 90% when tested to EN 308. This shall be protected by G4 grade synthetic filters on supply and extract. Complete with a condensate drip tray, internal condensate pump and drain connection.

The unit shall incorporate 2 stage electric frost heaters to protect the cell from freezing under low ambient conditions. The unit shall be constructed with removable side panels allowing full maintenance access.

The removable panels shall provide access to the following:

- ✔ Supply or extract fan
- ✔ Supply and extract filter
- ✔ Heat exchanger
- ✔ Frost heater

Within a separate side access lockable hinged door section access shall be provided for wiring termination and set-up/commissioning. The backlit LCD user interface therein shall be removable for remote mounting if required.

Units shall be as manufactured by Vent-Axia Ltd.

Sentinel Totus D-ERV - Standard controls

All Sentinel Totus D-ERV units shall incorporate the following functions integrally mounted, pre-wired and factory fitted by the manufacturer: -

- ✔ Integral infinitely variable fan speed control on supply and extract.
- ✔ Integral min/max ventilation control/set point.
- ✔ Integral BMS interfaces – control and status indication
- ✔ Cooling and heating interlocks (summer/winter)
- ✔ 0-10V speed adjustment.
- ✔ Integral on/off or trickle boost function from remote switch, e.g. PIR occupancy detector.
- ✔ Automatic frost protection by in-built electric frost heaters.
- ✔ User settable night time purge function to purge the room automatically over night to reduce morning start up loads within the space during hot summer periods.
- ✔ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings.

Frost protection and control

The control for the in-built electric frost coils shall be 2 stage fully integrated and automatic and will ensure the energy recovery cell does not freeze up under low ambient conditions. The frost protection system will switch in each of the 2 stages as required when ambient temperature falls below 0° C.

Vent-Axia Sentinel Totus D-ERV

Features and Benefits

- 3 unit sizes covering 500-2000m³/h
- Sentinel demand ventilation control
- Low energy EC/DC motors
- Internal or external mounting IPX4
- Up to 90% energy recovery cell
- Independently Tested to EN 308
- Proporational or constant pressure control
- Performance tested to BS848 Parts 1 & 2
- Manufacture controlled to BS EN ISO 9001

Manufactured with an aluminium frame construction with double skinned panels fitted with 60kg/m³ thermal acoustic insulation. All external panels are plastisol coated making the unit suitable for internal or external applications (IPX4). An optional inlet cowl is available for roof mounting applications if required.

The casing includes an inclined inlet and bellmouth entry which directs the incoming air to the impeller with minimal turbulence. The result is better air management through the unit, less noise, higher efficiency and an increased performance.

The housing is designed to be as compact as possible for concealed false ceiling applications and Sentinel Totus D-ERV, Demand Energy Recovery casings incorporate side access panels for maintenance.

Impellers

All Sentinel Totus D-ERV units feature low energy, Class 1, EC/DC external rotor motor and backward curved impeller assemblies specifically chosen for performance and non-overloading characteristics. The assembly is dynamically balanced to DIN ISO 1940 Grade 6.3. Ball bearings are greased for life. Insulation is Class 'B' (from -25°C to +60°C). All models incorporate internal electronic overload protection and soft start function.

Filters

All Sentinel Totus D-ERV units are complete with G4 replaceable synthetic filters, somplete with filter change warning.

Electrical

Every Sentinel Totus D-ERV unit is fitted with integrated controls and a purpose designed common user interface controller incorporating a 16-character backlit alpha numerical x 2 line display with 4 button membrane keypad for fan status and commissioning set up. This can be removed and remotely fixed if required. The unit also incorporates a isolator that is suitable for fitting a locking device to prevent accidental operation.

Motors are single phase 230V +/- 10% / 50/60Hz / 1ph.
24V DC power is provided from the unit for powering the matched range of Sentinel Demand Ventilation switches and sensors.

Performance/Sound

Extensively tested to BS848 parts 1 & 2. Published dB(A) figures are free field sound pressure levels at 3m with spherical propagation at reference level of 2×10^{-5} Pa. The inlet/outlet sound power level spectra figures are dB with a reference of 10^{-12} watts.

Models

Sensor Control	Constant Pressure
Mini	Mini/CP
Midi	Midi/CP
Maxi	Maxi/CP



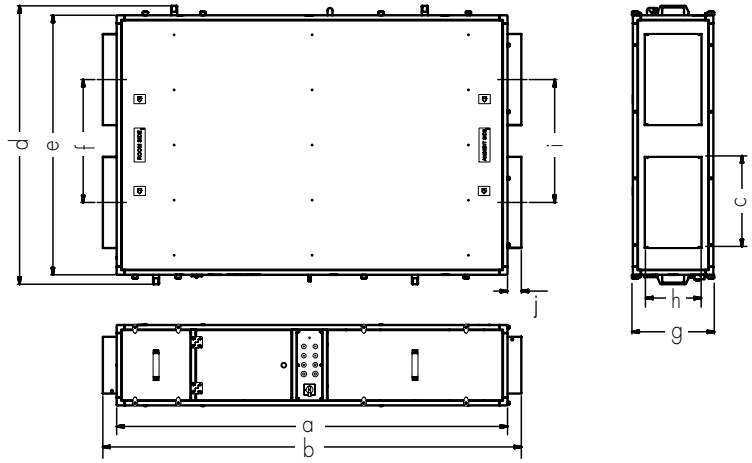

T: 0844 856 0591

Fan Dimensions (mm)

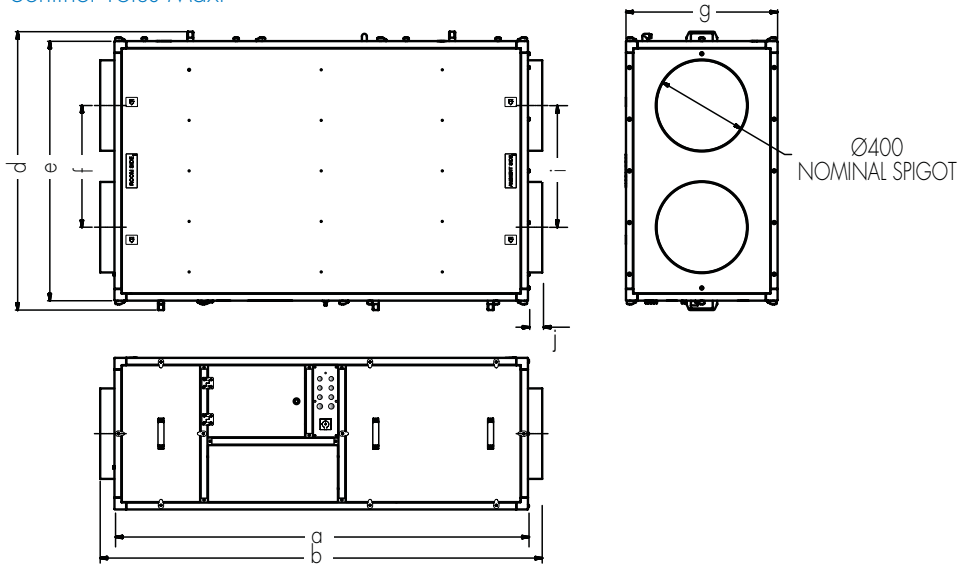
Dimensions in mm

Model	a	b	c	d	e	f	g	h	i
Mini/Midi	1700	1820	400	1212	1130	535	358	250	60
Maxi	1800	1924	-	1212	1130	530	660	-	60

Sentinel Totus Mini/ Midi

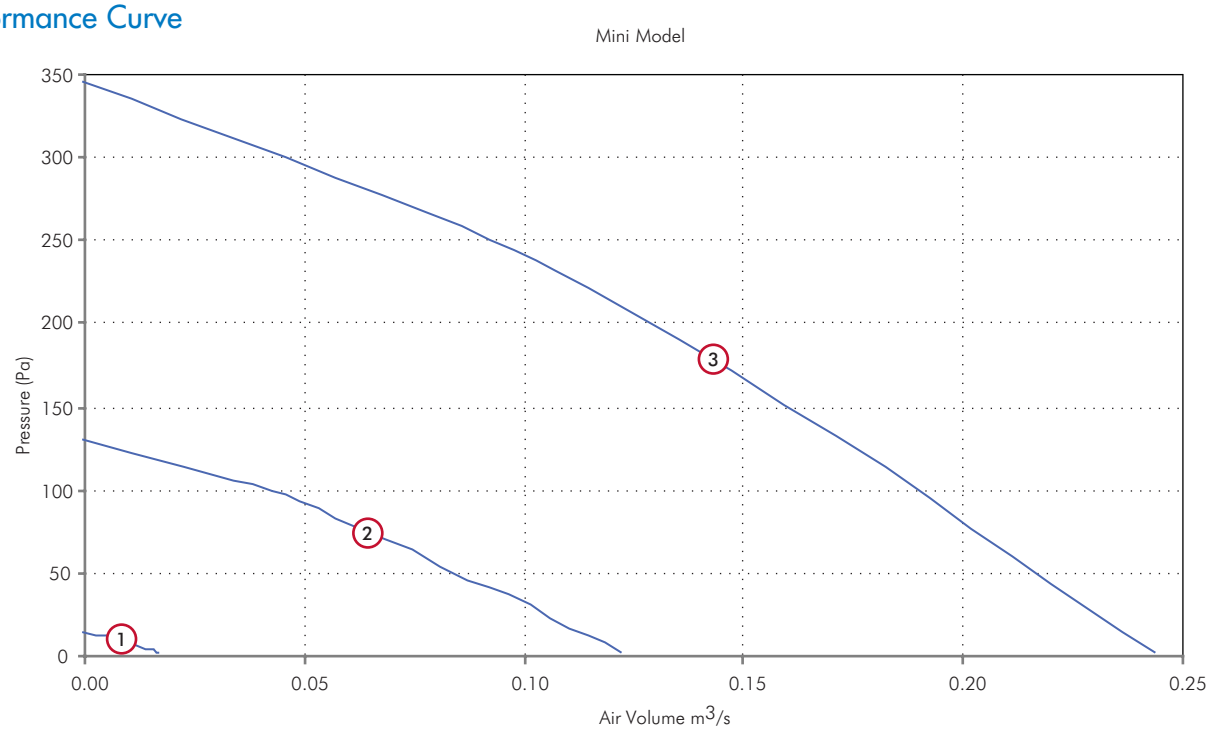


Sentinel Totus Maxi



Mini Model

Performance Curve



Performance Guide

		Airflow, m³/s @ Pa						Fans	Frost	Unit
Speed	Curve Ref.	0	50	100	150	200	250	F.L.C	Heater kW	F.L.C
100%	3	0.224	0.215	0.19	0.16	0.13	0.09	3	2	12A
SFP		1.25	1.42	1.6	1.9	2.34	3.38	3	2	12A
62%	2	0.1229	0.08	0.04				1.5	2	12A
SFP		0.79	1.21	2.42				1.5	2	12A
31%	1	0.018						0.5	2	12A
SFP		0.34						0.5	2	

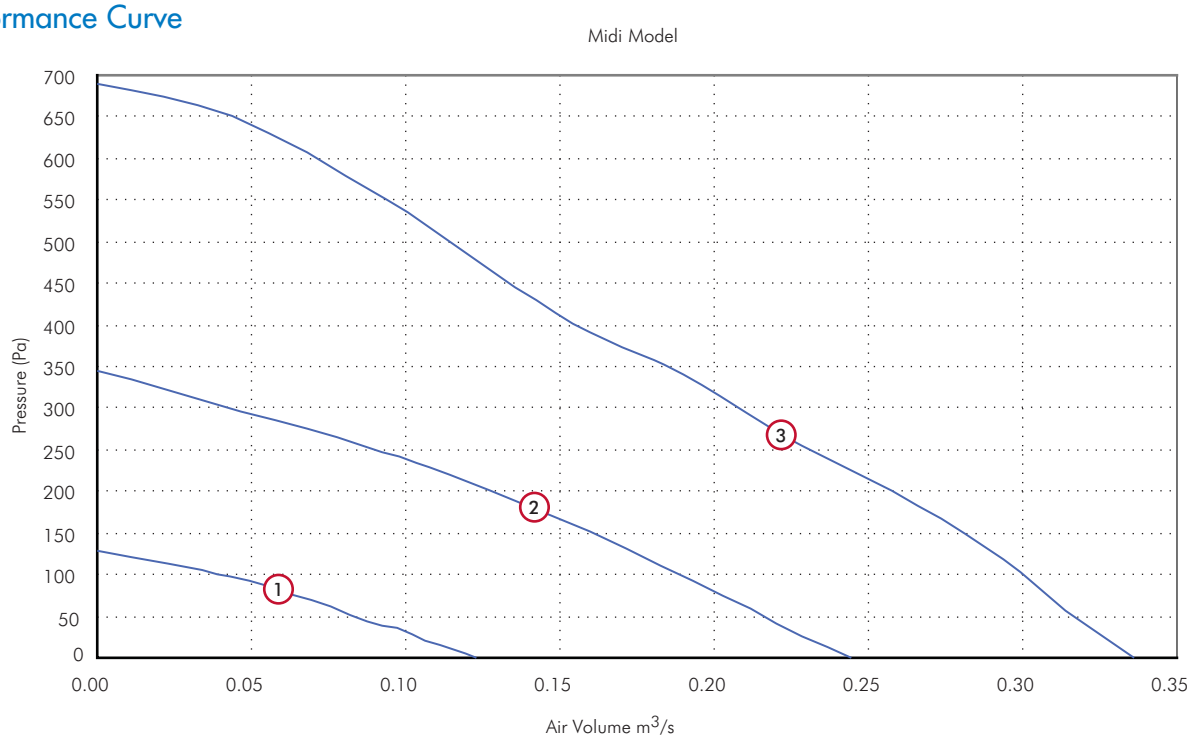
Sound Data

		Octave Band Frequency SWL								dB(A)
Speed	Test Mode	63	125	250	500	1k	2k	4k	8k	@3m
100%	Intake	61	75	67	64	61	59	55	51	35
100%	Supply	57	66	66	62	56	49	39	39	35
100%	Discharge	66	73	72	72	70	66	61	55	35
100%	Extract	57	68	63	59	53	46	37	38	35
62%	Intake	59	62	55	54	51	46	41	33	28
62%	Supply	51	58	53	49	45	38	32	38	28
62%	Discharge	59	66	61	60	58	54	48	39	28
62%	Extract	51	56	50	48	43	35	31	38	28
31%	Intake	45	44	44	32	27	24	23	29	19
31%	Supply	46	41	41	32	31	30	31	39	19
31%	Discharge	48	45	45	39	36	32	27	29	19
31%	Extract	44	41	40	31	31	30	31	38	19

T: 0844 856 0591

Midi Model

Performance Curve



Performance Guide

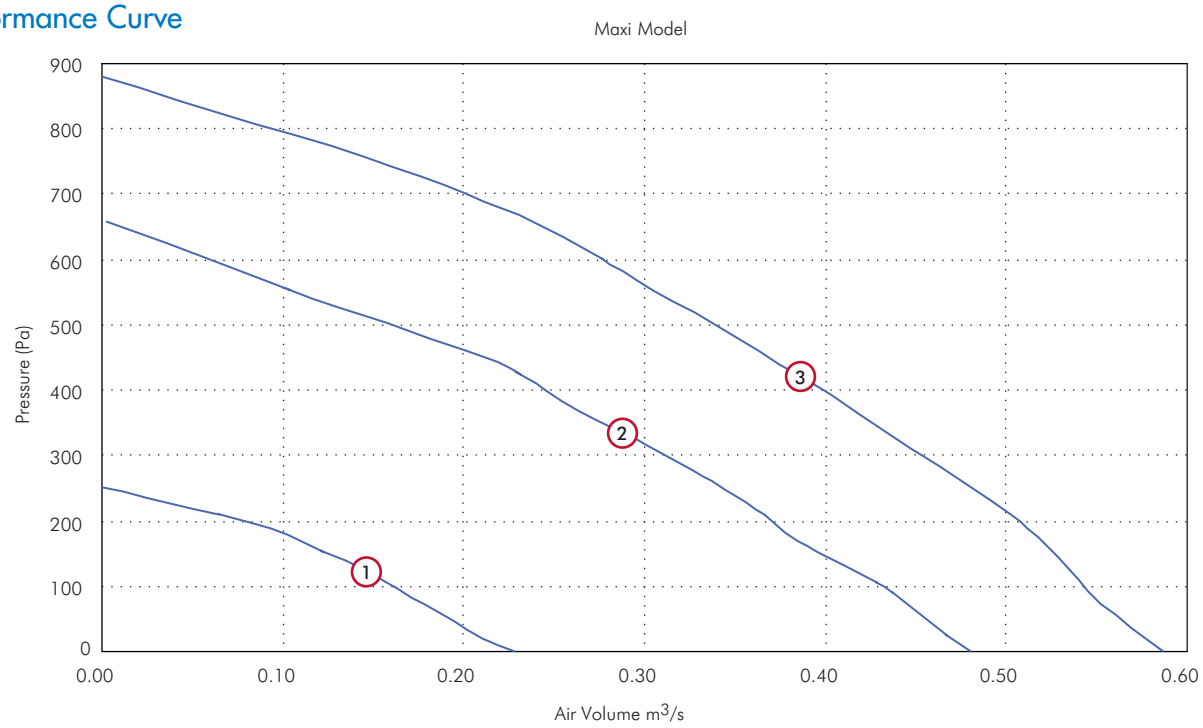
		Airflow, m³/s @ Pa									Fans	Frost
Speed	Curve Ref.	0	50	100	150	200	250	300	350	400	F.L.C	Heater kW
100%	3	0.336	0.325	0.3	0.275	0.26	0.235	0.21	0.185	0.158	3	2
SFP		1.75	1.81	1.96	2.14	2.26	2.5	2.8	3.18	3.72	3	2
80%	2	0.244	0.215	0.19	0.16	0.13	0.09				1.5	2
SFP		1.25	1.42	1.6	1.5	2.34	3.38				1.5	2
50%	1	0.123	0.08	0.04							0.5	2
SFP		0.79	1.21	2.42							0.5	2

Sound Data

		Octave Band Frequency SWL								dB(A)
Speed	Test Mode	63	125	250	500	1k	2k	4k	8k	@3m
100%	Intake	65	74	75	70	67	64	62	56	37
100%	Supply	60	64	73	66	61	54	45	42	37
100%	Discharge	70	75	80	77	75	72	68	61	37
100%	Extract	62	63	71	64	58	52	43	40	37
80%	Intake	61	75	67	64	61	59	55	51	35
80%	Supply	57	66	66	62	56	49	39	39	35
80%	Discharge	66	73	72	72	70	66	61	55	35
80%	Extract	57	68	63	59	53	46	37	38	35
50%	Intake	59	62	55	54	51	46	41	33	28
50%	Supply	51	58	53	49	45	38	32	38	28
50%	Discharge	59	66	61	60	58	54	48	39	28
50%	Extract	51	56	50	48	43	35	31	38	28
25%	Intake	45	44	44	32	27	24	23	29	19
25%	Supply	46	41	41	32	31	30	31	39	19
25%	Discharge	48	45	45	39	36	32	27	29	19
25%	Extract	44	41	40	31	31	30	31	38	19

Maxi Model

Performance Curve



Performance Guide

	Curve	Airflow, m³/s @ Pa													Fans	Frost
Speed	Ref.	0	50	100	150	200	250	300	350	400	450	500	550	600	F.L.C	Heater kW
100%	3	0.587	0.58	0.54	0.52	0.51	0.48	0.43	0.415	0.4	0.365	0.34	0.31	0.268	5	4
SFP		1.73	1.75	1.88	1.95	1.99	2.11	2.36	2.44	2.53	2.78	2.98	3.27	3.78	5	4
80%	2	0.48	0.46	0.43	0.4	0.38	0.345	0.315	0.28	0.24	0.22	0.16			3	4
SFP		1.31	1.37	1.46	1.57	1.66	1.82	3	2.25	2.62	2.86	3.93			3	4
50%	1	0.228	0.19	0.16	0.125	0.07									1	4
SFP		0.82	0.99	1.17	1.5	2.67										

Sound Data

		Octave Band Frequency SWL								dB(A)
Speed	Test Mode	63	125	250	500	1k	2k	4k	8k	@3m
100%	Intake	67	72	75	72	73	71	68	62	41
100%	Supply	62	65	75	66	65	61	53	46	41
100%	Discharge	67	70	83	72	75	73	70	65	41
100%	Extract	62	64	74	63	60	54	44	39	41
80%	Intake	64	71	79	70	69	68	65	58	40
80%	Supply	60	64	77	63	62	57	49	43	40
80%	Discharge	65	69	82	69	72	70	67	59	40
80%	Extract	59	63	75	60	57	51	42	38	40
50%	Intake	56	68	57	57	57	53	49	40	30
50%	Supply	52	66	57	51	50	44	35	31	30
50%	Discharge	56	64	61	56	59	57	50	41	30
50%	Extract	52	62	52	46	43	37	28	28	30
25%	Intake	48	47	40	37	35	29	23	29	20
25%	Supply	46	43	39	33	31	25	23	29	20
25%	Discharge	46	45	42	40	41	34	25	29	20
25%	Extract	48	41	37	31	26	23	23	29	20

T: 0844 856 0591

CO_2 + Temp Room Sensor *

HVAC temperature and carbon dioxide room sensor for proportional ventilation control. Sensor will monitor both CO_2 and temperature levels between the set points, the air flow rate following the higher of the 2 outputs.

24V DC SELV. 0 - 2000ppm CO_2 working range. 0 - 50°C working range. Auto-calibrating NDIR CO_2 absorption sensor. Dimensions: 100 x 84 x 25mm (H x W x D).

Stock Ref: 433257

CO_2 Duct Probe

Sensor monitors CO_2 level in extract ducts from conference areas, offices, theatres etc. In proportional control mode, air flow rate tracks the CO_2 level to improve indoor air quality.

24V DC SELV. 0 - 2000ppm CO_2 working range. Auto-calibrating NDIR absorption sensor. Adjustable probe length. MAX. IP Rating 65.

Stock Ref: 433259

Vent-Axia PIR *

A wall or ceiling mounted presence detector for use with Sentinel Totus D-ERV. Can be used in MIN - MAX mode or for direct damper control.

Fits any UK single gang mounting box. Adjustable timer overrun (5-25 minutes). Range of detection up to 10 metres. Designed to meet IP43. Ambient operating temperature range 0°C to +50°C. Supply voltage 24V DC SELV.

Stock Ref: 433162

Vent-Axia ThermoSwitch®

Automatically switches on fans on either a rise or fall in air temperature. Used for Trickle/ Boost operation. Setting range: +6°C to +30°C. IP20 rated. Sealed sensing mechanism. Mounting direct on surface only. Dimensions: 80 x 104 x 36mm (H x W x D). Volt free switch connection to Sentinel Totus D-ER, Demand Energy Recover.

Stock Ref: 563502B

Constant Pressure System Accessories

PIR Grille *

PIR grille is on extract grille with an integral flap damper. Suitable for bathrooms and WC's. The PIR function fully opens the damper when a person presence is detected. The opening time is fixed at 20 mins. Spigot size is 125mm.

12V AC SELV unit using the main transformer unit supplied. Integral PIR person presence sensor controlling damper. Auto-humidity control damper response at all times. 100° viewing angle. Temperature range 0 - 50°C. Dimensions: 158 x 150 x 35mm (H x W x D). MAX airflow 70m³/hr @100 Pa.

Stock Ref: 434184

Dampers *

Two types available:
a) MM type - opening shut/MIN to open/MAX controlled by switches and b) PC type - opening proportionally when controlled by sensors.

Duct sizes available: 100, 125, 150, 200, 250 and 315. Industry standard actuators.

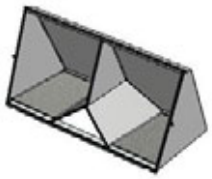
Typical ordering designation: DVD size MM or PC

Power Supply *

For those situations where a separate 24V DC SELV supply source is required to power duct dampers. 24W output capacity. See F & W for connection details.

Stock Ref: 433193

Inlet Cowl



For these situations where there is no ducted inlet or extract and the unit is roof mounted. Offers, weather protection to ensuring air paths do not recirculate.

Mini/Midi: 441205
Maxi: 441366

*** PLEASE NOTE: These sensors/controls are unique to Sentinel Totus D-ERV and CANNOT be used with any other product.**