CI/SfB

(57.7)

3rd Edition

High Efficiency MVHR & Cooker Hood Units

Lo-Carbon Sentinel Kinetic Range

Vent-Axia®

Lo-Carbon Sentinel Kinetic® Range Overview

Mechanical Ventilation with Heat Recovery

Features & Benefits

- Manufactured in the UK
- Building Regulations ADF and ADL compliant
- Recognised in SAP Appendix Q
- Specific Fan Power down to 0.4 W/l/s
- Up to 94% heat recovery
- Fully automatic Summer bypass
- Horizontal and/or vertical duct outlets
- Integrated digital controller for simple and accurate commissioning
- Lightweight for easy installation
- External condensate connection
- Plug and play controls; Humidistat, Ventwise, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer
- 0V to 10V proportional inputs
- Enthalpy heat recovery option

The Sentinel Kinetic Range Incorporates:

- A wholehouse heat recovery system with up to 94% energy efficiency
- An easily accessible heat recovery cube protected by two removable G3 filters
- Two Lo-Carbon energy saving EC/DC fans which ensure long life (typically over double the life of AC motors) and lowest possible energy use
- Fully insulated construction with built-in condensation drain
- Specifically designed for new build constructions with a high level of insulation

The Lo-Carbon Sentinel Kinetic meets the latest requirements of the Building Regulations ADF and ADL for wholehouse system ventilation: System 4 - Continuous mechanical supply and extract with heat recovery. The Lo-Carbon Sentinel Kinetic models have 3 fully adjustable speeds and a purge setting (maximum flow). Provided with the unit is a digital controller that can be used to preset the speeds to any required airflow within the performance range.

Integral Humidity Sensor

The integral humidity sensor (models with H suffix) increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

Optional M5 Supply Filters

Kinetic B, BH & Cooker Hoods Filter

Stock Ref
444200
Kinetic V Filter
Stock Ref
444199
Kinetic Plus Range Filter
Stock Ref
444201
For sensors see Accessories & Controllers section.

Sentinel Control

The Sentinel controller is the most advanced system available, providing Demand Control Ventilation (DCV), minimising energy consumption and noise levels, and optimising ventilation performance. Sentinel controlled units may be set to operate fully automatically or with varying levels of manual intervention.

Building Management System (BMS) Options
There are two levels of BMS available: Basic Output and full Electronic BMS.

Basic Output provides a 5 volt output from the LED terminals on the controller. This output occurs whenever a message appears in the digital display, for example; 'Check Filters' or a fault code. The output can also be converted to volt-free with the addition of an optional Opto-Coupler.

Electronic BMS: A full range of two-way digital signals are available through the RJ11 connector on the control board. The BMS system provider will translate this signal to extract the desired data. Contact Vent-Axia to discuss your specific requirements.

LED Alarm
MVHR units are often installed in lofts or other locations where they are difficult to monitor. The optional remote LED alarm illuminates when any message is visible in the MVHR unit display panel. The LED alarm can be installed in a convenient location within the dwelling allowing end users to see that the unit requires attention.

Control Inputs

Five volt-free pairs of switch terminals for sensor inputs allow boosting from a full range of Vent-Axia controllers – humidistats, PIR, timers.

Two terminals with 0-24V outputs allow 0V to 10V proportional control by sophisticated controllers such as CO_2 sensors and proportional humidistats.

The optional Ventwise controller senses temperature rise in a bath/shower hot water supply and/or current in a cooker/hob electrical circuit to activate boost, ensuring additional ventilation when needed.

Switched-live for boosting via light switches (220-240 V AC) or manual Normal/Boost switches. This connection has the advantage of Delay-On and Delay-Off facility. Delay-On enables you to prevent the Boost airflow between 0 and 10 minutes, after a light switch has been activated. Delay-Off allows the Boost airflow to continue after a light switch is turned off to ensure effective clearance of humidity. This timer is adjustable between 0 and 25 minutes.

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Sentinel

The units can be boosted incrementally via the on-board controller or the Wired Remote Controller: One press = 30 minutes, two presses = 60 minutes, three presses = continuous.

Optional Controls

LED Alarm with 15 metre cable
Stock Ref
448356

Wired Remote Controller with 15 metre cable
Stock Ref
443283

Wireless Enable Kit (includes one switch)
Stock Ref
441865

Additional Wireless Boost Switch (max 3 switches)
Stock Ref
437827

Ventwise Controller (also requires sensors, see Accessories & Controllers section)
Stock Ref
441780

Purge setting

The unit can be set to maximum flow (100%) by pressing and holding the Boost button on the unit itself or optional wired controller for 5 seconds. Purge will continue for two hours unless cancelled by pressing the Boost button again.

Summer Bypass

An internal damper operates when the external temperature is below the internal temperature, and the internal temperature is too high.

The bypass opens and allows the cooler outside air to help cool the dwelling.

Normal mode: Fans run on Normal speed with bypass open until the internal dwelling temperature falls below the set 'Indoor' (maximum desired) temperature.

Evening Purge mode: The fans run on Boost speed until the internal temperature falls below the set 'Indoor' temperature. If, after five hours the internal temperature is still above the set 'Indoor' temperature, the unit will switch down to normal speed for the remainder of the 'bypass open' period.

Night-time Purge mode: As Evening Purge, except that the unit will continue on Boost speed until the internal air temperature reaches the 'Outdoor' temperature set point (Default 14°C). This mode gives pre-cooling of the dwelling for the following day.

In Evening and Night Time Purge modes, the user can turn off the boost function by pressing the Boost button.

Frost Protection

In order to prevent frost forming inside the unit in winter conditions, the Kinetic range employs a sophisticated frost protection strategy that modifies the airflows ensuring heat recovery continues down to -20°C. Below this temperature, the units will operate as 'extract only' fans. If balanced ventilation is required at low temperatures, a duct pre-heater should be used.

System Cooker Hood Range

System canopy hoods are a motorless hood with extract being provided by the MVHR unit. When the Boost button on the canopy is activated, the MVHR unit goes to boost setting and the summer bypass opens preventing cooking by-products entering the heat exchanger cell.

Wired Remote Controller

Standard with horizontal units, optional extra with vertical units. Supplied with 15 metres of cable (max length), the Wired Remote Controller duplicates all the features of the on-board control panel, allowing commissioning, diagnosis and user control. Flush mounting, suitable for a single gang pattress box 16mm deep.

Lo-Carbon
Kinetic® Range Overview
Mechanical Ventilation with Heat Recovery

Model Range Overview

	Sentinel Kinetic Range									Kinetic E Range	
											
Model Ranges	Lo-Carbon Sentinel Kinetic Plus	Lo-Carbon Sentinel Kinetic Cooker Hood		Lo-Carbon Sentinel Kinetic			Lo-Carbon Sentinel Kinetic Horizontal			Lo-Carbon Kinetic Plus E	Lo-Carbon Kinetic E
Models	Plus	C	CH	V	B	BH	200ZP/ZPH	300Z/ZH	200Z/ZH	Plus E	E
Auto Summer Bypass	✓	✓	✓		✓	✓	✓	✓	✓		
Easy Access Filters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Very Low Noise Levels	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Integral Cooker Hood		✓	✓								
Built-In Humidistat	✓		✓			✓	✓				
Kitchen Cupboard Inst'n				✓	✓	✓					✓
Max Airflow @ 100Pa	117	68	68	68	68	68	34	81	50	117	36
Frost Protection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Delay-On	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wired Remote Control	○	○	○	○	○	○	✓	✓	✓		
Wireless Boost	○	○	○	○	○	○	○	○	○		
Clean Filter Indicator (Time)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fault Code Indicator	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Potentiometer Control										✓	✓
Sentinel Control	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Switched Live	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No Volt Contact	✓	✓	✓	✓	✓	✓	✓	✓	✓		
0V - 10V Proportional Control	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BMS Input/Output	✓1	✓1	✓1	✓1	✓1	✓1	✓1	✓1	✓1		
Lightweight	✓			✓	✓	✓				✓	✓
External Condensate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Horizontal Duct Option	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Horizontal (Slab) Installation							✓	✓	✓		
Left/Right Orientation	✓	✓	✓	✓	✓	✓				✓	✓
Ventwise Control	✓	✓	✓	✓	✓	✓	✓	✓	✓		
PIN Number Lock	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Running Time Indicator	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Pre-Heater Controller	○	○	○	○	○	○	○	○	○		
Enthalpy Heater Exchanger	○				○	○					
Mounting Options	Wall Surface	Wall		Wall Surface			Slab			Wall Surface	Wall Surface

O - Denote Optional, 1- Seek technical advice from Vent-Axia

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Sentinel Demand Control

The Lo-Carbon Sentinel Kinetic Range can be used with a wide range of optional Vent-Axia controllers and sensors, ranging from integral humidistats, through to wireless controllers and wired remote sensors.

Wired Remote Controller
- Standard with horizontal units, optional extra with vertical units
- Supplied with 15 metres of cable (max length)
- Duplicates all the features of the on-board control panel, allowing easy commissioning, diagnosis and user control
- Flush mounting, suitable for a single gang pattress box 16mm deep

Stock Ref
443283

Wireless Transmitter Controller Receiver Kit
- Manual boost
- Adjustable overrun timer
- Easy wireless installation
- Reduces installation time
- Future proof - add more controllers at any time

Stock Ref
441865

Wireless Transmitter Controller
- Additional controller for 441865
- A maximum of 4 controllers can be used per system
- Can be connected to other accessories (e.g. Humidistat) to send a boost signal wirelessly

Stock Ref
437827

Ambient Response Humidity Sensor
- Pullcord override and neon indicator
- Changeover relay switch
- Operating range: 30% - 90%RH
- Ambient operating temp. 5°C to 40°C
- 220-240V AC
- Will fit single gang box for surface mounting

Stock Ref
563550

Ecotronic Humidity Sensor
- Set Point adjustable
- Maximum switching load 1 amp inductive
- Pullcord override indicator
- Ambient operating temp. 0°C to 40°C
- Supply voltage 220-240V

Stock Ref
563532

Normal Boost Switch
- A single gang switch to boost from low to high speeds on heat recovery systems
- 85 x 85 x 10mm (H x W x D)

Stock Ref
455213

Isolator Relay Controller
- Allows fan unit to be isolated from other mains circuit when used with TIM2 trickle/ boost switch or light switch control
- 87 x 87 x 33 (H x W x D)

Stock Ref
442030

Ventwise
- Automatically boosts fan when temperature of the supply pipe to a shower or bath increases
- Automatically boosts fan when electric hob is switched on
- Can be used in conjunction with manual override input
- Adjustable overrun timer
- 3 sensor inputs

Stock Ref
441780

Momentary Push Switch
- Compatible with Sentinel Kinetic range, the momentary switch boosts the unit for 30 minutes
- 85 x 85 x 10mm (H x W x D)

Stock Ref
448929

Normal Boost Switch with Light Indicator
- Single gang switch with LED illumination when in the Boost position
- 85 x 85 x 10mm (H x W x D)

Stock Ref
449060

Normal Boost Switch - Stainless Steel
- A single gang switch to operate normal/ boost functions on MVHR systems
- Brushed stainless steel finish
- 90 x 90 x 18 (H x W x D)

Stock Ref
437320

Visonex PIR Sensor
- Fits any UK single gang mounting box
- Adjustable timer overrun (5-25 mins)
- Range of detection up to 10 metres
- Designed to meet IP43
- Ambient operating temp. range 0°C to 50°C
- 87 x 87 x 33 (H x W x D)

Stock Ref
459623

CO_2 + Temp Room Sensor
- 240V DC
- 0 - 2000ppm CO_2 working range
- 0 - 50°C working range
- Auto-calibrating NDIR CO22
- Thin film platinum temperature sensor for high accuracy

Stock Ref
433257

LED Indicator
- Compatible with the Sentinel Kinetic range, the LED indicator illuminates when the MVHR unit requires a filter check or if the unit has a fault
- Supplied with 15 metres of cable
- 85 x 85 x 10mm (H x W x D)

Stock Ref
448356

Lo-Carbon
Sentinel Kinetic®
MVHR Units

Features & Benefits

- Recognised in SAP Appendix Q
- Ultra quiet
- Lightweight for easier installation
- Horizontal duct option for space-saving installations
- Fits within a 290mm deep kitchen cupboard
- Integrated digital controller for simple and accurate commissioning
- Plug and play controls; Humidistat, Ventwise, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer

Easy Installation

The Sentinel Kinetic models can be mounted vertically in a roof space, hallway cupboard or kitchen or within a kitchen cupboard. When mounted in an unheated area ducting should be insulated. Ducting can be attached to the unit horizontally, vertically or both. Minimum internal depth of kitchen cupboard: V, B & BH models 290mm.

Left (L) or right (R) hand installation. The unit is supplied with duct spigots to outside on the right hand side. These can be reversed on site by simply removing the control panel, rotating the unit 180 degrees and re-attaching the control panel.

Spigot Options

The combination of spigot options allows installation in confined locations. If vertical and horizontal connection is required on the same outlet/inlet, additional spigots can be supplied.

The condensate drain can be taken out through the back, side or bottom of the unit. Using the fittings supplied, the final condensate connection is made outside the unit and can be completed after installation.

Integral Humidity Sensor

The integral humidity sensor increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

Models

Model	Stock Ref
Kinetic V	438342
(non-summer bypass)	
Kinetic B Right	438222
Kinetic B Left	438222L
(with summer bypass)	
Kinetic BH Right	443319
Kinetic BH Left	443319L
(with summer bypass & humidity sensor)	

B & BH models available in left hand or right hand configurations (L).

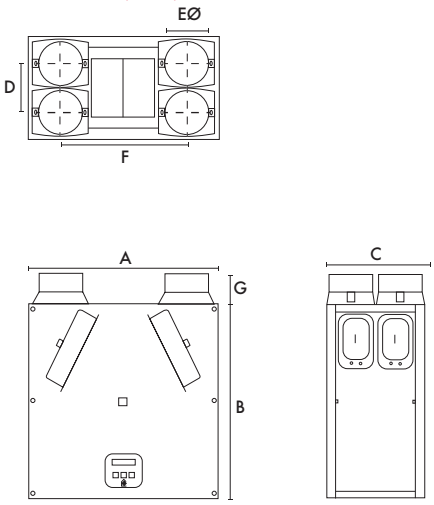
Accessories

Model	Stock Ref
Wired Remote Controller	443283
Wireless Enable Kit	441865
Wireless Transmitter	437827
Controller	
Ventwise Controller	441780
LED alarm with 15m cable	448356

Model B & BH	Stock Ref
Kinetic Spare Filters 2 pk	441774
M5 Pollen Filter	444200

Model V	Stock Ref
Kinetic Spare Filter 2 pk	442356
M5 Pollen Filter	444199

Dimensions (mm)



A	B	C	D	EØ	F	G
550	550	285	140	125	360	90

Weight: 15kg

SAP Appendix Q Test Results (Kinetic V)

	Thermal Efficiency %	SFP (W/l/s)
K+1	90	0.60
K+2	90	0.59
K+3	90	0.68
K+4	89	0.79
K+5	90	0.97

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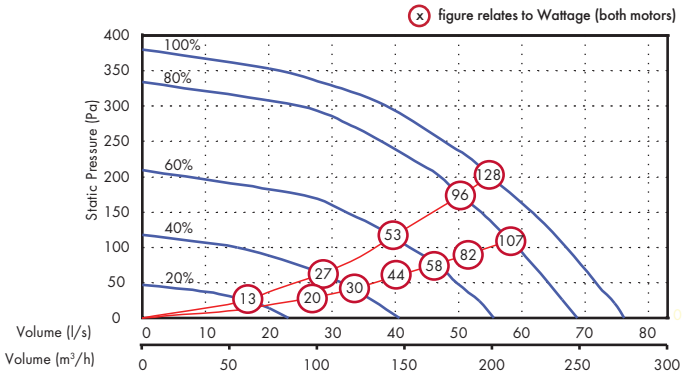
Vent-Axia®

MVHR Units

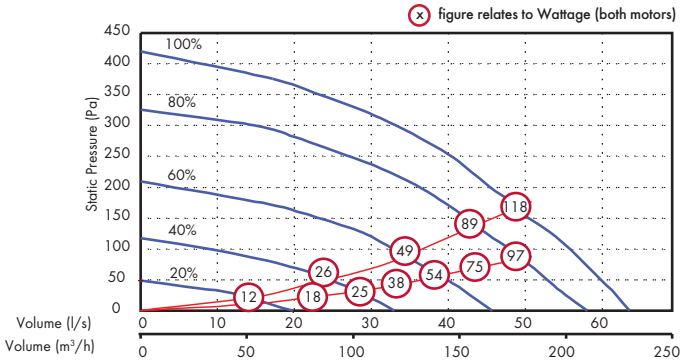
Sentinel

Performance

Fan speeds are fully adjustable within the performance range.



Example system curves - vertical spigots



Example system curves - horizontal spigots

Sound Data

		Octave band, Hz, dB SWL							
Flow l/s	Test mode	63	125	250	500	1K	4K	8K	SPL dB(A) @ 3m
10	Supply	47.8	40.2	38	31.1	28.2	23.6	30.9	21.4
	Extract	47	38.7	36	29.9	25	23.3	30.8	20.6
	Breakout	43.6	36.2	37.4	30.9	27.4	24.2	31.4	18.6
20	Supply	54	46.6	50.2	44.5	44.4	28.8	31.9	31.2
	Extract	46.8	40.5	34.6	34.2	34.6	23.7	30.3	22.9
	Breakout	45.9	39.9	40.6	35.7	33.5	25.3	31.2	21.3
30	Supply	58.1	54.5	57.6	52.2	51.7	38.6	35.8	38.5
	Extract	47.6	46.2	38.7	41.3	42.8	26.4	30.5	28.4
	Breakout	45.2	42.4	48.2	40.8	37.7	30	31.1	25.2
40	Supply	65.2	58.4	62.3	58	56.5	44.1	41.4	43.6
	Extract	53.5	53	44	47.7	48.1	31.5	31.5	33.5
	Breakout	50.9	47.6	47.4	48.1	42.5	36.3	34.4	29.3
50	Supply	66.4	63.2	66.3	62.5	61.7	50	47.8	48.3
	Extract	64.2	55.2	48	50.9	52.1	35.9	35	37.2
	Breakout	55	51	51.3	51.6	46.9	42	38.3	33.2

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Consultant's Specification

Operation

The supply and extract ventilation unit shall be a Sentinel Kinetic 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 composite plastic counterflow heat recovery cell. The Sentinel Kinetic 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, or alternative wired remote control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a reversible core to allow for left or right hand mounting.

The unit shall have a high efficiency composite plastic counterflow heat exchanger, supply and extract filters, automatic summer bypass, (B/BH) 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 forward curved centrifugal type.

The unit shall have a heat exchanger cell with a thermal efficiency of up to 92% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

Access shall be provided for wiring termination and setup/commissioning. The backlit LCD user interface therein shall be removable for remote mounting if required.

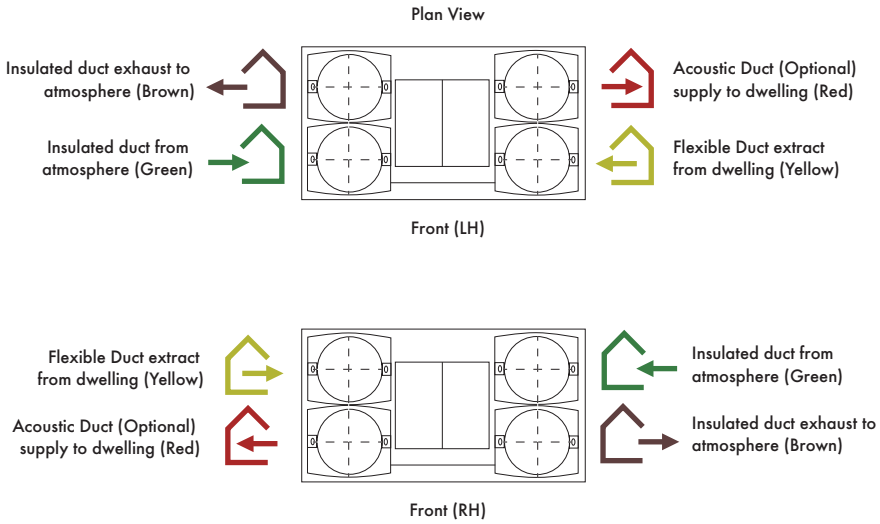
Units shall be as manufactured by Vent-Axia Ltd.

Standard controls

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

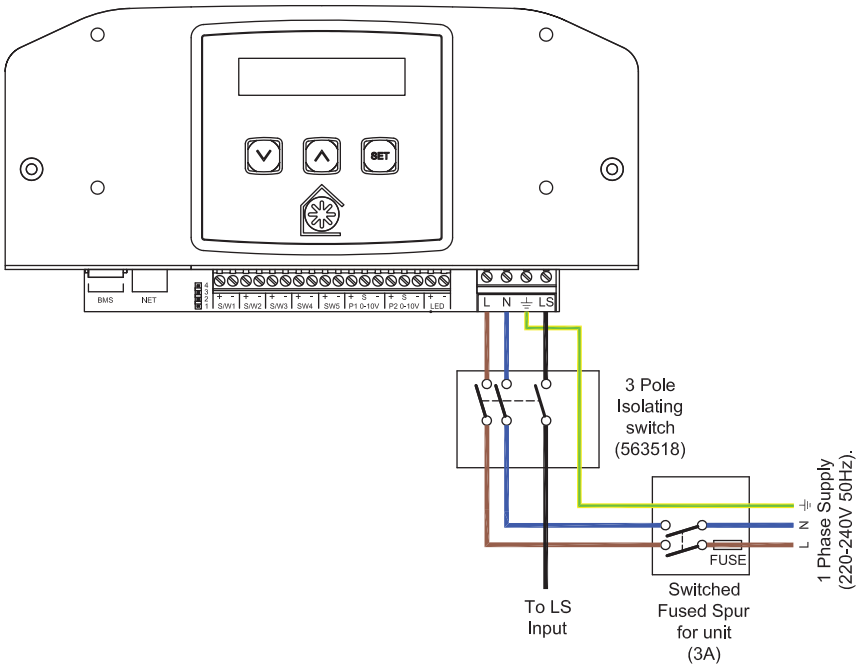
- ✓ Integral infinitely variable fan speed control on supply and extract
- ✓ Integral min/max ventilation control/set point
- ✓ Integral BMS interfaces – control and status indication
- ✓ Heating interlocks
- ✓ 0-10V proportional speed adjustment
- ✓ Volt free contacts
- ✓ 24V sensor supply
- ✓ Integral on/off or trickle boost function from remote switch e.g. PIR occupancy detector
- ✓ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings
- ✓ Fully automatic summer bypass
- ✓ Switched Live input with adjustable 'delay-on' feature
- ✓ Fan failure or component failure indicated via individual fault code display
- ✓ Running time counter
- ✓ Control panel PIN number lock
- ✓ Automatic frost protection effective to -20°C
- ✓ Tool free filter access
- ✓ The unit shall incorporate ('H' models) an integral humidity sensor with the following features:
  - Ambient Response; Raises the humidity trigger point as dwelling temperature reduces
  - Rapid Response; Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached
  - Proportional Response; Incrementally increases the fan speed to reduce noise and reduce energy consumption

Airflow Direction

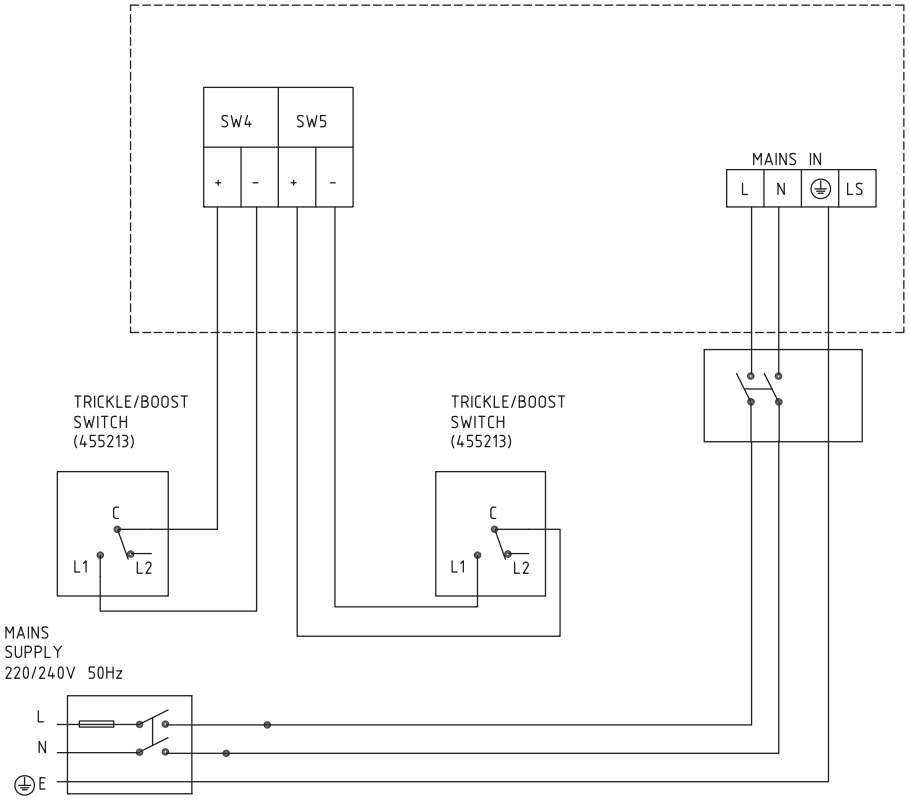


Electrical Connection

Please note: Electrical connection should be carried out by an appropriately qualified person and in accordance with current wiring regulations.



Trickle to Boost by Trickle/Boost switch



Lo-Carbon
Sentinel Kinetic® Plus
MVHR Unit

Features & Benefits

- Recognised in SAP Appendix Q
- Ultra quiet
- Horizontal duct option for space-saving installations
- High airflow, ideal for student accommodation clusters
- Unique folding filter for removal when access is restricted
- Integrated digital controller for simple and accurate commissioning
- Lightweight for easy installation
- Plug and play controls; Humidistat, Ventwise, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer
- Summer bypass and frost protection

Increased Performance

The Sentinel Kinetic Plus benefits from the latest high efficiency, backward curved impeller design, ensuring the lowest possible energy consumption, ultra quiet operation and an exceptional performance range covering small one bed apartments to the largest of houses.

Care Homes & Student Accommodation

The Sentinel Kinetic Plus is ideal for larger homes and multiple occupancy units such as care homes and student accommodation. Capable of 400m³/hr at 150Pa, the unit can extract from up to ten bathrooms and a communal kitchen while still achieving almost 90% heat recovery. The fully automatic capability of the Kinetic range means that adequate ventilation is always achieved.

The Kinetic's BMS capability is also ideal for those commercial applications where landlords or property managers want to monitor and optimise building performance and maintenance. The Kinetic BMS can provide status information and its self diagnostics can report if any fault is found.

Spigot Options

Spigots may be re-positioned to give horizontal connection or a combination of vertical and horizontal connection.

Optional 180mm/200mm spigots can simplify connection in commercial installations where larger diameter duct work has been used.

Quick Change Filter

As many systems are placed within cupboards the unique filter design folds as you remove it to ensure easy access in restricted spaces.

Integral Humidity Sensor

The integral humidity sensor increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

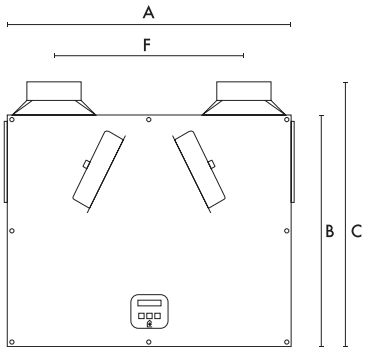
Models

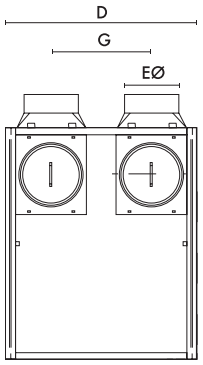
	Stock Ref
Kinetic Plus B Right	443028
Kinetic Plus B Left	443028L

Accessories

Model	Stock Ref
Wired Remote Controller	443283
Wireless Enable Kit	441865
Wireless Transmitter Controller	437827
Ventwise Controller	441780
LED Alarm with 15m cable	448356
Opto-coupler For volt-free bms connection	447340
Kinetic Spare Filters 2 pk.	443351
M5 Pollen Filter	444201
180mm/200mm Spigot Kit (One per pack)	446523

Dimensions (mm)





A	B	C	D	EØ	F	G
785	635	722	550	150	520	275

Weight: 24kg

SAP Appendix Q Test Results

	Thermal Efficiency %	SFP (W/l/s)
K+1	91	0.51
K+2	91	0.40
K+3	90	0.41
K+4	90	0.45
K+5	90	0.53
K+6	90	0.60
K+7	90	0.70

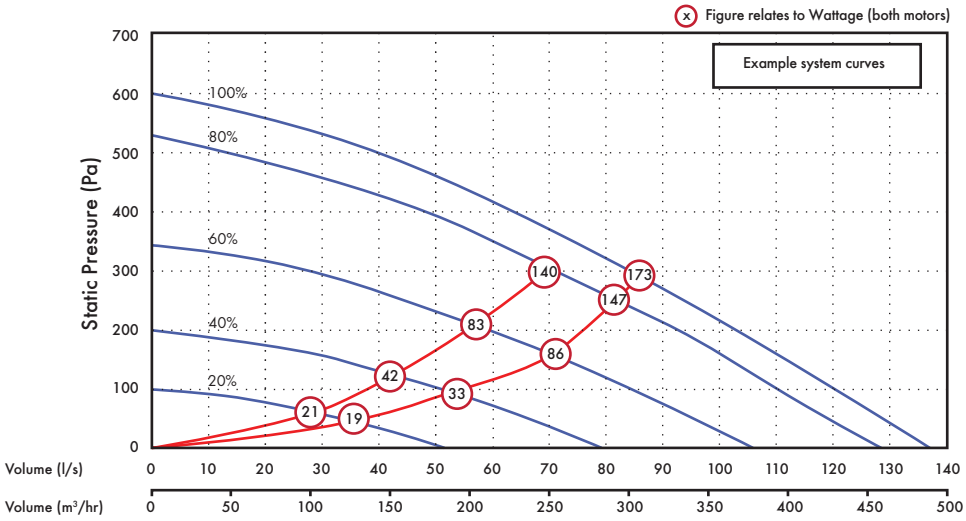
T: 0844 856 0590

Sentinel

BEAB Approved

Performance

Fan speeds are fully adjustable within the performance range.



Sound Data

			Octave band, Hz, dB SWL								SPL dB(A)
Flow l/s	Unit setting	Test mode	63	125	250	500	1k	2k	4k	8k	at 3m
50	20%	Supply	46.5	54.3	46.4	44.8	36.2	28.5	24.5	31.2	28.5
		Extract	46	52.2	42.3	38.7	27.6	24.2	24	31.7	25
		Breakout	48.5	42.6	43.3	38.9	35.8	29.3	23.8	30.7	22.8
78	40%	Supply	50.3	59.1	54.5	56.5	47	39.9	26.3	31.7	38
		Extract	46.8	51.6	47.8	44.4	32.7	27.4	24.4	31.7	28
		Breakout	48.4	51.2	53.4	46	41	34.6	25	30.3	28.5
104	60%	Supply	52.4	57.2	60.4	60.9	55.8	50.3	33.1	33.9	43.6
		Extract	50	49.8	56.8	52.4	40.2	35.9	33.4	39.8	35.2
		Breakout	55	49.6	59.7	54.5	46.9	39.9	33.6	39.2	34.9
127	80%	Supply	54.9	60.7	67.4	66.6	61.8	56	39.6	37.7	49.5
		Extract	50.4	52	61.2	56.6	45.1	39.6	34.2	40.2	39.1
		Breakout	53.5	53.4	60.8	59.1	53	45.3	36	40.1	38.7
137	100%	Supply	54.7	61.7	70.5	69.9	62.7	57.5	42.1	38.3	52
		Extract	54.4	55.1	65.8	57.5	46.9	40.6	33.7	40	41.8
		Breakout	56.6	54.6	60.5	60.7	54.7	45.9	36.5	39.6	40

Consultants Specification

Operation

The supply and extract ventilation unit shall be as Sentinel Kinetic Plus 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 composite plastic counterflow heat recovery cell. The Sentinel Kinetic Plus 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, or alternative wired remote control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a reversible core to allow for left or right hand mounting.

The unit shall have a high efficiency composite plastic 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 92% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

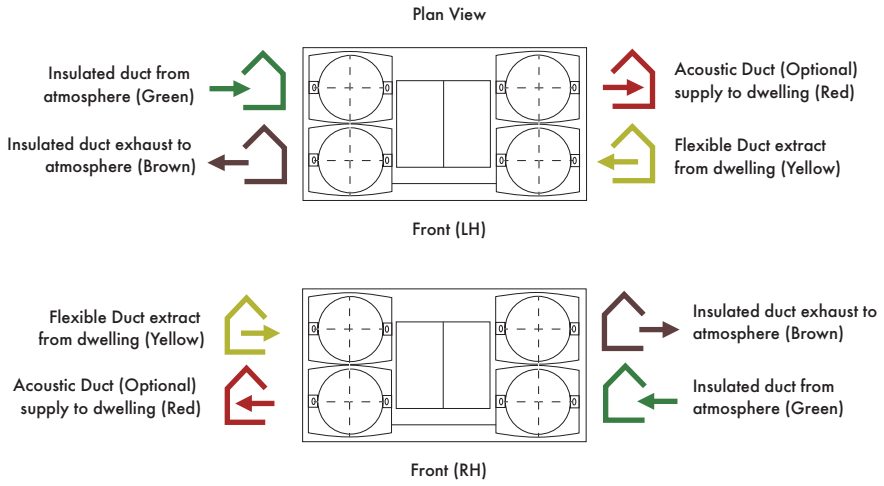
Access shall be provided for wiring termination and setup/commissioning. The backlit LCD user interface therein may be duplicated for remote mounting if required. Units shall be as manufactured by Vent-Axia Ltd.

Standard controls

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

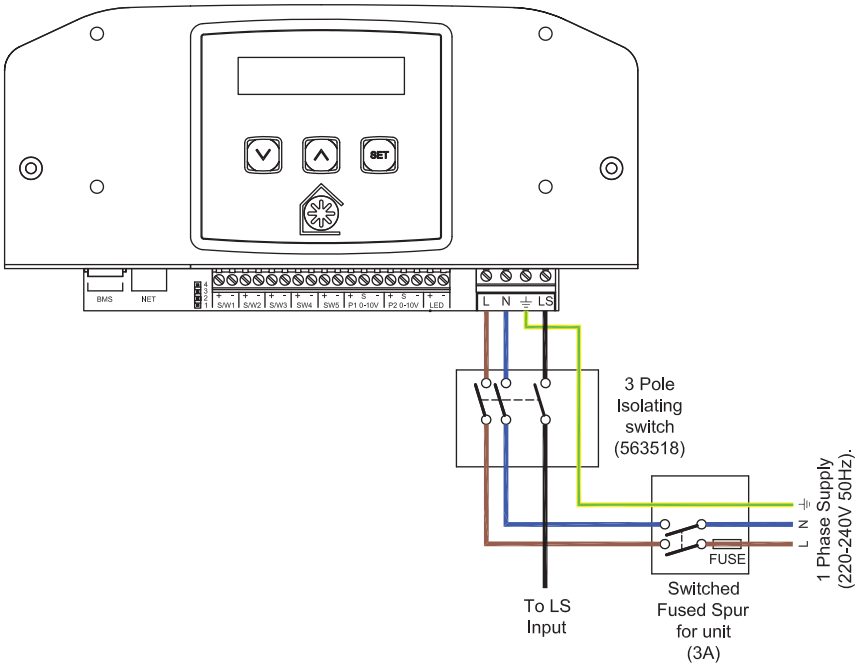
- ✓ Integral infinitely variable fan speed control on supply and extract
- ✓ Integral min/max ventilation control/set point
- ✓ Integral BMS input/output interfaces – control and status indication
- ✓ Heating interlocks
- ✓ 0-10V proportional speed adjustment
- ✓ Volt free contacts
- ✓ 24V sensor supply
- ✓ Integral on/off or trickle boost function from remote switch, e.g. PIR occupancy detector
- ✓ Fully automatic summer bypass
- ✓ Switched Live input with adjustable 'delay-on' feature
- ✓ Fan failure or component failure indicated via individual fault code display
- ✓ Running time counter
- ✓ Control panel PIN number lock
- ✓ Automatic frost protection effective to -20°C
- ✓ The unit shall incorporate an integral humidity sensor with the following features:
  - Ambient Response; Raises the humidity trigger point as dwelling temperature reduces
  - Rapid Response: Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached
  - Proportional Response; Incrementally increases the fan speed to reduce noise and reduce energy consumption
- ✓ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings.
- ✓ Tool free filter access

Airflow Direction

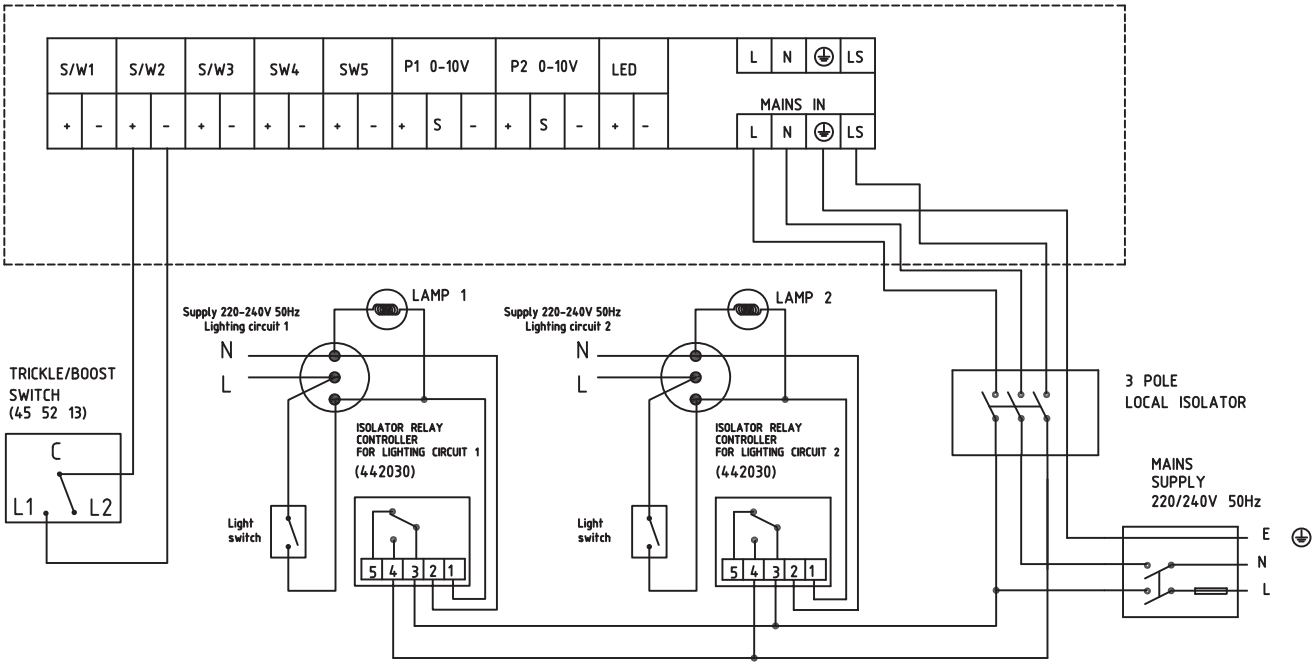


Electrical Connection

Please note: Electrical connection should be carried out by an appropriately qualified person and in accordance with current wiring regulations.



Trickle to Boost by two lighting circuits or Trickle/Boost switch



Lo-Carbon
Sentinel Kinetic® Cooker Hood
MVHR Units

Features & Benefits

- Recognised in SAP Appendix Q
- Includes Cooker Hood Canopy
- Ultra quiet
- Horizontal duct option for space-saving installations
- Fits within a 600mm wide aperture (300mm deep)
- Integrated digital controller for simple and accurate commissioning
- Plug and play controls; Humidistat, Ventwise, Wireless Remote
- BMS connectivity
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer
- Summer bypass and frost protection

Easy Installation

Ducting can be attached to the unit horizontally, vertically or both. Minimum internal depth of kitchen cupboard: 300mm.

Horizontal and vertical spigots: The combination of spigot options allows installation in confined locations. If vertical and horizontal connection are required on the same outlet/inlet, additional spigots can be supplied.

The condensate connection can be taken through the rear of the unit or through the side of the unit into an adjacent cupboard prior to connection into pre-installed domestic waste water system.

Cooker Hood Unit

The Sentinel Kinetic Cooker Hood is designed to fit in a 600mm aperture above a hob. The telescopic hood incorporates two flat removable metal grease filters, low energy light bulbs and is available with a White or Brushed Aluminium front trim.

The hood contains an integral fire damper in accordance with BRE Digest 398 and is connected to the heat recovery unit by a galvanised steel duct with access for cleaning. When the hood is opened, the heat recovery unit goes to boost speed and the summer bypass automatically opens to prevent cooking by-products entering the heat recovery cell. As an additional safety feature, the duct also contains a thermal cut-out fuse which turns off the MVHR unit in the event of excessive temperature in the airway. Cooker Hood units cannot be handed on-site and must be purchased as left hand (L) or right hand (R) models.

Models

Lo-Carbon Sentinel Kinetic with summer bypass and humidity sensor.

Model	Stock Ref
Kinetic CWH L (with White Cooker Hood)	446756
Kinetic CSH L (with Brushed Aluminium Cooker Hood)	446757
Kinetic CWH R (with White Cooker Hood)	446758
Kinetic CSH R (with Brushed Aluminium Cooker Hood)	446759

Lo-Carbon Sentinel Kinetic with summer bypass.

Model	Stock Ref
Kinetic CW L (with White Cooker Hood)	441483
Kinetic CS L (with Brushed Aluminium Cooker Hood)	441484
Kinetic CW R (with White Cooker Hood)	441485
Kinetic CS R (with Brushed Aluminium Cooker Hood)	441486

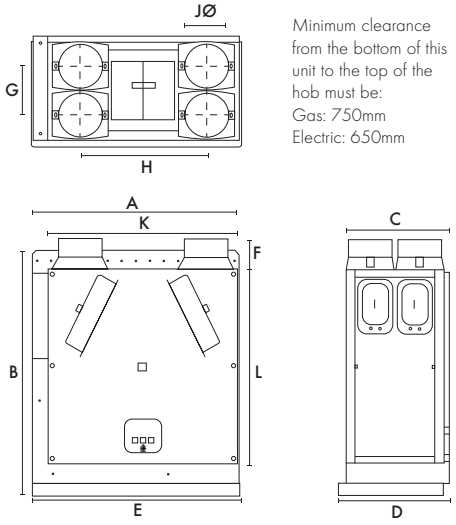
Integral Humidity Sensor

The integral humidity (models with H suffix) sensor increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature.

Accessories

Model	Stock Ref
Wired Remote Controller	443283
Wireless Enable Kit	441865
Wireless Transmitter Controller	437827
Ventwise Controller	441780
LED Alarm with 15m cable	448356
Opto-coupler	447340
For volt-free bms connection	
Pre-Heater Controller	407198
Kinetic Spare Filters 2 pk.	441774
M5 Pollen Filter	444200

Dimensions (mm)



Minimum clearance from the bottom of this unit to the top of the hob must be:
Gas: 750mm
Electric: 650mm

Weight: 27kg

A	B	C	D	E	F
590	710	295	316	598	90

G	H	JØ	K	L
140	360	125	550	550

SAP Appendix Q Test Results

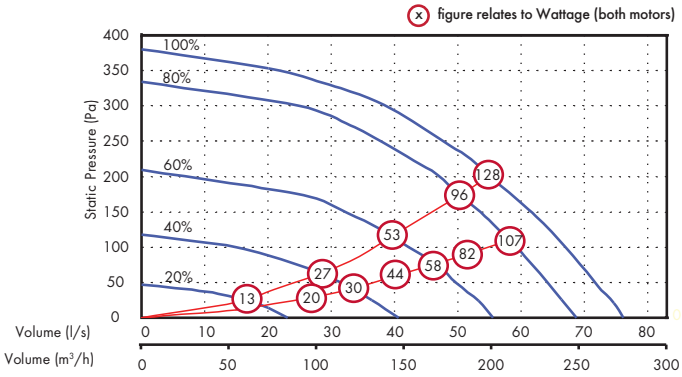
	Thermal Efficiency %	SFP (W/l/s)
K+1	90	0.60
K+2	90	0.59
K+3	90	0.68
K+4	89	0.79
K+5	90	0.97

T: 0844 856 0590

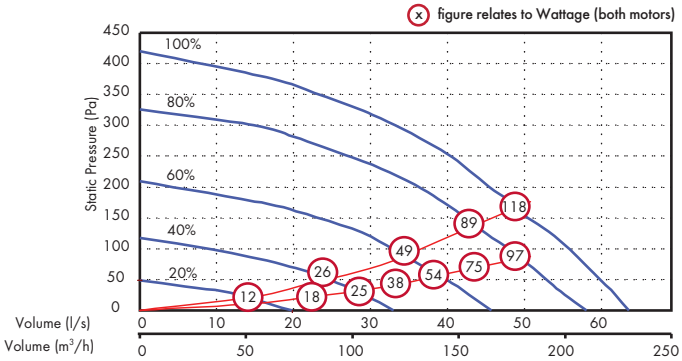
Sentinel

Performance

Fan speeds are fully adjustable within the performance range.



Example system curves - vertical spigots



Example system curves - horizontal spigots

Sound Data

		Octave band, Hz, dB SWL							
Flow l/s	Test mode	63	125	250	500	1K	4K	8K	SPL dB(A) @ 3m
10	Supply	47.8	40.2	38	31.1	28.2	23.6	30.9	21.4
	Extract	47	38.7	36	29.9	25	23.3	30.8	20.6
	Breakout	43.6	36.2	37.4	30.9	27.4	24.2	31.4	18.6
20	Supply	54	46.6	50.2	44.5	44.4	28.8	31.9	31.2
	Extract	46.8	40.5	34.6	34.2	34.6	23.7	30.3	22.9
	Breakout	45.9	39.9	40.6	35.7	33.5	25.3	31.2	21.3
30	Supply	58.1	54.5	57.6	52.2	51.7	38.6	35.8	38.5
	Extract	47.6	46.2	38.7	41.3	42.8	26.4	30.5	28.4
	Breakout	45.2	42.4	48.2	40.8	37.7	30	31.1	25.2
40	Supply	65.2	58.4	62.3	58	56.5	44.1	41.4	43.6
	Extract	53.5	53	44	47.7	48.1	31.5	31.5	33.5
	Breakout	50.9	47.6	47.4	48.1	42.5	36.3	34.4	29.3
50	Supply	66.4	63.2	66.3	62.5	61.7	50	47.8	48.3
	Extract	64.2	55.2	48	50.9	52.1	35.9	35	37.2
	Breakout	55	51	51.3	51.6	46.9	42	38.3	33.2

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Lo-Carbon Sentinel® Kinetic Cooker Hood

Consultants Specification

Operation

The supply and extract ventilation unit shall be a Sentinel Kinetic 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 composite plastic counterflow heat recovery cell. The Sentinel Kinetic 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, or alternative wired remote control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a metal duct to the cooker hood, intumescent fire damper and thermal switch, in accordance with BRE Digest 398.

The unit shall have a high efficiency composite plastic 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 forward curved centrifugal type.

The unit shall have a heat exchanger cell with a thermal efficiency of up to 92% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

Access shall be provided for wiring termination and setup/commissioning. The backlit LCD user interface therein shall be removable for remote mounting if required.

Units shall be as manufactured by Vent-Axia Ltd.

Standard controls

All Sentinel Kinetic 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
- ✓ Heating interlocks
- ✓ 0-10V proportional speed adjustment
- ✓ Volt free contacts
- ✓ 24V sensor supply
- ✓ Integral on/off or trickle boost function from remote switch e.g. PIR occupancy detector
- ✓ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings
- ✓ Fully automatic summer bypass
- ✓ Switched Live input with adjustable 'Delay-On' feature
- ✓ Fan failure or component failure indicated via individual fault code display
- ✓ Running time counter
- ✓ Control panel PIN number lock
- ✓ Automatic frost protection effective to -20°C
- ✓ Tool free filter access
- ✓ The unit shall incorporate ('H' models) an integral humidity sensor with the following features:
  - Ambient Response; Raises the humidity trigger point as dwelling temperature reduces
  - Rapid Response; Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached
  - Proportional Response; Incrementally increases the fan speed to reduce noise and reduce energy consumption

Integral Cooker Hood Specification

The Sentinel Kinetic Cooker Hood shall consist of a telescopic Hood and galvanised steel duct connection to the MVHR Unit.

The Hood construction shall be of grey powder coated steel with Brushed Aluminium or White painted fascia.

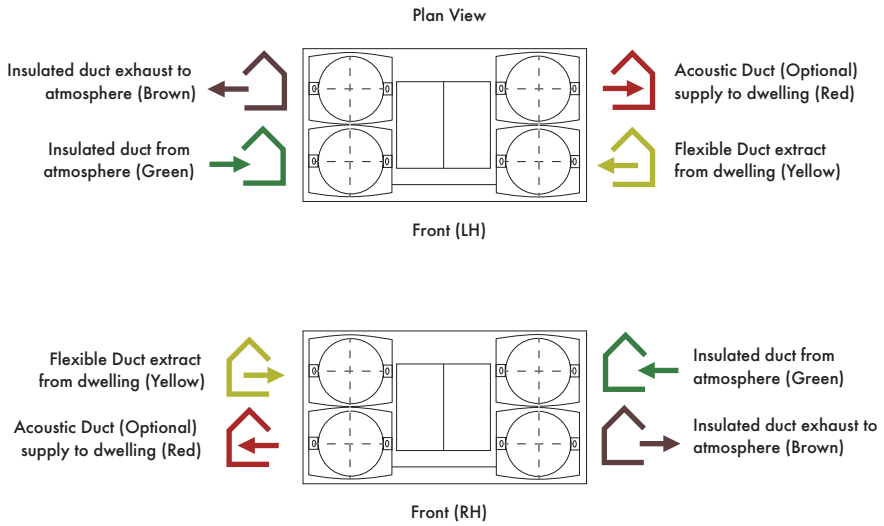
The Hood shall trigger the MVHR unit to a pre-defined boost speed and open the summer bypass when opened, and shall have two low-energy lamps illuminating the hob top.

Filter shall be a flat metal grease filter, removable for cleaning.

The galvanised steel ductwork shall provide a continuous fire barrier between the Hood and the MVHR unit. It shall contain an Intumescent fire damper, thermal cut-out and volume balancing damper. The thermal cut-out shall switch off the MVHR unit at a pre-defined safety temperature.

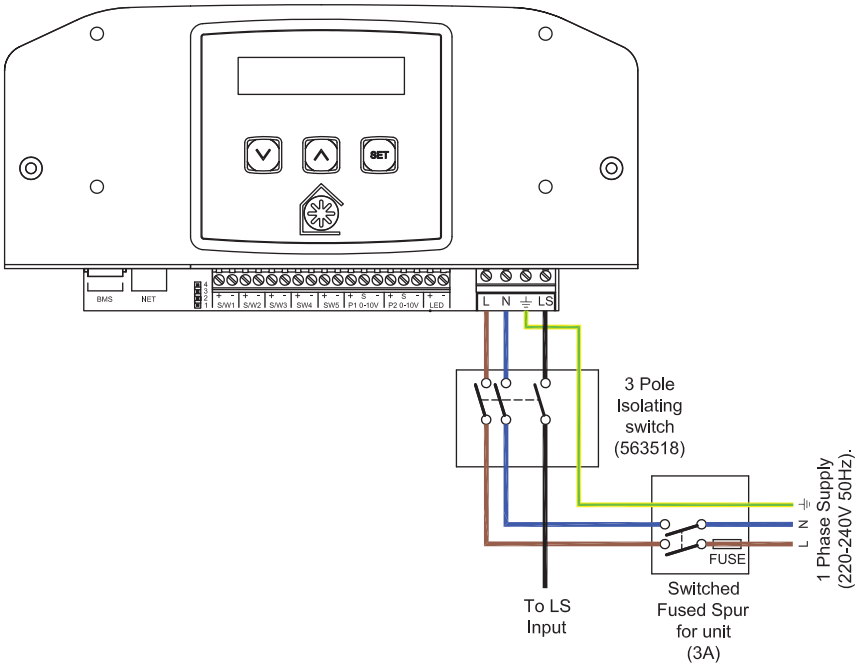
The duct shall have an access panel for cleaning by the end-user.

Airflow Direction

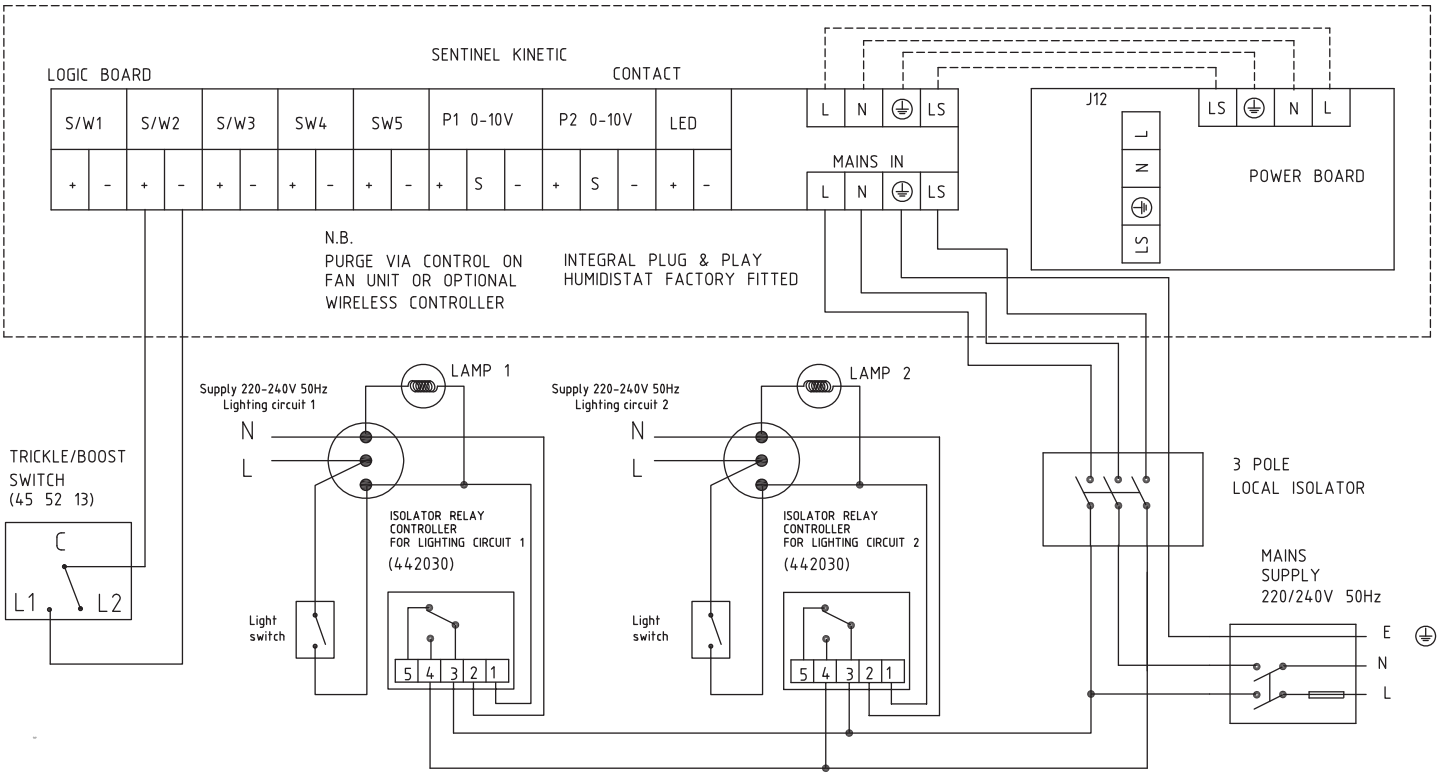


Electrical Connection

Please note: Electrical connection should be carried out by an appropriately qualified person and in accordance with current wiring regulations.



Trickle to Boost by a light circuit



Lo-Carbon Kinetic® E

MVHR Unit

Features & Benefits

- Compact size
- Lightweight for easy installation
- Easy access filters
- External condensate connection
- Compatible with a range of controls: PIR, Humidistat
- Horizontal duct option for space-saving installations
- Energy saving EC/DC motors
- Quiet operation
- Manufactured in the UK
- Switched live inputs (Light switch control)

A wholehouse heat recovery system with 91% energy efficiency. An easily accessible heat recovery cube protected by two removable EU3 filters. Two Lo-Carbon Energy Saving EC/DC fans ensure long life (typically over double the life of AC motors) and lowest possible energy use. Fully insulated construction with built-in condensation drain.

Lo-Carbon Kinetic E meets the latest requirements of the Building Regulations Approved Document F and L for wholehouse system ventilation.

The Lo-Carbon Kinetic E model has two adjustable speeds: normal and boost. On the front of the unit is the controller that can be used to preset the speeds to any required performance, up to 38l/s (135m³/hr) 100Pa. Offering 'Close Control' to prevent over ventilating. Acoustically lined - low noise levels from only 20dB(A) @3m.

Left or right hand installation

Units are supplied right handed with duct spigots to outside on the right hand side. These can be reversed on site by simply removing the control panel, rotating the unit 180 degrees and re-attaching the control panel.

Spigot Options

The combination of spigot options allows installation in confined locations. If vertical and horizontal connection is required on the same outlet/inlet, additional spigots can be supplied.

Filter Check

An LED on the control panel illuminates at six month intervals to remind users to check and clean the filters.

Frost Protection

The Kinetic E range benefits from an automatic frost protection system which manages the airflows to prevent the heat recovery cell freezing in very cold weather, while at the same time maintaining ventilation down to -20°C.

Control options

There are two LS (Switched Live) inputs allowing the unit to be connected to a number of sensors and controllers such as Ventwise, Timespan, Ambient Response Humidistat. One of the LS connections also benefits from a 'Delay On' feature which prevents the unit boosting unnecessarily.

Model

Model	Stock Ref
Kinetic E	443303

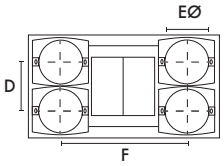
Accessories

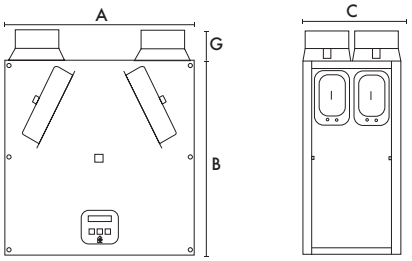
Model	Stock Ref
Kinetic Spare Filters 2 Pack	442356
Optional M5 Pollen Filter	444199

SAP Appendix Q Test Results

Exhaust Terminal Configuration	Thermal Efficiency %	SFP (W/l/s)
K + 1	91%	0.51
K + 2	90%	0.58
K + 3	89%	0.71

Dimensions (mm)





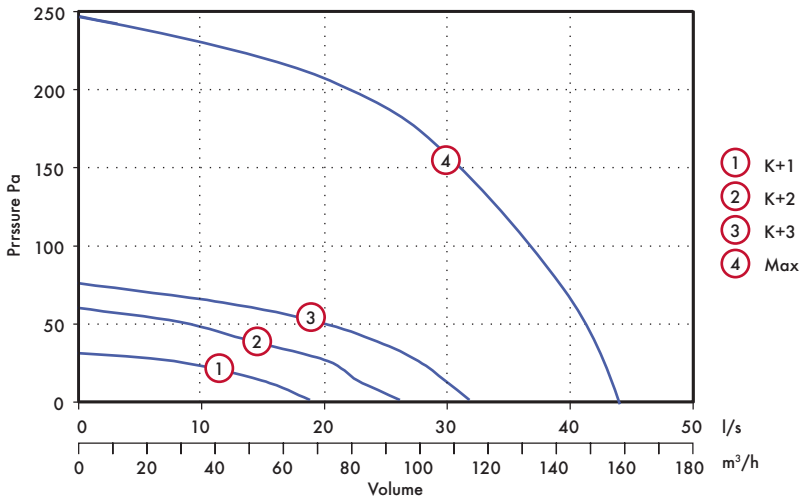
A	B	C	D	EØ	F	G
550	550	285	140	125	360	90

Weight: 15kg

T: 0844 856 0590

Performance

Fan speeds are fully adjustable within the performance range.



Sound Data

		Octave band, Hz, dB SWL								SPL
Flow l/s	Test mode	63	125	250	500	1k	2k	4k	8k	dB(A) at 3m
15	Supply	43.5	44.7	40.4	38.9	35.7	27.1	24.8	29.5	28.3
	Extract	45.0	42.1	34.5	32.4	32.7	24.1	24.5	30.7	22.2
	Breakout	53.6	52.6	47.7	47.2	43.1	35.3	24.1	30.0	28.3
21	Supply	43.4	49.2	45.9	42.8	42.1	35.2	27.7	30.6	32.2
	Extract	45.4	42.6	37.1	33.8	35.5	28.2	23.8	30.3	23.5
	Breakout	48.9	42.9	49.4	47.9	44.2	39.8	26.4	30.6	29.2
27	Supply	47.0	52.1	49.3	46.3	46.1	39.6	31.3	31.2	35.4
	Extract	45.7	43.9	37.6	37.8	40.3	31.5	25.6	31.0	26.3
	Breakout	48.0	45.6	48.0	48.2	47.4	39.1	28.8	29.8	30.3
31	Supply	46.8	57.7	53.8	51.2	50.0	44.2	37.5	33.2	40.1
	Extract	47.1	45.2	40.6	40.8	44.2	35.1	28.7	31.3	29.3
	Breakout	50.2	46.9	48.2	50.0	47.7	41.7	31.4	30.3	31.3
MAX	Supply	48.0	58.9	57.8	54.4	53.2	49.0	42.1	36.0	42.6
	Extract	46.1	45.4	41.2	42.1	43.4	35.8	29.6	31.0	29.1
	Breakout	51.9	48.0	51.1	52.0	47.0	44.5	34.1	31.7	32.5

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Consultants Specification

Operation

The supply and extract ventilation unit shall be as Kinetic E 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 composite plastic counterflow heat recovery cell. The Kinetic E 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 vary their speed 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 independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a reversible core to allow for left or right hand mounting. The unit shall have a high efficiency composite plastic counterflow heat exchanger, supply and extract filters, 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 forward curved centrifugal type. The unit shall have a heat exchanger cell with a thermal efficiency of up to 91% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

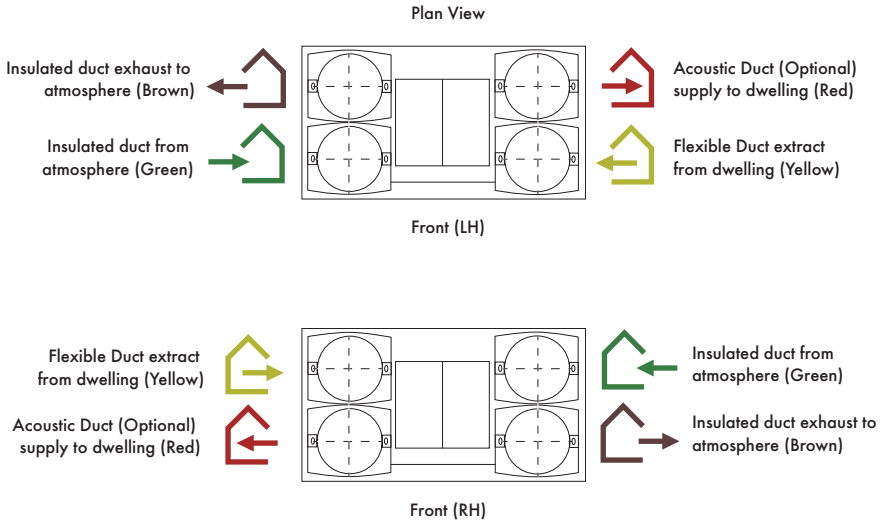
Access shall be provided for wiring termination and setup/commissioning.

Standard controls

All Kinetic E 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 on/off or trickle boost function from remote switch, e.g. PIR occupancy detector
- ✓ Switched Live input with adjustable 'Delay-On' feature
- ✓ Tool free filter access
- ✓ Frost protection down to -20°C
- ✓ LED 'filter check' indicator

Airflow Direction



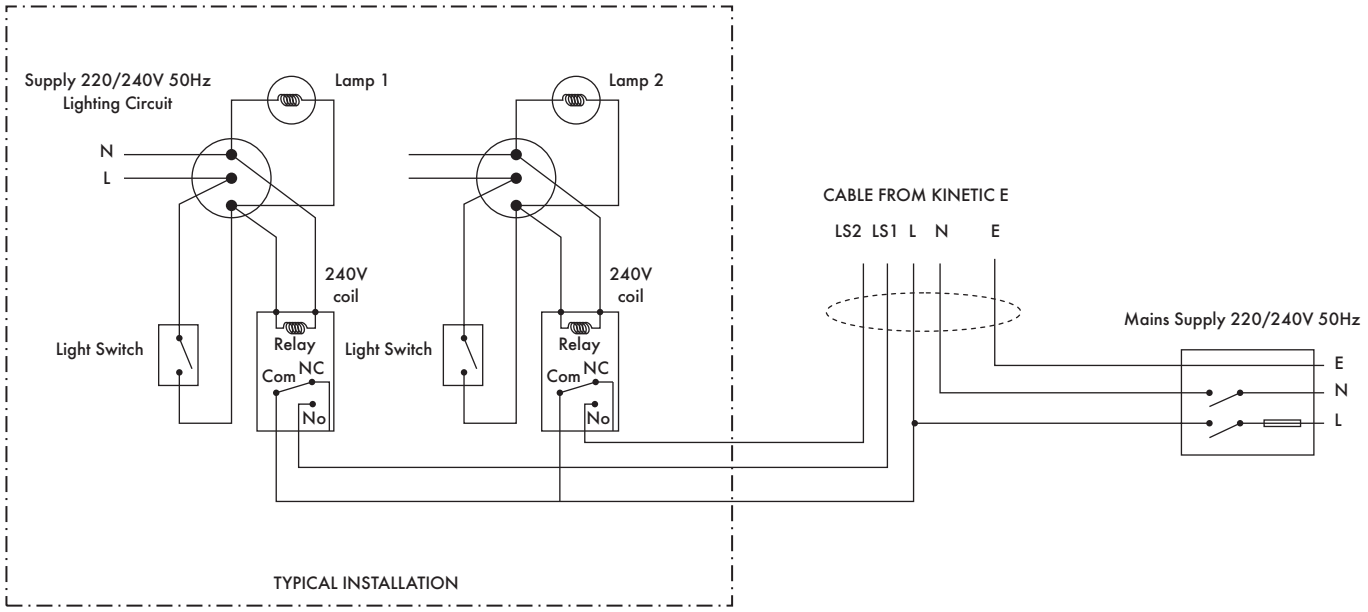
Electrical Connection

The unit can be switched to boost by applying 230 V to the LS1 or LS2 inputs. Alternatively, the boost button on the control unit may be used.

Mains Cable Connections

Terminal No.	Name	Description
L	Mains Live	220-240 V AC, 50 Hz input
N	Mains Neutral	220-240 V AC, 50 Hz input
EARTH	Mains Earth	Earthing connector
LS1	Switched Live 1	220-240 V AC, 50 Hz input
LS2	Switched Live 2	220-240 V AC, 50 Hz input

Trickle to Boost by Two Light Switches using Relay



Lo-Carbon Kinetic® Plus E

MVHR Unit

Features & Benefits

- Lightweight for easy installation
- Easy access filters
- External condensate connection
- Compatible with a range of controls: PIR, Humidistat
- Horizontal duct option for space-saving installations
- Up to 94% heat recovery
- Quiet operation
- Manufactured in the UK
- Switched live inputs (Light switch control)

A wholehouse heat recovery system with up to 94% energy efficiency. An easily accessible heat recovery cube protected by two removable EU3 filters. Two Lo-Carbon Energy Saving EC/DC fans ensure long life (typically over double the life of AC motors) and lowest possible energy use. Fully insulated construction with built-in condensation drain.

Lo-Carbon Kinetic Plus E meets the latest requirements of the Building Regulations Approved Document F for wholehouse system ventilation.

The Lo-Carbon Kinetic Plus E model has two adjustable speeds, normal and boost. On the front of the unit is the controller that can be used to preset the speeds to any required performance, up to 111l/s (400m³/hr) 150Pa. Offering 'Close Control' to prevent over ventilating. Acoustically lined - low noise levels from only 20dB(A) @ 3m.

Left or Right Hand Installation

Units are supplied right handed with duct spigots to outside on the right hand side. These can be reversed onsite by simply removing the control panel, rotating the unit 180 degrees and reattaching the control panel.

Spigot Options

The combination of spigot options allows installation in confined locations. If vertical and horizontal connections are required on the same outlet/inlet, additional spigots can be supplied.

Filter Check

An LED on the control panel illuminates at 6 month intervals to remind users to check and clean the filters.

Frost Protection

The Kinetic E range benefits from an automatic frost protection system, effective down to -20°C, which manages the airflows to prevent the heat recovery cell freezing in very cold weather, while at the same time maintaining ventilation.

Control Options

There are two LS (Switched Live) inputs allowing the unit to be connected to a number of sensors and controllers such as Ventwise, Timespan, Ambient Response Humidistat. One of the LS connections also benefits from a 'Delay-On' feature which prevents the unit boosting unnecessarily.

Model

Model	Stock Ref
Kinetic Plus E	449059

Accessories

Model	Stock Ref
Kinetic Spare Filters 2 pack Optional M5 Pollen Filter	443351
Isolator Relay Controller	444201
	442030

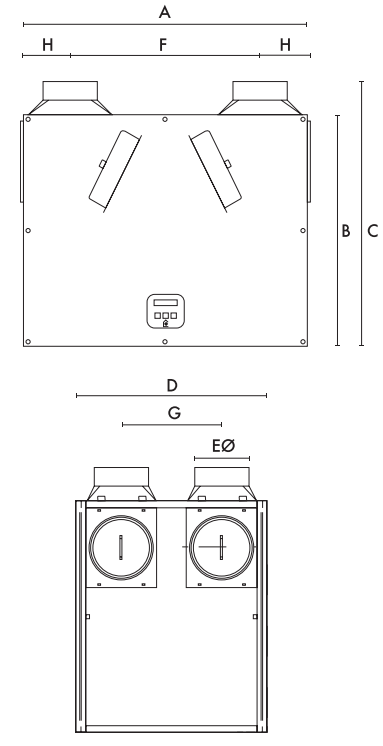
SAP Appendix Q Test Results

Exhaust Terminal Configuration	Thermal Efficiency %	SFP (W/l/s)
K + 1	94	0.41
K + 2	94	0.40
K + 3	94	0.43
K + 4	94	0.45
K + 5	93	0.52
K + 6	93	0.61
K + 7	93	0.73

Dimensions (mm)

A	B	C	D	EØ	F	G	H
785	635	722	550	150	520	275	135

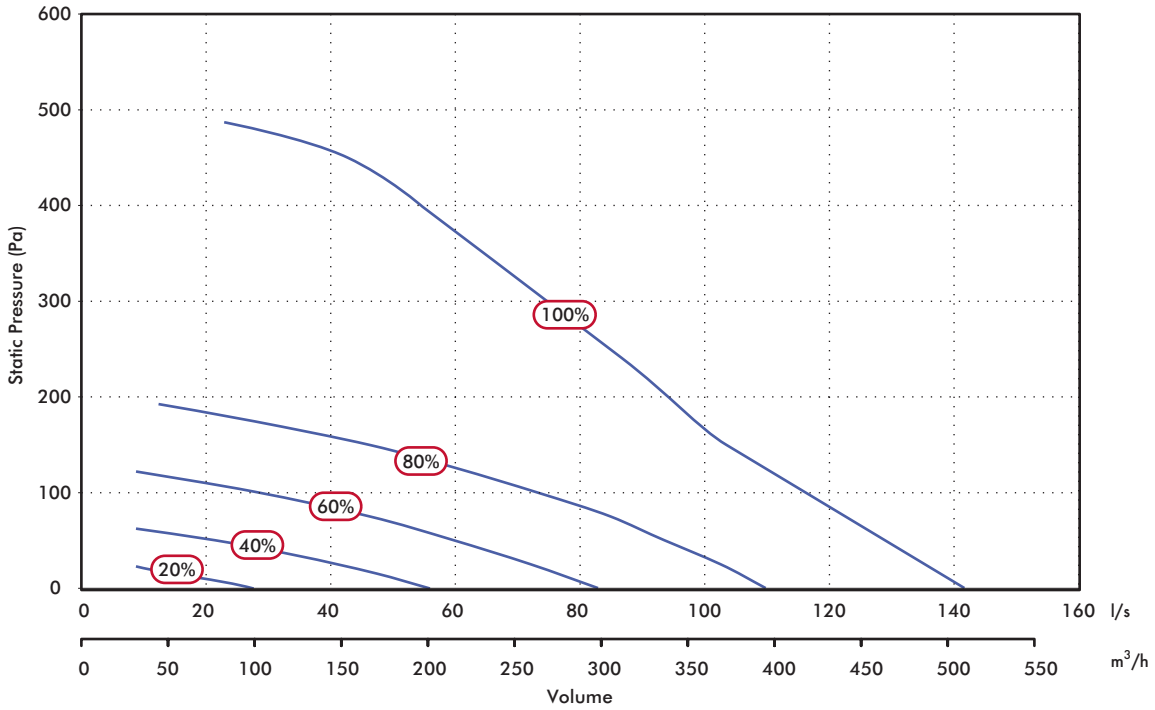
Weight: 24kg



T: 0844 856 0590

Performance

Fan speeds are fully adjustable within the performance range.



Sound Data

			Octave band, Hz, dB SWL								SPL dB(A)
Flow l/s	Unit setting	Test mode	63	125	250	500	1k	2k	4k	8k	at 3m
50	20%	Supply	46.5	54.3	46.4	44.8	36.2	28.5	24.5	31.2	28.5
		Extract	46	52.2	42.3	38.7	27.6	24.2	24	31.7	25
		Breakout	48.5	42.6	43.3	38.9	35.8	29.3	23.8	30.7	22.8
78	40%	Supply	50.3	59.1	54.5	56.5	47	39.9	26.3	31.7	38
		Extract	46.8	51.6	47.8	44.4	32.7	27.4	24.4	31.7	28
		Breakout	48.4	51.2	53.4	46	41	34.6	25	30.3	28.5
104	60%	Supply	52.4	57.2	60.4	60.9	55.8	50.3	33.1	33.9	43.6
		Extract	50	49.8	56.8	52.4	40.2	35.9	33.4	39.8	35.2
		Breakout	55	49.6	59.7	54.5	46.9	39.9	33.6	39.2	34.9
127	80%	Supply	54.9	60.7	67.4	66.6	61.8	56	39.6	37.7	49.5
		Extract	50.4	52	61.2	56.6	45.1	39.6	34.2	40.2	39.1
		Breakout	53.5	53.4	60.8	59.1	53	45.3	36	40.1	38.7
137	100%	Supply	54.7	61.7	70.5	69.9	62.7	57.5	42.1	38.3	52
		Extract	54.4	55.1	65.8	57.5	46.9	40.6	33.7	40	41.8
		Breakout	56.6	54.6	60.5	60.7	54.7	45.9	36.5	39.6	40

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Consultants Specification

Operation

The supply and extract ventilation unit shall be as Kinetic Plus E 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 composite plastic counterflow heat recovery cell. The Kinetic Plus E 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 vary their speed 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 independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS outer case construction, and incorporate a reversible core to allow for left or right hand mounting. The unit shall have a high efficiency composite plastic counterflow heat exchanger, supply and extract filters, 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 94% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable Core allowing full maintenance access. The removable Core shall provide access to the following:

- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

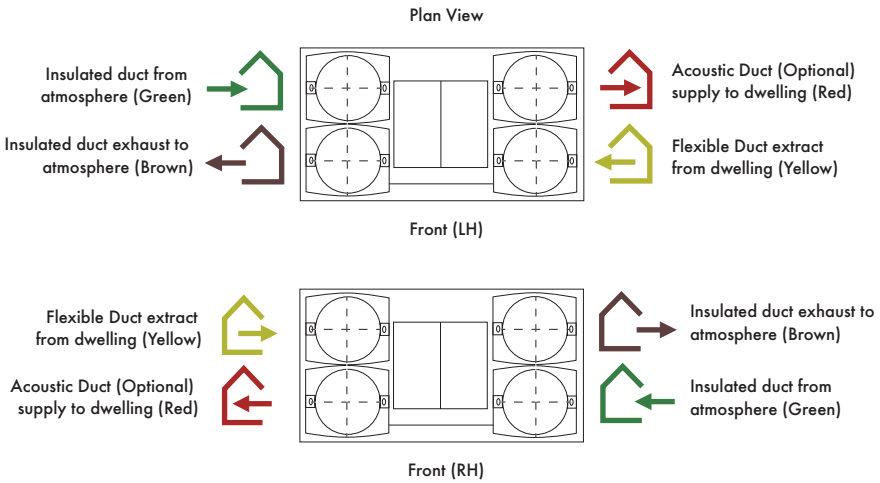
Access shall be provided for wiring termination and setup/commissioning.

Standard controls

All Kinetic Plus E 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 on/off or trickle boost function from remote switch, e.g. PIR occupancy detector
- ✓ Switched Live input with adjustable 'delay-on' feature
- ✓ Tool free filter access
- ✓ Frost protection down to -20°C
- ✓ LED 'filter check' indicator

Airflow Direction & Condensate Connection (RH Supplied)

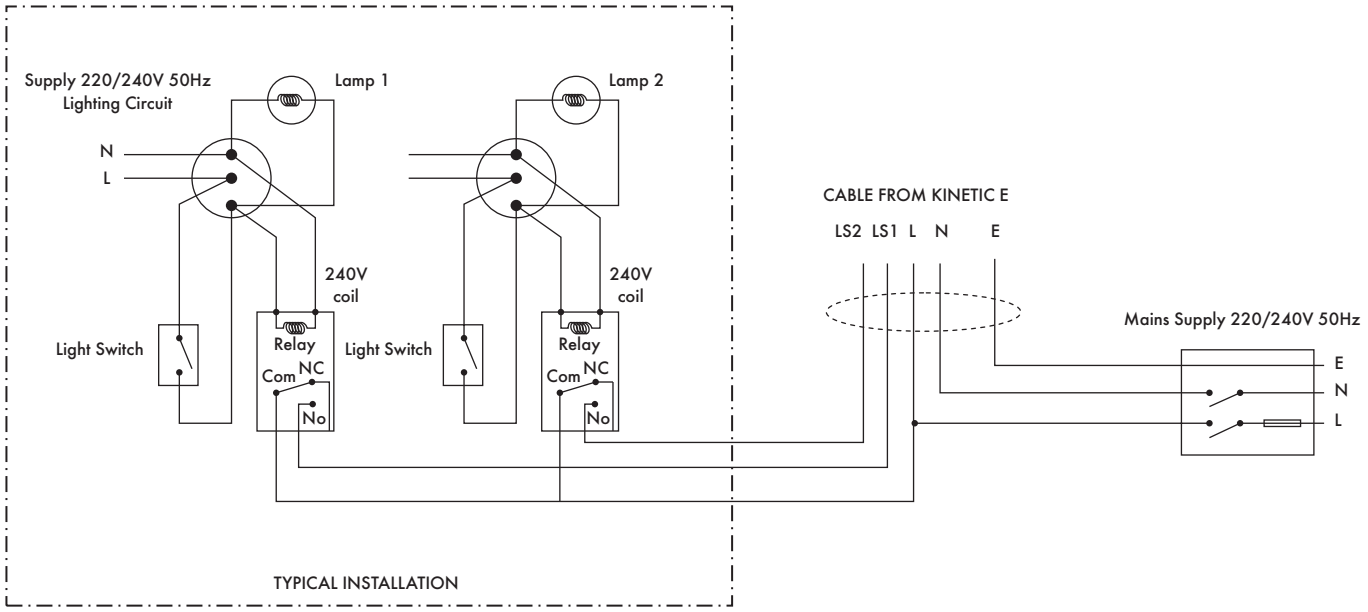


Electrical Connection

The unit can be switched to boost by applying 230 V to the LS1 or LS2 inputs. Alternatively, the boost button on the control unit may be used.

Mains Cable Connections

Terminal No.	Name	Description
L	Mains Live	220-240 V AC, 50 Hz input
N	Mains Neutral	220-240 V AC, 50 Hz input
EARTH	Mains Earth	Earthing connector
LS1	Switched Live 1	220-240 V AC, 50 Hz input
LS2	Switched Live 2	220-240 V AC, 50 Hz input



Lo-Carbon
Sentinel Kinetic® Horizontal
MVHR Units

Features & Benefits

- Manufactured in the UK
- Building Regulations ADF compliant
- Recognised in SAP Appendix Q
- Energy Savings Trust best practice compliant
- Up to 81% heat recovery whilst controlling condensation
- Programmable Summer bypass
- Digital controller for simple and accurate commissioning
- External condensate connection
- Plug and play controls; Humidistat, Ventwise, Wireless remote
- LS inputs (Light Switch)
- Volt-free inputs
- Self diagnosis for simplified fault finding
- Adjustable delay On/delay Off timer

The Sentinel Kinetic Horizontal Range

A wholehouse heat recovery system with up to 81% heat exchange efficiency. An easily accessible heat recovery cube protected by two removable EU3 filters. Two Lo-Carbon Energy Saving EC/DC fans ensure long life (typically over double the life of AC motors) and lowest possible energy use. Fully insulated construction with built-in condensation drain. Specifically designed for new build constructions with a high level of insulation.

Lo-Carbon Sentinel Kinetic Horizontal meets the latest requirements of the Building Regulations ADF for wholehouse system ventilation: System 4. Continuous mechanical supply and extract with heat recovery. Each model has three fully adjustable speeds and a purge setting (maximum flow). Supplied with the unit is a digital controller that can be used to pre-set the speeds to any required airflow within the performance range.

Integral Humidity Sensor

The integral humidity sensor ('H' models) increases speed in proportion to relative humidity levels, saving energy and reducing noise. The sensor also reacts to small but rapid increases in humidity, even if the normal trigger threshold is not reached. This unique feature ensures adequate ventilation, even for the smallest wet room. The night time relative humidity setback feature suppresses nuisance tripping as humidity gradually increases with falling temperature. Acoustically lined - low noise levels from only 20dB(A) @ 3m.

Models

Model	Stock Ref
Kinetic 200ZP	407161
Kinetic 200ZPH	407162
Kinetic 200Z	448733
Kinetic 200ZH	449540
Kinetic 300Z	447801
Kinetic 300ZH	449536

Optional Controls

Model	Stock Ref
Wireless Enable Kit (includes one switch)	441865
Wireless Boost Switch (max 3 switches)	437827
Ventwise Controller (also requires sensors: see Accessories & Controllers section)	441780

Accessories

Model	Stock Ref
Spare Filters Kinetic 200Z/ZH (2 pack)	449524
Spare Filters Kinetic 300Z/ZH (2 pack)	449575

Multiple control options:

Five Volt-free pairs of switch terminals for sensor inputs allow boosting from a full range of Vent-Axia controllers – humidistats, PIR, timers.

Two terminals with 0-24V outputs allow 0V to 10V proportional control by sophisticated controllers such as CO_2 sensors and proportional humidistats.

The optional Ventwise controller senses temperature rise in a bath/shower hot water supply and/or current in a cooker/hob electrical circuit to activate boost, ensuring additional ventilation when needed. Switch-live for boosting via light switches (220-240V AC) or manual Normal/Boost switches. This connection has the advantage of Delay-On and Delay-Off facility. Delay-On enables you to prevent the Boost airflow between 0 and 10 minutes after a light switch has been activated. Delay-Off allows the Boost airflow to continue after a light switch is turned off to ensure effective clearance of humidity. This timer is adjustable between 0 and 25 minutes.

Summer Bypass

An internal damper operates when the external temperature is below the internal temperature, and the internal temperature is too high.

The bypass opens and allows the cooler outside air to help cool the dwelling.

Normal mode: Fans run on Normal speed with bypass open until the internal dwelling temperature falls below the set 'Indoor' (maximum desired) temperature.

Evening Purge mode: The fans run on Boost speed until the internal temperature falls below the set 'Indoor' temperature. If, after five hours the internal temperature is still above the set 'Indoor' temperature, the unit will switch down to normal speed for the remainder of the 'bypass open' period.

Night-time Purge mode: As Evening Purge, except that the unit will continue on Boost speed until the internal air temperature reaches the 'Outdoor' temperature set point (Default 14°C). This mode gives pre-cooling of the dwelling for the following day.

In Evening and Night Time Purge modes, the user can turn off the boost function by pressing the Boost button.

Frost Protection

In cold climates there is a possibility of frost building up on the intake side of the heat exchanger. In order to prevent damage, the Kinetic reduces supply flow while maintaining extract flow at temperatures down to -20°C.

Sentinel

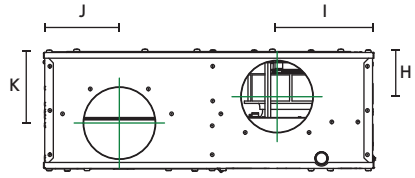
SAP Appendix Q Test Results

	200ZP/ZPH	
	Thermal Efficiency %	SFP (W/l/s)
K+1	86	0.62
K+2	84	0.65
K+3	83	0.76

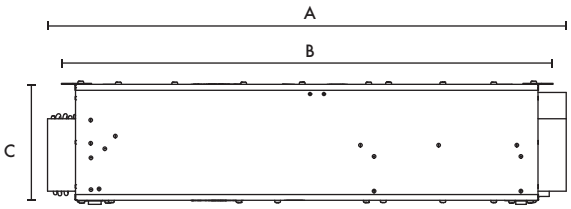
	200Z/ZH	
	Thermal Efficiency %	SFP (W/l/s)
K+1	80	0.69
K+2	81	0.70
K+3	80	0.80
K+4	80	0.97
K+5	79	1.14

	300Z/ZH	
	Thermal Efficiency %	SFP (W/l/s)
K+1	77	0.59
K+2	78	0.51
K+3	78	0.57
K+4	78	0.66
K+5	78	0.76
K+6	78	0.88
K+7	77	1.05

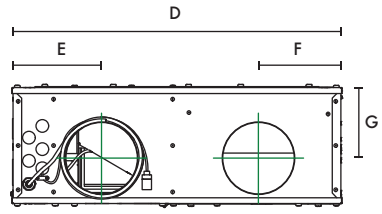
Dimensions (mm)



FRONT

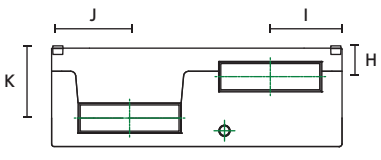


SIDE

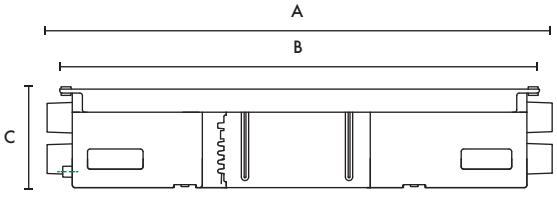


BACK

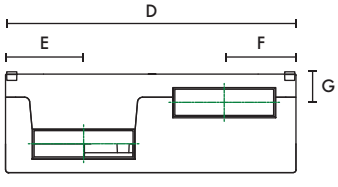
Model	A	B	C	D	E	F	G	H	I	J	K	Spigots Ø
200Z	895	849	200	570	155	144	122	76	167	131	122	125
300Z	985	940	301	720	184	179	187	102	279	174	187	150
Weight: 200Z - 26kg, 300Z - 38kg												



FRONT



SIDE

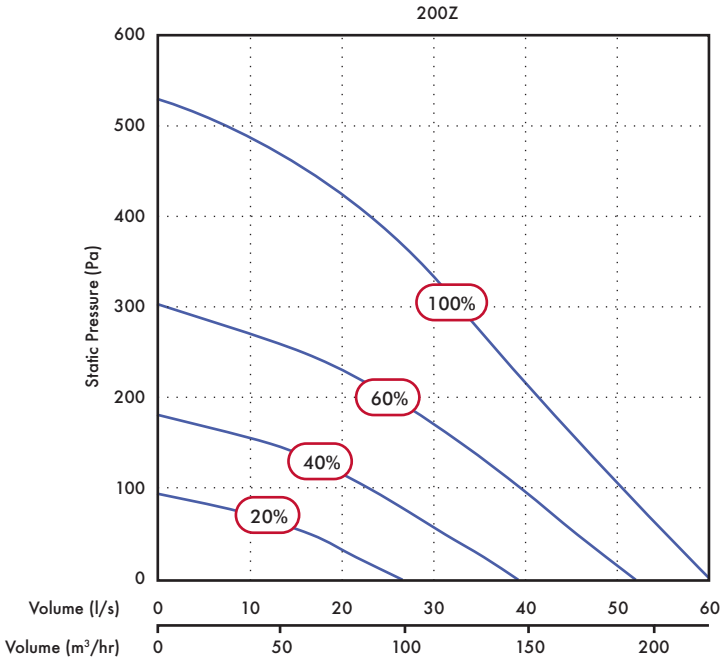


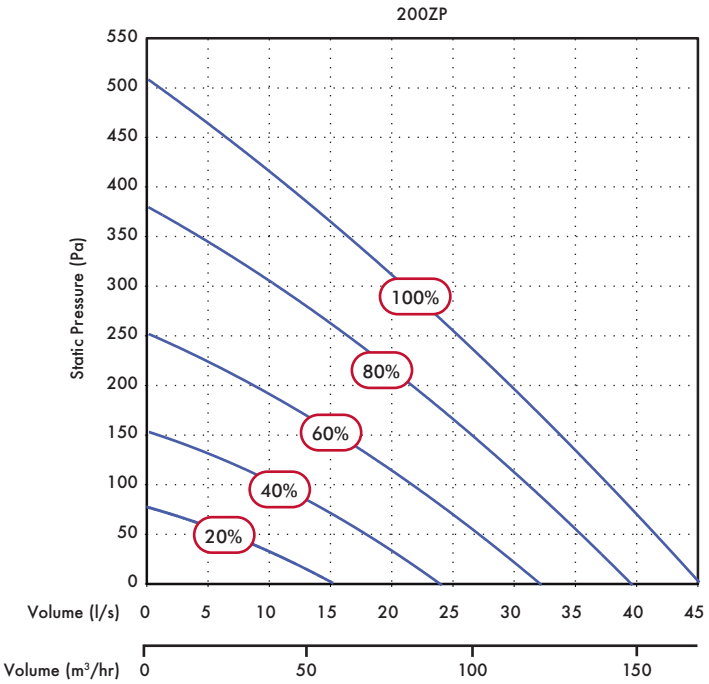
BACK

Model	A	B	C	D	E	F	G	H	I	J	K	Spigots
200ZP	1000	950	200	575	155	142	60	61	142	154	143	204x60
Weight: 200ZP - 14kg												

Performance - 200Z/ZP Model

Fan speeds are fully adjustable within the performance range.





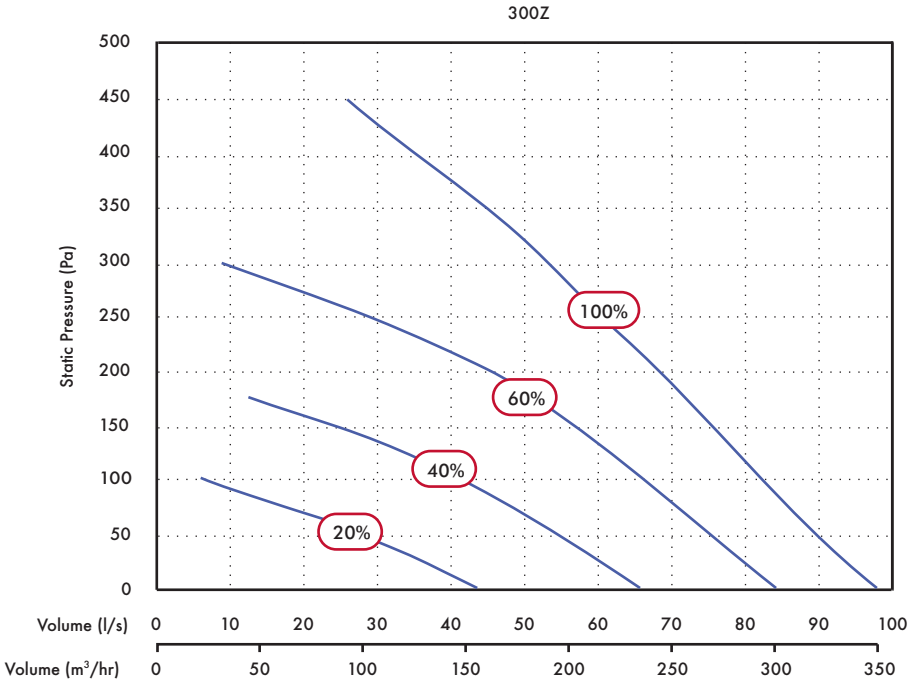
Sound Data - 200Z Model

Flow l/s	Flow %	Test mode	63	125	250	500	1k	2k	4k	8k	dB(A) at 3m
25	20	Supply	50.3	54	50.1	45.5	37	36	27.5	31.1	30.0
		Extract	47.2	47.7	46.6	41.8	30.7	27.9	24.6	30.5	26.3
		Breakout	48.8	55.8	51.2	43.8	32.4	29.0	25.4	30.8	26.8
39	40	Supply	52.7	61.7	60.1	61.8	47.4	45.1	38.1	40.1	42.7
		Extract	50.7	55.4	55.0	51.5	37.5	34.6	25.9	30.7	33.9
		Breakout	53.7	60.1	61.1	50.7	40.2	35.8	27.1	30.3	34.0
51	60	Supply	52.8	64.5	66.7	59.4	51.1	51.1	42.9	39.3	44.0
		Extract	50.6	59.0	62.1	57.1	43.7	40.0	29.0	31.6	39.7
		Breakout	55.1	64.4	66.8	57.5	47.0	41.4	32.0	32.0	39.7
60	100	Supply	58.3	69.2	68.6	64.6	56.9	56.1	47.9	45.6	48.1
		Extract	51.8	63.1	64.9	63.9	52.4	45.9	34.8	34.8	45.2
		Breakout	59.4	68.1	69.7	68.3	53.1	47.1	36.5	34.3	46.5

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Performance - 300Z Model

Fan speeds are fully adjustable within the performance range.



Sound Data - 300Z Model

Flow l/s	Flow %	Test mode	63	125	250	500	1k	2k	4k	8k	dB(A) at 3m
26	10	Supply	42.5	42.8	38.3	32.9	28	24.6	25.5	30.3	26.3
		Extract	46.9	45	40.3	34.4	27.4	23	24.3	30.1	22.5
		Breakout	48.7	52.1	47.7	40.5	32.9	27.3	25.1	31.6	24.4
44	20	Supply	45.6	47	41.7	35.7	31.7	26.7	24.8	30	29.9
		Extract	46.9	48.6	47	38.2	29.5	25.3	23.8	29.9	25.3
		Breakout	50.2	56.4	53.9	46.3	37.5	32.5	25.2	31.4	28.8
55	30	Supply	44.4	46	52.9	39.4	35.1	31.9	25.5	30.5	33.9
		Extract	47	48	55.5	42.5	32.2	29.9	25.7	30.6	30.6
		Breakout	52.2	59.6	62	51.4	41.9	37.4	28.1	31.4	34.7
66	40	Supply	43.1	44.4	54.3	43.5	39.2	35.7	27.7	29.9	35.0
		Extract	48.9	49	58.4	45.9	35.7	33.4	25.3	29.9	33.4
		Breakout	54.6	58.3	66.1	52.6	39.3	36.5	31.1	35.3	37.7
85	60	Supply	44.7	49.8	58	50.4	45	41.9	30.6	30.3	39.1
		Extract	51	53.6	61.2	50.1	41.6	40.1	30.7	31.1	36.7
		Breakout	57.5	62.6	68.7	57.5	45.9	41	36.3	34	40.7
96	80	Supply	46	52.2	57.1	56.5	47.2	44.2	32.3	30.5	40.5
		Extract	55.5	55	63.1	53.4	44.3	41	33.5	31.4	38.8
		Breakout	62.2	65.7	68.8	63	50.8	43.8	38.8	35.4	42.9
98	100	Supply	46.6	52.3	57	55.4	47.1	43.7	32.1	30.3	40.1
		Extract	53.7	55.2	63.3	53.3	44.1	41.2	33.2	31.5	38.9
		Breakout	62.2	73.8	77.4	74.1	67.4	61	53.6	45.4	53.9

Tested according to BS848. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Consultants Specification

Operation

The supply and extract ventilation unit shall be as Sentinel Kinetic Z as manufactured by Vent-Axia and shall be sized as indicated on the drawings and shall be in accordance with the particular specification; 200Z - 200mm deep, 300Z - 300mm deep.

The Sentinel Kinetic Z 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 the wired remote control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit specification (200Z/300Z)

The unit shall be manufactured with a galvanized steel outer case construction and shall have a high efficiency aluminium heat exchanger.

Unit specification (200ZP)

The unit shall be manufactured with high density EPP case and shall have a high efficiency polymer heat exchanger.

The unit shall have supply and extract filters, automatic summer bypass, integral minimum and maximum infinitely variable speed controls with failure indication via the wired remote controller.

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 81% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract. Complete with a condensate drip tray and drain connection.

The unit shall be constructed with a removable access panel allowing full maintenance access from below. The removable panel shall provide access to the following:

- ✓ Supply or extract fan
- ✓ Supply and extract filter
- ✓ Heat exchanger
- ✓ Access to the electrical connections

Access shall be provided for wiring termination and setup/commissioning.

Standard controls

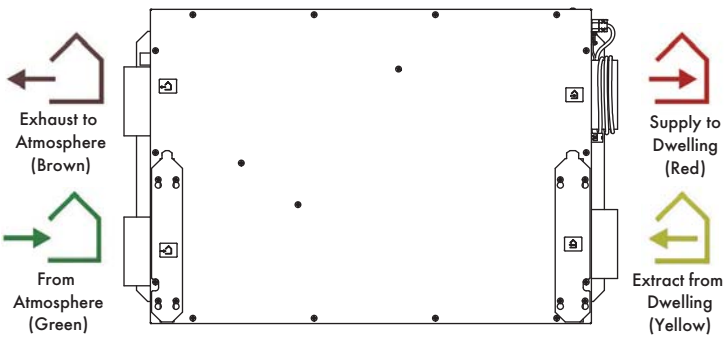
All Sentinel Kinetic Z units shall incorporate the following functions integrally mounted, pre-wired and factory fitted by the manufacturer:

- ✓ Infinitely variable fan speed control on supply and extract
- ✓ Min/max ventilation control/set point
- ✓ Heating interlocks
- ✓ 0-10V proportional speed adjustment
- ✓ Volt free contacts
- ✓ 24V sensor supply
- ✓ On/off or trickle boost function from remote switch, e.g. PIR occupancy detector
- ✓ The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings
- ✓ Fully automatic summer bypass
- ✓ Switched Live input with adjustable 'delay-on' feature
- ✓ Fan failure or component failure indicated via individual fault code display
- ✓ Running time counter
- ✓ Control panel PIN number lock
- ✓ Automatic frost protection effective to -20°C
- ✓ The unit shall incorporate ('H' models) an integral humidity sensor with the following features:
  - Ambient Response: Raises the humidity trigger point as dwelling temperature reduces
  - Rapid Response: Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached
  - Proportional Response: Incrementally increases the fan speed to reduce noise and reduce energy consumption

The unit shall be controlled by the 'Sentinel' control devices (enablers and sensors) as detailed in the schedule or on the drawings.

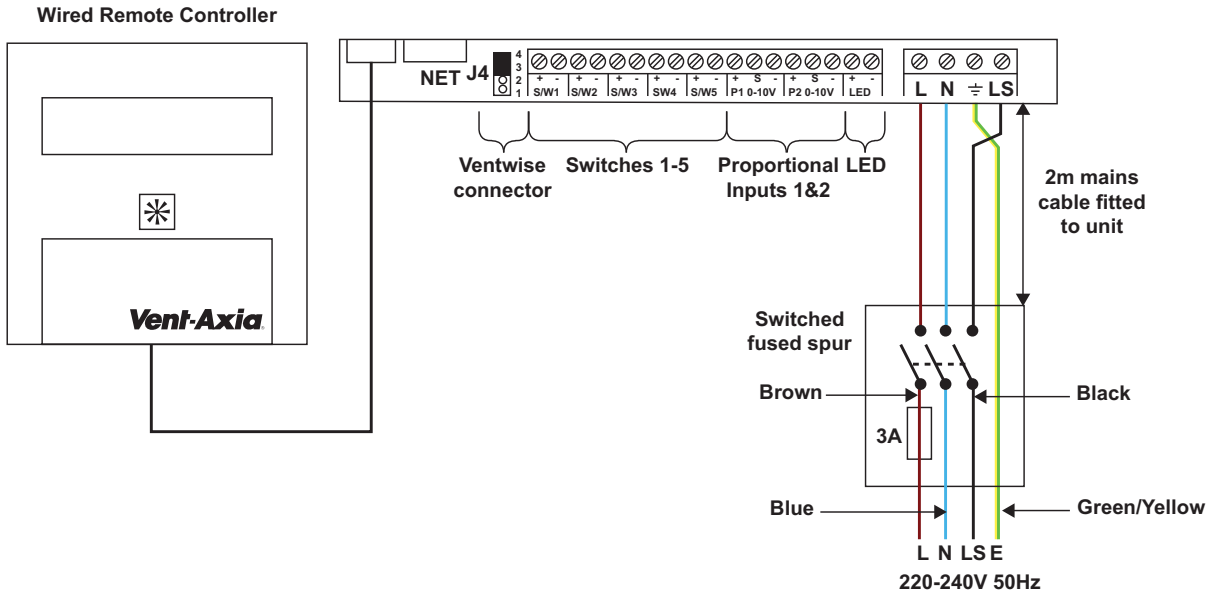
Airflow Direction

View from beneath

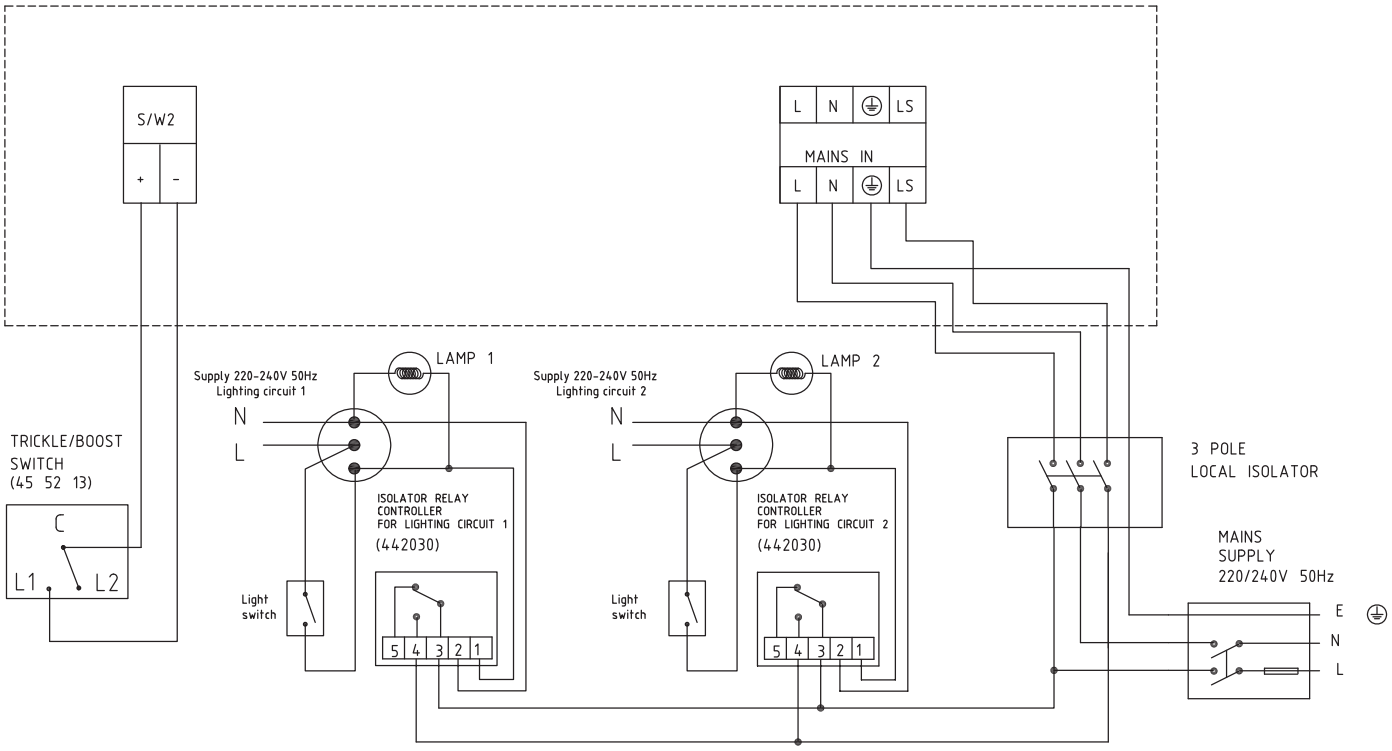


Electrical Connection

Please note: Electrical connection should be carried out by an appropriately qualified person and in accordance with current wiring regulations.



Trickle to Boost by two lighting circuits or Trickle/Boost switch



By Appointment to H.M. The Queen
Suppliers of Unit Ventilation Equipment
Vent-Axia, Crawley, West Sussex

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