Mechanical Ventilation Specification

Project: 13-15 John's Mews, London, WC1N 2PA

Date: 22/07/2021 / Rev: 0

Due to the external air quality at 13-15 John's Mews it has been determined that mechanical ventilation systems with Nitrogen Oxide filtration are required, to supply fresh air and extract stale air from the proposed four apartments.

The apartments differ in size and requirements, we have completed our design and made our equipment selection is based on surpassing the minimum constant extract requirements as set out in Approved Document Part F. To achieve the duties required we specify that a Vectaire WHHR-MIDI BY 'AT' mechanical heat-recovery ventilation unit should be installed in each apartment, and commissioned to deliver the air volumes shown on our design drawings.

The Vectaire MVHR unit technical specification is provided at the end of this specification. The unit has integral controls and will be commissioned to run at a constant speed.

We propose that the MVHR units are located as per our design drawings, and distribution ductwork run throughout the property to serve supply and extract terminations in the appropriate locations. Please see our associated design drawings for the plant locations and distribution layout.

Each MVHR system will incorporate an NOx filter, to be supplied by Filtrex. The technical data for this filter is provided at the end of this specification. These NOx filters will be installed onto the roomside supply duct immediately after the MVHR, ensuring that all incoming air has passed through the MVHR filters prior to reaching the NOx filters and all air supplied into the apartments has passed through the NOx filters.

It is proposed that the MVHR systems will intake and exhaust to the atmosphere via external louvres/vents in the locations show on the drawings. The intake and exhaust ductwork within the property shall be thermally insulated to prevent condensation forming.

It is important to note that the systems should be regularly maintained by a suitably trained person, to ensure efficient operation. The NOx filters will need to be replaced in line with the Filtrex recommendations.

This specification was written by Ryan Clarke. 020 3191 9131 / ryan.clarke@calibreclimate.com

Midi BY-AT

with integral acoustic attenuation

SAP PCDB Listed

NEW

energy efficient-environmentally friendly-economical

Midi BY-AT

- very low noise levels - lined with Class "O" fire resistant acoustic foam
- with summer bypass and frost-stat
- efficient, low energy solution to controlling condensation and pollution in residential properties up to 170m²
- up to 94% heat exchange efficiency
- variable choice of low (trickle), boost and purge speed at installation
- for wall, cupboard or loft installation - no extra cabinet required
- universal handing for models without humidistat
- low running costs
- complies with Building Regulations Parts L1A 2013 and F 2013
- manufactured in UK to ISO 9001
- accurate commissioning via integral touch screen LCD

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Midi BY-AT

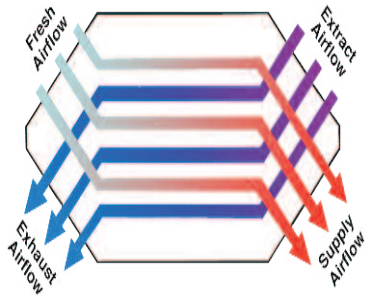
with integral acoustic attenuation

GENERAL FEATURES

- extremely low noise levels
- up to 95 litre/sec at 50Pa - max 101 litre/sec capacity
- sfp down to 0.50 W/l/s
- summer bypass which allows the airflow to bypass the heat exchanger automatically when internal and external temperatures are between adjustable setpoints.
- frost-stat - proportionally reduces intake motor speed as temperature falls - activated when the outside temperature between +8^{0}C and -3^{0}C.
- run-time and power outage counters
- easy to install and maintain - no extra cabinet required
- easy to access G3 filters
- universal handing for models without humidistat - left or right (see separate diagram on page 6 for handing on humidistat models)
- for fitting vertically into lofts, or cupboards - wall fixing bracket supplied - weight only 29 kgs
- variable low (trickle), boost and purge options for each motor
- boost speed can be activated by a 230V switched live from:
  - A light switch (if more than one light switch is used, each one must be a double pole switch)
  - Remote humidistat (230V - DRH240)
  - Passive infra red (230V - PIRFF)
  - Thermostat (230V - THM)
  - Remote switch/pull cord - 230V
- low running costs
- 5 year warranty - 1 year parts and labour, 4 years parts only

TECHNICAL FEATURES

- compact unit - casing from steel sheet - epoxy paint finish
- lined with Class "O" fire resistant acoustic foam
- low energy EC brushless motor with single width, single inlet, direct drive, forward curved impellors
- operates in temperature up to 60ºC
- easy to access standard, disposable G3 filters
- counter flow heat exchanger



MODELS AVAILABLE:

- MidiBY-AT - bypass, attenuation, universal, integral LCD
- MidiBYATH/LH - bypass, attenuation, humidistat, left drain, integral LCD
- MidiBYATH/RH - bypass, attenuation, humidistat, right drain, integral LCD

CONTROL FEATURES - STANDARD

- independent variable speed adjustment for each motor for trickle, boost and purge speeds.
- adjustable boost speed over-run timer from 0 to 90 minutes.
- adjustable boost speed delay from 0 to 5 minutes
- remote purge - adjustable over-run timer from 0 to 250 minutes, pre-set to 15 minutes (adjustable at factory).
- adjustable night time boost and purge inhibitor
- integral frost-stat - proportionally reduces intake motor speed as temperature falls
- automatic summer bypass

CONTROL FEATURES - FACTORY SET

- change of ductwork handing on humidistat version (trip point can be set at manufacture)
- integral humidistat - proportionally increases motor speeds with rising humidity
- 0-10V connections can be added for:
  - BMS - for remote motor shut-off
  - CO_2 detector
  - home automation system
- relay for external pre-heater
- 3 speed selector switch
- remote purge
- purge speed over-run time
- holiday mode for reduced speeds when property is unoccupied (factory set option)
- run-time and power outage counters downloadable via QR code.

COMPLIES WITH

- Part L1A 2013 of Building Regulations for enhanced energy saving capability
- Part F 2013 of Building Regulations for reliable, efficient ventilation
- EU RoHS Directive Compliant.
- Complies with IEC60335-2-80, LVD2006/95/CE and EMC2014/30/UE (European Directive against radio interference and electro-magnetic compatibility
- manufactured in UK to ISO 9001
- CE marked
- SAP PCDB Listed

TYPICAL SPECIFICATION AVAILABLE AT

http://www.vectaire.co.uk/downloads

Vectaire Ltd can supply all accessories for use with these units, including product filters. air filter cassettes, silencers, fire dampers, air valves, ducting, outside grilles and wall cowls. Additionally, Vectaire offers a design service to ensure that the unit installed is the best possible to provide efficient, effective, low energy and low running cost ventilation. Vectaire can also organise installation, commissioning and maintenance of these products

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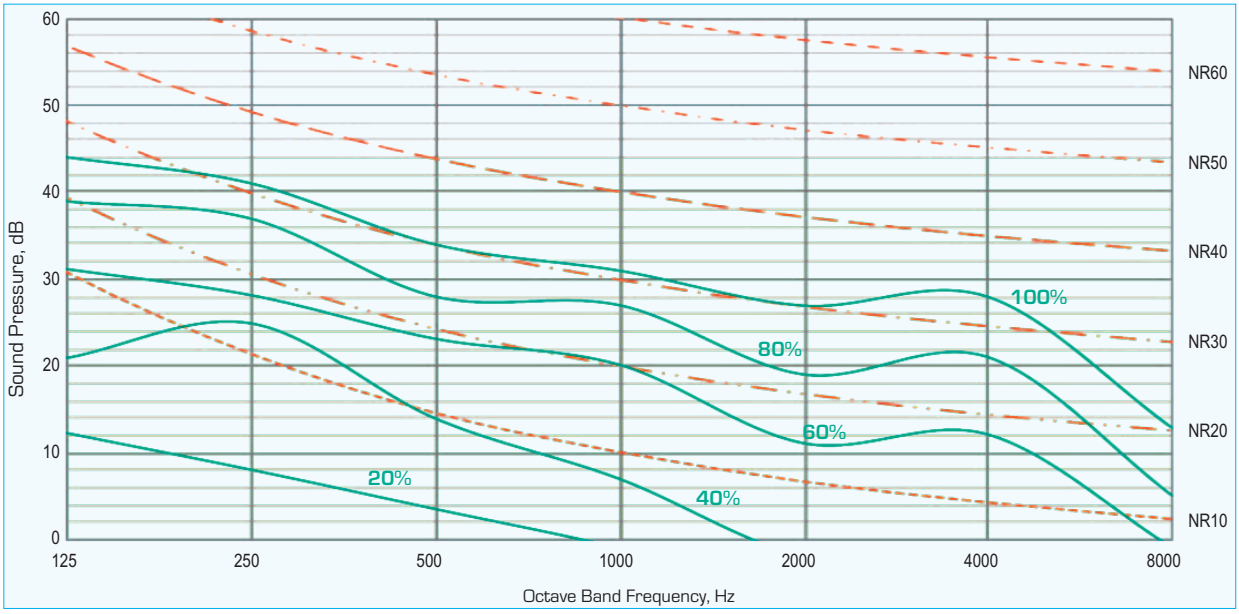
Midi-BY-AT

with integral acoustic attenuation

Midi-BY-AT		Sound Power Levels, L_w (dB) - Octave Bands Frequency Hz.							Sound Pressure dBA @ 3m	Noise Rating based on dB @ 1m
Curve Ref		125	250	500	1k	2k	4k	8k		
100% (101 l/sec)	Extract	61	58	48	41	34	26	23		
	Supply	74	69	60	57	50	44	43		
	Breakout	**52**	**49**	**42**	**39**	**35**	**36**	**21**	**28.3**	**34**
80% (79 l/sec)	Extract	56	53	45	37	29	21	16		
	Supply	70	65	55	53	44	39	36		
	Breakout	**47**	**45**	**36**	**35**	**27**	**29**	**13**	**23.4**	**28**
60% (58 l/sec)	Extract	49	45	39	29	19	10	7		
	Supply	62	56	47	45	34	27	21		
	Breakout	**39**	**36**	**31**	**28**	**19**	**20**	**7**	**15.8**	**21**
40% (36 l/sec)	Extract	38	38	32	17	8	3	6		
	Supply	51	47	38	31	22	13	8		
	Breakout	**29**	**33**	**22**	**15**	**6**	**5**	**6**	**9.8**	**15**
20% (14 l/sec)	Extract	31	20	10	4	0	2	6		
	Supply	32	27	13	8	1	2	6		
	Breakout	**20**	**16**	**12**	**7**	**1**	**2**	**6**	**<5.0**	**<10**
The breakout dB(A) sound pressure values are given for hemispherical free field propagation at a distance of 3m from the unit										
All the above data has been independently tested and verified by BRE to BS EN 13141-7:2010 and BS EN ISO 3741:2010										

BREAKOUT - NR (SPL curves based on breakout dB values at 1m)



RESULTS for SAP CALCULATIONS ENERGY LEVEL PERFORMANCE - using rigid ducting only						
	2009 Data			2012 Data		
Exhaust Terminal Configuration	Airflow (l/sec)	Specific Fan Power (W/l/sec)	Heat Exchange Efficiency	Airflow (l/sec)	Specific Fan Power (W/l/sec)	Heat Exchange Efficiency
Kitchen + 1 additional wet room	15	0.50	94%	21	0.51	93%
Kitchen + 2 additional wet rooms	21	0.50	93%	29	0.61	91%
Kitchen + 3 additional wet rooms	27	0.55	92%	37	0.75	90%
Kitchen + 4 additional wet rooms	33	0.65	91%	45	0.92	89%
Kitchen + 5 additional wet rooms	39	0.76	89%			
Kitchen + 6 additional wet rooms	45	0.88	89%			
Figures at minimum flow rate conditions						

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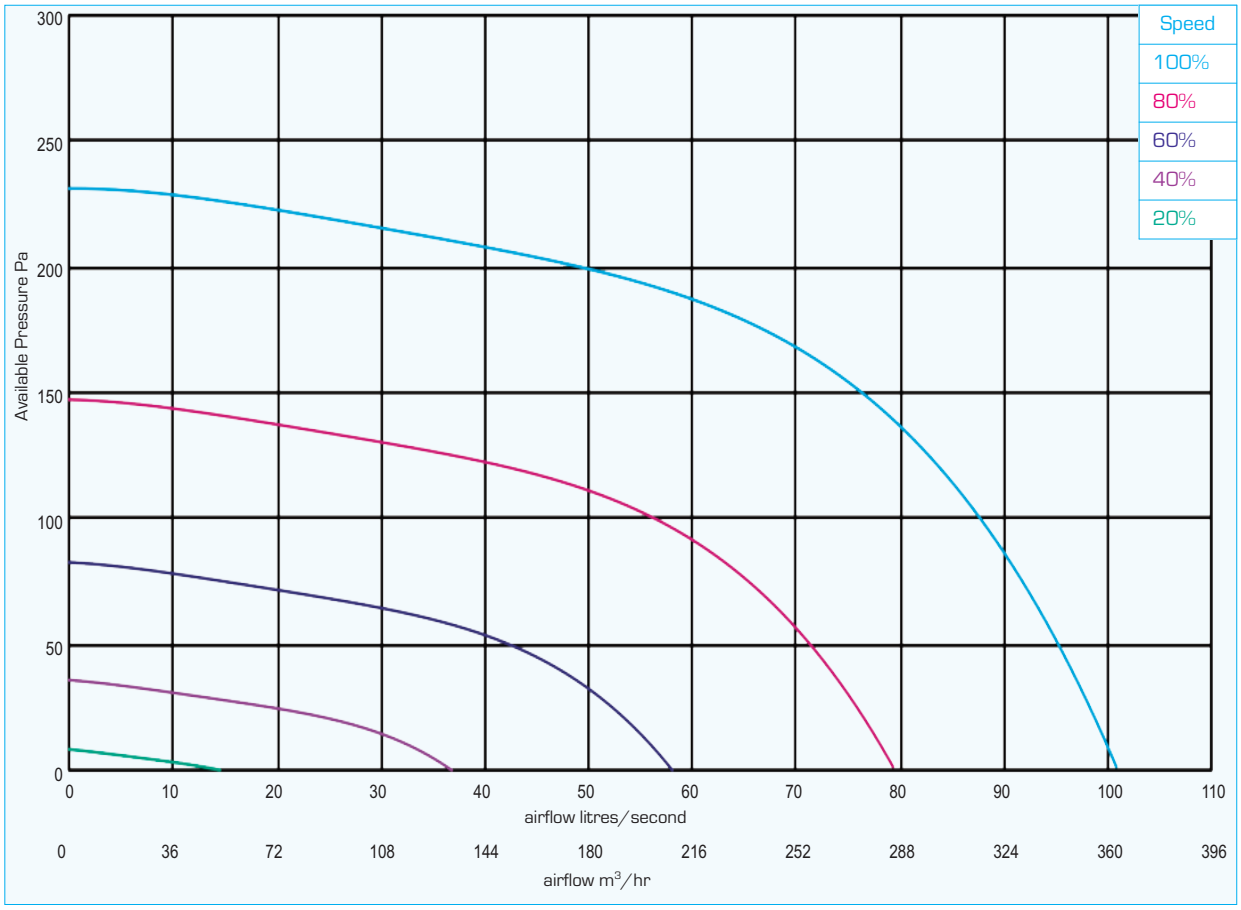
Midi-BY-AT

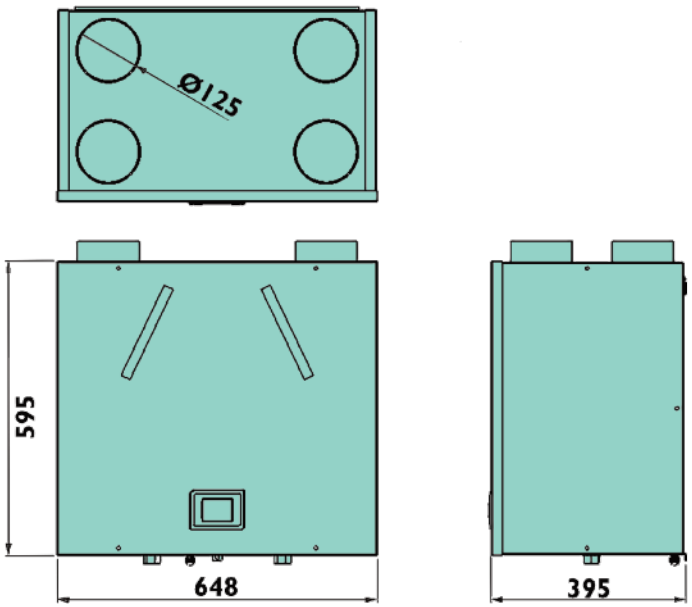
with integral acoustic attenuation

TECHNICAL CHARACTERISTICS											
Model	Airflow l/sec					Total Power - Watts					Operating Current (Amps)
	100%	80%	60%	40%	20%	100%	80%	60%	40%	20%	
Midi-BY-AT	101	79	58	36	14	120	69	31	11	2.2	1.21

PERFORMANCE (curves are for guidance only)



DIMENSIONS - mm



N.B a clearance of at least 200 mm should be allowed on each side of the cabinet for access to the interior

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MVHR

Vertical Models - features and overview

	Midi			Maxi			Maxi Plus		
	S*	H*	AT*	S*	H*	AT*	S*	H*	AT*
Automatic Summer Bypass	✓	✓	✓	✓	✓	✓	✓	✓	✓
Automatic Frost Protection	✓	✓	✓	✓	✓	✓	✓	✓	✓
Filters	✓	✓	✓	✓	✓	✓	✓	✓	✓
Delay Timer	✓	✓	✓	✓	✓	✓	✓	✓	✓
Purge Speed (factory set)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Purge Speed Timer	✓	✓	✓	✓	✓	✓	✓	✓	✓
Built-in Humidistat	✘	✓	on request	✘	✓	on request	✘	✓	on request
Universal Handing (non-humidistat models)	✓	✘	✓	✓	✘	✓	✓	✘	✓
Very low noise levels	✓	✓	✓	✓	✓	✓	✓	✓	✓
Max Airflow at 50Pa - l/s	95	95	95	163	163	163	230	230	230
Max Wet Rooms - Kitchen + SAP2009/SAP2012	K+6/4	K+6/4	K+6/4	K+7/7	K+7/7	K+7/7	K+7/7	K+7/7	K+7/7
SFP w/l/s SAP2009/SAP2012	0.50/0.51	0.50/0.51	0.50/0.51	0.40/0.45	0.40/0.45	0.40/0.45	0.46/0.47	0.46/0.47	0.46/0.47
% Heat Recovery SAP2009/SAP2012	94/93	94/93	94/93	92/92	92/92	92/92	89/89	89/89	89/89
Duct Size - Ømm	125	125	125	150	150	150	150	150	150
Wired Remote Control (optional)	✓	✓	✓	✓	✓	✓	✓	✓	✓
External Condensate	✓	✓	✓	✓	✓	✓	✓	✓	✓
Size mm W x H x D	600 x 564 x 382		648 x 595 x 395	754 x 654 x 535		802 x 703 x 560	754 x 654 x 535		802 x 703 x 560
Weight kg	24		29	37		42	37		42
Approximate Mass kg	24		29	37		42	37		42
Enhanced Acoustic Attenuation	✘	✘	✓	✘	✘	✓	✘	✘	✓

S* - standard models
H* - models with integral humidistat
AT* - models with integral acoustic attenuation

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Vertical MVHR

Midi and Maxi

Vectaire's range of vertical MVHRs include the Midi, the Maxi and the Maxi Plus. These models provide optimum ventilation by continuously and quietly supplying fresh air. The energy efficient motors automatically remove excess moisture helping to maintain a healthy atmosphere.

They tackle condensation in areas from 60m^2 to 400m^2 making them ideal for all residential dwellings, whether houses, apartments or student accommodation with the most powerful models also being suitable for hotels, care homes, multi-occupancy establishments and other commercial properties.

These models meet the latest requirements of the Building Regulations for whole house ventilation systems with heat recovery (System 4).

How They Work

They incorporate two fans - one extracts stale, damp air from the wet rooms in a building, and the other replaces it with warmed fresh air from outside. The two airflows pass through a heat exchanger which recovers the heat from the outgoing air. This is filtered and tempered before being transferred to the incoming fresh air supply and ducted to the living areas. Thus the dwelling is permanently well ventilated and comfortable with good indoor air quality.

Vectaire MVHRs can recover up to 94% of the heat which might otherwise be lost.

The speed of the two fans can be adjusted independently with a choice of variable trickle, boost and purge speeds at installation.

All models have universal handing apart from 'H' humidistat models (see below).

Summer Bypass

All models incorporate a summer bypass which allows the airflow to bypass the heat exchanger automatically when internal and external temperatures are between adjustable setpoints.

Frost Protection

The integral frost-stat proportionally reduces intake motor speed as the temperature falls. This stops the ingress of cold air and consequently the removal of warm air making sure that the ambient remains comfortable. It is activated when the outside temperature is between +8^{0}C and -3^{0}C.

Humidity Control

Models with an integral humidity sensor (H) increase the speed of the motors proportionally as the humidity rises. It responds to increases in relative humidity ensuring a comfortable ambience throughout the day and night. The speed of the motors will fall back to normal levels once the excess humidity has been cleared making sure the minimum amount of energy is used.

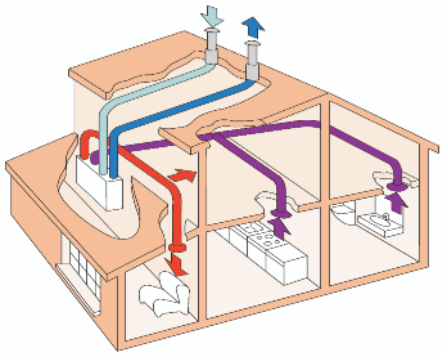
"Super Silent"

The Midi, Maxi and Maxi Plus AT models incorporate additional acoustic attenuation making them ultra quiet - the quietest in the market place.

LCD Control

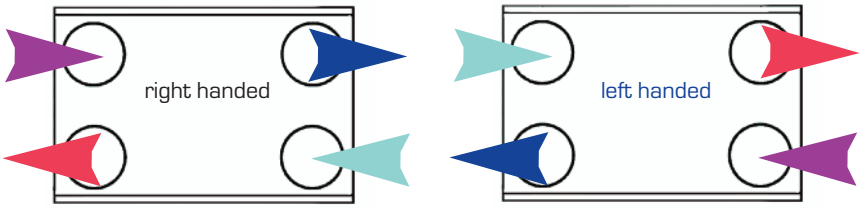
All models can have an integral or remote commissioning state-of-the-art touch screen LCD controller. It is one of the most technologically advanced available giving both installer and user a range of options to ensure that the MVHR is set to provide quiet and efficient ventilation at all times whilst recovering the heat that would otherwise be lost.

TYPICAL INSTALLATION



- Incoming fresh air
- Warmed fresh air
- Extracted warm, moist, stale air
- Cooled outgoing stale air
- MVHR

TOP VIEW OF HANDING FOR HUMIDISTAT MODELS



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MVHR LCD Controller

- For use with all Vectaire Heat Recovery Units
- Option of Integral LCD screen with upright MVHRs (Midis and Maxis)
- Remote units can be mounted wherever is convenient to the user (Model No: LCD-DISPLAY)

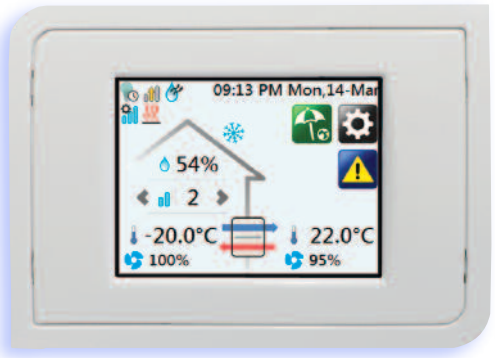
LCD Touch Screen Functions

Display shows:

> motor speeds - for both supply and extract fans. They can be set independently and are variable
> inside and outside temperatures
> status icons - show which functions are currently controlling fan speeds
> date and time
> relative humidity level
> bypass status
> error and service notifications
> filter saturation level - shows when filters need replacing

LCD Touch Screen Functions for USER

> screen allows USER to set and control:
- time
- date
- reset the filter saturation level after filters have been changed
- holiday mode - sets system to minimum running, saving energy whilst maintaining air quality
- operating speed
- language



Commissioning Options - these options are ONLY for use by the installer, and can only be used with a Commissioning Access Code.

If an incorrect passcode is entered 5 times consecutively the system will automatically lock for one hour. Access permissions are lost every time the option screen is exited.

Setting Time: sets up 12 or 24hr format, DST (daylight saving time) and time zone.	Language Selection
Setting Date: sets date format	Touch Screen Calibration
Holiday Mode: sets system to minimum running when required (factory set to maintain air quality)	Commissioning Screen
Boost Speed Time Delay	Night Time Boost Inhibitor
Boost Speed Over-run Timer	Screen Cleaning: wipe screen safely without deleting settings
Run Time Counter and Filter Saturation	Exit to main screen

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K600/1001 INLINE AIR FILTRATION UNIT

STAINLESS STEEL HOUSING WITH 2 LEVELS OF FILTRATION

- **WHO Air Quality Guidelines** – for Nitrogen Dioxide (NO2): 40ug/m3.
- **Housing** – Galvanised steel housing with 125mm inlet and outlet spigots.
- **1st Level filtration** – ePM1 55% metal framed micropleat filter
- **2nd Level filtration** – 3x Actisorb Loose fill carbon panel filters, grade suitable for nitrogen dioxide removal

Filtrex Code	Housing	1st Level Filtration	2nd Level Filtration
K100/1001	Galvanized Steel	Micropleat Metal Frame	Actisorb Carbon Panel
	125mm inlet/outlet spigots	Quantity x1 per unit	Quantity x3 per unit
	Size: 300x200x600mm	Size: 287x109x75mm	Size (each): 450x198x28mm
	Pressure Drop: 100Pa	Recommended Filter Change: Every 6 – 8 months or at 250Pa pressure drop*	Recommended Filter Change: Every 6-12 months*
	Airflow: 180m³/h		
		Contact Sales for quotation for replacement filters	

**Please note all filter changes are approximate and subject to environmental conditions; this may increase/decrease the amount of changes required*

FILTREX

SMART FILTRATION

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