

TECHNICAL SUBMITTAL SHEET

TS No:	KH-TS-005	Revision:	01
Date:	30/05/2014	Project No:	KH0153
To:	Andy Jarvis David Laing/Declan Douglas	Project:	The Royal College of Ophthalmologists
Of:	E3 Consulting Engineers Bennetts Associates		
Copy to:	Andy Worsick – E3 Claudine O’Sullivan - BA Ian Henderson - JC Keith Wilkinson - Bradgate Knight Harwood Team	Address:	18 Stephenson way London NW1 2HD
		From:	Gary Sumsion
		Of:	Knight Harwood

Title:	Extract Fans		
<p>Please find attached our Extract Fan selections and technical data for information and comments. Included attachments: - Revised Fan Schedule dated 22.5.14 Nuaire Fan Data Sheets fans EF 1.1 Skills Centre, EF G.1 Ground Floor Kitchen and EF B.1 Basement Toilet Extract Nuaire Fan Data Sheets fans 5.1 Toilet Extract Fan (revised selection)</p>			
Date Response Required by:	06/06/2014		
Comments:			
Wording -			
Status:			
Date:	Company:	Name:	Signature:

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VRF Schedule 15_04_2014

KH-TS-004 - REV 02

System Reference		System Type	Refrigerant	Proposed Manufacturer	
COND AC01	All Floors	Variable Refrigerant Flow	R410A	Panasonic	
COND AC02	3 rd Floor Server Room Stand-by	DX Split Type	R410A	Panasonic	

Unit Reference	Room	Unit Type	Outdoor Unit Ref	Room Total Cooling Load (kW)	Room Cooling Sensible Load (kW)	Heating Load (kW)	Fan Speed	Air Volume l/s	Fan Coil Sound Pressure Level dB	Room Noise Criteria L _{eq} dB	External Pressure	Manufacturer Ref
Basement												
AC B.1	Breakout	Ducted	COND AC01	3.28	2.39	0.3	Low	133	30	30	15	S-45MM1E51
Ground												
AC G.1	Stairwell	Ducted	COND AC01	3.30	3.0	2.4	Medium	191	33	40	15	S-56MM1E51
AC G.2	Café / Reception	Cased floor standing	COND AC01	4.35	2.67	2.38	Medium	-	38	40	15	S-71MP1E5
AC G.3	Café / Reception	Ducted	COND AC01	4.35	2.67	2.38	Medium	191	33	40	15	S-56MM1E51
AC G.4	Café / Reception	Ducted	COND AC01	4.35	2.67	2.38	Medium	191	33	40	15	S-56MM1E51
DC G.1	Café / Reception	Air Curtain	COND AC01	9.2	-	11.9	Low	-	40	40	-	PAW-10EA/IRC-MJ
First												
AC 1.1	Skills Centre	Ducted	COND AC01	3.84	2.36	2.21	Medium	191	33	40	15	S-56MM1E51
AC 1.2	Skills Centre	Ducted	COND AC01	3.84	2.36	2.21	Medium	191	33	40	15	S-56MM1E51
AC 1.3	Skills Centre	Ducted	COND AC01	3.84	2.36	2.21	Medium	191	33	40	15	S-56MM1E51
AC 1.4	Meeting Room	Cased floor standing	COND AC01	4.02	1.9	3.04	Medium	-	36	35	15	S-56MP1E5
AC 1.5	Meeting Room	Cased floor standing	COND AC01	4.02	1.9	3.04	Medium	-	36	35	15	S-56MP1E5
Second												
AC 2.1	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.43	Medium	-	35	40	15	S-36MP1E5
AC 2.2	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.43	Medium	-	35	40	15	S-36MP1E5
AC 2.3	Open Plan	Ducted	COND AC01	2.49	1.65	1.43	Medium	133	30	40	15	S-36MM1E51
AC 2.4	Open Plan	Ducted	COND AC01	2.49	1.65	1.43	Medium	133	30	40	15	S-36MM1E51
AC 2.5	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.43	Low	-	28	40	15	S-28MP1E5
AC 2.6	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.43	Low	-	28	40	15	S-28MP1E5

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AC 2.7	Quiet Room	Cased floor standing	COND AC01	1.71	1.05	1.05	Medium	-	30	35	15	S-28MP1E5
AC 2.8	President's Office	Cased floor standing	COND AC01	2.04	1.62	0.8	Low	-	31	35	15	S-45MP1E5
AC 2.9	President's Office	Cased floor standing	COND AC01	2.04	1.62	0.8	Low	-	31	35	15	S-45MP1E5
Third												
AC 3.1	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.44	Medium	-	35	40	15	S-36MP1E5
AC 3.2	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.44	Medium	-	35	40	15	S-36MP1E5
AC 3.3	Open Plan	Ducted	COND AC01	2.49	1.65	1.44	Medium	133	30	40	15	S-36MM1E51
AC 3.4	Open Plan	Ducted	COND AC01	2.49	1.65	1.44	Medium	133	30	40	15	S-36MM1E51
AC 3.5	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.44	Medium	-	35	40	15	S-36MP1E5
AC 3.6	Open Plan	Cased floor standing	COND AC01	2.49	1.65	1.44	Medium	-	35	40	15	S-36MP1E5
AC 3.7	Quiet Room	Cased floor standing	COND AC01	1.92	1.07	1.01	Medium	-	30	35	15	S-28MP1E5
AC 3.8	Quiet Room	Cased floor standing	COND AC01	2.1	1.47	1.12	Medium	-	30	35	15	S-28MP1E5
AC 3.9	CEO Office	Cased floor standing	COND AC01	1.92	1.35	1.18	Medium	-	30	35	15	S-28MP1E5
Server Lead	Server Room	Wall mounted	COND AC01	-	3.00	-	Medium	-	44			S-73MK1E5
Server Stand-by	Server Room	Wall mounted	COND AC02	-	3.00	-	Medium	-	44			S-71PK1E5
Fourth												
AC 4.1	Boardroom	Ducted	COND AC01	3.8	1.96	2.65	Low	133	30	30	15	S-45MM1E51
AC 4.2	Boardroom	Ducted	COND AC01	3.8	1.96	2.65	Low	133	30	30	15	S-45MM1E51
AC 4.3	Boardroom	Ducted	COND AC01	3.8	1.96	2.65	Low	133	30	30	15	S-45MM1E51
AC 4.4	Boardroom	Ducted	COND AC01	3.8	1.96	2.65	Low	133	30	30	15	S-45MM1E51
AC 4.5	Boardroom extension	Ducted	COND AC01	5	2.9	3.64	Low	166	31	30	15	S-56MM1E51
AC 4.6	Staff kitchen	Ducted	COND AC01	2.61	2.48	0.63	Medium	133	30	35	15	S-36MM1E51

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Unit Reference	Location	Total Cooling (kW)	Total Indoor Sensible Cooling Duty (kW)	Total Indoor Heating Duty (kW)	Minimum EER (Cooling)	Minimum COP (Heating)	Noise Level	Manufacturer Ref
COND AC01	Roof	115	73.8	94	2.5	2.2	See note 2	Panasonic 3 No. U-16MF2E8
COND AC02	Roof	7.1	3.5	-	-	-	See note 2	Panasonic U-71PE1ESA

Notes

- Design return air condition: 24°C db, 50% RH
Minimum supply temperature: 12°C
Fresh air supply condition: 24°C db, 50% RH

- L_p at 1m under free field conditions:

Model	63 Hz (dB)	125 Hz (dB)	250 Hz (dB)	500 Hz (dB)	1000 Hz (dB)	2000 Hz (dB)	4000 Hz (dB)	dB(A)
3 No. U-16MF2E8	73	73	69	64	63	56	50	67
U-71PE1ESA	48	49	48	48	44	36	32	48

To meet the ION acoustic plant noise assessment requirements – acoustic report A580/R10a 9th March 2013

College of Ophthalmologists
Fan Schedule 22_05_2014

KH-TS-005 REV 01

Fan Reference & Type	Location	Manu Ref	Air Volume (m ³ /s)	External Resistance (Pa)	Max SFP (W/(/s))	Power Requirements	Control	Maximum Sound Power Levels	63 Hz	125 Hz	250 Hz	500 Hz	1K Hz	2K Hz	4K Hz	8K Hz
EF 5.1 Toilet Extract	Roof	Nuair AM42ES	0.2	175	0.6	Three Phase 205W 1.1A FLC 1.1A SC	Enabled by BMS	Inlet (Roomside) Outlet (Exhaust) Breakout	71	76	65	61	50	52	49	44
EF 1.1 Skills Centre Extract	First Floor	Nuair AM42ES	0.2	165	0.6	Three Phase 280W 1.1A FLC 1.1A SC	Enabled by BMS	Roomside Exhaust Breakout	71	76	65	61	50	52	49	44
EF G.1 Ground Floor Kitchen Extract	Ground Floor	Nuair MEVDC2	0.03	125	0.6	Single Phase 20W 1.1A FLC 1.1A SC	Local manual speed control with on/off control	Roomside Exhaust Breakout	43	42	46	26	18	18	16	16
EF B.01 Basement Toilet	Basement	Nuair AVT1	0.09	138	0.6	Single Phase 90W 0.75A FLC 0.75A SC	Automatic changeover with remote alarm. Enabled by BMS	Roomside Exhaust Breakout	71	66	59	59	53	50	46	44

Notes

1. The fan selections are subject to final spatial coordination and selection of attenuators.


SUMMARY FAN DATA SHEET

Nuaire International, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom.

Tel:+44 (0)29 2085 8200 Fax:+44 (0)29 2085 8300 email:info@nuairegroup.com

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended
This data sheet produced on 21 May 2014 19:34 using software version 2.6.08 - 12-February-2013

Technical Data

AM - Airmover

In-Line Centrifugal Duct Fan

Fan Code: **AM42ES**

Installation Manual Links: 671174

Required Duty: 200 l/s @ 165 Pa

Actual Duty: 294 l/s @ 358 Pa

Actual at Required Flow: 200 l/s @ 372 Pa

When Speed Controlled to Required Duty (67.9%):

Fan Input Power: 0.064 kW

Motor Input Power: 0.106 kW

Specific Fan Power: 0.5 W/(l/s)

Motor Efficiency: 68 %

Fan Efficiency: 51 %

Fan Input Power: 0.205 kW

Maximum Fan Input Power: 0.28 kW

Motor Input Power: 0.337 kW

Specific Fan Power: 1.1 W/(l/s)

Nominal Fan Speed: 4 Pole 1,430 RPM

Electrical Supply: 3 Phase

Nominal Motor Rating: 0.37 kW

Motor Current: fl: 1.1 A

Motor Current: sc: 1.1 A

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnecter is required to isolate the fan from the electrical supply.

Max. Operating Temp.: 60°C

Weight: 53 kg

Sound Data

Acoustic performance to BS848 Part 2.2 and AMCA 300.

Breakout Noise (dBA): 28 dBA @ 3m

Breakout level is spherical. For hemi-spherical add 3 dBA.

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k
Induct Inlet	71	76	65	61	50	52	49	44
Induct Outlet	70	77	61	59	54	56	50	46
Open Inlet	62	70	62	60	50	51	49	44
Open Outlet	60	71	58	58	54	56	50	46
Breakout	64	63	51	38	23	25	28	19

Noise calculated at actual duty of fan.

Above noise calculated speed controlled to required duty (67.9%)

For 100% Speed: +3 +3 +5 +6 +9 +9 +9 +9

Breakout Noise (dBA): +4

Values shown are for inlet Lw and outlet Lw sound power levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Project Details

Location: TEF -

Specification

The unit casing shall consist of high rigidity Pentapost framework with double skinned infill panels. Panels shall contain inert high density infill. Panel material shall be heavy gauge Aluzinc corrosion resistant steel. Fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with high efficiency IE2 motors to IEC60034-30:2008 where applicable (e.g. single speed motors, rated at 0.75kW and above). The efficiency rating of other motors will vary by size and type.

Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer: integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10v and volt free failure indication.

AMDF2

Square double flanged flexible connectors with a pair of quickfit flanges. The flexible duct material is a sound barrier mat with wear resistant skin, designed to improve sound installation. The material is self extinguishing and suitable for operating temperatures between -30°C to +65°C.

NAV2

Resilient rubber anti-vibration mountings, supplied as a set of 4.

**NOTE: Control is not suitable for external mounting.
For weatherproof enclosure please contact sales office.**

Selected Ancillaries

2 x AMDF2	Quickfit double flanged flexible connector
1 x NAV2	Anti-vibration mounting kit

Wiring Information

For complete wiring details please refer to the Installation & Maintenance Manual reference 671174 on our website.

nuaire SUMMARY FAN DATA SHEET - PERFORMANCE

Nuaire International, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom.

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Fan Efficiency: 51 %

Fan Input Power: 0.205 kW

Maximum Fan Input Power: 0.28 kW

Motor Input Power: 0.337 kW

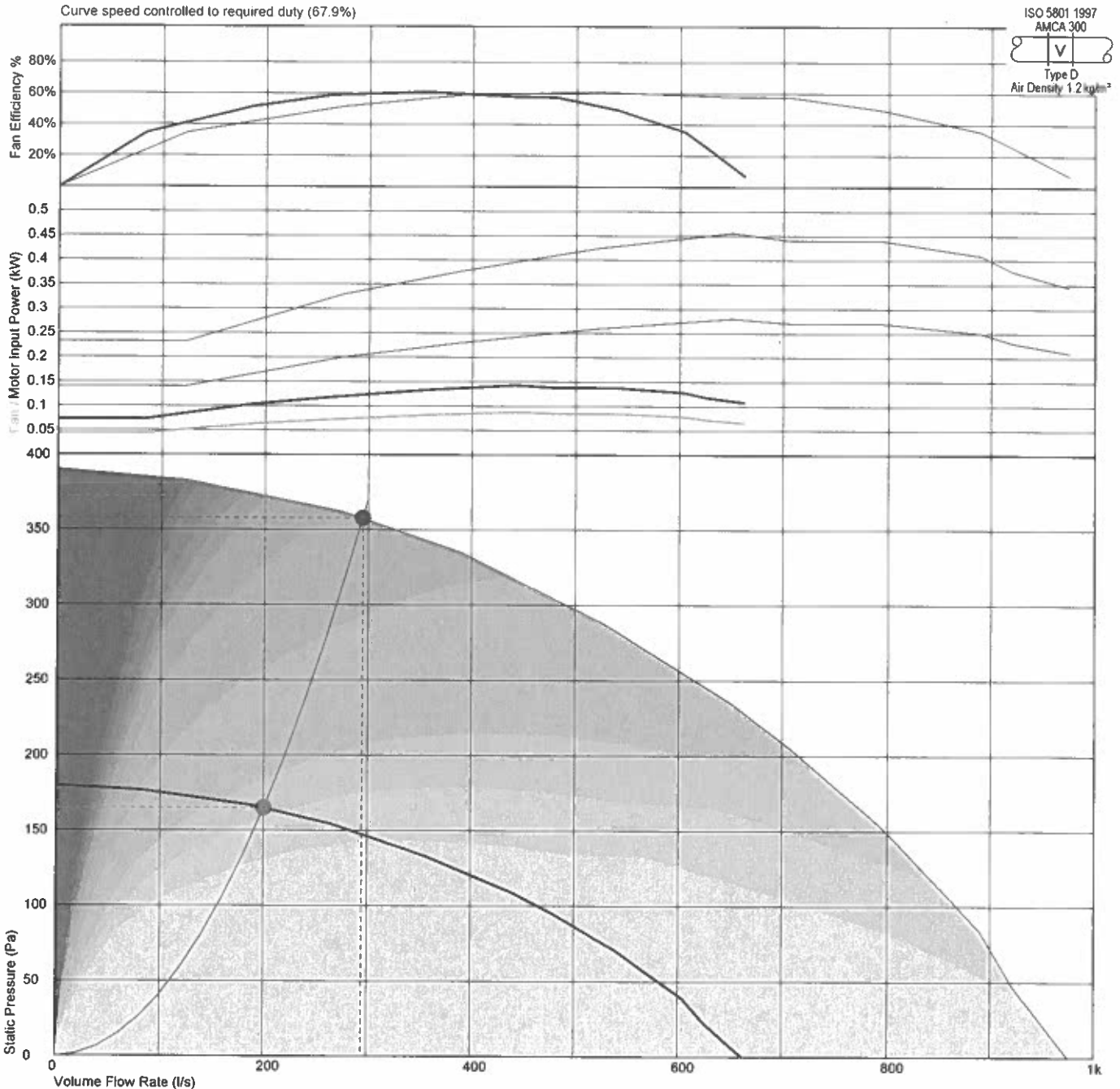
Specific Fan Power: 1.1 W/(l/s)

Project Details

Location: TEF -

Performance Curve

Curve speed controlled to required duty (67.9%)



nuaire SUMMARY FAN DATA SHEET - DRAWINGS

Nuaire International, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom.

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Technical Data

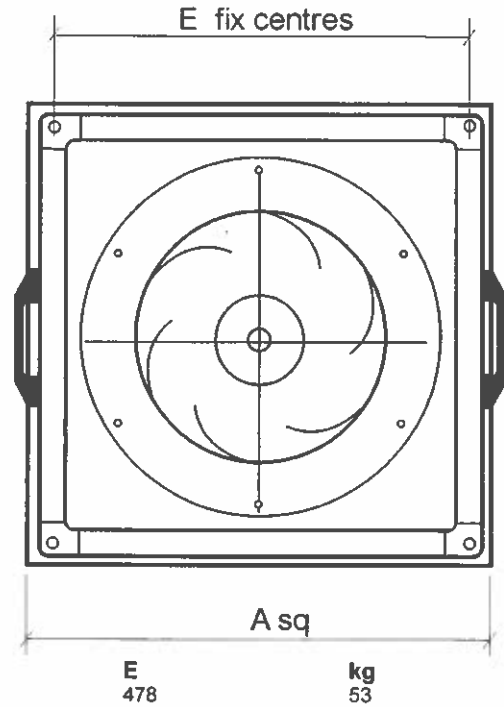
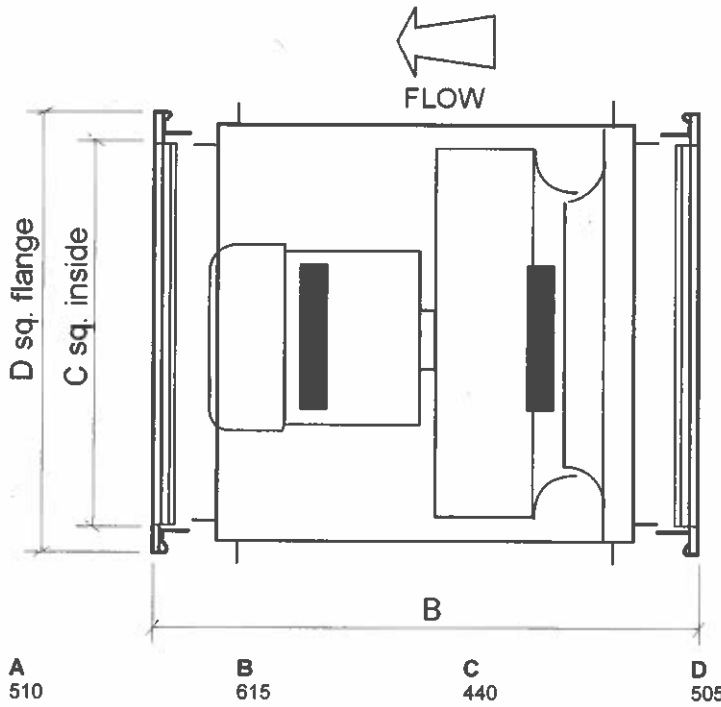
AM - Airmover
In-Line Centrifugal Duct Fan

Fan Code:

AM42ES

Project Details

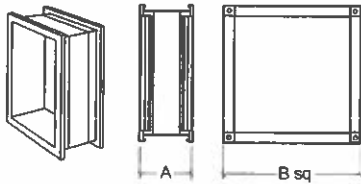
Location: TEF -



The drawing is for dimensional purposes only. Dimensions in mm.

Ancillary Dimensions

AMDF2 - Quickfit double flanged flexible connector
A=150 B=505 mm



NAV2 - Anti-vibration mounting kit
B=45 C=75 mm

