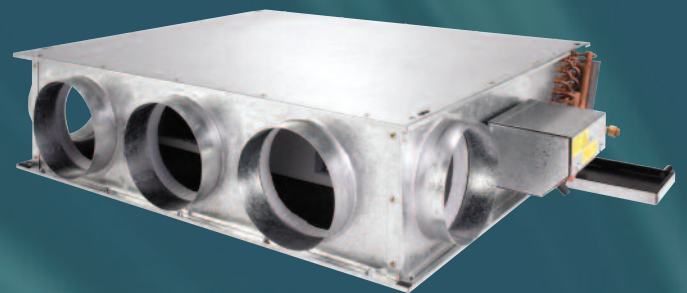


Waterside Control Fan Coil Units

Horizontal Chassis Type -
EPIC Range



“EPIC” – the most energy efficient
fan coil unit utilising an ECM motor

Advanced Air 



Advanced Air UK factory and technical centre of just over 60,000 sq ft

Advanced Air are part of the Nailor Industries Group in the USA and some of the key factors are:-

Turnover	£80m
Employees	750
Laboratories and Test Cells	6
Total factory area	600,000 ft ²

In the UK Advanced Air manufacture:-

- Fan Coil Units
- Grilles and Diffusers
- Chilled Beams
- Fire and Smoke Dampers
- Volume Control Dampers
- Electrical Control Panels
- VAV Terminal Units

The investment in R & D means there is a continuous flow of new products and upgrades to existing units. Specialist customer testing and mock ups undertaken in BSRIA approved laboratories



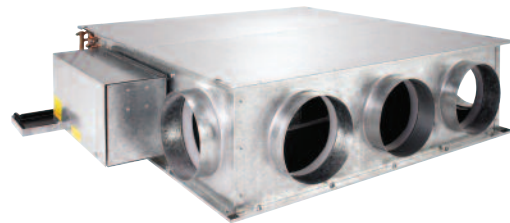
R & D Facilities

Fan Coil Unit Overview

Advanced Air and Nailor Industries have over 10 years experience in manufacturing bespoke and project specific fan coil units. As a result Advanced Air have invested in the development of the latest range of energy efficient and versatile fan coil units in accordance with today's building regulations.

Advanced Air's design team offer full technical support to assist with your system design including the Air Distribution Equipment and co-ordination from concept through to delivery to site. Our service department also offer a full after sales service and maintenance contracts if required.

EPIC Fan Coil Units 280mm high

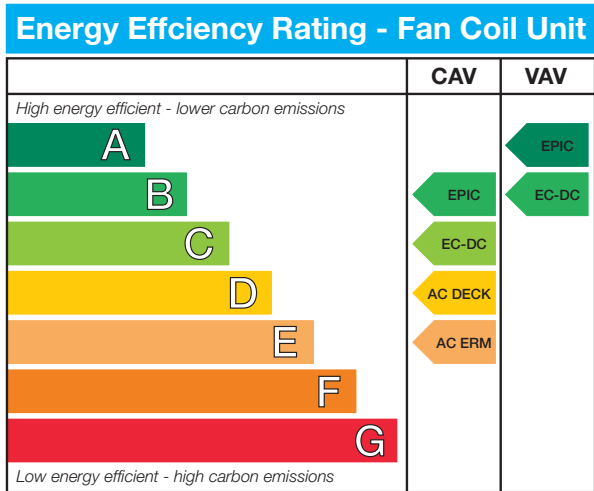


A unique ECM horizontal mounted fan to give the most energy efficient solution with specific fan powers down to 0.15w/l/s.

EPIC Fan Coil Units

The EPIC fan coil range provides the designer with the opportunity to achieve very low specific fan power levels (SFP). This is becoming an increasingly important issue as successive building regulations slash the allowable total carbon emission from a building.

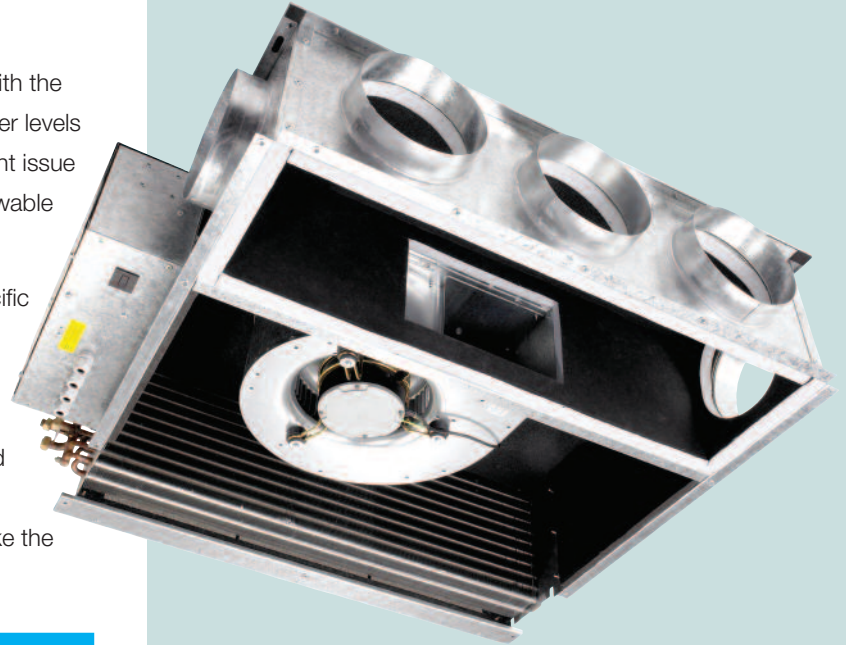
Display Energy Certificates (DEC) show the specific buildings carbon emissions as calculated by approved software. The appearance is similar to the energy labelling of domestic electrical appliances. If a similar labelling system was used for individual components in an air conditioning system the ratings for fan coil units could look like the label below.



SFP is a measure of how efficiently the fan moves the air over the heat exchangers within the fan coil unit. Below is a simple tabulation:-

Motor Type	Air Volume (Constant) l/s	W	SFP W/l/s
ECM (EPIC)	170	34	0.20
EC - DC	170	55	0.32
AC DECK	170	103	0.61
AC ERM	170	123	0.72

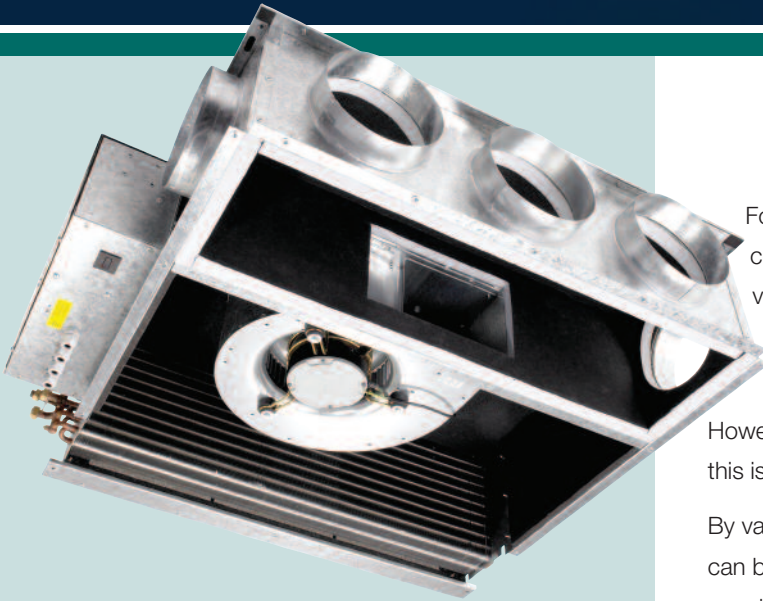
The SFP is simply l/sec divided by the power consumption of the motors in watts.



The unique horizontally mounted ECM motor gives many benefits which may be summarised as follows:-

- 1 The most energy efficient fan coil unit
- 1 Infinitely variable speed
- 1 Variable air volume can be easily achieved with further savings in energy consumption
- 1 Single motor as opposed to multiple motors means greater reliability
- 1 Lower life time costings compared to conventional fan coils
- 1 Lower noise levels
- 1 Ability to pre-set air volumes at the factory and fully commission the unit
- 1 Independently tested to British & European Standards, Eurovent 6/3 and ISO/TC86/SC6

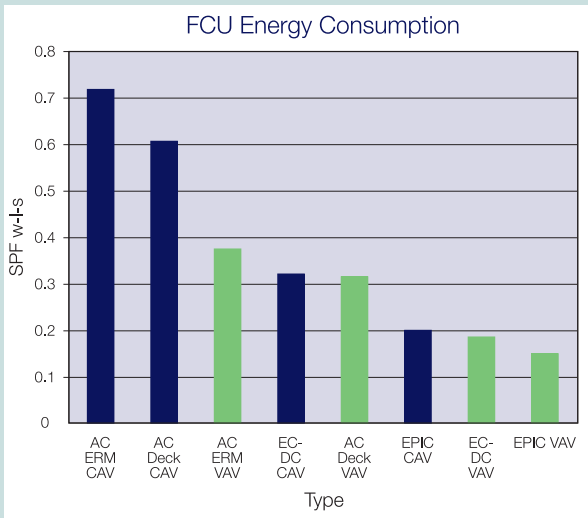
Variable Air Volume - VAV



For the last 40 years virtually all fan coils have been constant fan speed and consequently constant air volume (CAV). Any changes in cooling or heating were adjusted by the water valve, i.e. varying the water volume.

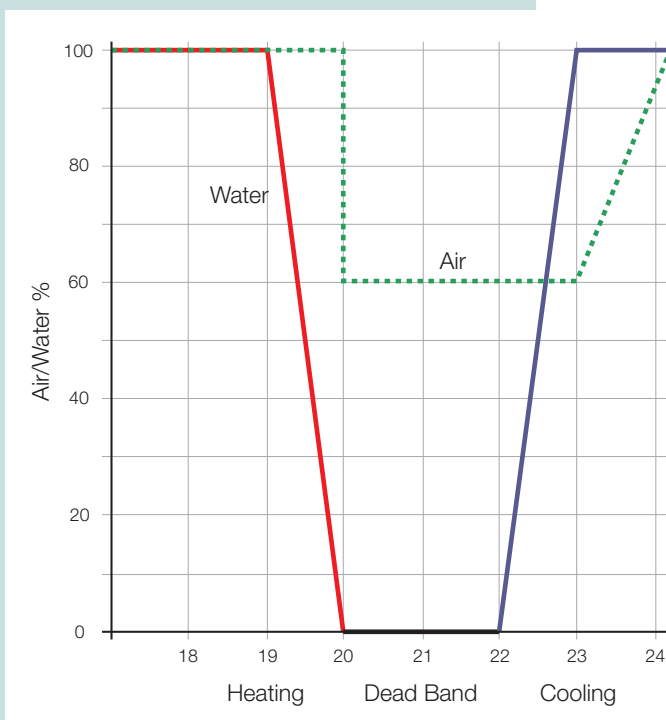
However with the fans running at full speed all of the time this is a needless waste of energy.

By varying the air volume, significant reductions in energy can be achieved and typical values for a wide range of constant and VAV fan coils is shown in the energy comparison graph



Controls

The control philosophy is relatively simple as can be seen from the diagram below. At maximum cooling the fan is running at 100% with the water valve fully open as the cooling load reduces the fan air volume is reduced down to a minimum of 60%. If the cooling load reduces further the water valve is progressively closed until the dead band is reached. In other words the fan air volume is reduced first followed by a progressive reduction in the water cooling volume.



On heating the early morning boost has maximum air volume and heating. On the heating cycle the air volume is kept constant to ensure there is no stratification within the room. The heating requirement is usually a short period just prior to occupation of the building and therefore does not significantly impact on the carbon emissions.

EPIC Fan Coil Units - ECM Technology

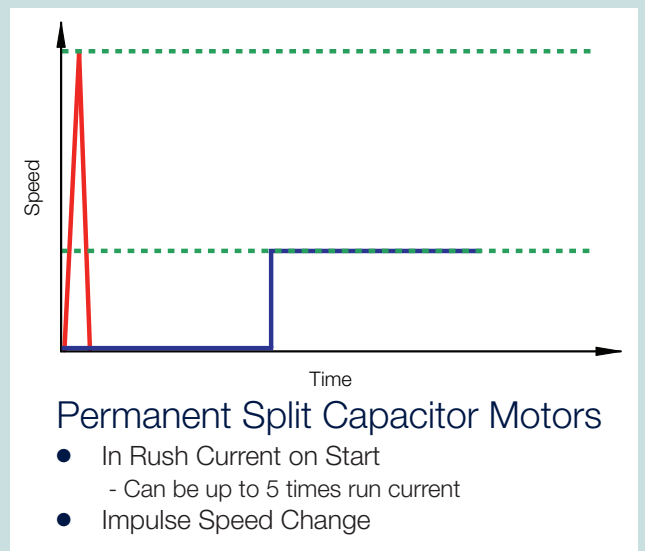
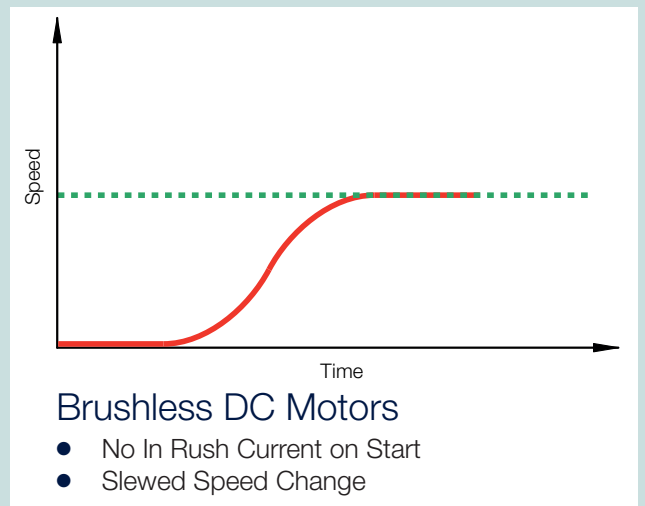
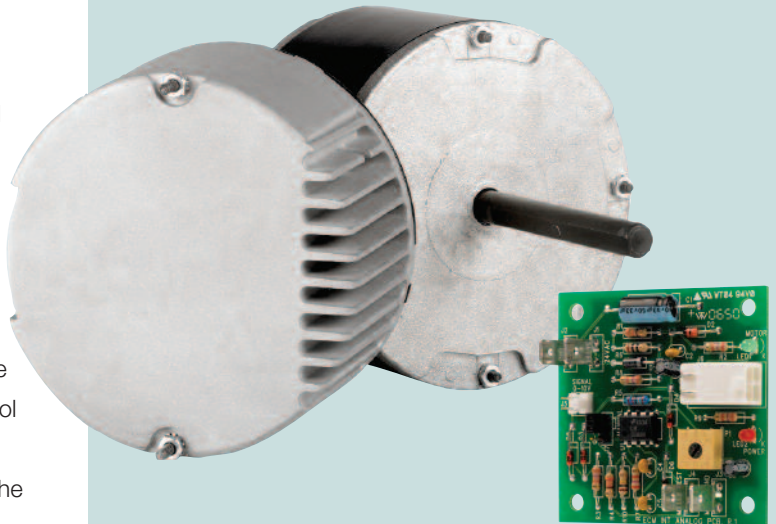
Energy efficient brushless DC motors, as incorporated into Advanced Air's EPIC fan coil units, give energy savings that reduce the fan power to almost a ¼ of that taken by a comparable permanent split capacitor (PSC) motor. This results in a cooler running motor that transfers less heat to the supply air.

Factory setting of air volume can be set direct from the BMS system or through the in-built unique EPIC control card module. The volume can be set by a 0-10 volt control signal which, via a control system, is ideal for the utilisation of VAV capability to suit varying occupied space loads.

Due to its "smart" motor technology the fan is self-commissioning as any change in external resistance is recognised by the "smart" controller and the fan automatically compensates to achieve its set point. The step-less dynamic speed control compared to standard step control gives greater operating range and more flexibility. The "smart" motor has feedback capabilities which via the BMS can be used to indicate dirty filters and can be programmable to suit varying room condition loads.

Soft start and slewed speed ramps are programmed into the ECM motor which eliminates stress to the mounting bracket or hardware. This is one of the factors in higher life expectancy of 90,000 hours (approximately 20 years) compared to the expected 50,000 hours (10 years) of typical PSC motors, resulting in fewer failures and lower maintenance costs for the life cycle of the building.

- Energy Efficient Brushless DC motor.
- Significant Energy Savings
- Unique Factory Pre-set Air Volume Capability (+/- 5%)
- Pressure Independent Fan Operation
- On-site Adjustable Fan Air Volume Controller
- Remote Fan Air Volume Adjustment Capability From BMS



EPIC Fan Coil Units - Thermal Performance Data

Size	Airflow l/s	Cooling				Heating			NR Guide*		
		Total Pc - kW	Sensible Ps - kW	Water Flow kg/s	Hyd Resistance kPa	Total Ph - kW	Water Flow kg/s	Hyd Resistance kPa	Standard	185mm Long Attenuator	400mm Long Attenuator
600	75	1.50	1.14	0.06	2.82	0.36	0.006	1.0	<25	<25	<25
	90	1.75	1.35	0.07	3.70	0.43	0.007	1.0	25	<25	<25
	135	2.35	1.88	0.09	6.19	0.65	0.010	1.0	31	29	27
	160	2.70	2.19	0.11	7.90	0.77	0.012	1.0	35	33	31
	170	2.80	2.27	0.11	8.42	0.82	0.013	1.0	36	34	32
	195	3.05	2.50	0.12	9.77	0.93	0.015	1.0	38	36	34
	220	3.30	2.74	0.13	11.22	1.05	0.017	1.0	40	38	36
	240	3.65	3.03	0.15	13.38	1.17	0.019	1.0	42	40	38
	285	4.10	3.44	0.16	16.40	1.37	0.022	1.0	44	42	40
900	320	4.40	3.74	0.18	18.56	1.54	0.025	1.0	47	45	43
	90	1.85	1.39	0.07	2.00	0.43	0.007	1.0	25	<25	<25
	120	2.40	1.80	0.10	3.80	0.58	0.009	1.0	30	28	26
	146	2.80	2.18	0.11	6.00	0.70	0.011	1.0	33	31	29
	170	3.08	2.43	0.12	6.26	0.81	0.013	1.0	35	33	31
	190	3.35	2.65	0.13	8.00	0.91	0.014	1.0	38	34	32
	225	3.90	3.12	0.16	10.00	1.08	0.017	1.0	41	35	34
	255	4.30	3.44	0.17	12.00	1.23	0.020	1.0	42	36	35
	280	4.55	3.73	0.18	13.00	1.35	0.021	2.0	43	39	37
1200	320	5.00	4.10	0.20	15.00	1.51	0.024	2.0	45	42	39
	355	5.43	4.51	0.22	18.00	1.68	0.027	2.0	48	44	41
	170	3.20	2.50	0.13	3.00	0.83	0.013	1.0	27	<25	<25
	200	3.70	2.96	0.15	4.00	0.98	0.016	1.0	30	25	<25
	240	4.05	3.26	0.16	4.62	1.17	0.019	2.0	33	28	25
	280	4.80	3.85	0.19	7.00	1.35	0.021	2.0	35	30	28
	320	5.30	4.24	0.21	7.91	1.54	0.025	2.0	38	32	30
	385	5.90	4.84	0.23	10.00	1.86	0.030	3.0	40	35	33
	420	6.60	5.40	0.26	12.00	2.02	0.032	3.0	42	36	34
1500	485	7.25	6.09	0.29	14.00	2.33	0.037	4.0	44	38	37
	540	7.90	6.64	0.31	16.00	2.60	0.041	5.0	46	40	39
	600	8.60	7.23	0.34	19.00	2.87	0.046	6.0	48	43	41
	250	4.68	3.65	0.19	6.15	1.19	0.019	2.0	31	25	23
	325	5.65	4.40	0.22	8.55	1.55	0.025	2.0	34	28	26
	400	6.62	5.40	0.26	11.28	1.94	0.031	3.0	38	32	30
	450	7.20	5.87	0.29	13.06	2.18	0.035	4.0	42	36	34
	500	7.80	6.36	0.31	15.03	2.43	0.039	5.0	43	37	35
	550	8.42	6.96	0.34	17.18	2.67	0.042	6.0	45	39	37
1500	600	9.02	7.46	0.36	19.38	2.87	0.046	6.0	46	40	38
	650	9.44	9.80	0.38	20.99	3.11	0.050	7.0	48	42	40
	700	10.02	8.50	0.40	23.29	3.35	0.053	8.0	50	44	42
	750	10.61	9.00	0.42	25.75	3.59	0.057	9.0	51	45	43

Performance Notes:

Cooling - Air On 23°C, 50% RH
ChW 6°C flow, 12°C return

Heating - Air On 20°C, Air Off 30°C Maximum
LPHW 70°C flow, 55°C return

*Published NR figures should only be used as a quick reference guide to assess the acoustic performance of Advanced Air's fan coil units. It is recommended that acoustic analysis using the sound power levels should be conducted to suit specific project requirements. For further details, please contact Advanced Air Sales.

EPIC Fan Coil Units - Thermal Performance Data

Size	Airflow l/s	Cooling				Heating			NR Guide*		
		Total Pc - kW	Sensible Ps - kW	Water Flow kg/s	Hyd Resistance kPa	Total Ph - kW	Water Flow kg/s	Hyd Resistance kPa	Standard	185mm Long Attenuator	400mm Long Attenuator
600	75	1.30	1.04	0.04	1.68	0.36	0.006	1.0	<25	<25	<25
	90	1.55	1.26	0.05	2.28	0.43	0.007	1.0	25	<25	<25
	135	2.10	1.76	0.07	3.88	0.65	0.010	1.0	31	29	27
	160	2.32	1.94	0.08	4.62	0.77	0.012	1.0	35	33	31
	170	2.50	2.13	0.09	5.27	0.82	0.013	1.0	36	34	32
	195	2.70	2.32	0.09	6.03	0.93	0.015	1.0	38	36	34
	220	2.86	2.49	0.10	6.67	1.05	0.017	1.0	40	38	36
	240	3.20	2.79	0.11	8.12	1.17	0.019	1.0	42	40	38
	285	3.60	3.17	0.12	9.98	1.37	0.022	1.0	44	42	40
	320	3.86	3.44	0.13	11.27	1.54	0.025	1.0	47	45	43
900	90	1.61	1.29	0.05	1.67	0.43	0.007	1.0	25	<25	<25
	120	2.00	1.60	0.07	2.44	0.58	0.009	1.0	30	28	26
	146	2.40	1.97	0.08	3.36	0.70	0.011	1.0	33	31	29
	170	2.61	2.17	0.09	3.89	0.81	0.013	1.0	35	33	31
	190	2.95	2.45	0.10	4.82	0.91	0.014	1.0	38	34	32
	225	3.35	2.81	0.11	6.02	1.08	0.017	1.0	41	35	34
	255	3.75	3.19	0.13	7.33	1.23	0.020	1.0	42	36	35
	280	4.00	3.40	0.14	8.20	1.35	0.021	2.0	43	39	37
	320	4.40	3.78	0.15	9.69	1.51	0.024	2.0	45	42	39
	355	4.75	4.14	0.16	11.08	1.68	0.027	2.0	48	44	41
1200	170	2.80	2.30	0.10	1.91	0.83	0.013	1.0	27	<25	<25
	200	3.12	2.56	0.11	2.31	0.71	0.011	1.0	30	25	<25
	240	3.35	2.75	0.11	2.61	0.59	0.009	2.0	33	28	25
	280	4.10	3.49	0.14	3.72	1.35	0.021	2.0	35	30	28
	320	4.60	3.91	0.16	4.55	1.54	0.025	2.0	38	32	30
	385	5.10	4.39	0.17	5.46	1.86	0.030	3.0	40	35	33
	420	5.75	4.95	0.20	6.73	2.02	0.032	3.0	42	36	34
	485	6.35	5.53	0.22	8.01	2.33	0.037	4.0	44	38	37
	540	6.95	6.05	0.24	9.38	2.60	0.041	5.0	46	40	39
	600	7.50	6.60	0.26	10.71	2.87	0.046	6.0	48	43	41
1500	250	4.00	3.32	0.14	3.57	1.19	0.019	2.0	31	25	23
	325	4.85	4.03	0.17	5.00	1.55	0.025	2.0	34	28	26
	400	5.90	5.02	0.20	7.04	1.94	0.031	3.0	38	32	30
	450	6.50	5.53	0.22	8.34	2.18	0.035	4.0	42	36	34
	500	7.02	5.97	0.24	9.54	2.43	0.039	5.0	43	37	35
	550	7.52	6.40	0.26	10.76	2.67	0.042	6.0	45	39	37
	600	8.00	6.95	0.27	11.99	2.87	0.046	6.0	46	40	38
	650	8.42	7.31	0.29	13.12	3.11	0.050	7.0	48	42	40
	700	8.95	7.79	0.31	14.60	3.35	0.053	8.0	50	44	42
	750	9.45	8.23	0.32	16.05	3.59	0.057	9.0	51	45	43

Performance Notes:

Cooling - Air On 23°C, 50% RH
ChW 7°C flow, 14°C return

Heating - Air On 20°C, Air Off 30°C Maximum
LPHW 70°C flow, 55°C return

*Published NR figures should only be used as a quick reference guide to assess the acoustic performance of Advanced Air's fan coil units. It is recommended that acoustic analysis using the sound power levels should be conducted to suit specific project requirements. For further details, please contact Advanced Air Sales.

EPIC Fan Coil Units - Thermal Performance Data

Size	Airflow l/s	Cooling				Heating			NR Guide*		
		Total Pc - kW	Sensible Ps - kW	Water Flow kg/s	Hyd Resistance kPa	Total Ph - kW	Water Flow kg/s	Hyd Resistance kPa	Standard	185mm Long Attenuator	400mm Long Attenuator
600	75	0.77	0.74	0.04	1.21	0.36	0.006	1.0	<25	<25	<25
	90	0.90	0.87	0.04	1.59	0.43	0.007	1.0	25	<25	<25
	135	1.30	1.25	0.06	3.02	0.65	0.010	1.0	31	29	27
	160	1.45	1.39	0.07	3.66	0.77	0.012	1.0	35	33	31
	170	1.60	1.54	0.08	4.35	0.82	0.013	1.0	36	34	32
	195	1.75	1.66	0.08	5.09	0.93	0.015	1.0	38	36	34
	220	1.90	1.81	0.09	5.87	1.05	0.017	1.0	40	38	36
	240	2.15	2.05	0.10	7.29	1.17	0.019	1.0	42	40	38
	285	2.40	2.28	0.11	8.84	1.37	0.022	1.0	44	42	40
900	320	2.60	2.47	0.12	10.17	1.54	0.025	1.0	47	45	43
	90	1.00	0.97	0.05	1.31	0.43	0.007	1.0	25	<25	<25
	120	1.25	1.21	0.06	1.93	0.58	0.009	1.0	30	28	26
	146	1.50	1.44	0.07	2.66	0.70	0.011	1.0	33	31	29
	170	1.65	1.58	0.08	3.14	0.81	0.013	1.0	35	33	31
	190	1.87	1.80	0.09	3.91	0.91	0.014	1.0	38	34	32
	225	2.15	2.07	0.10	4.99	1.08	0.017	1.0	41	35	34
	255	2.40	2.30	0.11	6.05	1.23	0.020	1.0	42	36	35
	280	2.60	2.50	0.12	6.96	1.35	0.021	2.0	43	39	37
1200	320	2.85	2.71	0.14	8.17	1.51	0.024	2.0	45	42	39
	355	3.15	2.99	0.15	9.73	1.68	0.027	2.0	48	44	41
	170	1.75	1.68	0.08	1.51	0.83	0.013	1.0	27	<25	<25
	200	2.00	1.92	0.10	1.91	0.71	0.011	1.0	30	25	<25
	240	2.40	2.30	0.11	2.63	0.59	0.009	1.0	33	28	25
	280	2.70	2.59	0.13	3.23	0.50	0.008	2.0	35	30	28
	320	3.00	2.88	0.14	3.88	1.35	0.021	2.0	38	32	30
	385	3.30	3.14	0.16	4.59	1.62	0.026	2.0	40	35	33
	420	3.75	3.57	0.18	5.74	1.77	0.028	3.0	42	36	34
1500	485	4.20	4.00	0.20	7.00	2.02	0.032	3.0	44	38	37
	540	4.60	4.37	0.22	8.21	2.25	0.036	4.0	46	40	39
	600	5.00	4.75	0.24	9.50	2.50	0.040	5.0	48	43	41
	250	2.50	2.40	0.12	2.82	1.19	0.019	2.0	31	25	23
	325	3.10	2.98	0.15	4.11	1.55	0.025	2.0	34	28	26
	400	3.70	3.50	0.18	5.61	1.94	0.031	3.0	38	32	30
	450	4.00	3.78	0.19	6.43	2.18	0.035	4.0	42	36	34
	500	4.40	4.16	0.21	7.59	2.43	0.039	5.0	43	37	35
	550	4.80	4.54	0.23	8.84	2.67	0.042	6.0	45	39	37
600	5.20	4.94	0.25	10.17	2.87	0.046	6.0	46	40	38	
650	5.60	5.32	0.27	11.58	3.11	0.050	7.0	48	42	40	
700	5.90	5.58	0.28	12.69	3.35	0.053	8.0	50	44	42	
750	6.20	5.86	0.30	13.84	3.59	0.057	9.0	51	45	43	

Performance Notes:

Cooling - Air On 23°C, 50% RH
ChW 12°C flow, 17°C return

Heating - Air On 20°C, Air Off 30°C Maximum
LPHW 70°C flow, 55°C return

*Published NR figures should only be used as a quick reference guide to assess the acoustic performance of Advanced Air's fan coil units. It is recommended that acoustic analysis using the sound power levels should be conducted to suit specific project requirements. For further details, please contact Advanced Air Sales.

EPIC Fan Coil Units - Acoustic Performance Data

Size	Airflow l/s	Discharge Sound Power Levels dB								Radiated Sound Power Levels dB							
		Octave Band Centre Frequency Hz								Octave Band Centre Frequency Hz							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
600	75	34.3	40.2	34.7	27.9	20.5	13.8	19.2	24.6	38.5	38.3	38.5	32.5	26.3	15.0	16.9	21.7
	90	36.6	39.7	39.1	35.1	29.2	18.5	20.2	24.9	39.2	41.1	43.4	39.3	35.3	21.9	17.3	21.9
	135	41.4	48.4	46.0	44.5	39.4	31.6	29.8	25.9	44.1	49.9	49.4	48.4	45.4	34.8	22.3	22.8
	170	45.7	51.0	49.8	48.7	44.2	37.4	36.6	28.2	49.3	52.5	52.5	52.5	50.0	40.3	27.9	23.6
	195	48.8	53.9	52.2	51.2	47.4	41.0	41.4	32.4	52.2	56.0	55.1	55.5	53.3	43.6	31.8	26.1
	220	51.4	57.0	54.8	53.2	49.8	43.7	45.1	36.4	57.9	58.7	56.7	56.9	55.7	46.0	35.0	29.1
	240	54.1	59.2	56.7	54.9	52.3	46.4	48.3	40.3	60.0	60.9	58.2	58.3	57.8	48.3	37.8	32.2
	285	57.0	62.2	59.1	56.9	54.7	49.2	51.6	44.3	61.9	64.0	60.1	60.1	59.9	50.9	40.8	35.8
	320	60.2	64.4	61.1	58.7	57.0	51.6	54.3	47.6	64.5	65.5	61.7	61.3	61.7	53.2	43.4	38.9
900	90	36.7	38.3	35.8	30.0	21.8	13.4	18.1	23.6	34.0	37.3	39.3	34.5	28.1	16.4	16.7	21.3
	146	41.1	44.7	44.7	44.7	38.8	29.3	26.0	24.2	42.0	46.6	48.1	48.8	44.1	33.8	21.5	22.0
	190	45.9	50.2	49.5	49.7	44.6	36.6	35.0	26.7	46.9	52.6	52.0	52.9	49.7	40.6	27.9	22.8
	225	49.5	53.7	51.4	52.0	47.4	40.2	40.2	31.3	49.6	55.8	52.7	54.9	52.9	44.2	32.1	25.5
	255	52.2	56.9	54.0	54.4	49.9	43.2	44.6	36.1	52.0	59.7	55.2	56.9	55.5	46.9	35.8	29.2
	280	55.2	59.7	56.8	56.4	51.9	45.7	47.8	39.8	56.5	61.9	57.6	58.6	57.5	49.0	38.7	32.6
	320	58.5	63.2	60.0	59.7	54.2	48.3	50.9	43.5	58.9	65.7	59.7	61.4	60.0	51.4	41.5	35.8
	355	62.2	67.0	63.6	61.6	57.3	51.5	54.3	47.7	60.5	67.3	61.9	61.9	62.0	54.3	44.6	39.4
	400	65.0	69.3	65.9	63.8	60.1	54.2	57.1	51.1	62.9	70.5	64.5	64.0	64.3	56.9	47.4	42.9
1200	170	38.2	38.7	38.9	36.1	29.8	16.0	19.5	23.9	36.8	40.3	43.6	40.3	35.0	19.6	17.6	21.7
	280	45.0	49.7	49.5	50.2	45.6	36.4	33.4	26.7	44.5	51.3	53.0	53.7	50.5	40.9	27.5	24.6
	385	50.7	53.5	51.9	53.6	48.8	40.9	39.2	29.3	46.8	55.1	54.8	56.1	54.0	45.4	32.0	25.1
	420	52.4	56.8	54.6	55.3	51.4	44.2	43.6	33.8	51.1	59.1	56.9	58.5	56.5	48.3	35.5	28.0
	485	54.6	59.7	57.0	57.5	53.5	46.8	47.2	38.2	53.0	61.4	58.9	60.7	58.6	50.3	38.5	31.4
	540	55.9	62.4	59.6	60.5	55.6	49.3	50.3	42.1	55.5	64.1	60.5	61.4	60.8	52.5	41.3	34.9
	600	57.8	64.4	61.7	61.2	57.7	51.7	53.4	45.9	57.2	66.0	62.2	62.8	62.6	54.7	44.1	38.2
	675	60.9	67.3	64.4	63.2	60.3	54.3	56.6	49.8	59.5	68.4	64.7	64.5	64.8	57.2	47.1	41.8
	750	63.5	69.8	67.2	65.3	63.1	57.1	59.7	53.5	61.9	71.3	66.8	66.3	67.0	59.9	50.1	45.5
1500	250	37.9	39.0	39.1	37.2	30.0	18.0	17.0	24.1	37.0	39.2	42.3	41.3	36.8	20.1	19.2	22.3
	325	41.2	44.6	43.5	43.5	39.0	31.2	24.6	25.1	42.3	45.6	46.5	47.3	42.1	35.2	23.1	24.1
	400	44.5	50.1	48.9	50.0	45.0	35.9	34.0	28.5	46.0	50.1	51.2	52.1	48.6	41.2	28.1	23.0
	450	47.1	51.3	49.9	51.6	46.8	36.9	36.9	29.5	46.2	53.1	52.9	54.2	50.2	42.3	29.5	25.6
	500	48.0	52.1	50.2	52.3	47.2	39.1	38.2	28.6	47.5	54.9	54.1	55.3	51.8	42.1	28.4	25.4
	550	50.0	53.5	51.9	53.6	49.2	40.2	40.1	29.3	48.2	56.1	55.2	57.0	53.0	42.0	28.9	26.1
	600	53.5	57.2	55.3	56.5	50.9	45.1	47.2	37.2	52.3	60.2	58.2	60.2	57.4	48.7	35.2	33.5
	650	55.6	60.9	57.2	56.8	54.1	48.2	49.8	40.2	55.1	62.1	60.5	61.2	60.2	51.2	40.1	36.8
	750	57.8	64.4	61.7	61.2	57.7	51.7	53.4	45.9	58.0	65.9	64.1	62.1	63.2	55.1	45.2	39.2

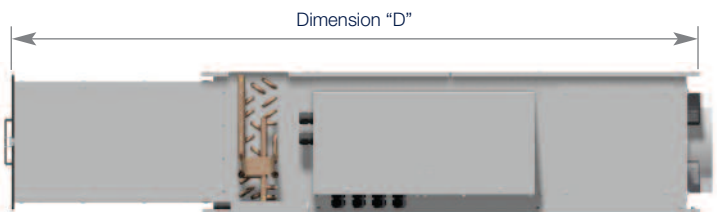
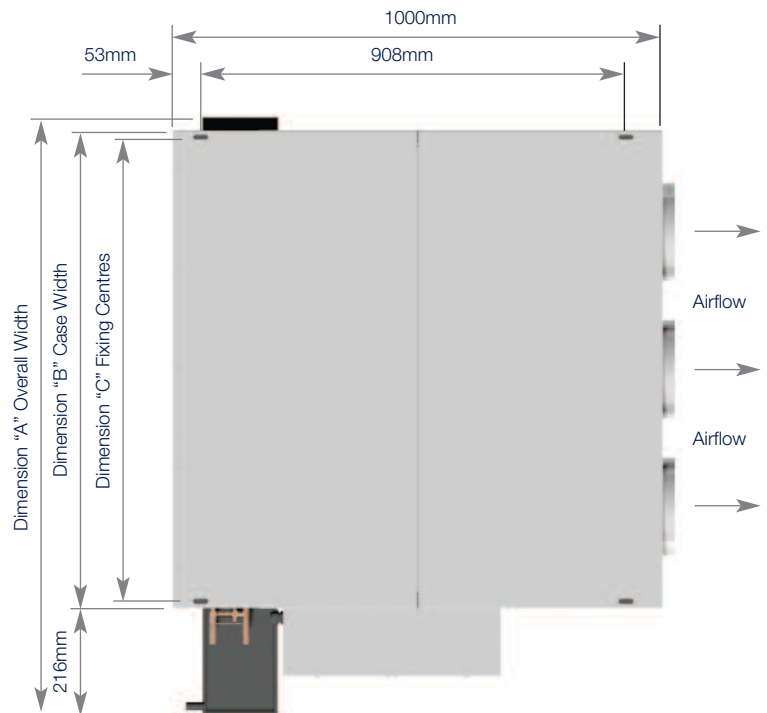
Performance Notes:

1. Fan discharge (external) static pressure is 30 Pa in all cases. It is the difference (ΔP) in static pressure from fan coil unit discharge to the room.

Dimensional Data

Standard EPIC Unit

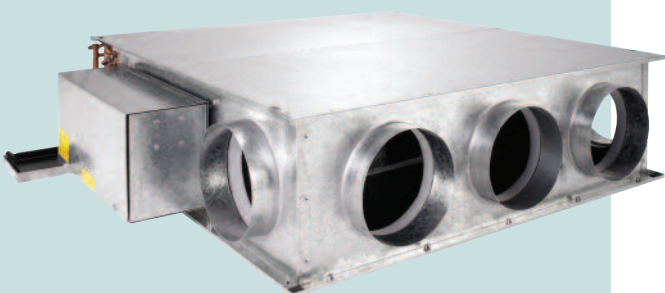
Size	Dim A (mm)	Dim B (mm)	Dim C (mm)	Weight (kg)
600	900	657	630	45
900	1200	957	930	53
1200	1500	1257	1230	60
1500	1800	1557	1530	80



Optional Attenuator

The attenuator will increase the length of the fan coil unit as follows:

Attenuator Length	Dim D (mm)
185	1165
400	1380



Spigotted Outlet View

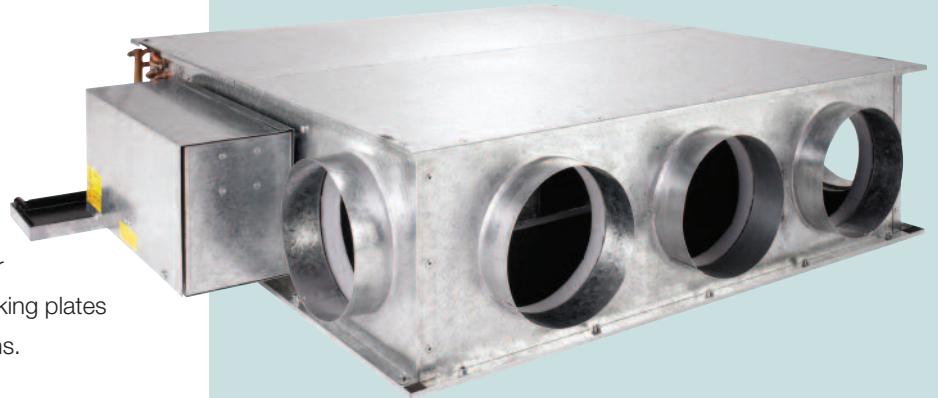


Filtered Inlet View

Specification

Casing

Manufactured from 1.2mm thick folded galvanised mild steel sheet, with slotted holes for easy installation. Units include a discharge air plenum incorporating circular de-mountable discharge spigots and blanking plates to facilitate rapid adaption to site conditions.



Motor

The fans are driven by a Brushless DC. motor with controls to provide infinitely variable fan speed/air volume operation, with the additional facility for pressure independent operation.

Fans

Single driven centrifugal fan assemblies. Galvanised mild steel scrolls with statically and dynamically balanced impeller's, resiliently mounted within a vertically mounted 1.2mm folded galvanised mild steel fan deck.

Heating and Cooling Coils

Manufactured from copper tubes with mechanically bonded aluminium fins. The coil circuitry is arranged so as to facilitate air venting and draining with two plain ends for pipe-work connection. The coil is supported at either side of the casing.

Electric Heating Elements

Manufactured from Stainless Steel tubes with 80/20 Nickel Chrome resistance wire and Magnesium Oxide insulation and are mounted on galvanised mild steel plates. Heaters are tested to BS7671. Heating coils are provided with a manually re-settable high temperature cut-out and an automatic thermal cut-out, which is set to a lower temperature than the manual high temperature cut-out.

Filter

Washable/disposable woven, continuous filament filter media to EU2/G2, contained within a rectangular galvanised mild steel angle frame and complete with a steel wire mesh support panel. Filter can be withdrawn from the rear of the of casing.

Thermal and Acoustic Treatment

Two types of foam are used to achieve a high standard of acoustic and thermal performance. Both foam types are class 'O' rated and selected to achieve a superior performing product.

Condensate Tray

Manufactured from folded and epoxy powder coated galvanised mild steel. The tray is mounted below the coil and extends outside the casing below the cooling and heating pipe work connections. It is complete with an externally applied closed cellular thermal insulation material. A secondary steel lining for added protection can be added as an optional extra.

Attenuators

Two lengths, 185mm and 400mm of attenuators are available to reduce noise levels and increase the air volume range of each size. Manufactured from 1.2mm folded galvanised mild steel and lined with 25mm class 'O' acoustic foam.

Controls

All fan coil unit controls are factory fitted and wired, and contained within a purpose made control box mounted on the side of the fan coil unit. Each unit is supplied with on/off switch and 230 Vac./24Vac. transformer. Analogue and digital control options are available.

Fan Coil Units - Selection Guidelines

There are many things that effect the selection of a Fan Coil Unit (FCU) to meet with a project specification. These include, but are not limited to, thickness of the materials used, fire rating of any foam included and efficiency of the motor/fan assembly.

Once the model type has been selected it is then that the task of selecting the size of FCU required. The size of the FCU is driven by the thermal output and acoustic requirements of the selection.

Selection Process

Acoustic Banding of Each Size.

The acoustic specification of the project should indicate maximum sound power levels for both the discharge and case radiated noise from the FCU. Using these values the maximum air volume for each size can then be established.

Example Limiting Sound Power Levels (dB) Case and Inlet Radiated

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Casing Radiated	67	59	55	49	46	45	44	43
Discharge	72	59	52	46	43	41	39	36

Thermal Banding of Each Size

Once the limits on the air volumes have been established to meet with the acoustic requirements of the project, it is then necessary to establish the maximum thermal output that can be achieved at this air volume. Within the specification the temperature for the supply and return water will be specified for the cooling and, if required, the heating.

Using the maximum air volumes established to meet the acoustic specification and the supply/return water temperatures, the maximum thermal output can be given for each size of unit. A significant factor in the thermal capacity available is the temperature of the air entering the FCU.

This may be as high as 25°C but in every case this would need checking as the primary air volume and temperature will give a mixed condition that needs to be calculated for every selection.

For these selections a check should also be made on the temperature of the air leaving the FCU to ensure it is not lower than required in the specification and that the hydraulic pressure losses through the coil are not too high.

By looking at just the acoustic specification and the water temperatures we can put a unit size to each selection.

Fan Coil Units - Selection Guidelines

Fan Coil Unit Supply Air Volumes

The next step in the process is to look at the air volume requirement to satisfy the thermal capacities scheduled for each individual FCU. Quite often the air volumes have been calculated based on the specification. In a lot of cases these air volumes will be changed so that the FCU size selected will deliver the thermal capacities required.

Each size of FCU will cover a band of air volumes/thermal capacities. Within each of these bands we have a fixed size FCU with a fixed length of coil. The water flow is governed and dictated by the thermal capacity requirement of the individual unit. The only variable that can be used to fine tune the output of the FCU is the air volume. It is for this reason that for each individual selection the air off temperature of the FCU will be unique.

Example FCU Performance Specification

Example Limiting Sound Power Levels (dB) Case and Inlet Radiated

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Casing Radiated	67	59	55	49	46	45	44	43
Discharge	72	59	52	46	43	41	39	36

Finished Space Noise Rating

Situation	NR Value
Open Plan	38
Cellular Office	35

Thermal Performance

Cooling Water Supply/Return Temperatures	7°C and 14°C
Heating Water Supply/Return Temperatures	60°C and 45°C
Ceiling Void Temperature	24°C
Primary Air Temperature	14°C
Air into FCU (Including Primary Air Mx)	22.5°C
Minimum Air Off Temperature	14°C
Coil Maximum Hydraulic Pressure Loss	16kPa

Other products from Advanced Air

Air Distribution Equipment

- Grilles and diffusers including louvre face diffusers
- Linear slot diffusers
- Linear bar grilles
- Eggcrate grilles and door transfer grilles
- A variety of finishes, powder coated to RAL9010 as standard, with other colours available
- Floor swirl diffusers which supply a low velocity, helical discharge air pattern
- "Twister" ceiling swirl diffuser
- External weather louvers suitable for most wall configurations

VAV Terminal Units

- Single duct and dual duct units for different types of variable air volume systems
- Fan Powered VAV units that use advance Brushless DC motors to give lower energy consumption and simpler commissioning

Air Control Products

- Low leakage fire smoke dampers, tested to BS ISO 10294
- Smoke and high temperature smoke dampers, which can be used up to 300°C for 120 minutes
- Curtain fire dampers provide a wide range of models suitable for most applications
- Control dampers from value solutions to a low leakage, low pressure drop, airfoil blade type

Control Panels

- Fire smoke damper control panels are available to provide solutions to suit all requirements
- Bespoke units, which can be manufactured to suit specific customer requirements

For more information on these products, please contact Advanced Air Sales



Advanced Air

Burrell Way, Thetford, Norfolk, IP24 3QU, England.

Sales Tel: +44 (0) 1842 855566

Fax: +44 (0) 1842 855546

email: sales@advancedair.co.uk

Customer Services Tel: +44 (0) 1842 753624

Fax: +44 (0) 1842 762032

website: www.advancedair.co.uk



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