

EQUIPMENT STATEMENT (Revision 0)

Camden Development Control Planning Services Details

Introduction

Attached are the specification details, noise details, attenuation details and roof plan layout indicating positions of the proposed air source heat pump machines serving the 8 No. residential flats and the ground and basement office area. This information is issued in relation to discharge the following planning condition:

Condition 8: *"No development shall take place until details of the air source heat pumps, including of their specifications, location, noise levels and noise attenuation, have been submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details."*

External Equipment List

Residential Equipment

1. **Air Source Heat Pumps:** 2 No. Daikin EMRQ16A Condenser Units (Technical details can be found in appendix 1).

Office Equipment

1. **Air Source Heat Pumps:** 1 No. Daikin REYQ12T, 1 No. Daikin REYQ14T Condenser Units. (Technical details can be found in appendix 2).
2. **Air Handling Unit:** 1 No. VES Ecovent EVX616-3 (Technical details can be found in appendix 3).

Appendix 1 – Residential Air Source Heat Pump Condenser Equipment Details

Heating

Technical Data

Daikin Altherma flex type



EEDEN12-726

EMRQ-A

2 Specifications

2-1 Technical Specifications				EMRQ8A	EMRQ10A	EMRQ12A	EMRQ14A	EMRQ16A	
Heating capacity	Nom.	kW		22.4 (1)	28 (1)	33.6 (1)	39.2 (1)	44.8 (1)	
Cooling capacity	Nom.	kW		20 (2)	25 (2)	30 (2)	35 (2)	40 (2)	
Casing	Colour			Daikin White					
	Material			Painted galvanized steel plate					
Dimensions	Unit	Height	mm	1,680					
		Width	mm	1,300					
		Depth	mm	765					
	Packed unit	Height	mm	1,885					
		Width	mm	1,425					
		Depth	mm	860					
Weight	Unit		kg	331			339		
	Packed unit		kg	339			347		
Packing	Material			Cardboard / Wood / EPS	Cardboard / Wood / EPS	Cardboard / Wood / EPS	Cardboard / Wood / EPS	Cardboard / Wood / EPS	
	Weight		kg	8					
Heat exchanger	Type			Cross fin coil					
Fan	Type			Propeller fan					
	Quantity			2					
	Discharge direction			Vertical					
Fan motor	Quantity			2					
	Drive			Direct drive					
	Output		W	350			750		
	Starting method			Soft start					
Compressor	Quantity			2					
	Type			Hermetically sealed scroll compressor					
	Starting method			Soft start					
	Crankcase heater	Quantity		2					
Operation range	Heating	Min.	°CWB	-15					
		Max.	°CWB	20					
	Domestic hot water	Ambient	Min.	°CDB	-15				
			Max.	°CDB	35				
	Cooling	Max.	°CDB	43					
Refrigerant	Type			R-410A					
	Charge		kg	10.3	10.6	10.8	11.1		
	Control			Expansion valve (electronic type)					
Refrigerant oil	Type			Daphne FVC68D					
Piping connections	Liquid	Quantity		1					
		Type		Braze connection					
		OD	mm	9.52			12.7		
	Suction	Quantity		1					
		Type		Braze connection					
		OD	mm	19.1	22.2	28.6			
	High and low pressure gas	Quantity		1					
		Type		Braze connection					
		OD	mm	15.9	19.1			22.2	
	Piping length	System	Equivalent	m	120				
		Additional refrigerant charge		kg/m	See installation manual				
	Total piping length	System	Actual	m	300				
	Level difference	OU - IU	Total	m	40				
		IU - IU	Max.	m	15 (7)				
	High pressure side	Design pressure		bar	40				
	Sound power level	Heating	Nom.	dBA	78			80	83
Sound pressure level	Heating	Nom.	dBA	58			60	62	63
Defrost method				Deicer					
Safety devices	Item	01		HPS					
		02		Fan driver overload protector					
		03		Inverter overload protector					
		04		Overcurrent relay					

2 Specifications

Standard Accessories : Installation manual; Quantity : 1;

2-2 Electrical Specifications			EMRQ8A	EMRQ10A	EMRQ12A	EMRQ14A	EMRQ16A
Power supply	Phase		3~				
	Frequency	Hz	50				
	Voltage	V	380-415				
Voltage range	Min.	%	-10				
	Max.	%	6				
Current	Zmax	Text	-	0.27		-	
	Recommended fuses	A	20	25		40	
Current - 50Hz	Maximum running current	A	17.1	22.1	22.3	32.8	33
	Minimum Ssc value	kVa	889	843	850	2,045	2,035
Wiring connections	For power supply	Quantity	4G				
		Remark	Select diameter and type according to national and local regulations				
	For connection with indoor	Qty.	2G				
		Remark	F1,F2				
Power supply intake			Both indoor and outdoor unit				

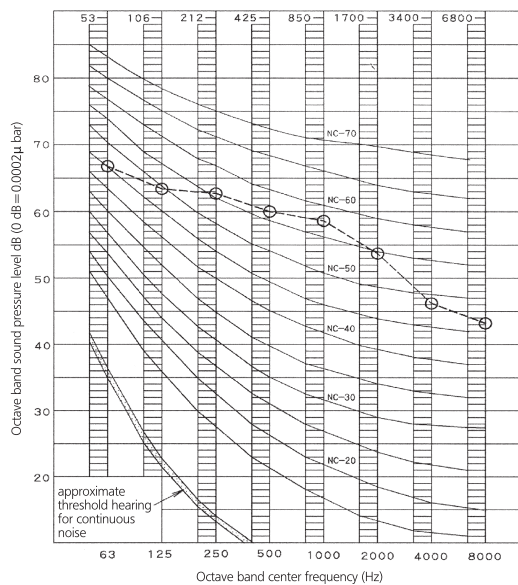
Notes

- (1) Condition: Ta=7°CDB/6°CWB, 100% connection ratio
- (2) Condition: Ta=35°CDB, 100% connection ratio
- (3) European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16A and <= 75A per phase
- (4) In accordance with EN/IEC 61000-3-11, it may be necessary to consult the distribution network operator to ensure that the equipment is connected only to a supply with Zsys (system impedance) ≤ Zmax
- (5) Ssc: Short-circuit power
- (6) EN/IEC 61000-3-11: European/international technical standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated ≤ 75A
- (7) Maximum installation height difference between indoor units can be increased up to 25m with special field setting
- (8) 380 V
- (9) 400 V
- (10) 415 V

10 Sound data

10 - 2 Sound Pressure Spectrum

EMRQ16A



NOTES

1 Overall (dB)

Scale	50 Hz
A	63
C	70

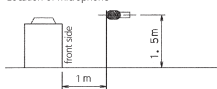
(B.G.N is already rectified)

2 Measuring place: Anechoic chamber (conversion value)

3 Operating conditions: Power source: Y1 : 380-415V 50Hz

4 The operating sound is measured in anechoic chamber, if it is measured under the actual installation conditions, it is normally over the set value due to environmental noise and sound reflection.

5 Location of microphone



3TW59927-1A

Appendix 2 – Office Air Source Heat Pump Condenser Equipment Details



Air Conditioning

Technical Data

VRV IV heat recovery



EEDEN15-200_4

REYQ-T

2 Specifications

2-1 Technical Specifications					REYQ8T	REYQ10T	REYQ12T	REYQ14T	REYQ16T	REYQ18T	REYQ20T	
Capacity range			HP		8	10	12	14	16	18	20	
Cooling capacity	Nom.		kW		22.4 (1) / 22.4 (2)	28.0 (1) / 28.0 (2)	33.5 (1) / 33.5 (2)	40.0 (1) / 40.0 (2)	45.0 (1) / 45.0 (2)	50.4 (1)	56.0 (1)	
Heating capacity	Nom.		kW		22.4 (3) / 22.40 (4)	28.0 (3) / 28.00 (4)	33.5 (3) / 33.5 (4)	40.0 (3) / 40.00 (4)	45.0 (3) / 45.00 (4)	50.4 (3)	56.0 (3)	
	Max.		kW		25.0 (3)	31.5 (3)	37.5 (3)	45.0 (3)	50.0 (3)	56.5 (3)	63.0 (3)	
Power input - 50Hz	Cooling	Nom.	kW		5.31 (1) / 4.56 (2)	7.15 (1) / 6.19 (2)	9.23 (1) / 8.31 (2)	10.7 (1) / 9.61 (2)	12.8 (1) / 11.9 (2)	15.2	18.6	
	Heating	Nom.	kW		4.75 (3) / 4.47 (4)	6.29 (3) / 5.47 (4)	8.05 (3) / 6.83 (4)	9.60 (3) / 9.37 (4)	11.2 (3) / 9.88 (4)	12.3	14.9	
		Max.	kW		5.51 (3)	7.38 (3)	9.43 (3)	11.3 (3)	12.9 (3)	14.3	17.5	
EER					4.22 (1) / 4.92 (2)	3.92 (1) / 4.52 (2)	3.63 (1) / 4.03 (2)	3.74 (1) / 4.16 (2)	3.52 (1) / 3.79 (2)	3.32	3.01	
ESEER - Automatic					7.41	7.37	6.84	7.05	6.63	6.26	5.68	
ESEER - Standard					6.25	5.78	5.36	5.45	5.14	4.84	4.39	
COP - Max.					4.54 (3)	4.27 (3)	3.98 (3)		3.88 (3)	3.95	3.60	
COP - Nom.					4.72 (3) / 5.01 (4)	4.45 (3) / 5.12 (4)	4.16 (3) / 4.90 (4)	4.17 (3) / 4.27 (4)	4.02 (3) / 4.56 (4)	4.10	3.76	
Maximum number of connectable indoor units					64 (5)							
Indoor index connection	Min.				100	125	150	175	200	225	250	
	Nom.				200	250	300	350	400	450	500	
	Max.				260	325	390	455	520	585	650	
Dimensions	Unit	Height	mm	1,685								
		Width	mm	930				1,240				
		Depth	mm	765								
	Packed unit	Height	mm	1,820								
		Width	mm	1,000				1,310				
		Depth	mm	835								
Weight	Unit		kg	210	218		304	305	337			
	Packed unit		kg	226	234		320	321	353			
Packing	Material			Carton								
	Weight		kg	2.00				3.00				
Packing 2	Material			Wood								
	Weight		kg	17.00				18.50				
Packing 3	Material			Plastic								
	Weight		kg	0.50								
Casing	Colour			Daikin White								
	Material			Painted galvanized steel plate								
Heat exchanger	Type			Cross fin coil								
	Fin	Treatment		Anti-corrosion treatment								
Compressor	Quantity			1				2				
	Model			Inverter								
	Type			Hermetically sealed scroll compressor								
	Crankcase heater		W	33								
Compressor 2	Model			-				Inverter				
	Type			-				Hermetically sealed scroll compressor				
	Crankcase heater		W	-				33				
Fan	Type			Propeller fan								
	Quantity			1				2				
	Air flow rate	Cooling	Nom.	m³/min	162	175	185	223	260	251	261	
	External static pressure		Max.	Pa	78							
	Discharge direction			Vertical								
Fan motor	Quantity			1				2				
	Model			Brushless DC motor								
	Output		W	750								
Fan motor 2	Model			-				Brushless DC motor				
	Output		W	-				750				
Sound power level	Cooling	Nom.	dBA	78	79	81		86		88		

2 Specifications

2-1 Technical Specifications				REYQ8T	REYQ10T	REYQ12T	REYQ14T	REYQ16T	REYQ18T	REYQ20T	
Sound pressure level	Cooling	Nom.		dBA	58		61		64	65	66
Operation range	Cooling	Min.~Max.		°CDB	-5.0~43.0						
	Heating	Min.~Max.		°CWB	-20~15.5						
	Water production	Space cooling	Min.~Max.	°CDB	10~43						
		Space heating	Min.~Max.	°CDB	-20~20 / 24 (6)						
		Domestic hot water	Min.~Max.	°CDB	-20~43						
Refrigerant	Type				R-410A						
	Charge			kg	9.7	9.8	9.9	11.8			
				TCO ₂ eq	20.2	20.5	20.7	24.6			
	GWP				2,087.5						
Refrigerant oil	Type				Synthetic (ether) oil						
Piping connections	Liquid	Type			Braze connection						
		OD		mm	9.52		12.7		15.9		
	Gas	Type			Braze connection						
		OD		mm	19.1	22.2	28.6				
	Discharge gas	Type			Braze connection						
		OD		mm	15.9	19.1		22.2		28.6	
	Heat insulation				Liquid, Suction gas and HP/LP gas						
	Piping length	OU - IU	Max.	m	165 (7)						
		After branch	Max.	m	90 (7)						
	Total piping length	System	Actual	m	1,000 (7)						
	Level difference	OU - IU	Outdoor unit in highest position	m	90 (7)						
			Indoor unit in highest position	m	90 (7)						
		IU - IU	Max.	m	15						
Defrost method				Reversed cycle							
Safety devices	Item	01			High pressure switch						
		02			Fan driver overload protector						
		03			Inverter overload protector						
		04			PC board fuse						
PED	Category				Category II						
	Most critical part	Name			Liquid receiver						
		Ps*V		Bar*l	564		672		824		

Standard Accessories : Installation and operation manual;

Standard Accessories : Connection pipes;

2-2 Electrical Specifications				REYQ8T	REYQ10T	REYQ12T	REYQ14T	REYQ16T	REYQ18T	REYQ20T
Power supply	Name			Y1						
	Phase			3N~						
	Frequency		Hz	50						
	Voltage		V	380-415						
Voltage range	Min.		%	-10						
	Max.		%	10						
Current	Nominal running current (RLA) - 50Hz	Cooling	A	7.7	10.5	13.8	15.6	18.5	22.0	28.5

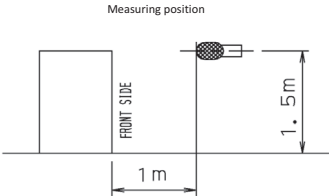
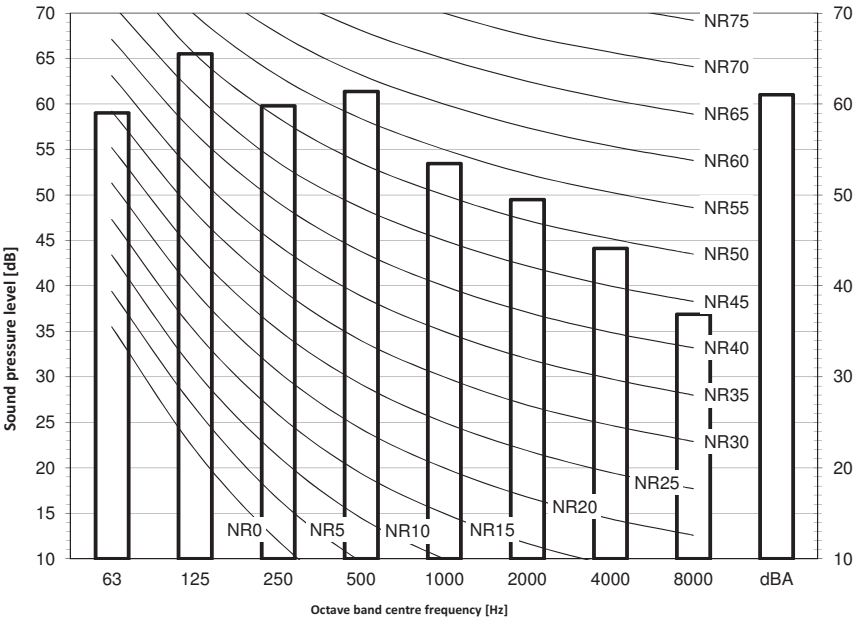
2 Specifications

2-2 Electrical Specifications				REYQ8T	REYQ10T	REYQ12T	REYQ14T	REYQ16T	REYQ18T	REYQ20T
Current - 50Hz	Minimum Ssc value	kVa		1,216	564	615	917	924	873	970
	Minimum circuit amps (MCA)	A		15.0	21.0	28.0	32.0	32.0	36.0	40.0
	Maximum fuse amps (MFA)	A		20	25	32	40	40	40	50
	Total overcurrent amps (TOCA)	A		17.3	21.1	35.4	42.7	42.7	42.7	42.7
	Full load amps (FLA)	Total	A	1.2	1.3	1.5	1.8	2.6	2.6	2.6
Wiring connections - 50Hz	For power supply	Quantity		5G						
	For connection with indoor	Quantity		2						
		Remark		F1,F2						
Power supply intake				Both indoor and outdoor unit						

11 Sound data

11 - 2 Sound Pressure Spectrum

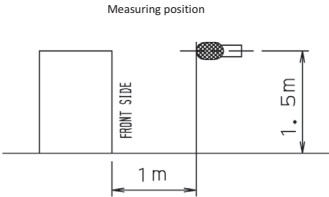
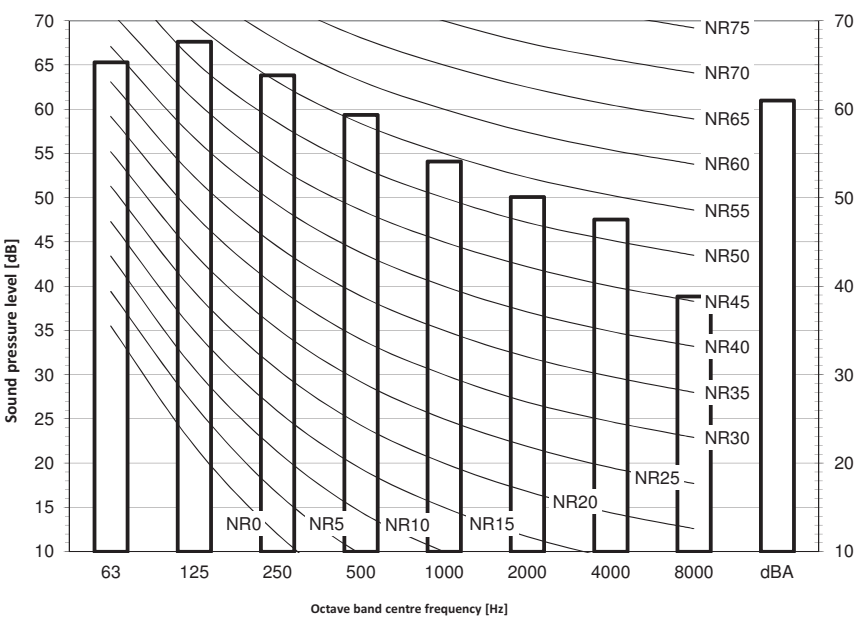
REYQ12T



- Notes :
1. Data is valid at free field condition.
 2. Data is valid at nominal operation condition.
 3. dBA = A-weighted sound pressure level (A scale according to IEC).
 4. Reference acoustic pressure 0 dB = 20 μ Pa

3D079903B

REYQ14T



- Notes :
1. Data is valid at free field condition.
 2. Data is valid at nominal operation condition.
 3. dBA = A-weighted sound pressure level (A scale according to IEC).
 4. Reference acoustic pressure 0 dB = 20 μ Pa

3D079904B

Appendix 3 – Office Air Handling Unit Equipment Details

Selection Data

Unit Size 6 EVX616-3

2a Performance

$$\text{SFP} = \frac{\text{Electrical input power (Watts)}}{\text{Air volume flow rate (litres/second)}}$$

Notes:

SFP figures quoted at voltages tested in accordance with BS EN ISO 5801:2008, BS 848-1:2007 for each of the two fans.

Heat exchanger efficiency is calculated based upon EAT -5 °C and RAT +20 °C.

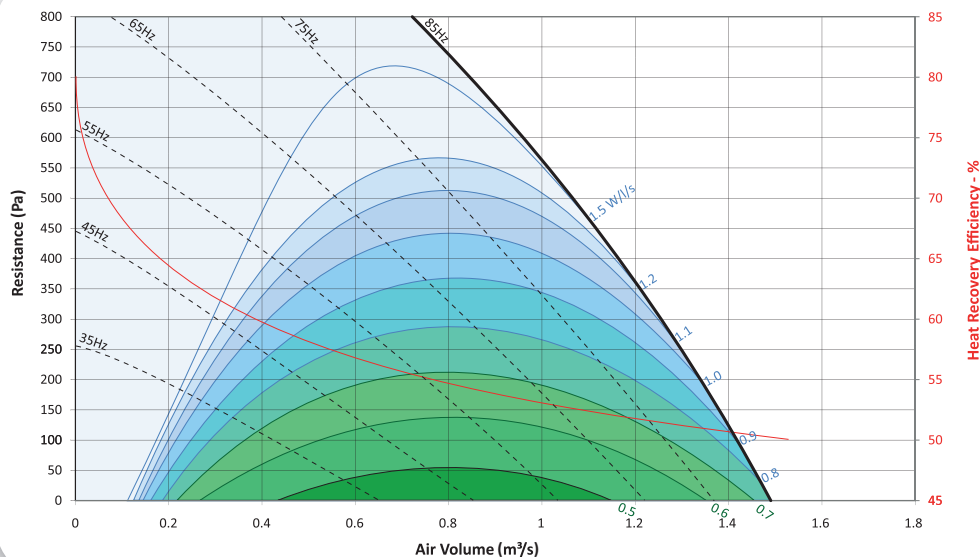
The fan performance is calculated using standard G4 filters. Alternative F7 will add a maximum of 150 Pa.

Tolerances:

On flow rates: +/- 5%

On acoustic power and pressure: Levels: +/- 3 dB

By octave band: +/- 5 dB



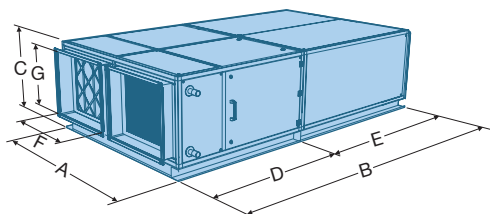
Size	Phase	Motor Size	Voltage	Fan Speed	Motor Full Load Current	Speed Control
EVX616-3	3 Phase	2.2 kW	400 VAC	2480 rpm	4.7 A	Inverter

2b Configuration

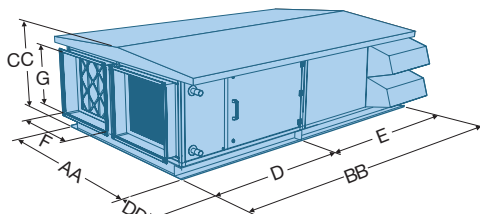
Configuration and Handling

EVX616-3 / **FP** **SP** / **L** **R** / **FW** **SW**

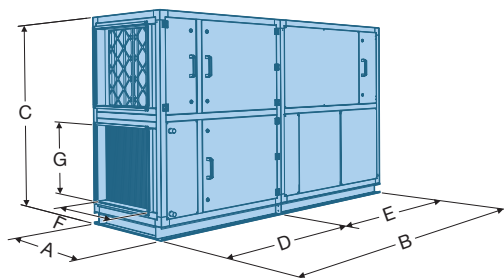
FP Flat Plantroom



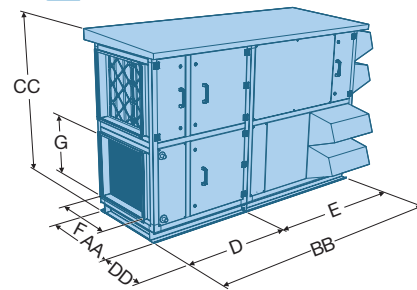
FW Flat Weatherproof



SP Stacked Plantroom



SW Stacked Weatherproof



Unit Type	Dimensions mm								Weight kg	Configuration Options	
	A	B	C	D	E	F	G		L	R	
EVX6 Flat Plantroom	1600	2800	1000	1300	1500	625	700	571	✓	✓	
EVX6 Stacked Plantroom	900	2800	1700	1300	1500	700	625	571	✓	✓	
	AA	BB	CC	D	DD	E	F	G			
EVX6 Flat Weatherproof	1800	2900	1075	1300	350	1500	625	700	625	✓	✓
EVX6 Stacked Weatherproof	1100	2900	1775	1300	350	1500	700	625	625	✓	✓

Note: Data for design guidance only. For full details, outline drawings are available upon request.

1 Choose duty up to 1.5 m³/s or 2.5 m³/s

2 Specify your chosen unit

3 Add control packages for performance and efficiency Pages 26-30

4 Specify bespoke options for Ecovent products Page 31

2c Heating and Controls

Heating

Controls

EVX616-3 / FP- **W** / **EE** / **RT** / **G4** / **ISC**
E
null **CPSC**

	Technical Data						Heating and Control Options	
	Air Volume m³/s	Maximum Leaving Air Temp °C	Maximum kW Output	Water Flow Rate l/s	Water Pressure kPa	Coil Connection Size BSP	Control Panel	Valve & Actuator Kit
LPHW Heating	0.400	44.0	23.9	0.53	5	1 1/4"	CPB7-3/W/N/IX/C CPC7-3/W/N/CC/IX/C	EVXCWKT600
	0.700	33.0	32.2	0.71	6			
	1.000	27.0	38.7	0.86	5			
	1.250	24.0	43.8	0.97	10			

LPHW coil, designed for LPHW 82/71 °C, EAT -5 °C, LAT 25 °C, coil construction copper tubes, aluminium fins, coil connections 1 1/4" BSP.

Note: If no control panel is purchased the unit will be supplied with a main isolator.

	Technical Data			Heating and Control Options	
	Air Volume m³/s	Maximum Leaving Air Temp °C	Maximum kW Output	3ph - Electric Heater	
				Electric Heater	Control Panel
Electric Thyristor Heating	0.400	30.9	15 kW	EHEX6/15KW/1X3	CPB7-3/18KW-3/N/IX/C CPC7-3/18KW-3/N/CC/IX/C
	0.700	28.9	24 kW	EHEX6/24KW/1X3	CPB7-3/24KW-3/N/IX/C CPC7-3/24KW-3/N/CC/IX/C
	1.000	26.4	32 kW	EHEX6/32KW/1X3	CPB7-3/32KW-3/N/IX/C CPC7-3/32KW-3/N/CC/IX/C
	1.250	31.7	48 kW	EHEX6/48KW/1X3	CPB7-3/48KW-3/N/IX/C CPC7-3/48KW-3/N/CC/IX/C

Air off temperature based upon entering air of -5 °C. Power = Air Volume x Constant x Temperature Rise.

kW = m³/s x 1.21 x ΔT °C

Note: If no control panel is purchased the unit will be supplied with a main isolator.

2d Noise Data

Fan Frequency	Fan Speed rpm	Sound Spectrum dB re 10 ⁻¹² W PWL Centre Frequency (Hz)								Casing Noise Breakout			
		63	125	250	500	1k	2k	4k	8k	NR @ 1m	NR @ 3m	dBA @ 1m	dBA @ 3m
85 Hz	2480	79	84	88	88	85	81	77	73	52	46	53	47
75 Hz	2115	76	80	85	85	82	77	73	69	49	43	50	44
65 Hz	1825	73	77	81	82	78	74	69	65	45	38	46	40
55 Hz	1580	70	74	78	78	74	70	65	61	41	35	43	37
45 Hz	1280	66	70	73	73	69	64	60	56	36	30	38	32
35 Hz	1000	62	65	69	68	64	60	55	51	32	25	34	28

Centre Frequency	63	125	250	500	1k	2k	4k	8k
Case Insertion Loss	-1	-6	-11	-24	-27	-30	-31	-28

Silencer Option	Sound Spectrum dB re 10 ⁻¹² W PWL Centre Frequency (Hz)							
EVXVA600/1600/STD	63	125	250	500	1k	2k	4k	8k
Induct Loss	-7	-13	-24	-41	-50	-50	-42	-30

Note: The silencer will add a maximum of 50 Pa to the external resistance.

Available on
vesdirect.co.uk



Note: Data for design guidance only. For full details, outline drawings are available upon request.

SIZE 6 - EVX616-3