

**WRC** AC Fan Remote Condensers



# WRC

## AC Fan Remote Condensers

The WRC Remote Condenser range with AC Fans has been specifically designed for supermarkets and other cold storage applications with low noise or energy savings in mind.

The WRC offers significant energy efficiency and power savings as a result of having an optimised coil surface to fan ratio. This ensures even air distribution at reduced pressure drop across a wide fan speed range, which in turn reduces electricity consumption and operating costs.

## Features & Benefits

The WRC AC Fan Remote Condenser features:

- Floating coil technology with 'split length fins' which vastly improves the life of the condenser
- Vertical or horizontal air discharge
- Range from 11.2kW to 61.2kW (R404A W/KTD)
- Attractive powder coated steel casing and end plates
- Rifle bore tube for improved heat transfer
- 2 speed, 3 phase external rotor fans with internal thermal protection
- Fan speed selection for low noise and power consumption consideration:
  - 6 Pole - Standard (880/660 R.P.M.)

- Dual refrigerant circuits with header protection covers where circuiting is standard (twin coil model only)
- Positive air seal between all fans
- Fans are pre-wired to (IP55) junction box with individual fan isolating switches
- Blue Kote Fin Protection

Options:

- Multiple circuit configuration
- Sub-cooling circuits
- Blygold coil treatment
- Special application on request (Dry coolers/oil coolers/Glycol circuiting)

## Nomenclature

WRC	XXX	B
		<b>Material Finish</b> B = BLUE KOTE Standard case is powder coated steel (RAL7035)
		<b>Capacity</b> Watts/K divided by 100
		<b>Unit Type</b> WRC Condenser Series

PERFORMANCE DATA

PRODUCT NUMBER	Total Heat Rejection Capacity								Noise Data #		
	Watts/K based on 32°C AMB, 50°C COND, OK S/C								Power	Press.	Press.
	R404A	R22	R134a	Airflow	R404A	R22	R134a	Airflow	LwA	LpA @3m	LpA @10m
	Watts/K			L/S	Watts/K			L/S	dB(A) HI/LO SPD	AS/ISO dB(A) HI/LO SPD	AS/ISO dB(A) HI/LO SPD
	High Speed				Low Speed						
<b>Single Coil Models</b>											
WRC112B	11210	10650	10430	11360	9190	8730	8550	8440	86/81	66/61	55/50
WRC123B	12310	11690	11450	10010	9850	9350	9160	7260			
WRC167B	16740	15900	15570	17040	13730	13040	12770	12660	88/83	68/63	57/52
WRC185B	18460	17540	17170	15010	14770	14030	13740	10880			
WRC225B	22470	21350	20900	22720	18430	17510	17140	16880	89/84	69/64	58/53
WRC247B	24650	23420	22920	20010	19720	18740	18340	14510			
WRC277B	27680	26300	25740	28400	22700	21570	21110	21100	90/85	70/65	59/54
WRC307B	30690	29160	28540	25010	24550	23330	22830	18130			
<b>Double Coil Models</b>											
WRC224B	22420	21300	20850	22720	18380	17470	17090	16880	89/84	69/64	58/53
WRC246B	24630	23400	22910	20010	19700	18720	18320	14510			
WRC335B	33480	31810	31140	34080	27450	26080	25530	25310	91/86	71/66	60/55
WRC369B	36920	35070	34340	30020	29540	28060	27470	21770			
WRC449B	44940	42690	41790	45450	36850	35010	34270	33760	91/86	71/66	60/55
WRC493B	49290	46830	45840	40020	39430	37460	36670	29020			
WRC554B	55360	52600	51480	56800	45400	43140	42220	42200	93/88	73/68	62/57
WRC614B	61380	58310	57080	50030	49100	46650	45660	36270			

## Total Heat Rejection

The WRC Remote Condenser features:

- Based on zero subcooling and 100°C discharge temperature at 32°C Ambient, with zero suction superheat assumed. Capacity will vary only slightly with other suction and superheat conditions.
- KTD is defined as the saturated liquid temp at the condenser outlet minus the air on (amb.) temp. (Coils are in counterflow)
- Capacity is given for continuous full airflow, i.e no fan cycling.

## Sound Power

Tests were done with a Sound Intensity meter generally in accordance with the methods of ISO9614-1:1993 (measured at discrete points). Tests were conducted at 20°C ambient temp with only the fan(s) running & no refrigerant flow. Actual results may vary due to refrigerant flow noise & other factors. Sound Pressure level at 3 metres and 10 metres has been calculated in a Free Field condition (Location 1) Refer to “WRC Remote Condenser - Performance Data.”

## Unit Input Watts & Rated Load Amps

Based on external rotor motor manufacturers nominal rated values at maximum load conditions. Values may vary depending on power supply and coil configuration and cleanliness.

TECHNICAL DATA

PRODUCT NUMBER	Coil Details	Motor Data (415V/3Ph 2Spd)			Unit Data				Approx. Weight kg	
		Qty	Amps/Ph (EA)		Total Watts		RLA Amps/Ph		Unpacked	Packed
			(Hi-Spd)	(Lo-Spd)	(Hi-Spd)	(Lo-Spd)	(Hi-Spd)	(Lo-Spd)	Provisional	
<b>Single Coil Models</b>										
WRC112B	2 Fan 4 Row	2	4	2.30	4000	2500	8	4.6	430	460
WRC123B	2 Fan 6 Row	2	4	2.30	4000	2500	8	4.6	500	530
WRC167B	3 Fan 4 Row	3	4	2.30	6000	3750	12	6.9	610	650
WRC185B	3 Fan 6 Row	3	4	2.30	6000	3750	12	6.9	710	750
WRC225B	4 Fan 4 Row	4	4	2.30	8000	5000	16	9.2	820	880
WRC247B	4 Fan 6 Row	4	4	2.30	8000	5000	16	9.2	960	1020
WRC277B	5 Fan 4 Row	5	4	2.30	10000	6250	20	11.5	1035	1115
WRC307B	5 Fan 6 Row	5	4	2.30	10000	6250	20	11.5	1210	1290
<b>Double Coil Models</b>										
WRC224B	2x2 Fan 4 Row	4	4	2.30	8000	5000	16	9.2	810	840
WRC246B	2x2 Fan 6 Row	4	4	2.30	8000	5000	16	9.2	950	980
WRC335B	2x3 Fan 4 Row	6	4	2.30	12000	7500	24	13.8	1170	1210
WRC369B	2x3 Fan 6 Row	6	4	2.30	12000	7500	24	13.8	1370	1420
WRC449B	2x4 Fan 4 Row	8	4	2.30	16000	10000	32	18.4	1570	1630
WRC493B	2x4 Fan 6 Row	8	4	2.30	16000	10000	32	18.4	1830	1890
WRC554B	2x5 Fan 4 Row	10	4	2.30	20000	12500	40	23	1975	2055
WRC614B	2x5 Fan 6 Row	10	4	2.30	20000	12500	40	23	2300	2380

NOTE - SUGGESTED CONTACTORS AND OVERLOADS FOR SID MOTOR FANS (FE080-SDQ.6N.5) / High Speed- Contactor 6A, Overload 5.5A.

TECHNICAL DATA - HORIZONTAL AIRFLOW

PRODUCT NUMBER	Coil Data			Dimensional Data (mm)				Shipping Volume
	Charge	Conn's ODS (mm)		L	W	H max	H min	
	R404A kg*	Gas	Liquid					m3
<b>Single Coil Models</b>								
WRC112B	37	54.4	54.4	3260	1136	1250	1250	6.7
WRC123B	53	54.4	54.4	3260	1136	1250	1250	6.7
WRC167B	55	66.7	66.7	4660	1136	1250	1250	8.7
WRC185B	79	66.7	66.7	4660	1136	1250	1250	8.7
WRC225B	70	66.7	66.7	6068	1136	1250	1250	11.7
WRC247B	102	66.7	66.7	6068	1136	1250	1250	11.7
WRC277B	87	66.7	66.7	7469	1136	1250	1250	13.7
WRC307B	126	66.7	66.7	7469	1136	1250	1250	13.7
<b>Double Coil Models</b>								
WRC224B	73	2 x 54.4	2 x 54.4	3260	1136	2406	2406	11.2
WRC246B	105	2 x 54.4	2 x 54.4	3260	1136	2406	2406	11.2
WRC335B	109	2 x 66.7	2 x 66.7	4660	1136	2406	2406	15.2
WRC369B	157	2 x 66.7	2 x 66.7	4660	1136	2406	2406	15.2
WRC449B	141	2 x 66.7	2 x 66.7	6068	1136	2406	2406	20.2
WRC493B	204	2 x 66.7	2 x 66.7	6068	1136	2406	2406	20.2
WRC554B	173	2 x 66.7	2 x 66.7	7469	1136	2406	2406	24.2
WRC614B	252	2 x 66.7	2 x 66.7	7469	1136	2406	2406	24.2

TECHNICAL DATA - VERTICAL AIRFLOW

<b>Single Coil Models</b>								
WRC112B	37	54.4	54.4	3260	1250	1585	1410	6.7
WRC123B	53	54.4	54.4	3260	1250	1585	1410	6.7
WRC167B	55	66.7	66.7	4660	1250	1585	1410	8.7
WRC185B	79	66.7	66.7	4660	1250	1585	1410	8.7
WRC225B	70	66.7	66.7	6068	1250	1585	1410	11.7
WRC247B	102	66.7	66.7	6068	1250	1585	1410	11.7
WRC277B	87	66.7	66.7	7469	1250	1585	1410	13.7
WRC307B	126	66.7	66.7	7469	1250	1585	1410	13.7
<b>Double Coil Models</b>								
WRC224B	73	2 x 54.4	2 x 54.4	3260	2406	1585	1410	11.2
WRC246B	105	2 x 54.4	2 x 54.4	3260	2406	1585	1410	11.2
WRC335B	109	2 x 66.7	2 x 66.7	4660	2406	1585	1410	15.2
WRC369B	157	2 x 66.7	2 x 66.7	4660	2406	1585	1410	15.2
WRC449B	141	2 x 66.7	2 x 66.7	6068	2406	1585	1410	20.2
WRC493B	204	2 x 66.7	2 x 66.7	6068	2406	1585	1410	20.2
WRC554B	173	2 x 66.7	2 x 66.7	7469	2406	1585	1410	24.2
WRC614B	252	2 x 66.7	2 x 66.7	7469	2406	1585	1410	24.2

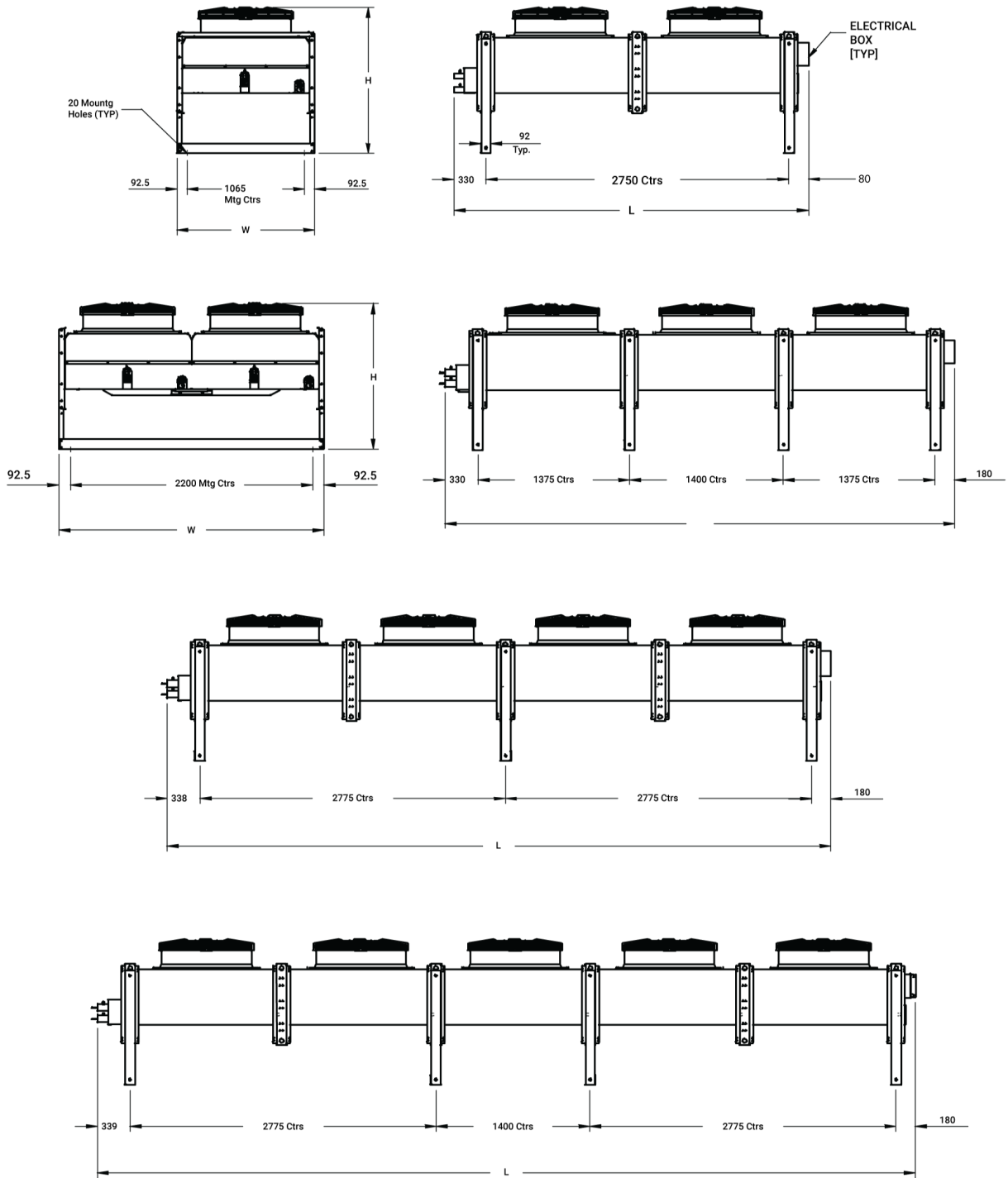
Pumpdown Charge Conversion Factors to R404A

Refrigerant	R22	R134a	R407C	R404A	R407B	R502	R507
Factor	1.22	1.24	1.13	1.00	1.13	1.22	1.05

Rating of Operation Charge @ -5°C SST & 40°C SCT to Pumpdown Charge

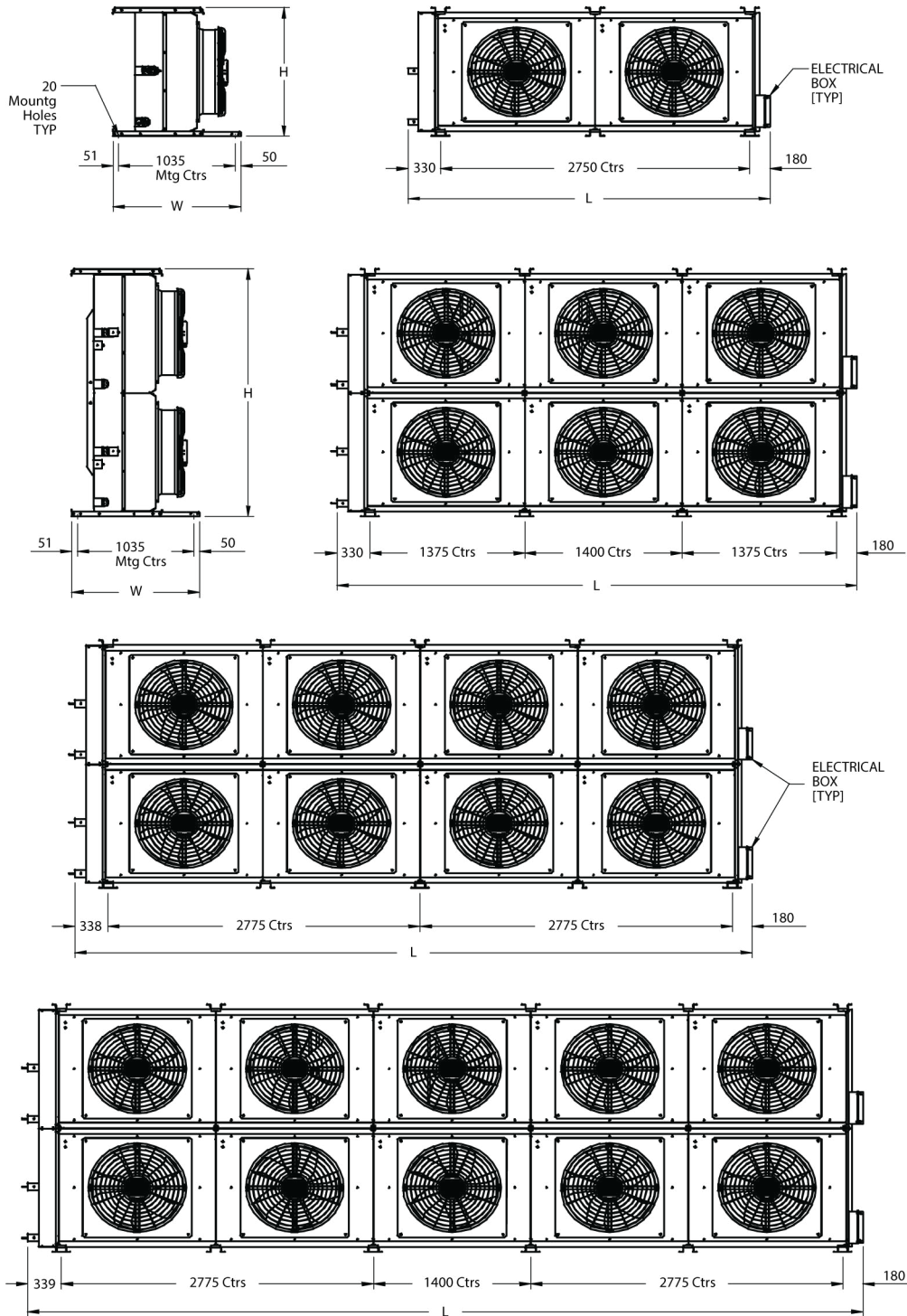
Refrigerant	R22	R134a	R407C	R404A	R407B	R502	R507
Factor	0.24	0.21	0.26	0.34	0.32	0.30	0.35

PHYSICAL DATA (HORIZONTAL AIRFLOW CONFIGURATION)





PHYSICAL DATA (VERTICAL AIRFLOW CONFIGURATION)



SOUND DATA

Fans	125	250	500	1000	2000	4000	8000	Noise Rating NR	Sound Press @ 3m dB(a) #
<b>Linear Sound Power dB @ Centre Frequency Hz - 6 Pole High Speed</b>									
2	84	80	81	83	80	71	62	65	66
3	85	82	83	85	82	73	64	67	68
4	86	83	84	86	83	74	65	69	69
5	87	84	85	87	84	75	66	69	70
6	88	85	86	88	85	76	67	70	71
8	89	86	87	89	86	77	68	72	72
10	90	87	88	90	87	78	69	72	73
<b>Linear Sound Power dB @ Centre Frequency Hz - 6 Pole Low Speed</b>									
2	78	77	76	79	72	63	54	61	61
3	80	79	78	81	74	65	56	63	63
4	81	80	79	82	75	66	57	65	64
5	82	81	80	83	76	67	58	65	65
6	83	82	81	84	77	68	59	66	66
8	84	83	82	85	78	69	60	68	67
10	85	84	83	86	79	70	61	68	68

# The Sound Pressure Level at 3 metres has been calculated in a Free Field Condition (Location 1) refer page 11 - WRC Remote Condenser - Rating Data



# Performance Data

Ambient Correction Factors (K1)							
Amb. °C	15	20	25	30	35	40	45
Factor	0.979	0.986	0.992	0.998	1.003	1.008	1.013

Divide the calculated THR at required ambient by the appropriate factor to find the required THR at the rating condition (32 °C).

Ambient Correction Factors (K2)							
Alt. m	0	600	800	1000	1200	1400	1600
Factor	1	1.04	1.06	1.075	1.09	1.11	1.12

Multiply the calculated THR at altitude by the appropriate factor to find the required THR at the rating condition (sea level).

Ambient Correction Factors (K3)					
S/C	KTD				
	3	5	10	15	20
K					
2	0.966	0.976	0.989	0.994	0.996
4		0.934	0.975	0.986	0.990
6			0.946	0.972	0.980
8			0.898	0.960	0.966

Multiply the rated THR at zero subcooling by the factor at the required KTD and degree of subcooling to give the new THR.

Separate Sub Cooling Correction Factors					
Subcooling	2K	4K	6K	8K	10K
Factor	0.96	0.950	0.930	0.910	0.880

Multiply the rated THR by the Integral subcooling factor at the required subcooling (K), and then multiply by the separate subcooling factor to find the THR of the condensing only section.

Use the condensing only THR as basis of selection.

Condensing only THR implies zero subcooling as per usual rating condition.

#### Notes to Performance Data

- Integral sub-cooling is defined as achieving the required degree of subcooling using the standard coil circuiting.
- In this case the subcooling is achieved at the end of each circuit and subcooled liquid exits the condenser to the receiver.
- For separate sub-cooling, there is a section of the coil used separately to sub-cool liquid coming from the receiver. This is available as an extra cost special circuiting option. The percentage of coil area required depends on the degree of subcooling and the design KTD. The factors listed for integral subcooling are used in conjunction with the separate subcooling factors above.

Refrigerant Capacity Correction Factors - Ratio to R404A (K4)					
Refrigerant	R134a	R22	R507	R407B	R407C
Factor	0.93	0.95	0.976	0.92	0.90

Divide the calculated THR by the appropriate factor to find the required THR at rating condition (R404A).

## Remote Condensers

Factors are an average of all models and may vary slightly over the range of KTD, however the above figures are sufficiently accurate for most system selection purposes.

Discharge Temperature Correction Factors			
Refrigerant	R404A	R134a	R22
85 °C Discharge	0.978	0.97	0.988

Factors at 32 °C ambient, 50 C SCT. Factor will not vary significantly within the allowable KTD. Multiply the rated THR by the factor to get THR at reduced discharge gas temp. Capacity Rating to 100 C discharge.

## Sound Power

Tests were done with a Sound Intensity meter generally in accordance with the methods of ISO9614-1:1993 (measured at discrete points). Tests were conducted at 20 °C ambient temp with only the fan(s) running & no refrigerant flow. Actual results may vary due to refrigerant flow noise & other factors. Sound pressure level at 3m distance from the unit can be estimated using various deductions depending on the location of the unit in the room.

Unit Locations	Location 1	Location 2	Location 3	Location 4
Lw - Lp (dB(A)) (3m)	20.5	17.5	14.5	11.5

- Location 1: Unit located with no hard surfaces to reflect the sound (Free Field conditions).
- Location 2: Unit located with 1 hard surface to reflect the sound.
- Location 3: Unit located with 2 hard surfaces to reflect the sound.
- Location 4: Unit located with 3 hard surfaces to reflect the sound.
- Lw: Sound power level, dB(A).
- Lp: Sound pressure level, dB(A).

Important: All data is approximate, and to be used only as a guide.

Manufactured by



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