

Engineering Databook



Indoor unit

RAS-10PKVPG-E
RAS-13PKVPG-E
RAS-16PKVPG-E

Outdoor unit

RAS-10PAVPG-E
RAS-13PAVPG-E
RAS-16PAVPG-E

Contents...

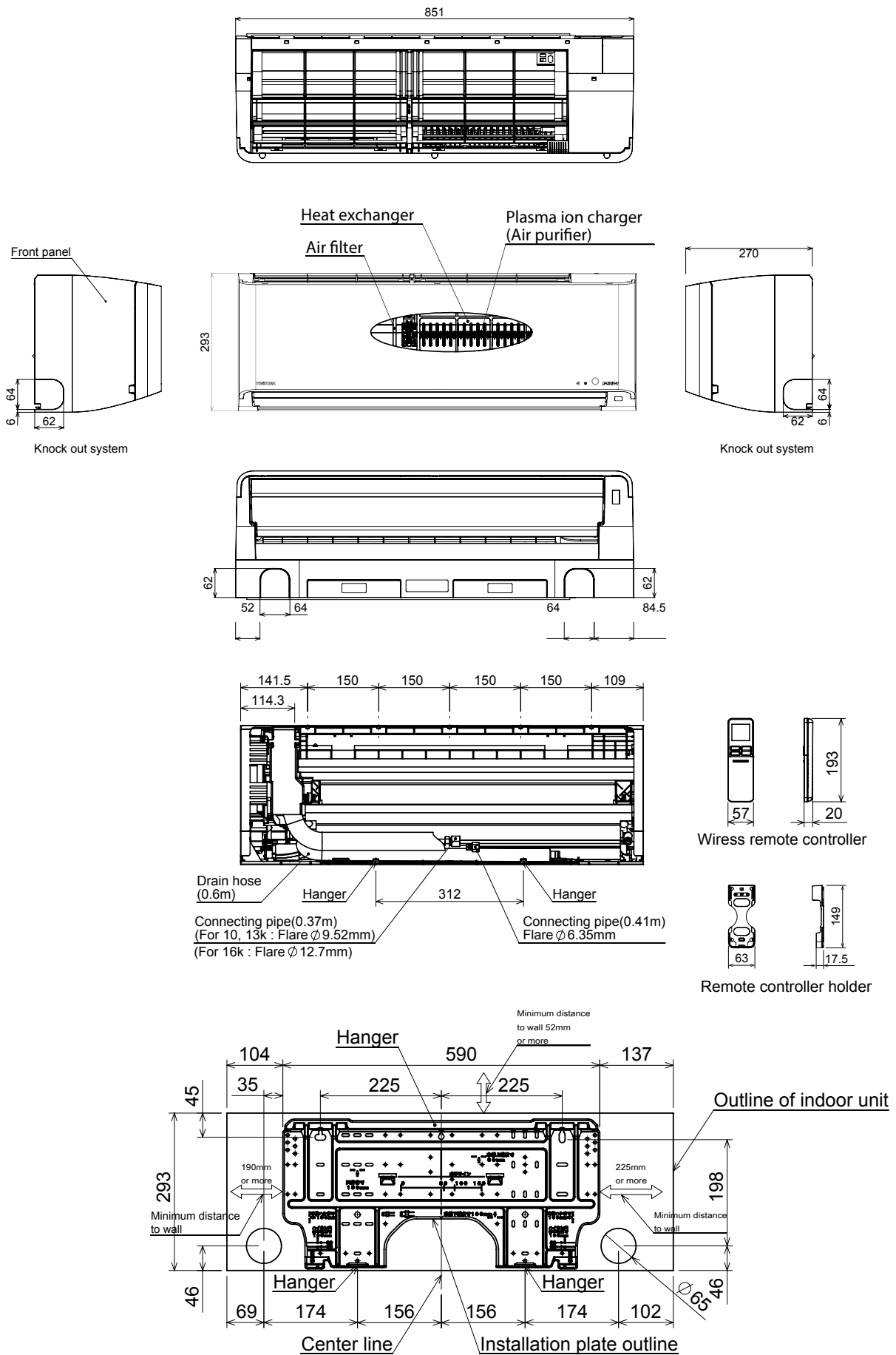
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1. Specifications

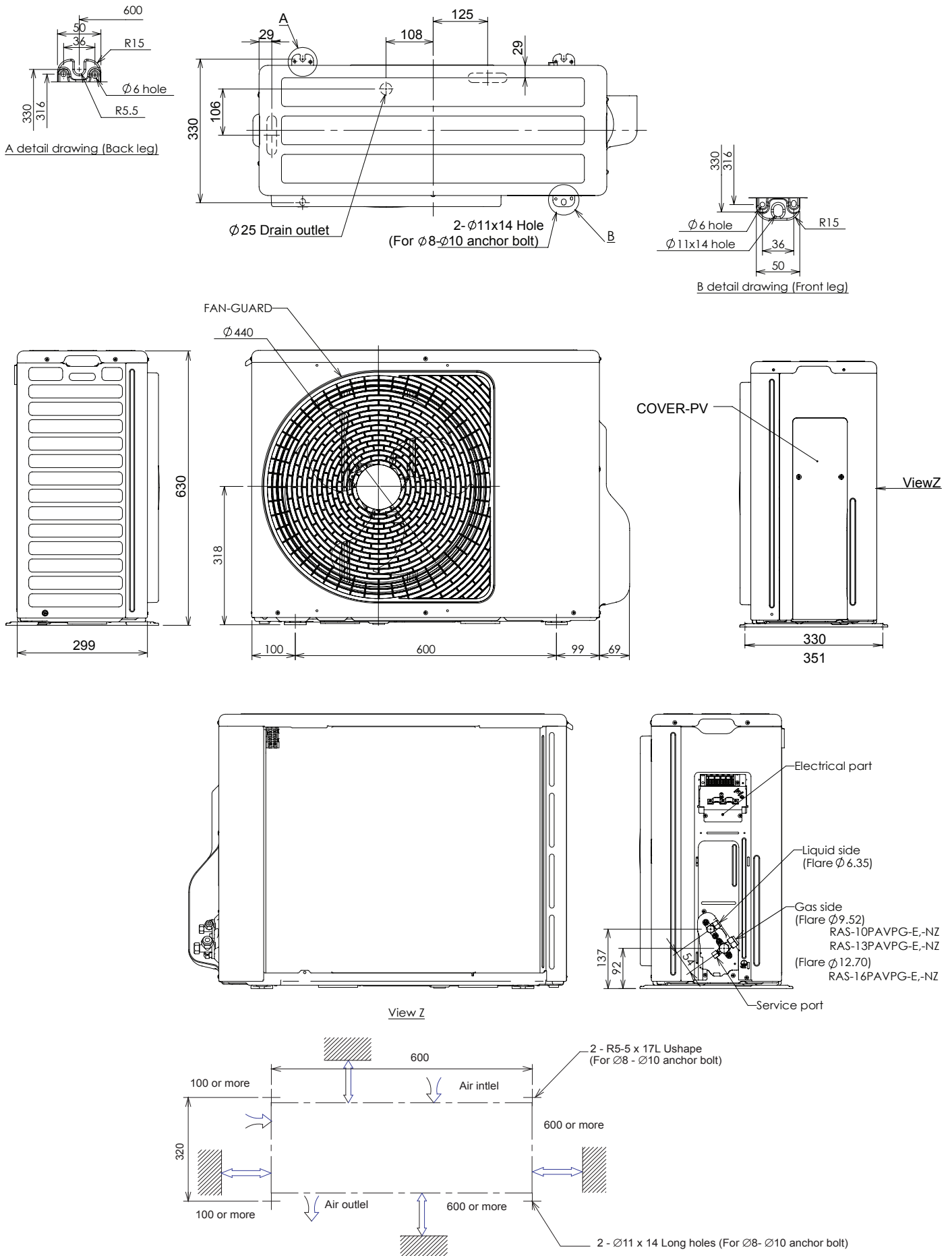
Specifications					
System	Size		10k	13k	16k
	Indoor		RAS-10PKVPG-E	RAS-13PKVPG-E	RAS-16PKVPG-E
	Outdoor		RAS-10PAVPG-E	RAS-13PAVPG-E	RAS-16PAVPG-E
Power supply		(V/Ph/Hz)	220-240/1/50		
Cooling	Capacity	(kW)	2.50 (0.80 - 3.50)	3.50 (0.90 - 4.10)	4.50 (0.90 - 5.10)
	Power Consumption	(kW)	0.45 (0.15 - 0.82)	0.75 (0.18 - 1.00)	1.08 (0.18 - 1.38)
	Toshiba Residential Inverter Heat Pump		5.56 (5.33 - 4.27)	4.67 (5.00 - 4.10)	4.17 (5.00 - 3.70)
	PdesignC	(kW)	2.50	3.50	4.50
	SEER		10.6	9.5	8.5
	Indoor Noise	(dB)	43/39/33/28/24/20	44/39/34/29/25/20	45/40/35/30/26/22
	Outdoor Noise	(dB)	46	48	49
	Air Flow	m ³ /min	11.4	11.9	12.2
Heating	Capacity	(kW)	3.20 (0.70 - 5.80)	4.00 (0.80 - 6.30)	4.50 (0.80 - 6.80)
	Power Consumption	(kW)	0.60 (0.15 - 1.55)	0.80 (0.17 - 2.00)	1.37 (0.17 - 2.05)
	COP		5.33 (4.67 - 3.74)	5.0 (4.71 - 3.15)	4.01(4.71 - 3.32)
	PdesignH (Tbiv -7°C)	(kW)	3.00	3.60	4.50
	SCOP		5.20	5.10	4.60
	Indoor Noise	(dB)	44/39/33/28/24/20	45/39/34/29/24/20	46/40/35/30/26/22
	Outdoor Noise	(dB)	47	50	50
	Air Flow	m ³ /min	12.1	12.1	12.4
FCU	Dimensions	H x W x D (mm)	293 x 851 x 270	293 x 851 x 270	293 x 851 x 270
		Net Weight (kg)	14	14	14
CDU	Dimensions	H x W x D (mm)	630 x 800 x 300	630 x 800 x 300	630 x 800 x 300
		Net Weight (kg)	38	38	38
Pipe	Chargeless	(m)	15	15	15
	Maximum Length	(m)	25	25	25
	Maximum Height	(m)	10	10	10
	Refrigerant		R32		
Energy Label Grade	Cooling / Heating		A+++ / A+++	A+++ / A+++	A+++ / A++
Usable Range Temp	Cooling	(°C)	Indoor: 21 ~ 32 °C , Outdoor: (-15) ~ 46 °C		
	Heating	(°C)	Indoor: 0 ~ 28 °C , Outdoor: (-15) ~ 24 °C		

2. Dimensions of indoor units

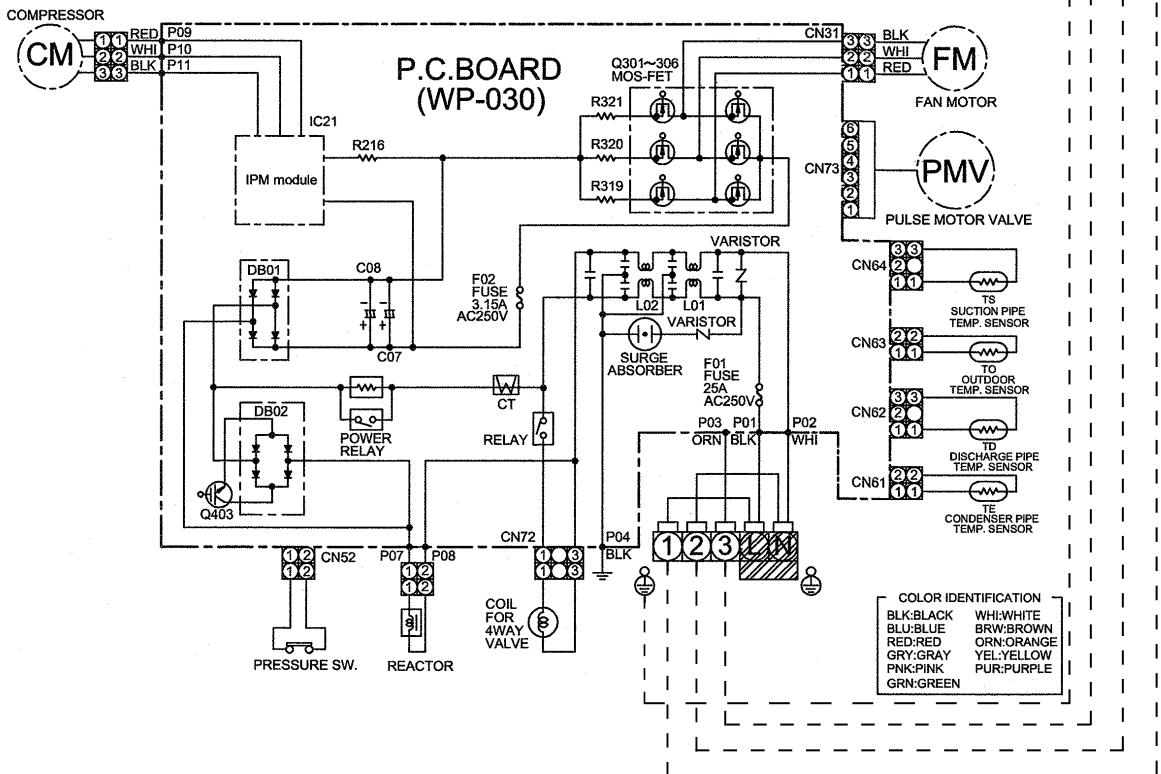
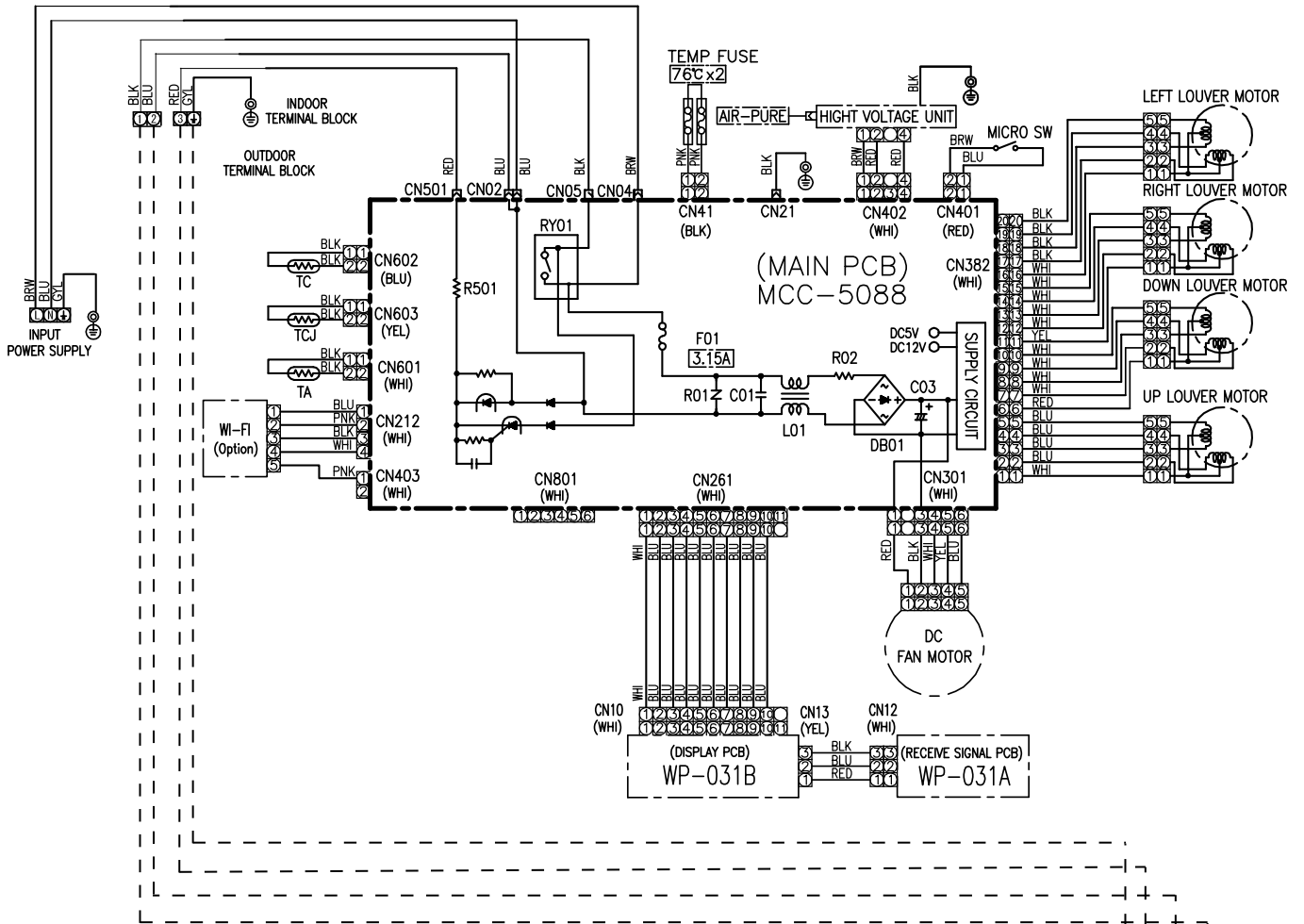


Dimensions of outdoor units

(Unit : mm)



3. Wiring Diagrams



4. Sensible capacity table

Product models : **RAS-10PKVPG-E / RAS-10PAVPG-E**

Specification of product at standard condition

Standard Condition	Indoor	27°C (DB) / 19°C (WB)	Total Cooling Capacity (TC)	2.50 kW
	Outdoor	35°C (DB) / 24°C (WB)		Sensible Heat Capacity (SHC)

Outdoor air temperature DB (°C)	Indoor air temperature													
	20.0°C (DB) 14.0°C (WB)		23.0°C (DB) 16.0°C (WB)		26.0°C (DB) 18.0°C (WB)		27.0°C (DB) 19.0°C (WB)		28.0°C (DB) 20.0°C (WB)		30.0°C (DB) 22.0°C (WB)		32.0°C (DB) 24.0°C (WB)	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	2.45	2.11	2.70	2.25	2.90	2.39	2.98	2.39	3.07	2.38	3.25	2.36	3.40	2.32
21	2.42	2.09	2.68	2.22	2.86	2.36	2.95	2.36	3.03	2.36	3.21	2.34	3.36	2.29
22	2.40	2.06	2.65	2.20	2.83	2.34	2.92	2.33	3.00	2.33	3.18	2.31	3.32	2.27
23	2.37	2.04	2.62	2.17	2.80	2.31	2.89	2.31	2.97	2.31	3.14	2.29	3.29	2.24
24	2.34	2.02	2.59	2.15	2.77	2.29	2.85	2.28	2.93	2.28	3.11	2.26	3.25	2.22
25	2.32	1.99	2.56	2.13	2.74	2.26	2.82	2.26	2.90	2.26	3.07	2.23	3.21	2.19
26	2.29	1.97	2.53	2.10	2.71	2.23	2.79	2.23	2.87	2.23	3.04	2.21	3.18	2.17
27	2.26	1.95	2.50	2.08	2.68	2.21	2.76	2.21	2.84	2.20	3.00	2.18	3.14	2.14
28	2.24	1.93	2.47	2.05	2.65	2.18	2.72	2.18	2.80	2.18	2.97	2.16	3.10	2.12
29	2.21	1.90	2.44	2.03	2.62	2.16	2.69	2.15	2.77	2.15	2.93	2.13	3.07	2.09
30	2.19	1.88	2.41	2.01	2.58	2.13	2.66	2.13	2.74	2.13	2.90	2.11	3.03	2.07
31	2.16	1.86	2.38	1.98	2.55	2.11	2.63	2.10	2.70	2.10	2.86	2.08	2.99	2.04
32	2.13	1.84	2.36	1.96	2.52	2.08	2.60	2.08	2.67	2.08	2.83	2.06	2.96	2.02
33	2.11	1.81	2.33	1.93	2.49	2.05	2.56	2.05	2.64	2.05	2.79	2.03	2.92	1.99
34	2.08	1.79	2.30	1.91	2.46	2.03	2.53	2.03	2.60	2.02	2.76	2.01	2.88	1.97
35	2.05	1.77	2.27	1.88	2.43	2.00	2.50	2.00	2.57	2.00	2.72	1.98	2.85	1.94
36	2.03	1.74	2.24	1.86	2.40	1.98	2.47	1.97	2.54	1.97	2.69	1.95	2.81	1.92
37	2.00	1.72	2.21	1.84	2.37	1.95	2.44	1.95	2.51	1.95	2.65	1.93	2.78	1.89
38	1.97	1.70	2.18	1.81	2.34	1.93	2.40	1.92	2.47	1.92	2.62	1.90	2.74	1.87
39	1.95	1.68	2.15	1.79	2.30	1.90	2.37	1.90	2.44	1.90	2.58	1.88	2.70	1.84
40	1.92	1.65	2.12	1.76	2.27	1.87	2.34	1.87	2.41	1.87	2.55	1.85	2.67	1.82
41	1.90	1.63	2.09	1.74	2.24	1.85	2.31	1.85	2.37	1.84	2.51	1.83	2.63	1.79
42	1.87	1.61	2.06	1.72	2.21	1.82	2.28	1.82	2.34	1.82	2.48	1.80	2.59	1.77
43	1.84	1.59	2.03	1.69	2.18	1.80	2.24	1.79	2.31	1.79	2.44	1.78	2.56	1.74
44	1.82	1.56	2.01	1.67	2.15	1.77	2.21	1.77	2.27	1.77	2.41	1.75	2.52	1.72
45	1.79	1.54	1.98	1.64	2.12	1.75	2.18	1.74	2.24	1.74	2.37	1.73	2.48	1.69
46	1.76	1.52	1.95	1.62	2.09	1.72	2.15	1.72	2.21	1.72	2.34	1.70	2.45	1.67

Product models : RAS-13PKVPG-E / RAS-13PAVPG-E

Specification of product at standard condition

Standard Condition	Indoor	27°C (DB) / 19°C (WB)	Total Cooling Capacity (TC)	3.50 kW
	Outdoor	35°C (DB) / 24°C (WB)		Sensible Heat Capacity (SHC)

Outdoor air temperature DB (°C)	Indoor air temperature													
	20.0°C (DB) 14.0°C (WB)		23.0°C (DB) 16.0°C (WB)		26.0°C (DB) 18.0°C (WB)		27.0°C (DB) 19.0°C (WB)		28.0°C (DB) 20.0°C (WB)		30.0°C (DB) 22.0°C (WB)		32.0°C (DB) 24.0°C (WB)	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	3.43	2.85	3.79	3.04	4.05	3.23	4.17	3.22	4.29	3.21	4.55	3.18	4.76	3.11
21	3.39	2.82	3.75	3.01	4.01	3.19	4.13	3.19	4.25	3.18	4.50	3.14	4.70	3.07
22	3.35	2.79	3.70	2.97	3.97	3.16	4.08	3.15	4.20	3.15	4.45	3.11	4.65	3.04
23	3.32	2.76	3.66	2.94	3.92	3.12	4.04	3.12	4.15	3.11	4.40	3.07	4.60	3.01
24	3.28	2.73	3.62	2.91	3.88	3.09	3.99	3.08	4.11	3.08	4.35	3.04	4.55	2.97
25	3.24	2.70	3.58	2.87	3.84	3.06	3.95	3.05	4.06	3.04	4.30	3.01	4.50	2.94
26	3.21	2.67	3.54	2.84	3.79	3.02	3.90	3.01	4.02	3.01	4.25	2.97	4.45	2.91
27	3.17	2.64	3.50	2.81	3.75	2.99	3.86	2.98	3.97	2.97	4.20	2.94	4.40	2.87
28	3.13	2.61	3.46	2.78	3.71	2.95	3.81	2.94	3.92	2.94	4.16	2.90	4.35	2.84
29	3.10	2.58	3.42	2.74	3.66	2.92	3.77	2.91	3.88	2.90	4.11	2.87	4.29	2.81
30	3.06	2.55	3.38	2.71	3.62	2.88	3.72	2.87	3.83	2.87	4.06	2.83	4.24	2.77
31	3.02	2.52	3.34	2.68	3.57	2.85	3.68	2.84	3.78	2.83	4.01	2.80	4.19	2.74
32	2.99	2.48	3.30	2.65	3.53	2.81	3.63	2.80	3.74	2.80	3.96	2.77	4.14	2.71
33	2.95	2.45	3.26	2.61	3.49	2.78	3.59	2.77	3.69	2.76	3.91	2.73	4.09	2.67
34	2.91	2.42	3.22	2.58	3.44	2.74	3.54	2.73	3.65	2.73	3.86	2.70	4.04	2.64
35	2.87	2.39	3.17	2.55	3.40	2.71	3.50	2.70	3.60	2.70	3.81	2.66	3.99	2.61
36	2.84	2.36	3.13	2.51	3.36	2.67	3.46	2.67	3.55	2.66	3.76	2.63	3.94	2.57
37	2.80	2.33	3.09	2.48	3.31	2.64	3.41	2.63	3.51	2.63	3.71	2.60	3.89	2.54
38	2.76	2.30	3.05	2.45	3.27	2.60	3.37	2.60	3.46	2.59	3.67	2.56	3.83	2.50
39	2.73	2.27	3.01	2.42	3.23	2.57	3.32	2.56	3.42	2.56	3.62	2.53	3.78	2.47
40	2.69	2.24	2.97	2.38	3.18	2.53	3.28	2.53	3.37	2.52	3.57	2.49	3.73	2.44
41	2.65	2.21	2.93	2.35	3.14	2.50	3.23	2.49	3.32	2.49	3.52	2.46	3.68	2.40
42	2.62	2.18	2.89	2.32	3.09	2.46	3.19	2.46	3.28	2.45	3.47	2.42	3.63	2.37
43	2.58	2.15	2.85	2.29	3.05	2.43	3.14	2.42	3.23	2.42	3.42	2.39	3.58	2.34
44	2.54	2.12	2.81	2.25	3.01	2.40	3.10	2.39	3.18	2.38	3.37	2.36	3.53	2.30
45	2.51	2.09	2.77	2.22	2.96	2.36	3.05	2.35	3.14	2.35	3.32	2.32	3.48	2.27
46	2.47	2.05	2.73	2.19	2.92	2.33	3.01	2.32	3.09	2.31	3.27	2.29	3.42	2.24

Product models : RAS-16PKVPG-E / RAS-16PAVPG-E

Specification of product at standard condition

Standard Condition	Indoor	27°C (DB) / 19°C (WB)	Total Cooling Capacity (TC)	4.50 kW
	Outdoor	35°C (DB) / 24°C (WB)	Sensible Heat Capacity (SHC)	3.50 kW

Outdoor air temperature DB (°C)	Indoor air temperature													
	20.0°C (DB) 14.0°C (WB)		23.0°C (DB) 16.0°C (WB)		26.0°C (DB) 18.0°C (WB)		27.0°C (DB) 19.0°C (WB)		28.0°C (DB) 20.0°C (WB)		30.0°C (DB) 22.0°C (WB)		32.0°C (DB) 24.0°C (WB)	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	4.41	3.70	4.87	3.94	5.21	4.18	5.37	4.17	5.52	4.17	5.85	4.12	6.11	4.03
21	4.36	3.66	4.82	3.89	5.16	4.14	5.31	4.13	5.46	4.12	5.78	4.08	6.05	3.99
22	4.31	3.62	4.76	3.85	5.10	4.09	5.25	4.08	5.40	4.08	5.72	4.03	5.98	3.95
23	4.27	3.58	4.71	3.81	5.04	4.05	5.19	4.04	5.34	4.03	5.66	3.99	5.92	3.90
24	4.22	3.54	4.66	3.77	4.99	4.00	5.14	3.99	5.28	3.99	5.59	3.94	5.85	3.86
25	4.17	3.50	4.61	3.73	4.93	3.96	5.08	3.95	5.22	3.94	5.53	3.90	5.78	3.82
26	4.12	3.46	4.55	3.68	4.88	3.91	5.02	3.90	5.16	3.90	5.47	3.85	5.72	3.77
27	4.08	3.42	4.50	3.64	4.82	3.87	4.96	3.86	5.10	3.85	5.41	3.81	5.65	3.73
28	4.03	3.38	4.45	3.60	4.76	3.82	4.90	3.81	5.04	3.81	5.34	3.77	5.59	3.69
29	3.98	3.34	4.40	3.56	4.71	3.78	4.85	3.77	4.99	3.76	5.28	3.72	5.52	3.64
30	3.93	3.30	4.34	3.51	4.65	3.73	4.79	3.72	4.93	3.72	5.22	3.68	5.46	3.60
31	3.89	3.26	4.29	3.47	4.60	3.69	4.73	3.68	4.87	3.67	5.15	3.63	5.39	3.56
32	3.84	3.22	4.24	3.43	4.54	3.64	4.67	3.63	4.81	3.63	5.09	3.59	5.32	3.51
33	3.79	3.18	4.19	3.39	4.48	3.60	4.62	3.59	4.75	3.58	5.03	3.54	5.26	3.47
34	3.74	3.14	4.13	3.34	4.43	3.55	4.56	3.54	4.69	3.54	4.96	3.50	5.19	3.43
35	3.70	3.10	4.08	3.30	4.37	3.51	4.50	3.50	4.63	3.50	4.90	3.46	5.13	3.38
36	3.65	3.06	4.03	3.26	4.32	3.46	4.44	3.46	4.57	3.45	4.84	3.41	5.06	3.34
37	3.60	3.02	3.98	3.22	4.26	3.42	4.38	3.41	4.51	3.41	4.78	3.37	5.00	3.30
38	3.55	2.98	3.92	3.17	4.20	3.37	4.33	3.37	4.45	3.36	4.71	3.32	4.93	3.25
39	3.51	2.94	3.87	3.13	4.15	3.33	4.27	3.32	4.39	3.32	4.65	3.28	4.86	3.21
40	3.46	2.90	3.82	3.09	4.09	3.28	4.21	3.28	4.33	3.27	4.59	3.23	4.80	3.17
41	3.41	2.86	3.77	3.05	4.03	3.24	4.15	3.23	4.27	3.23	4.52	3.19	4.73	3.12
42	3.36	2.82	3.72	3.00	3.98	3.19	4.10	3.19	4.21	3.18	4.46	3.15	4.67	3.08
43	3.32	2.78	3.66	2.96	3.92	3.15	4.04	3.14	4.15	3.14	4.40	3.10	4.60	3.03
44	3.27	2.74	3.61	2.92	3.87	3.10	3.98	3.10	4.09	3.09	4.34	3.06	4.53	2.99
45	3.22	2.70	3.56	2.88	3.81	3.06	3.92	3.05	4.03	3.05	4.27	3.01	4.47	2.95
46	3.17	2.66	3.51	2.84	3.75	3.01	3.86	3.01	3.98	3.00	4.21	2.97	4.40	2.90

Indoor: RAS-16PKVPG-E
Outdoor: RAS-16PAVPG-E

Table with 4 columns: Operation range, Cooling (Q, P), Heating (Q, P). Rows include MINIMUM, RATING, and MAXIMUM.

Cooling

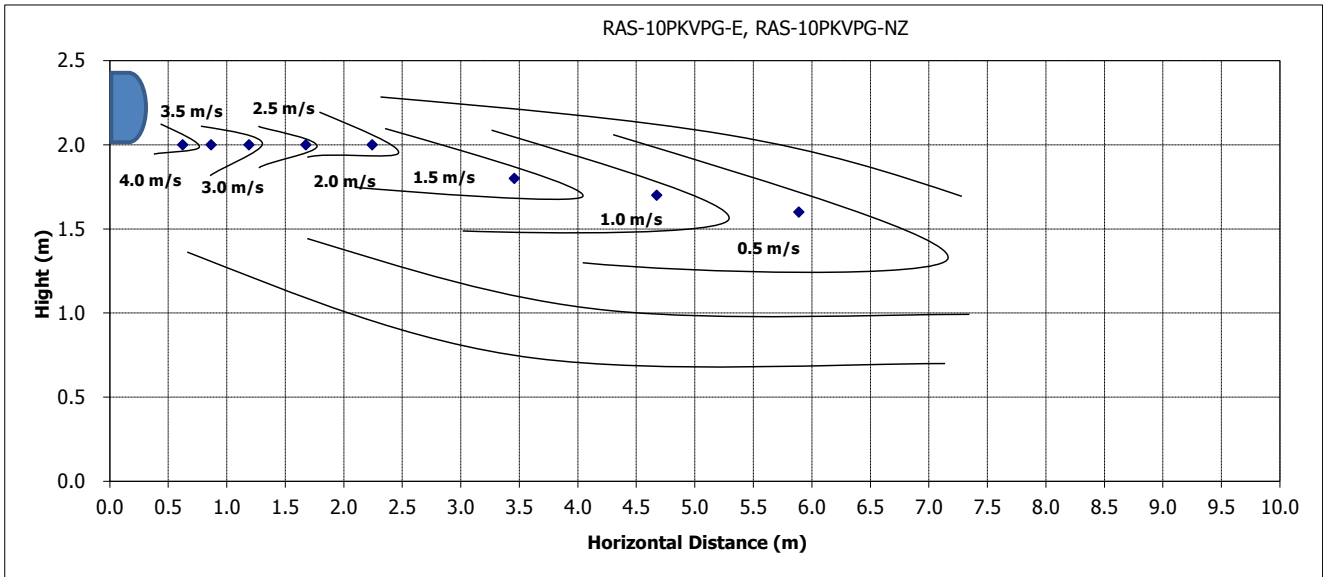
Cooling performance table. Columns: Outdoor Temperature DB (°C), Parts Load (%), Q, P. Rows: 20 to 46 °C.

Heating

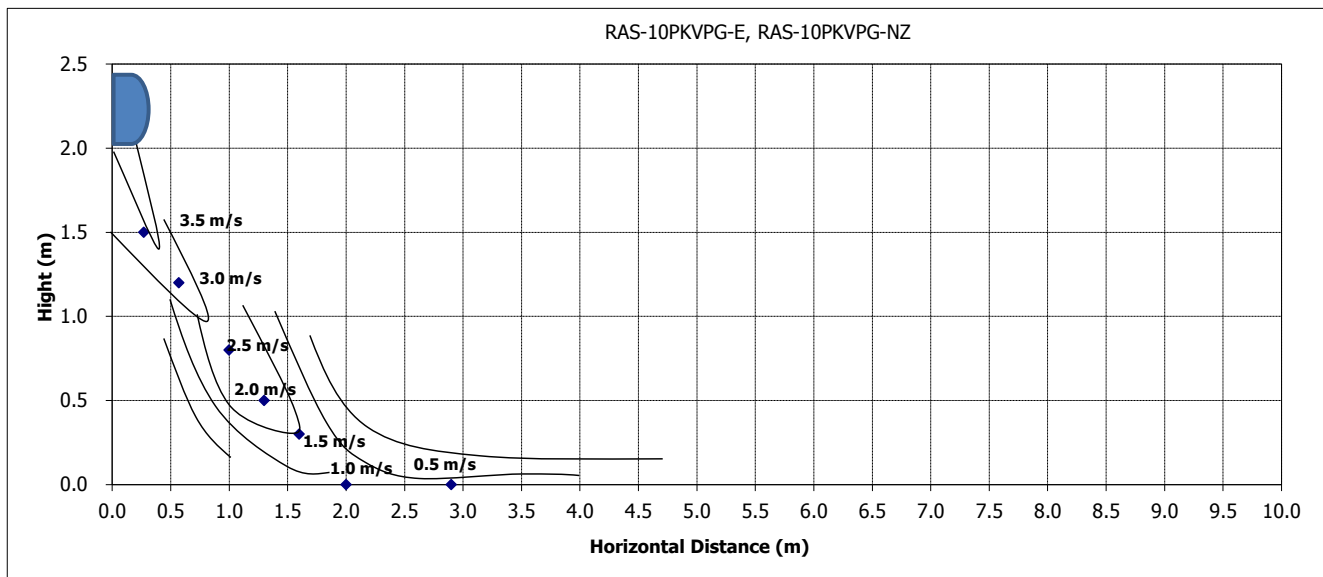
Heating performance table. Columns: Outdoor Temperature DB (°C), Parts Load (%), Q, P. Rows: -15 to 24 °C.

6. Air Speed distribution

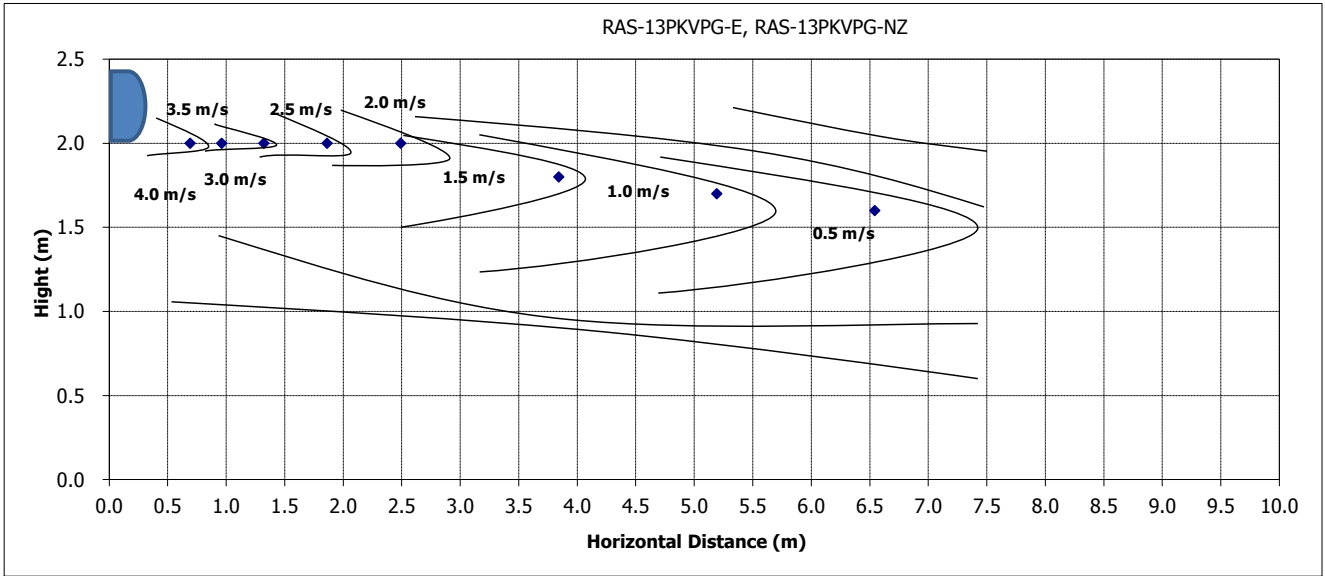
Cooling



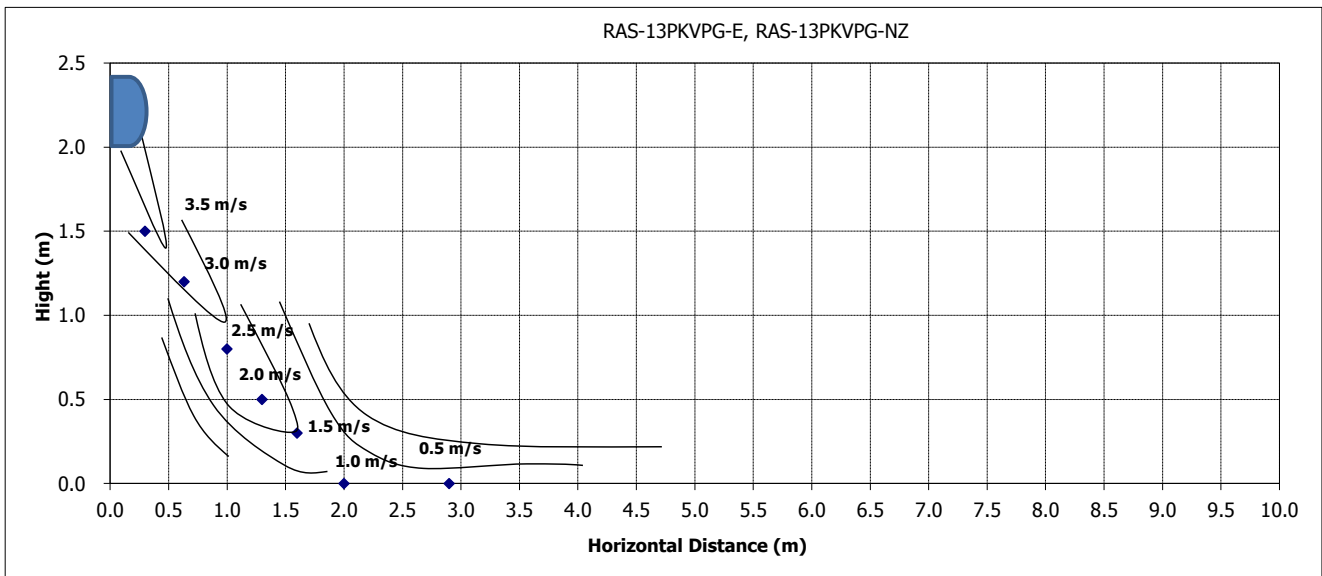
Heating



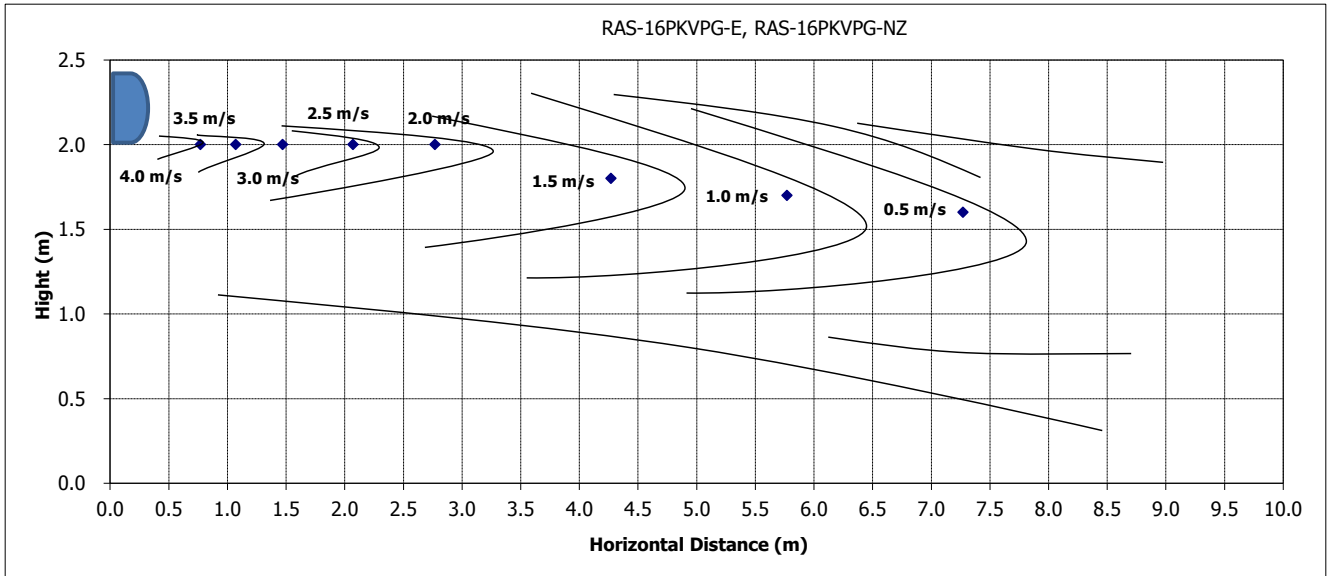
Cooling



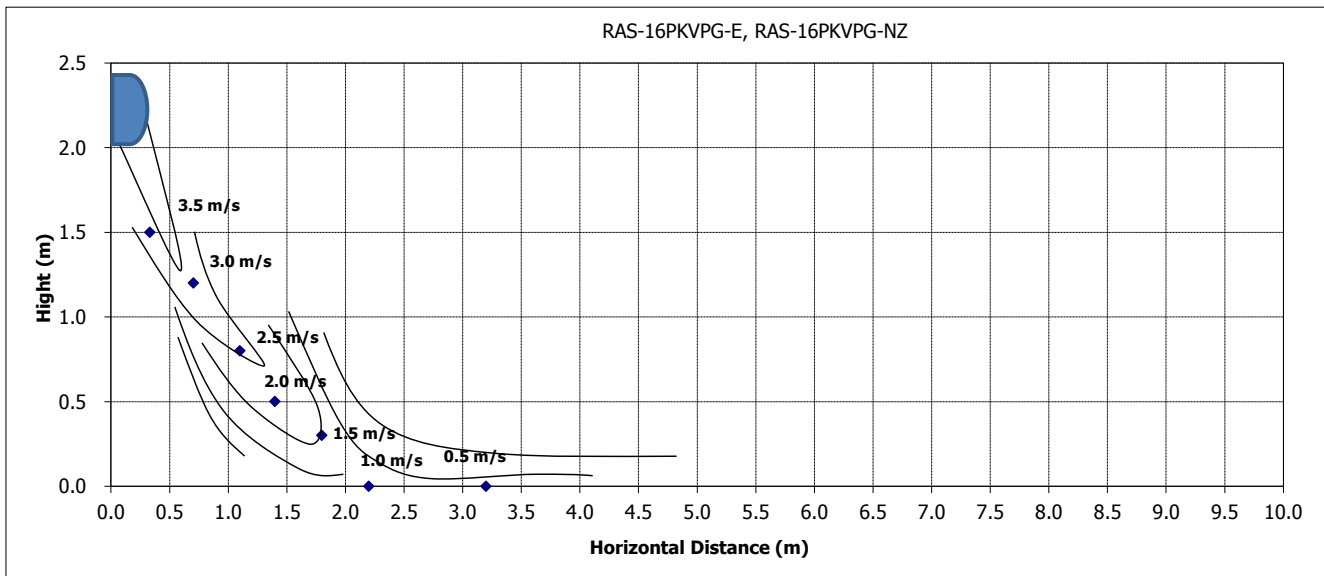
Heating



Cooling



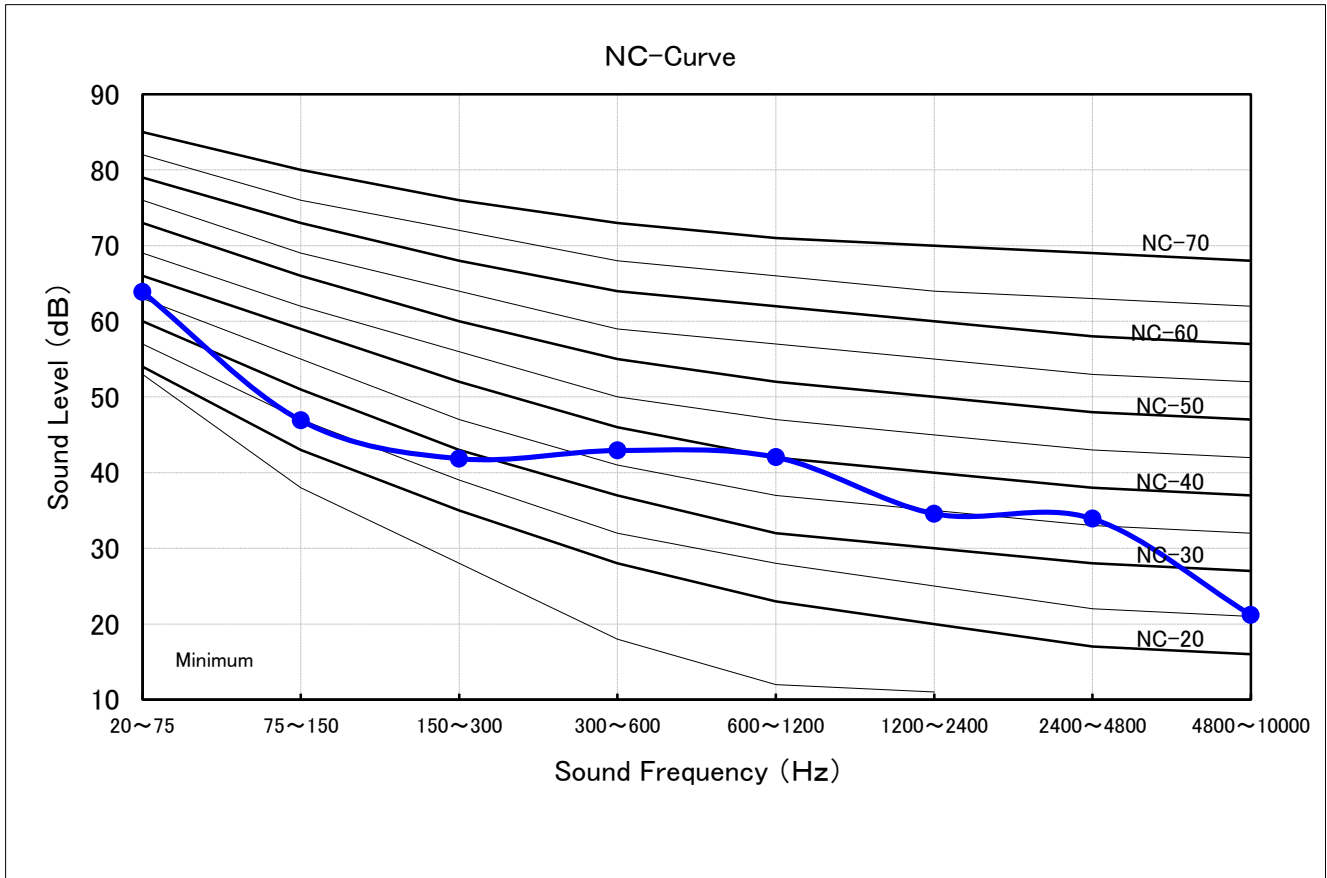
Heating



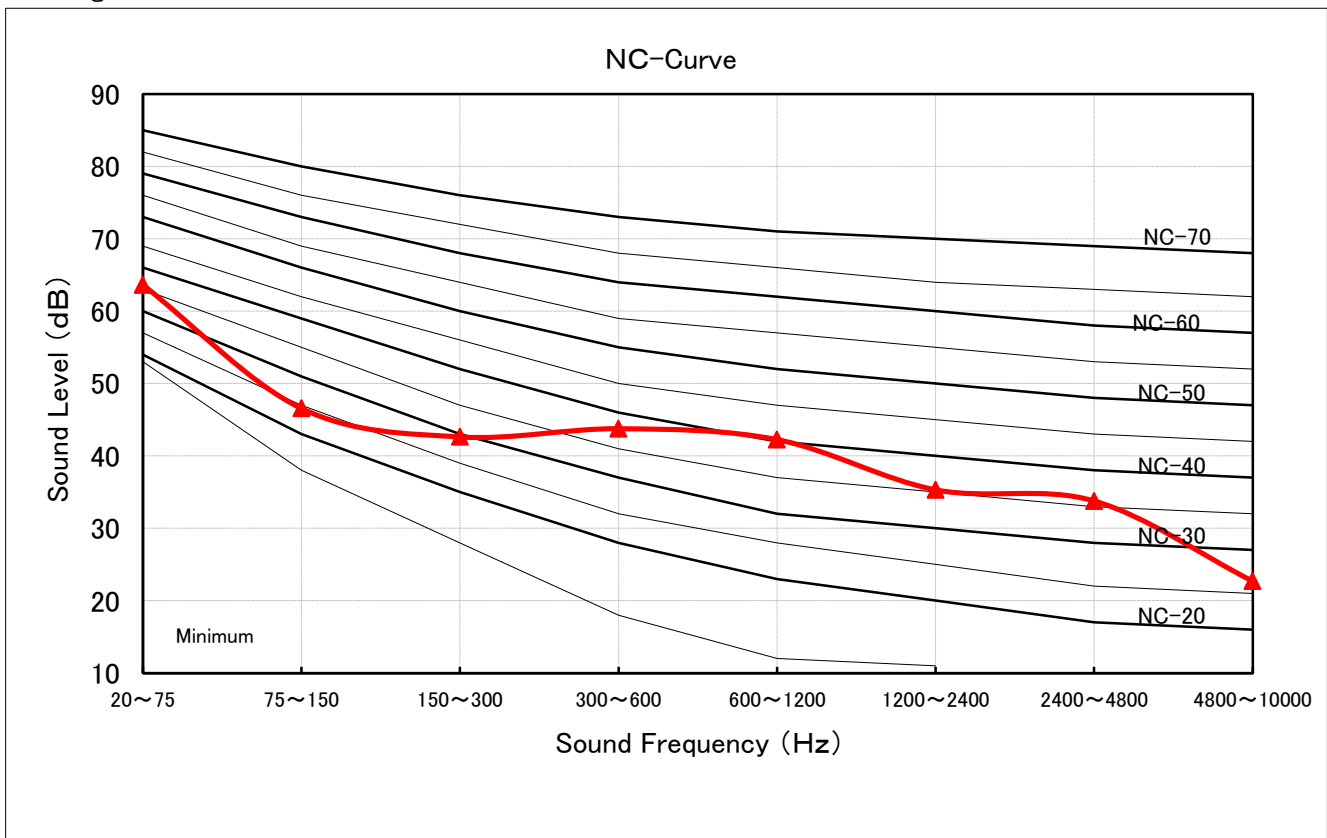
7. Sound characteristics (NC Curve)

RAS-10PAVPG-E

Cooling

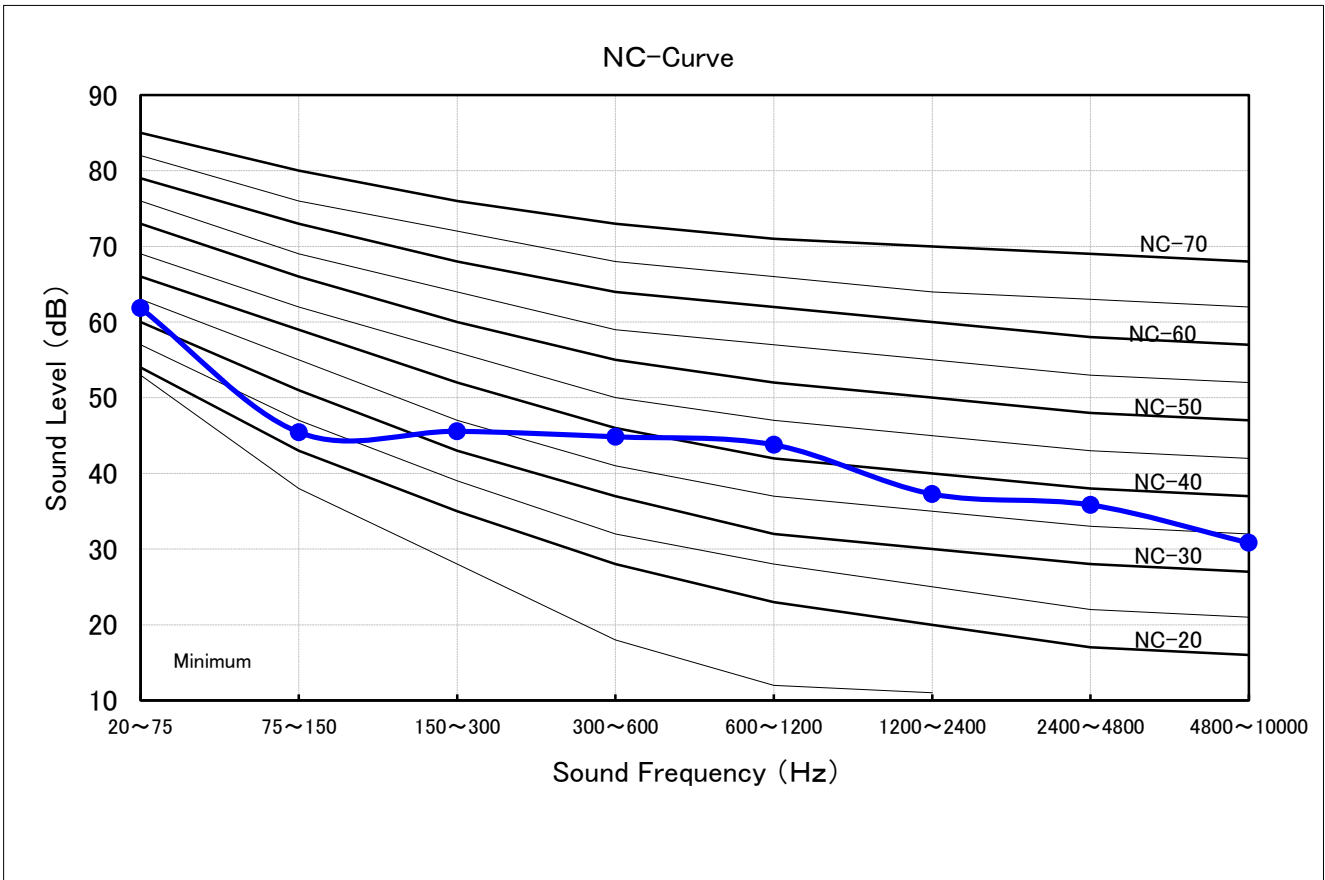


Heating

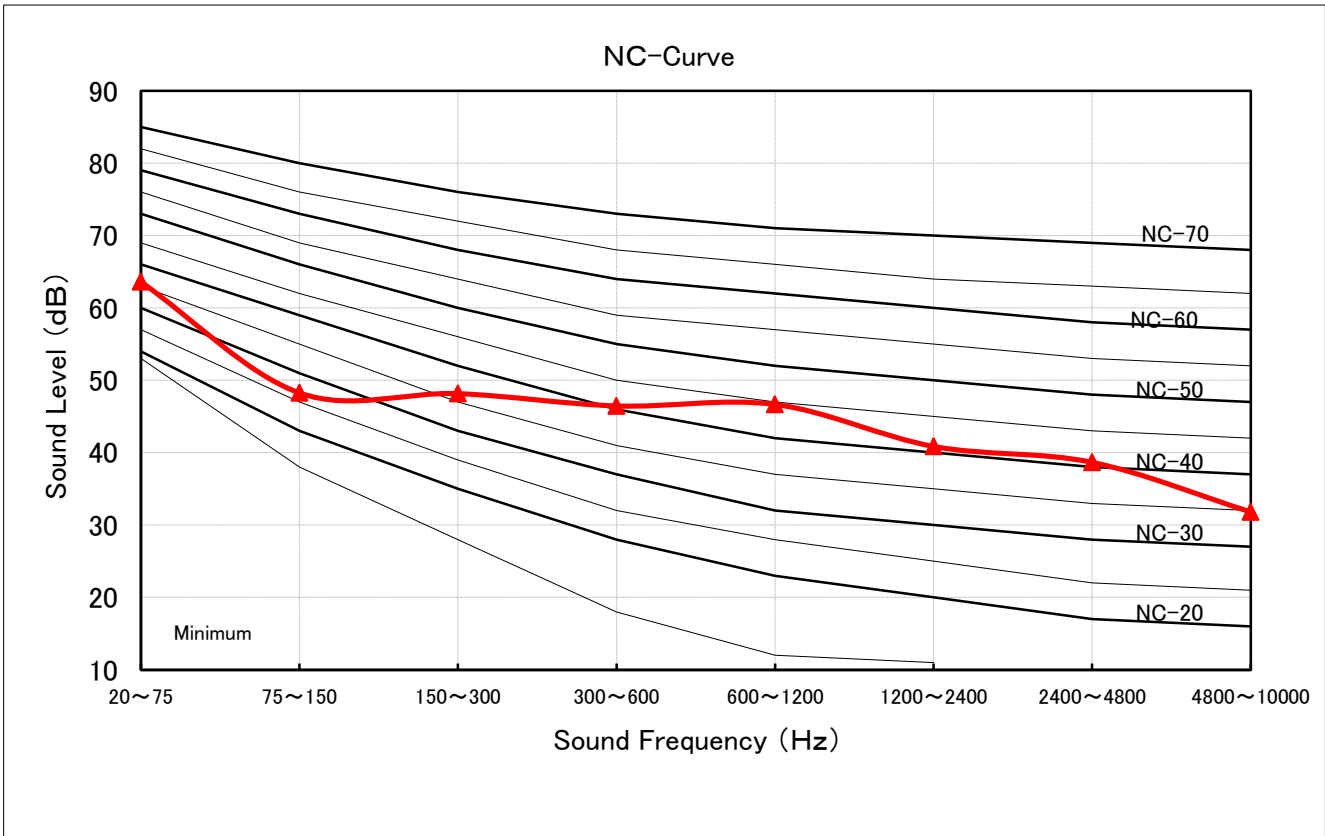


RAS-13PAVPG-E

Cooling

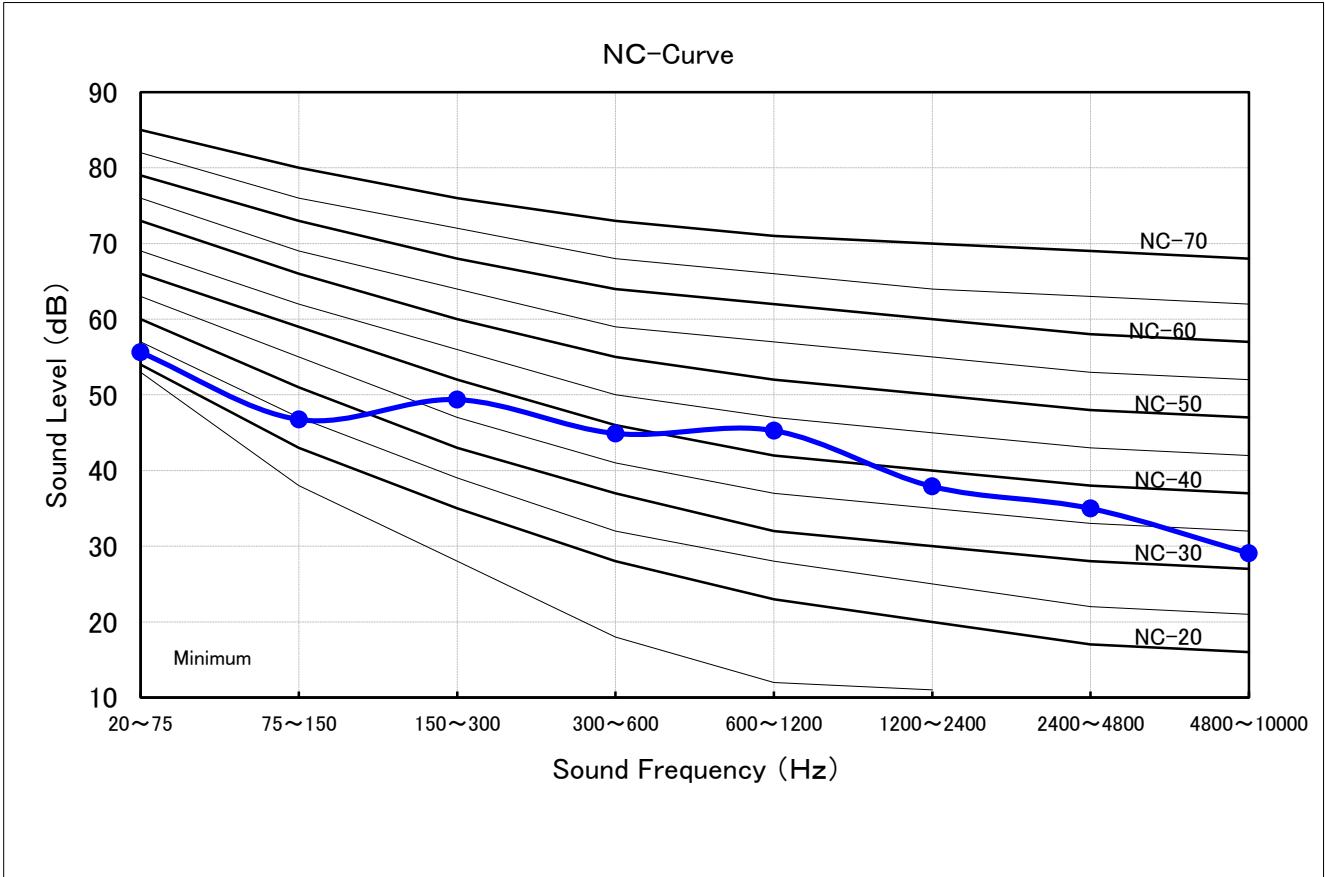


Heating

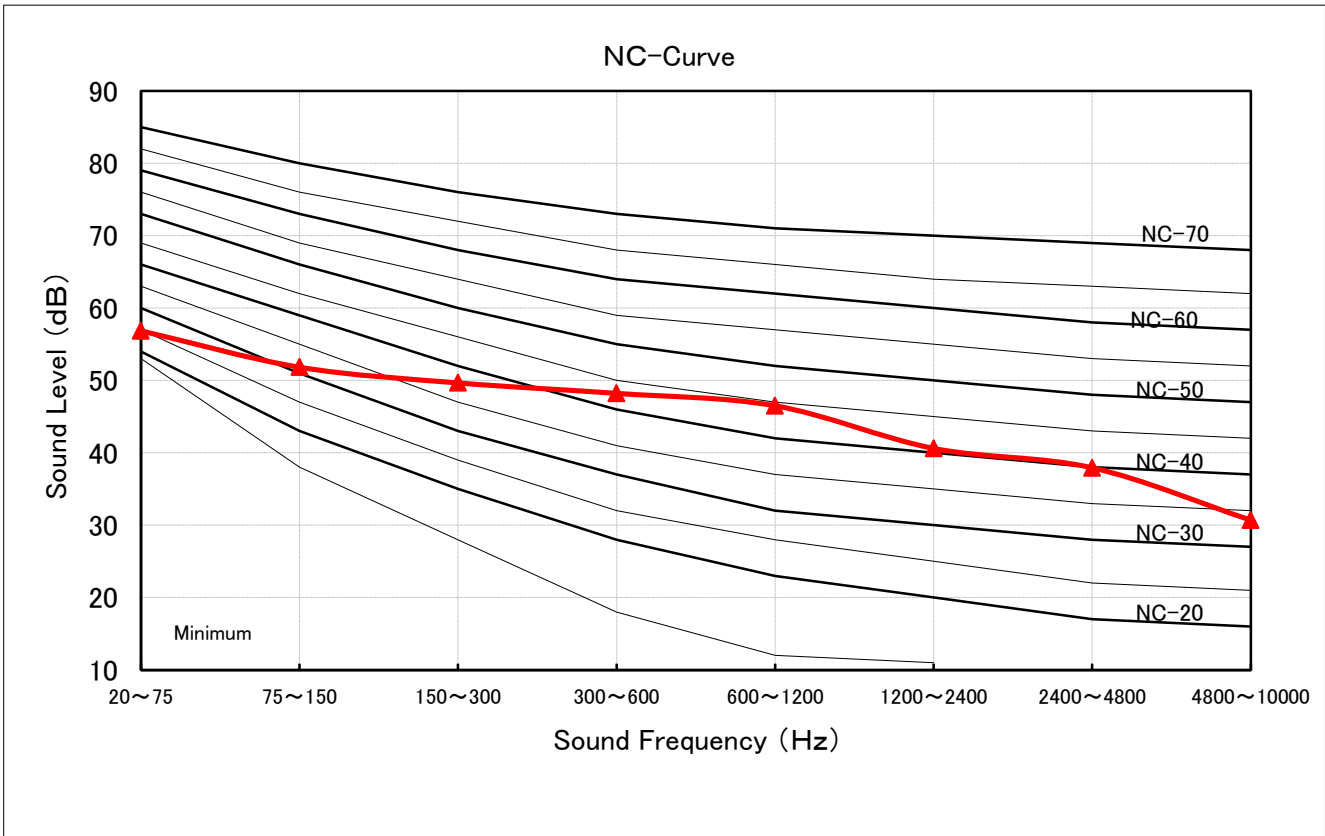


RAS-16PAVPG-E

Cooling



Heating



8. Performance characteristic

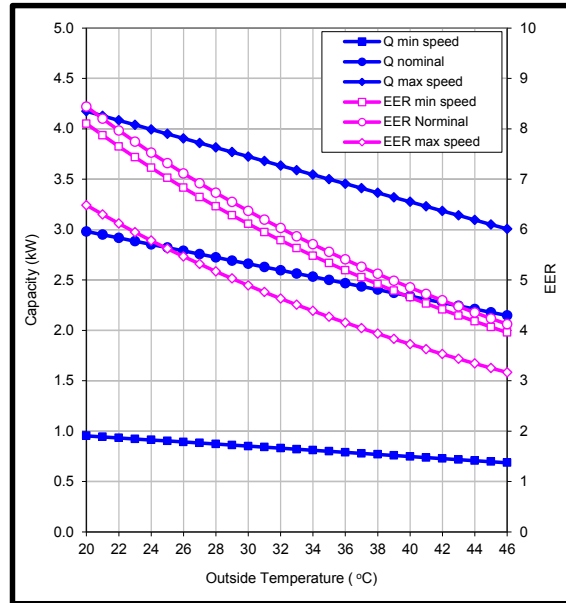
Model : RAS-10PKVPG-E / RAS-10PAVPG-E

Product specification :

Condition		Capacity (kW)	Power (kW)	EER/COP
Cooling JIS In: 27°C DB/19°C WB Out: 35°C DB/24°C WB	Min	0.80	0.15	5.33
	Rated	2.50	0.45	5.56
	Max	3.50	0.82	4.27
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	0.70	0.15	4.67
	Rated	3.20	0.60	5.33
	Max	5.80	1.55	3.74
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB	Max	4.30	1.30	3.31
	Max	3.30	1.200	2.75
Heating Low Temp. In: 20°C DB/15°C WB Out: -7°C DB/-6°C WB	Max	2.60	1.100	2.36
	Max	2.60	1.100	2.36

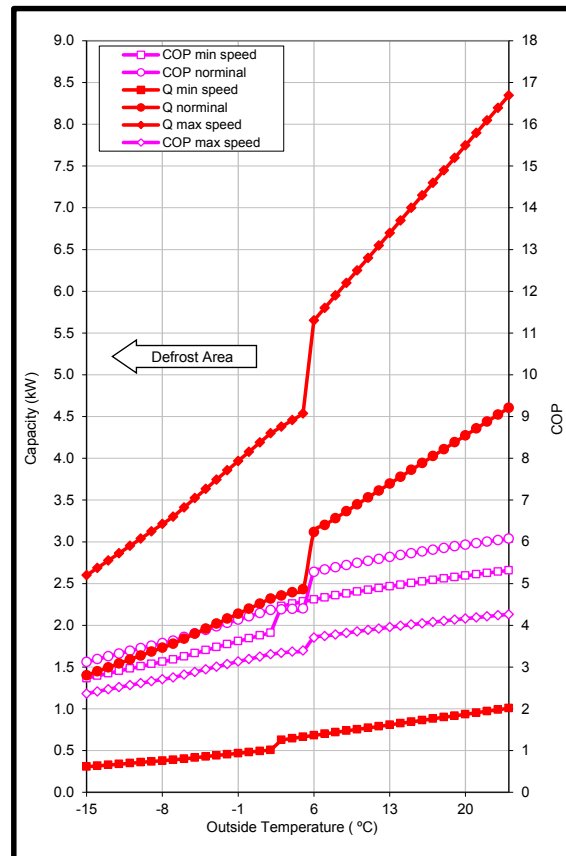
Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
20	0.95	0.12	8.10	2.98	0.35	8.44	4.17	0.64	6.48
21	0.94	0.12	7.87	2.95	0.36	8.20	4.13	0.66	6.30
22	0.93	0.12	7.65	2.92	0.37	7.97	4.08	0.67	6.12
23	0.92	0.12	7.43	2.89	0.37	7.74	4.04	0.68	5.95
24	0.91	0.13	7.23	2.85	0.38	7.53	3.99	0.69	5.78
25	0.90	0.13	7.02	2.82	0.39	7.32	3.95	0.70	5.62
26	0.89	0.13	6.83	2.79	0.39	7.12	3.90	0.71	5.47
27	0.88	0.13	6.64	2.76	0.40	6.92	3.86	0.73	5.32
28	0.87	0.13	6.46	2.72	0.40	6.73	3.81	0.74	5.17
29	0.86	0.14	6.28	2.69	0.41	6.55	3.77	0.75	5.03
30	0.85	0.14	6.11	2.66	0.42	6.37	3.72	0.76	4.89
31	0.84	0.14	5.95	2.63	0.42	6.20	3.68	0.77	4.76
32	0.83	0.14	5.79	2.60	0.43	6.03	3.63	0.78	4.63
33	0.82	0.15	5.63	2.56	0.44	5.87	3.59	0.80	4.51
34	0.81	0.15	5.48	2.53	0.44	5.71	3.54	0.81	4.39
35	0.80	0.15	5.33	2.50	0.45	5.56	3.50	0.82	4.27
36	0.79	0.15	5.19	2.47	0.46	5.41	3.46	0.83	4.15
37	0.78	0.15	5.05	2.44	0.46	5.26	3.41	0.84	4.04
38	0.77	0.16	4.92	2.40	0.47	5.12	3.37	0.86	3.93
39	0.76	0.16	4.79	2.37	0.48	4.98	3.32	0.87	3.83
40	0.75	0.16	4.66	2.34	0.48	4.85	3.28	0.88	3.73
41	0.74	0.16	4.53	2.31	0.49	4.72	3.23	0.89	3.63
42	0.73	0.17	4.41	2.28	0.50	4.60	3.19	0.90	3.53
43	0.72	0.17	4.29	2.24	0.50	4.47	3.14	0.91	3.44
44	0.71	0.17	4.18	2.21	0.51	4.35	3.10	0.93	3.34
45	0.70	0.17	4.07	2.18	0.51	4.24	3.05	0.94	3.25
46	0.69	0.17	3.96	2.15	0.52	4.12	3.01	0.95	3.17



Heating performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)
-15	0.31	0.11	2.73	1.40	0.45	3.12	2.60	1.10	2.36
-14	0.32	0.11	2.79	1.45	0.45	3.19	2.69	1.11	2.42
-13	0.33	0.11	2.85	1.50	0.46	3.26	2.78	1.13	2.47
-12	0.34	0.12	2.91	1.54	0.46	3.32	2.86	1.14	2.52
-11	0.35	0.12	2.96	1.59	0.47	3.39	2.95	1.15	2.57
-10	0.36	0.12	3.02	1.64	0.47	3.45	3.04	1.16	2.61
-9	0.37	0.12	3.07	1.69	0.48	3.51	3.13	1.18	2.66
-8	0.38	0.12	3.13	1.73	0.49	3.57	3.21	1.19	2.71
-7	0.39	0.12	3.18	1.78	0.49	3.63	3.30	1.20	2.75
-6	0.40	0.12	3.25	1.84	0.49	3.72	3.41	1.21	2.82
-5	0.42	0.12	3.33	1.90	0.50	3.80	3.52	1.22	2.88
-4	0.43	0.13	3.40	1.96	0.50	3.89	3.63	1.23	2.95
-3	0.44	0.13	3.48	2.02	0.51	3.97	3.74	1.24	3.01
-2	0.45	0.13	3.55	2.08	0.51	4.05	3.86	1.26	3.07
-1	0.47	0.13	3.62	2.14	0.52	4.13	3.97	1.27	3.13
0	0.48	0.13	3.69	2.20	0.52	4.21	4.08	1.28	3.19
1	0.49	0.13	3.75	2.26	0.53	4.29	4.19	1.29	3.25
2	0.51	0.13	3.82	2.32	0.53	4.37	4.30	1.30	3.31
3	0.63	0.14	4.46	2.36	0.54	4.38	4.38	1.31	3.34
4	0.65	0.14	4.52	2.39	0.55	4.39	4.46	1.32	3.37
5	0.66	0.15	4.57	2.43	0.55	4.40	4.53	1.33	3.40
6	0.68	0.15	4.62	2.42	0.59	5.28	5.65	1.53	3.70
7	0.70	0.15	4.67	3.20	0.60	5.33	5.80	1.55	3.74
8	0.72	0.15	4.71	3.28	0.61	5.39	5.95	1.57	3.78
9	0.74	0.15	4.76	3.37	0.62	5.44	6.10	1.60	3.82
10	0.75	0.16	4.80	3.45	0.63	5.49	6.25	1.62	3.85
11	0.77	0.16	4.85	3.53	0.64	5.54	6.40	1.65	3.89
12	0.79	0.16	4.89	3.61	0.65	5.59	6.55	1.67	3.92
13	0.81	0.16	4.93	3.70	0.66	5.64	6.70	1.69	3.95
14	0.83	0.17	4.97	3.78	0.67	5.68	6.85	1.72	3.99
15	0.84	0.17	5.01	3.86	0.67	5.73	7.00	1.74	4.02
16	0.86	0.17	5.05	3.94	0.68	5.77	7.15	1.77	4.05
17	0.88	0.17	5.08	4.03	0.69	5.81	7.30	1.79	4.08
18	0.90	0.18	5.12	4.11	0.70	5.85	7.45	1.81	4.10
19	0.92	0.18	5.15	4.19	0.71	5.89	7.60	1.84	4.13
20	0.93	0.18	5.19	4.27	0.72	5.93	7.75	1.86	4.16
21	0.95	0.18	5.22	4.36	0.73	5.97	7.90	1.89	4.19
22	0.97	0.18	5.25	4.44	0.74	6.00	8.05	1.91	4.21
23	0.99	0.19	5.28	4.52	0.75	6.04	8.19	1.93	4.24
24	1.01	0.19	5.31	4.60	0.76	6.07	8.34	1.96	4.26



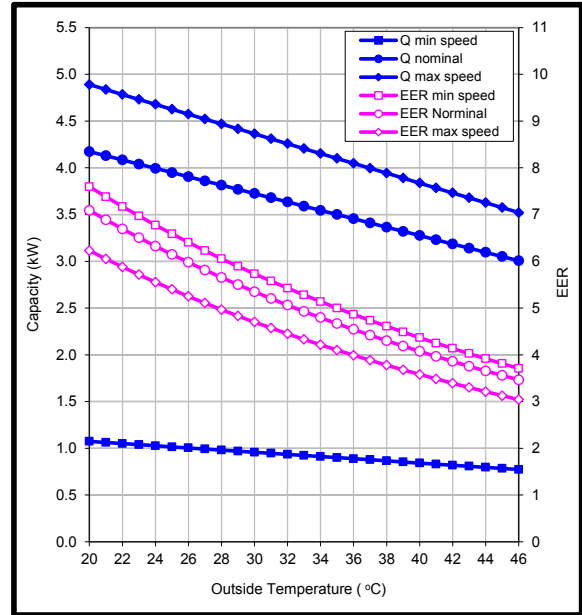
Model : RAS-13PKVPG-E / RAS-13PAVPG-E

Product specification :

Condition		Capacity (kW)	Power (kW)	EER/COP
Cooling JIS In: 27°C DB/19°C WB Out: 35°C DB/24°C WB	Min	0.90	0.18	5.00
	Rated	3.50	0.75	4.67
	Max	4.10	1.00	4.10
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	0.80	0.17	4.71
	Rated	4.00	0.80	5.00
	Max	6.30	2.00	3.15
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB	Max	4.60	1.55	2.97
	Max	3.80	1.350	2.81
Heating Low Temp. In: 20°C DB/15°C WB Out: -7°C DB/-6°C WB	Max	3.00	1.200	2.50
	Max	3.00	1.200	2.50

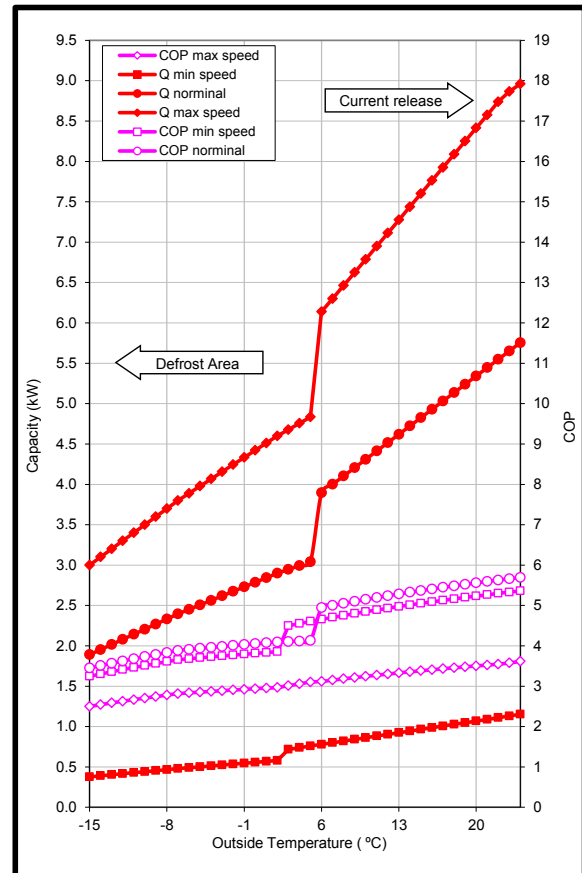
Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
20	1.07	0.14	7.60	4.17	0.59	7.09	4.89	0.79	6.23
21	1.06	0.14	7.38	4.13	0.60	6.89	4.84	0.80	6.05
22	1.05	0.15	7.17	4.08	0.61	6.69	4.78	0.81	5.88
23	1.04	0.15	6.97	4.04	0.62	6.50	4.73	0.83	5.71
24	1.03	0.15	6.77	3.99	0.63	6.32	4.68	0.84	5.55
25	1.02	0.15	6.59	3.95	0.64	6.15	4.63	0.86	5.40
26	1.00	0.16	6.40	3.90	0.65	5.98	4.57	0.87	5.25
27	0.99	0.16	6.23	3.86	0.66	5.81	4.52	0.89	5.11
28	0.98	0.16	6.06	3.81	0.67	5.65	4.47	0.90	4.97
29	0.97	0.16	5.89	3.77	0.69	5.50	4.42	0.91	4.83
30	0.96	0.17	5.73	3.72	0.70	5.35	4.36	0.93	4.70
31	0.95	0.17	5.58	3.68	0.71	5.20	4.31	0.94	4.57
32	0.93	0.17	5.43	3.63	0.72	5.06	4.26	0.96	4.45
33	0.92	0.17	5.28	3.59	0.73	4.93	4.21	0.97	4.33
34	0.91	0.18	5.14	3.54	0.74	4.80	4.15	0.99	4.21
35	0.90	0.18	5.00	3.50	0.75	4.67	4.10	1.00	4.10
36	0.89	0.18	4.87	3.46	0.76	4.54	4.05	1.01	3.99
37	0.88	0.19	4.74	3.41	0.77	4.42	3.99	1.03	3.88
38	0.87	0.19	4.61	3.37	0.78	4.30	3.94	1.04	3.78
39	0.85	0.19	4.49	3.32	0.79	4.19	3.89	1.06	3.68
40	0.84	0.19	4.37	3.28	0.80	4.08	3.84	1.07	3.58
41	0.83	0.20	4.25	3.23	0.81	3.97	3.78	1.09	3.48
42	0.82	0.20	4.14	3.19	0.83	3.86	3.73	1.10	3.39
43	0.81	0.20	4.03	3.14	0.84	3.76	3.68	1.11	3.30
44	0.80	0.20	3.92	3.10	0.85	3.66	3.63	1.13	3.21
45	0.78	0.21	3.81	3.05	0.86	3.56	3.57	1.14	3.13
46	0.77	0.21	3.71	3.01	0.87	3.46	3.52	1.16	3.04



Heating performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)
-15	0.38	0.12	3.25	1.89	0.55	3.45	3.00	1.20	2.50
-14	0.39	0.12	3.30	1.95	0.56	3.51	3.10	1.22	2.54
-13	0.40	0.12	3.36	2.02	0.57	3.57	3.20	1.24	2.59
-12	0.42	0.12	3.41	2.08	0.57	3.62	3.30	1.26	2.63
-11	0.43	0.12	3.46	2.14	0.58	3.68	3.40	1.28	2.67
-10	0.44	0.13	3.51	2.21	0.59	3.73	3.50	1.29	2.71
-9	0.45	0.13	3.56	2.27	0.60	3.78	3.60	1.31	2.74
-8	0.47	0.13	3.61	2.33	0.61	3.83	3.70	1.33	2.78
-7	0.48	0.13	3.65	2.39	0.62	3.88	3.80	1.35	2.81
-6	0.49	0.13	3.68	2.45	0.63	3.91	3.89	1.37	2.83
-5	0.50	0.14	3.70	2.51	0.64	3.94	3.98	1.39	2.85
-4	0.51	0.14	3.73	2.56	0.65	3.96	4.07	1.42	2.87
-3	0.52	0.14	3.75	2.62	0.66	3.98	4.16	1.44	2.89
-2	0.53	0.14	3.77	2.67	0.67	4.01	4.24	1.46	2.90
-1	0.55	0.14	3.79	2.73	0.68	4.03	4.33	1.48	2.92
0	0.56	0.15	3.81	2.79	0.69	4.05	4.42	1.51	2.94
1	0.57	0.15	3.83	2.84	0.70	4.07	4.51	1.53	2.95
2	0.58	0.15	3.85	2.90	0.71	4.09	4.60	1.55	2.97
3	0.72	0.16	4.50	2.95	0.72	4.11	4.68	1.55	3.01
4	0.74	0.16	4.55	2.99	0.73	4.12	4.76	1.56	3.06
5	0.76	0.16	4.61	3.04	0.74	4.13	4.83	1.56	3.10
6	0.78	0.17	4.66	3.09	0.79	4.95	6.14	1.97	3.12
7	0.80	0.17	4.71	4.00	0.80	5.00	6.30	2.00	3.15
8	0.82	0.17	4.75	4.10	0.81	5.05	6.46	2.03	3.18
9	0.84	0.18	4.80	4.21	0.82	5.10	6.63	2.06	3.21
10	0.86	0.18	4.85	4.31	0.84	5.15	6.79	2.09	3.24
11	0.88	0.18	4.89	4.41	0.85	5.19	6.95	2.12	3.27
12	0.90	0.18	4.93	4.52	0.86	5.24	7.11	2.15	3.30
13	0.92	0.19	4.97	4.62	0.87	5.28	7.28	2.19	3.33
14	0.94	0.19	5.01	4.72	0.89	5.33	7.44	2.22	3.36
15	0.97	0.19	5.05	4.83	0.90	5.37	7.60	2.25	3.38
16	0.99	0.19	5.09	4.93	0.91	5.41	7.76	2.28	3.41
17	1.01	0.20	5.13	5.03	0.92	5.45	7.93	2.31	3.43
18	1.03	0.20	5.16	5.14	0.94	5.49	8.09	2.34	3.46
19	1.05	0.20	5.20	5.24	0.95	5.52	8.25	2.37	3.48
20	1.07	0.20	5.23	5.34	0.96	5.56	8.41	2.40	3.50
21	1.09	0.21	5.26	5.45	0.97	5.59	8.58	2.43	3.52
22	1.11	0.21	5.30	5.55	0.99	5.63	8.74	2.46	3.55
23	1.13	0.21	5.33	5.65	1.00	5.66	8.87	2.48	3.58
24	1.15	0.21	5.36	5.75	1.01	5.69	8.96	2.48	3.61



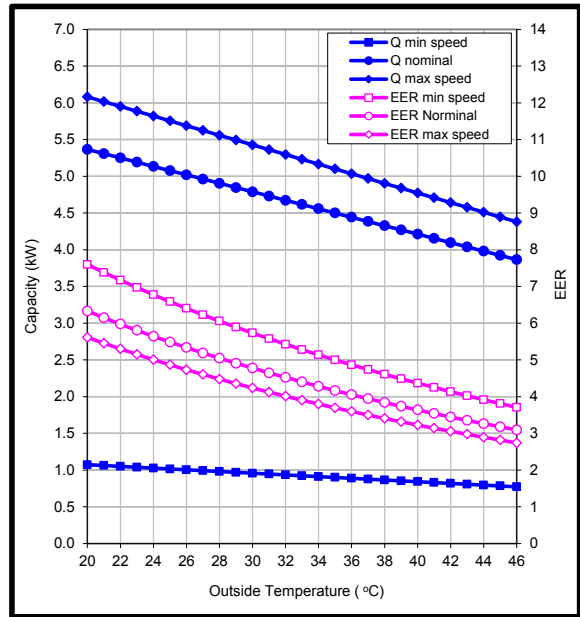
Model : RAS-16PKVPG-E / RAS-16PAVPG-E

Product specification :

Condition		Capacity (kW)	Power (kW)	EER/COP
Cooling JIS In: 27°C DB/19°C WB Out: 35°C DB/24°C WB	Min	0.90	0.18	5.00
	Rated	4.50	1.08	4.17
	Max	5.10	1.38	3.70
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	0.80	0.17	4.71
	Rated	5.50	1.37	4.01
	Max	6.80	2.05	3.32
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB	Max	5.00	1.65	3.03
Heating Low Temp. In: 20°C DB/15°C WB Out: -7°C DB/-6°C WB	Max	4.10	1.45	2.83
Heating Low Temp. In: 20°C DB/15°C WB Out: -15°C DB	Max	3.20	1.15	2.78

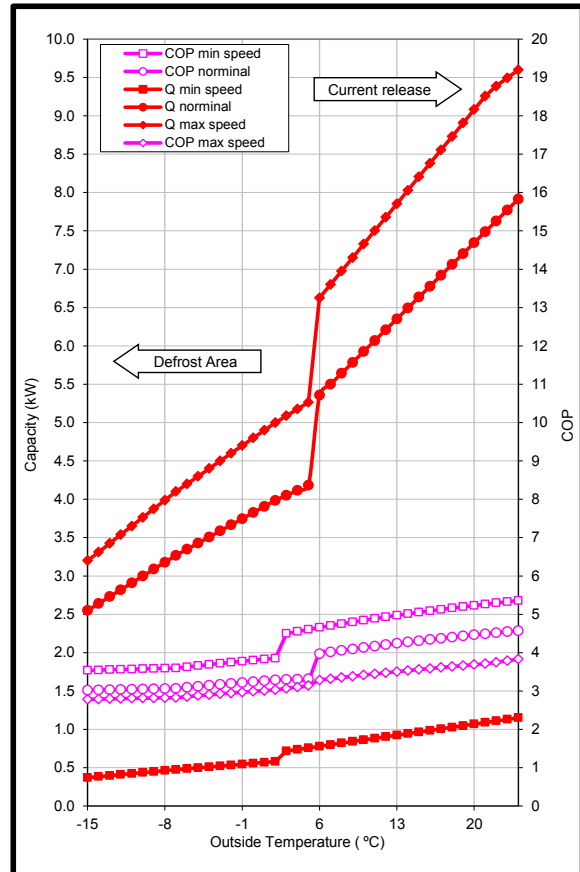
Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
20	1.07	0.14	7.60	5.37	0.85	6.33	6.08	1.08	5.61
21	1.06	0.14	7.38	5.31	0.86	6.15	6.02	1.10	5.45
22	1.05	0.15	7.17	5.25	0.88	5.98	5.95	1.12	5.30
23	1.04	0.15	6.97	5.19	0.89	5.81	5.89	1.14	5.15
24	1.03	0.15	6.77	5.14	0.91	5.64	5.82	1.16	5.01
25	1.02	0.15	6.59	5.08	0.93	5.49	5.75	1.18	4.87
26	1.00	0.16	6.40	5.02	0.94	5.34	5.69	1.20	4.73
27	0.99	0.16	6.23	4.96	0.96	5.19	5.62	1.22	4.60
28	0.98	0.16	6.06	4.90	0.97	5.05	5.56	1.24	4.48
29	0.97	0.16	5.89	4.85	0.99	4.91	5.49	1.26	4.35
30	0.96	0.17	5.73	4.79	1.00	4.78	5.43	1.28	4.24
31	0.95	0.17	5.58	4.73	1.02	4.65	5.36	1.30	4.12
32	0.93	0.17	5.43	4.67	1.03	4.52	5.30	1.32	4.01
33	0.92	0.17	5.28	4.62	1.05	4.40	5.23	1.34	3.90
34	0.91	0.18	5.14	4.56	1.06	4.28	5.17	1.36	3.80
35	0.90	0.18	5.00	4.50	1.08	4.17	5.10	1.38	3.70
36	0.89	0.18	4.87	4.44	1.10	4.06	5.03	1.40	3.60
37	0.88	0.19	4.74	4.38	1.11	3.95	4.97	1.42	3.50
38	0.87	0.19	4.61	4.33	1.13	3.84	4.90	1.44	3.41
39	0.85	0.19	4.49	4.27	1.14	3.74	4.84	1.46	3.32
40	0.84	0.19	4.37	4.21	1.16	3.64	4.77	1.48	3.23
41	0.83	0.20	4.25	4.15	1.17	3.54	4.71	1.50	3.14
42	0.82	0.20	4.14	4.10	1.19	3.45	4.64	1.52	3.06
43	0.81	0.20	4.03	4.04	1.20	3.35	4.58	1.54	2.98
44	0.80	0.20	3.92	3.98	1.22	3.26	4.51	1.56	2.90
45	0.78	0.21	3.81	3.92	1.23	3.18	4.45	1.58	2.82
46	0.77	0.21	3.71	3.86	1.25	3.09	4.38	1.60	2.74



Heating performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)	Capacity (kW)	Power (kW)	COP (-)
-15	0.37	0.10	3.54	2.55	0.84	3.02	3.20	1.15	2.78
-14	0.38	0.11	3.55	2.64	0.87	3.03	3.31	1.19	2.79
-13	0.40	0.11	3.56	2.73	0.90	3.03	3.43	1.23	2.80
-12	0.41	0.12	3.56	2.82	0.93	3.04	3.54	1.26	2.80
-11	0.42	0.12	3.57	2.91	0.96	3.05	3.65	1.30	2.81
-10	0.44	0.12	3.58	3.00	0.98	3.05	3.76	1.34	2.81
-9	0.45	0.13	3.58	3.09	1.01	3.06	3.88	1.38	2.82
-8	0.46	0.13	3.59	3.18	1.04	3.06	3.99	1.41	2.82
-7	0.48	0.13	3.60	3.27	1.07	3.07	4.10	1.45	2.83
-6	0.49	0.13	3.63	3.35	1.08	3.09	4.20	1.47	2.85
-5	0.50	0.14	3.66	3.43	1.10	3.12	4.30	1.49	2.88
-4	0.51	0.14	3.69	3.51	1.11	3.15	4.40	1.52	2.90
-3	0.52	0.14	3.72	3.59	1.13	3.17	4.50	1.54	2.92
-2	0.53	0.14	3.75	3.67	1.15	3.20	4.60	1.56	2.95
-1	0.54	0.14	3.77	3.75	1.16	3.22	4.70	1.58	2.97
0	0.56	0.15	3.80	3.83	1.18	3.24	4.80	1.61	2.99
1	0.57	0.15	3.83	3.91	1.20	3.27	4.90	1.63	3.01
2	0.58	0.15	3.85	3.99	1.21	3.29	5.00	1.65	3.03
3	0.72	0.16	4.50	4.05	1.23	3.30	5.09	1.66	3.07
4	0.74	0.16	4.55	4.12	1.24	3.31	5.18	1.67	3.10
5	0.76	0.16	4.61	4.18	1.26	3.32	5.26	1.68	3.14
6	0.78	0.17	4.66	4.26	1.35	3.97	6.62	2.02	3.28
7	0.80	0.17	4.71	5.50	1.37	4.01	6.80	2.05	3.32
8	0.82	0.17	4.75	5.64	1.39	4.06	6.98	2.08	3.35
9	0.84	0.18	4.80	5.78	1.41	4.09	7.15	2.11	3.38
10	0.86	0.18	4.85	5.93	1.43	4.13	7.33	2.15	3.42
11	0.88	0.18	4.89	6.07	1.45	4.17	7.50	2.18	3.45
12	0.90	0.18	4.93	6.21	1.48	4.21	7.68	2.21	3.48
13	0.92	0.19	4.97	6.35	1.50	4.24	7.85	2.24	3.51
14	0.94	0.19	5.01	6.49	1.52	4.28	8.03	2.27	3.53
15	0.97	0.19	5.05	6.64	1.54	4.31	8.20	2.30	3.56
16	0.99	0.19	5.09	6.78	1.56	4.34	8.38	2.34	3.59
17	1.01	0.20	5.13	6.92	1.58	4.37	8.55	2.37	3.61
18	1.03	0.20	5.16	7.06	1.60	4.40	8.73	2.40	3.64
19	1.05	0.20	5.20	7.20	1.62	4.43	8.91	2.43	3.66
20	1.07	0.20	5.23	7.35	1.65	4.46	9.08	2.46	3.69
21	1.09	0.21	5.26	7.49	1.67	4.49	9.26	2.49	3.71
22	1.11	0.21	5.30	7.63	1.69	4.52	9.39	2.50	3.75
23	1.13	0.21	5.33	7.77	1.71	4.55	9.49	2.50	3.79
24	1.15	0.21	5.36	7.91	1.73	4.57	9.60	2.50	3.83



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