

Residential Inverter Heat Pump R32

HAORI Series

Indoor Units

RAS-B10N4KVRG-E

RAS-B13N4KVRG-E

RAS-B16N4KVRG-E

RAS-10N4KVRG-TR

RAS-13N4KVRG-TR

RAS-16N4KVRG-TR

Outdoor Units

RAS-10J2AVSG-E1

RAS-13J2AVSG-E1

RAS-16J2AVSG-E1

RAS-10J2AVSG-TR1

RAS-13J2AVSG-TR1

RAS-16J2AVSG-TR1

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1. Line up

Outdoor Unit	Indoor Unit	Model Name		Capacity Rank
		CDU	FCU	
		RAS-10J2AVSG-E1 RAS-10J2AVSG-TR1	RAS-B10N4KVRG-E RAS-10N4KVRG-TR	10k
		RAS-13J2AVSG-E1 RAS-13J2AVSG-TR1	RAS-B13N4KVRG-E RAS-13N4KVRG-TR	13k
		RAS-16J2AVSG-E1 RAS-16J2AVSG-TR1	RAS-B16N4KVRG-E RAS-16N4KVRG-TR	16k

Accessories

Appearance	Model Name	Remark
	WH-UA01UE	Remote controller : Power Select, Off Timer , Heating setting 5 - 30°C, Swing, Fix, Hi Power, Eco, Fireplace, Self Cleaning, Quiet FCU, Silence CDU, Manual defrost, Self Diagnosis, Heating only compatibility, HADA Care Flow, Pure (packed with indoor unit)
	RB-RXS33-E	Remote controller : Power Select, Comfort Sleep, On-Off Timer, 8°C, Weekly Timer, Swing, Fix, Hi Power, Eco, Fireplace, Self Cleaning, Quiet FCU, Silence CDU, Manual defrost, Self Diagnosis, Heating only compatibility, HADA Care Flow, Pure, and wired connection (optional remote controller)
	Toshiba Home AC Controller Application	Adapter built-in Application : temperature monitoring, Power Select , On-Off Timer , 8°C, Swing, fix, Hi Power, Eco, Fireplace, Quiet FCU, Pure, Silence CDU, Error code, Weekly schedule, all ACs and group control, Energy monitoring, Smart speaker Google assistant and Alexa Amazon compatible.

2. Specifications

System	Size	10k	13k	16k
	Indoor	RAS-B10N4KVRG-E RAS-10N4KVRG-TR	RAS-B13N4KVRG-E RAS-13N4KVRG-TR	RAS-B16N4KVRG-E RAS-16N4KVRG-TR
	Outdoor	RAS-10J2AVSG-E1 / TR1	RAS-13J2AVSG-E1 / TR1	RAS-16J2AVSG-E1 / TR1
Power supply (V/Ph/Hz)		220 - 240 / 1 / 50		
Cooling	Capacity (kW)	2.5	3.5	4.6
	Power Consumption (kW)	0.54	0.80	1.35
	EER	4.63	4.38	3.41
	PdesignC (kW)	2.50	3.50	4.60
	SEER	8.60	8.60	7.80
	Indoor Noise (H/L/Q) (dB)	41/22/19	43/23/19	45/25/21
	Outdoor Noise (dB)	44	46	48
	Indoor Air Flow m ³ /min	10	11.2	10.8
Heating	Capacity (kW)	3.2	4.2	5.5
	Power Consumption (kW)	0.74	1.08	1.52
	COP	4.32	3.89	3.62
	PdesignH (Tbiv -10°C) (kW)	2.50	3.20	4.00
	SCOP	5.10	5.10	4.60
	Indoor Noise (H/L/Q) (dB)	41/22/19	43/23/19	45/26/22
	Outdoor Noise (dB)	46	48	50
	Indoor Air Flow m ³ /min	10.2	11.2	11.2
FCU	Dimensions	H x W x D (mm)	300 x 987 x 210	
		Net Weight (kg)	11	12
CDU	Dimensions	H x W x D (mm)	550 x 780 x 290	
		Net Weight (kg)	26	33
Pipe	Chargeless (m)	15	15	15
	Maximum Length (m)	20	20	20
	Maximum Height (m)	12	12	12
	Refrigerant	R32		
	Refrigerant amount (kg)	0.55	0.8	0.8
Energy Label		Cooling / Heating	A+++ / A+++	A+++ / A+++
Useable Range Temperature		Cooling (°C)	Indoor: 21 ~ 32 °C , Outdoor: (-15) ~ 46 °C	
		Heating (°C)	Indoor: 0 ~ 28 °C , Outdoor: (-15) ~ 24 °C	

For performance when each indoor unit is combined with other unit, refer to the separate table.

* The specifications may be subject to change without notice for purpose of improvement.

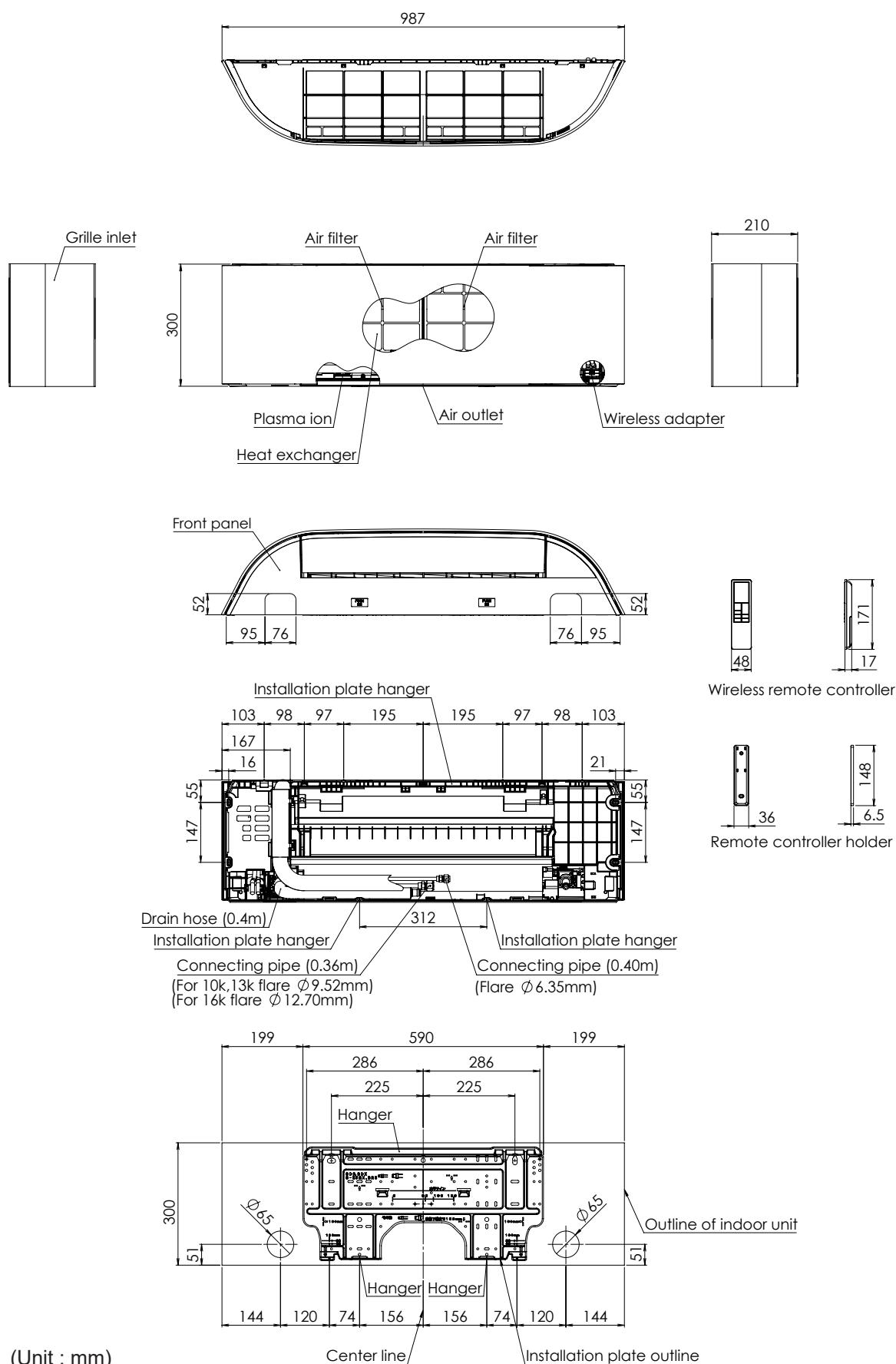
Cooling : Capacity test condition, inside : 27 °C (Db) / 19 °C (Wb), outside : 35 °C (Db) / 24 °C (Wb)

Heating : Capacity test condition, inside : 20 °C (Db), outside : 7 °C (Db) / 6°C (Wb)

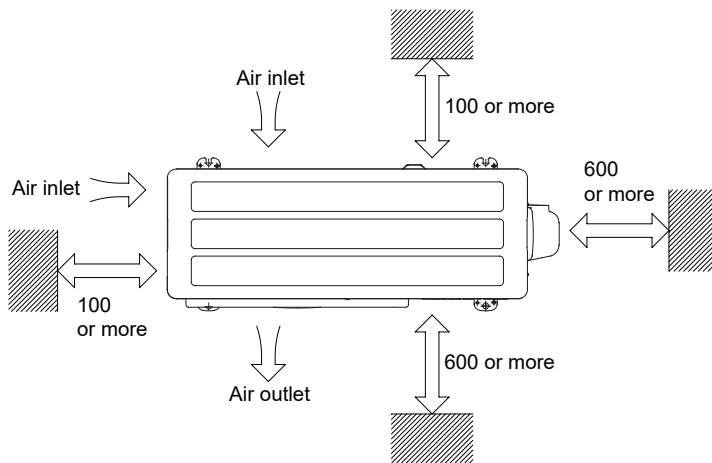
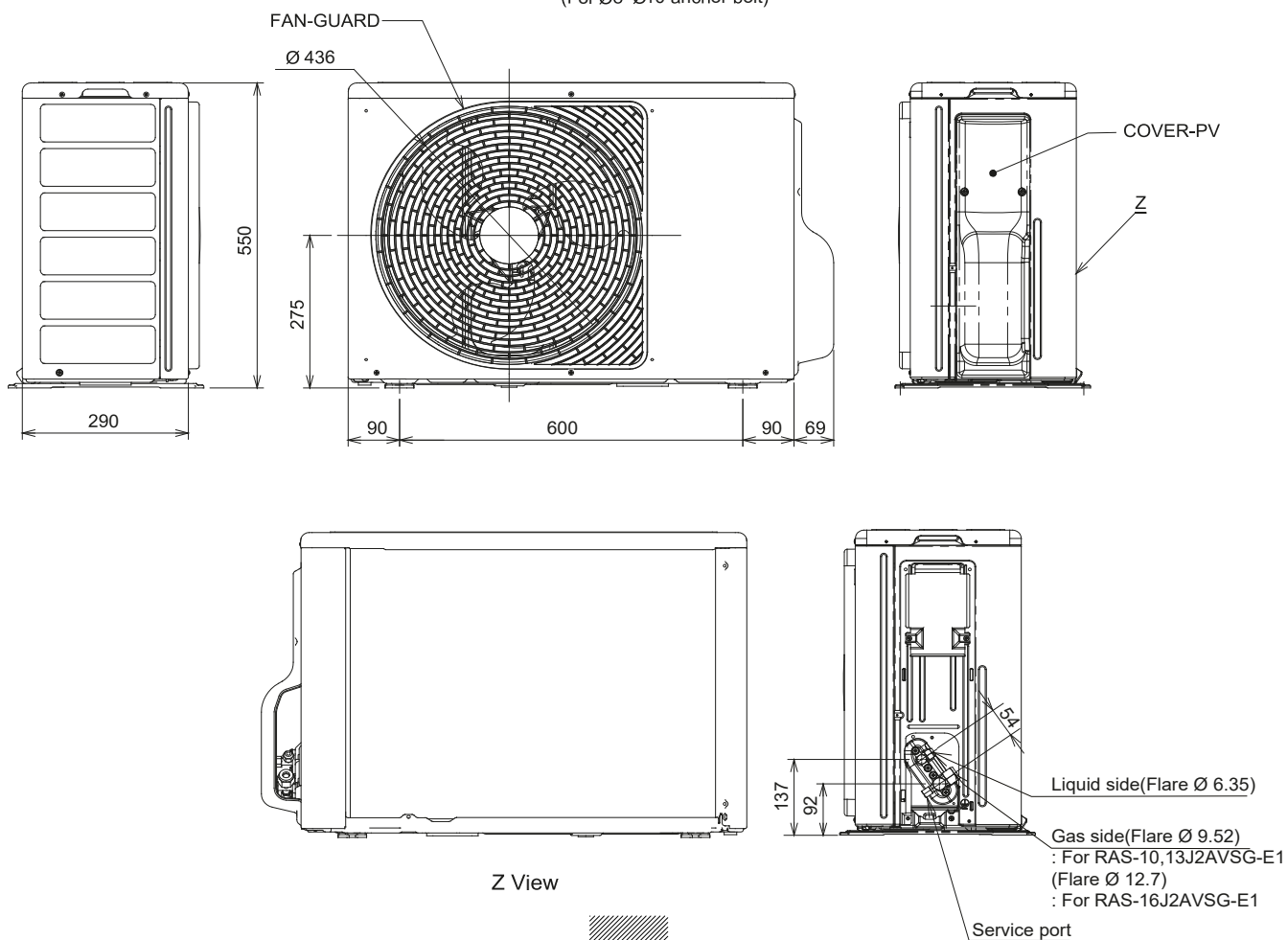
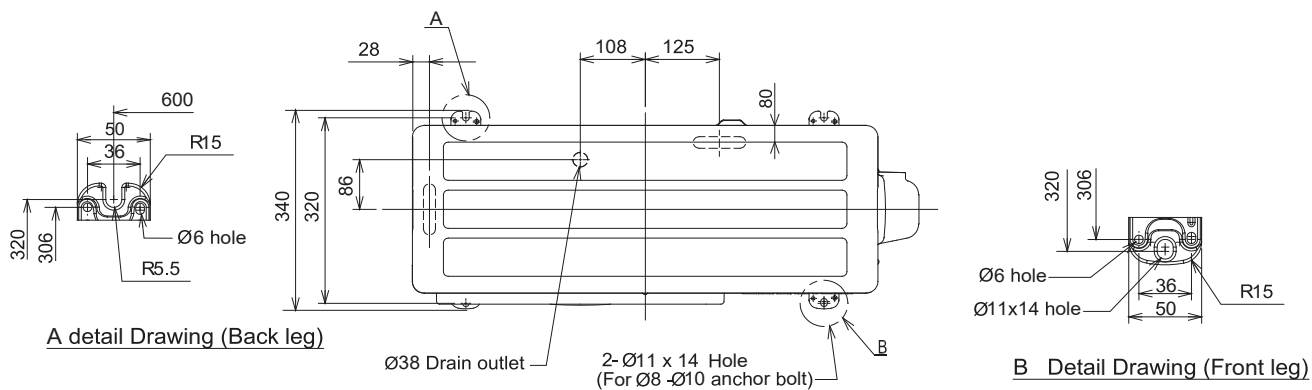
Piping length : 5 m per Indoor Unit.

3. Dimension

Indoor Unit : RAS-B10N4KVRG-E, RAS-B13N4KVRG-E, RAS-B16N4KVRG-E
RAS-10N4KVRG-TR, RAS-13N4KVRG-TR, RAS-16N4KVRG-TR



Outdoor Unit : RAS-10J2AVRG-E1, RAS-13J2AVRG-E1, RAS-16J2AVRG-E1
 RAS-10J2AVRG-TR1, RAS-13J2AVRG-TR1, RAS-16J2AVRG-TR1

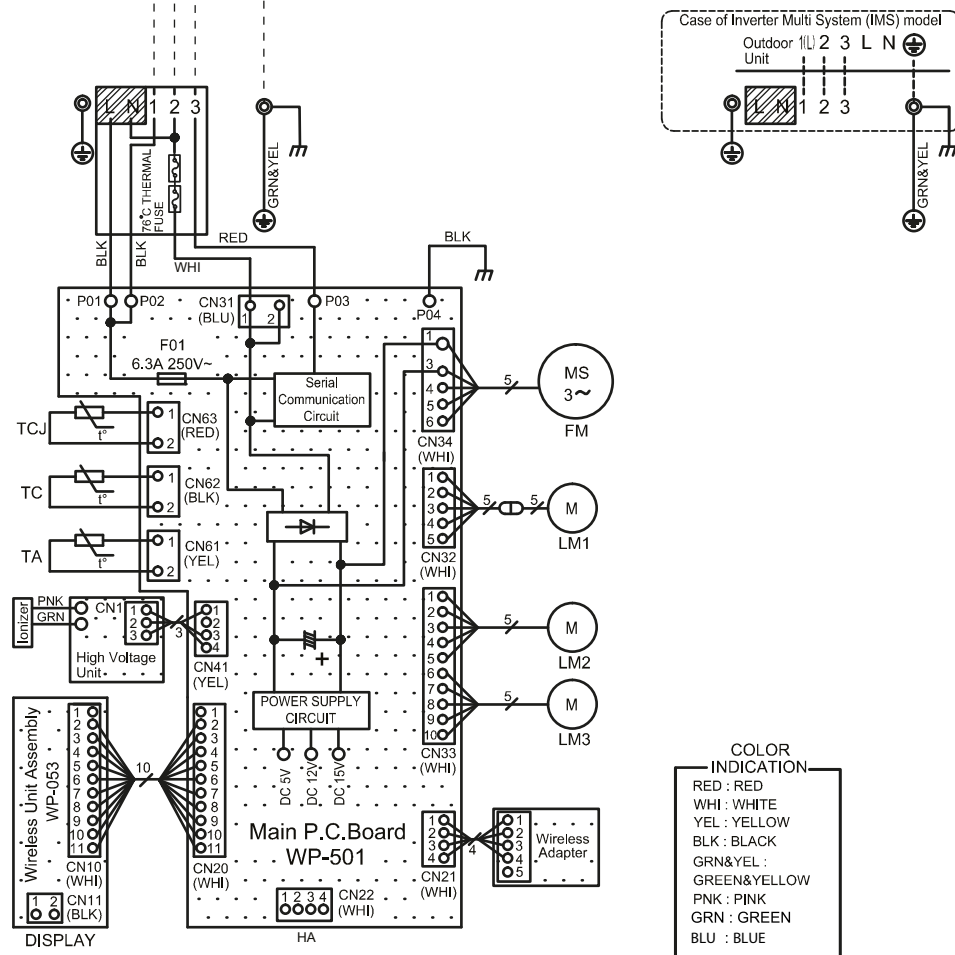
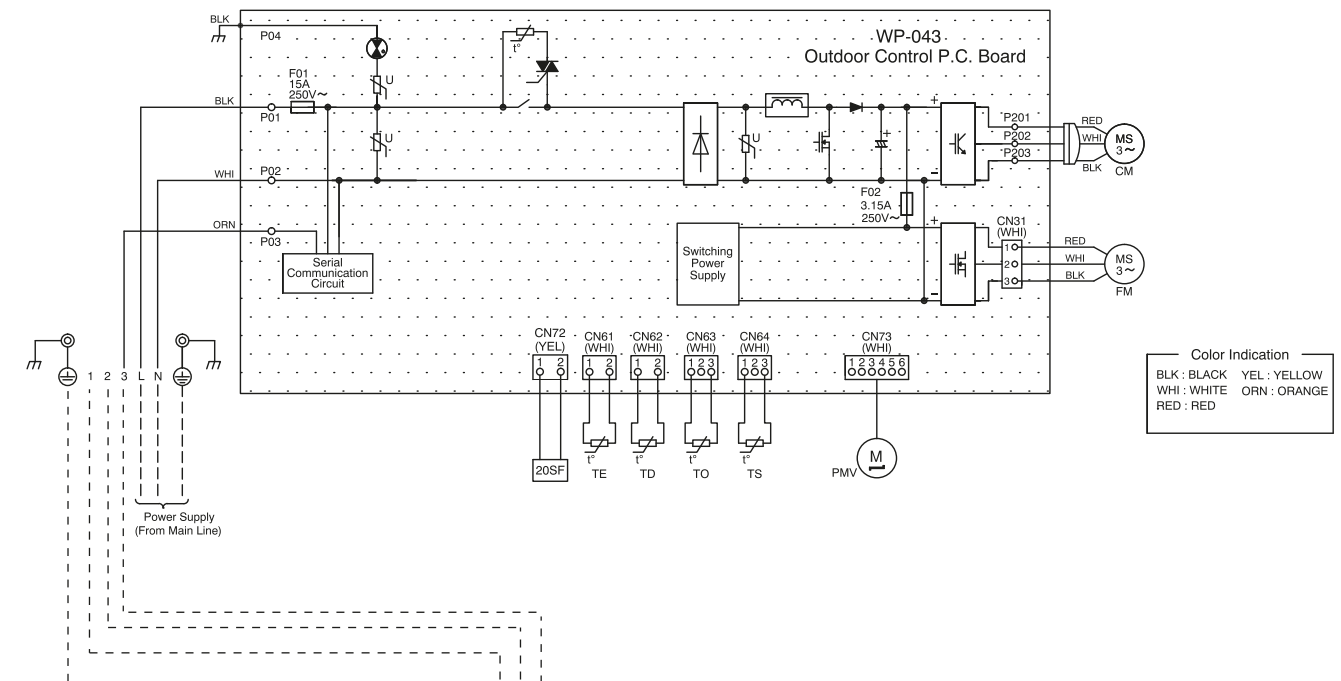


(Unit : mm)

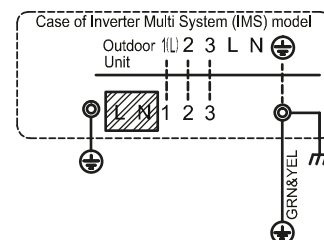
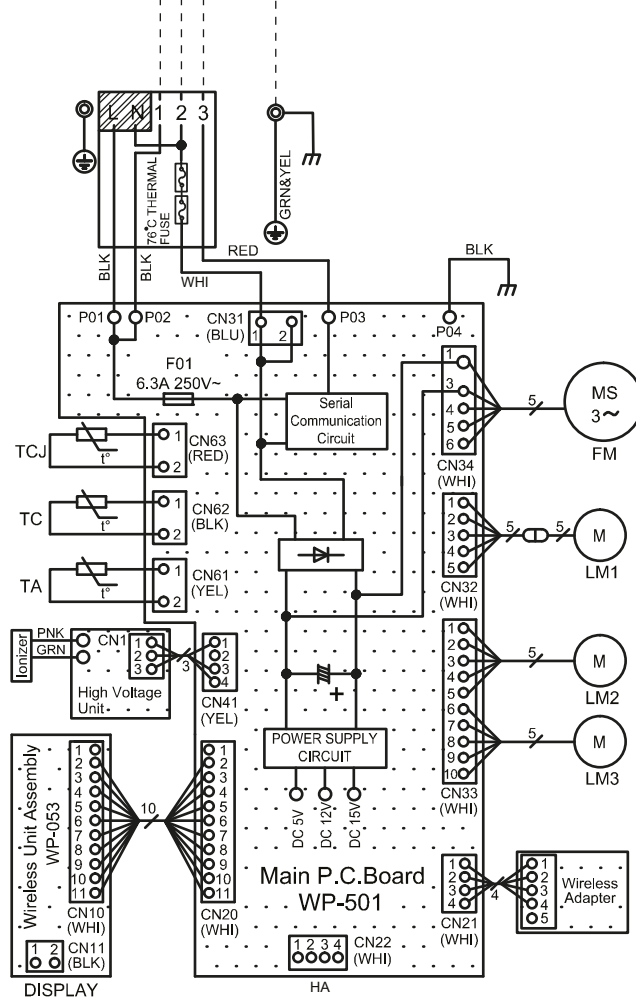
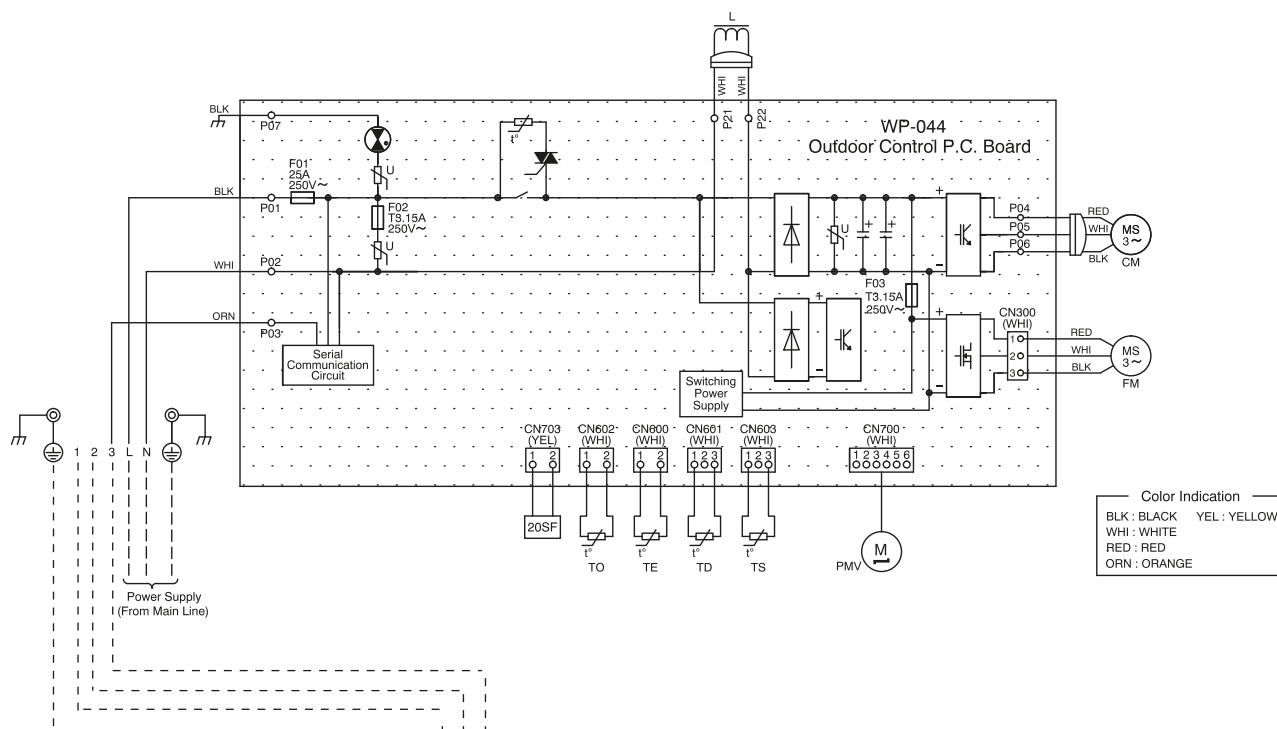
Installation dimension

4. Wiring diagrams

RAS-B10N4KVRG-E ; RAS-10J2AVRG-E1 / RAS-B13N4KVRG-E ; RAS-13J2AVRG-E1
RAS-10N4KVRG-TR ; RAS-10J2AVRG-TR1 / RAS-13N4KVRG-TR ; RAS-13J2AVRG-TR1

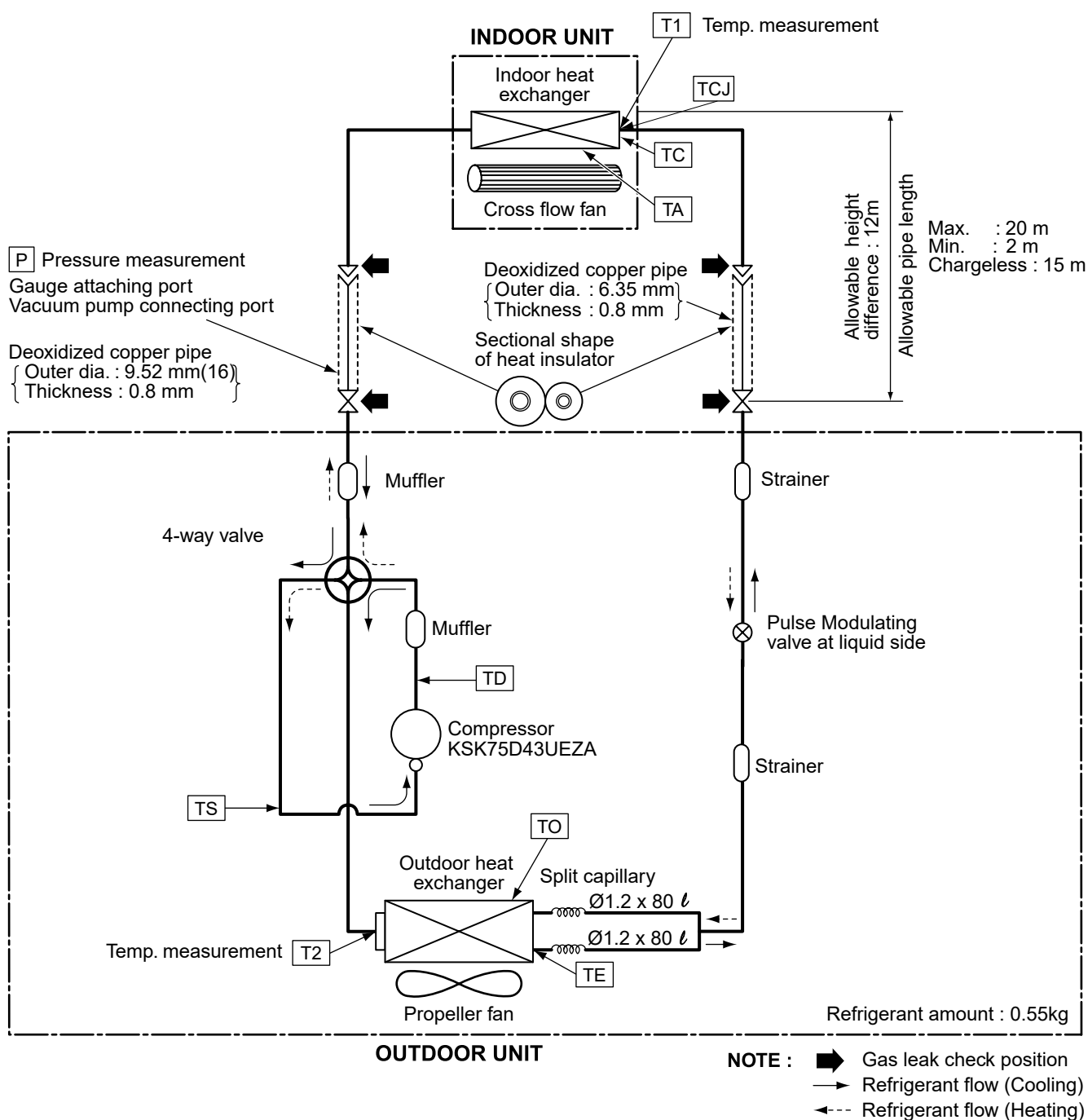


RAS-B16N4KVRG-E ; RAS-16J2AVRG-E1
RAS-16N4KVRG-TR ; RAS-16J2AVRG-TR1



5. Refrigerant cycle diagrams

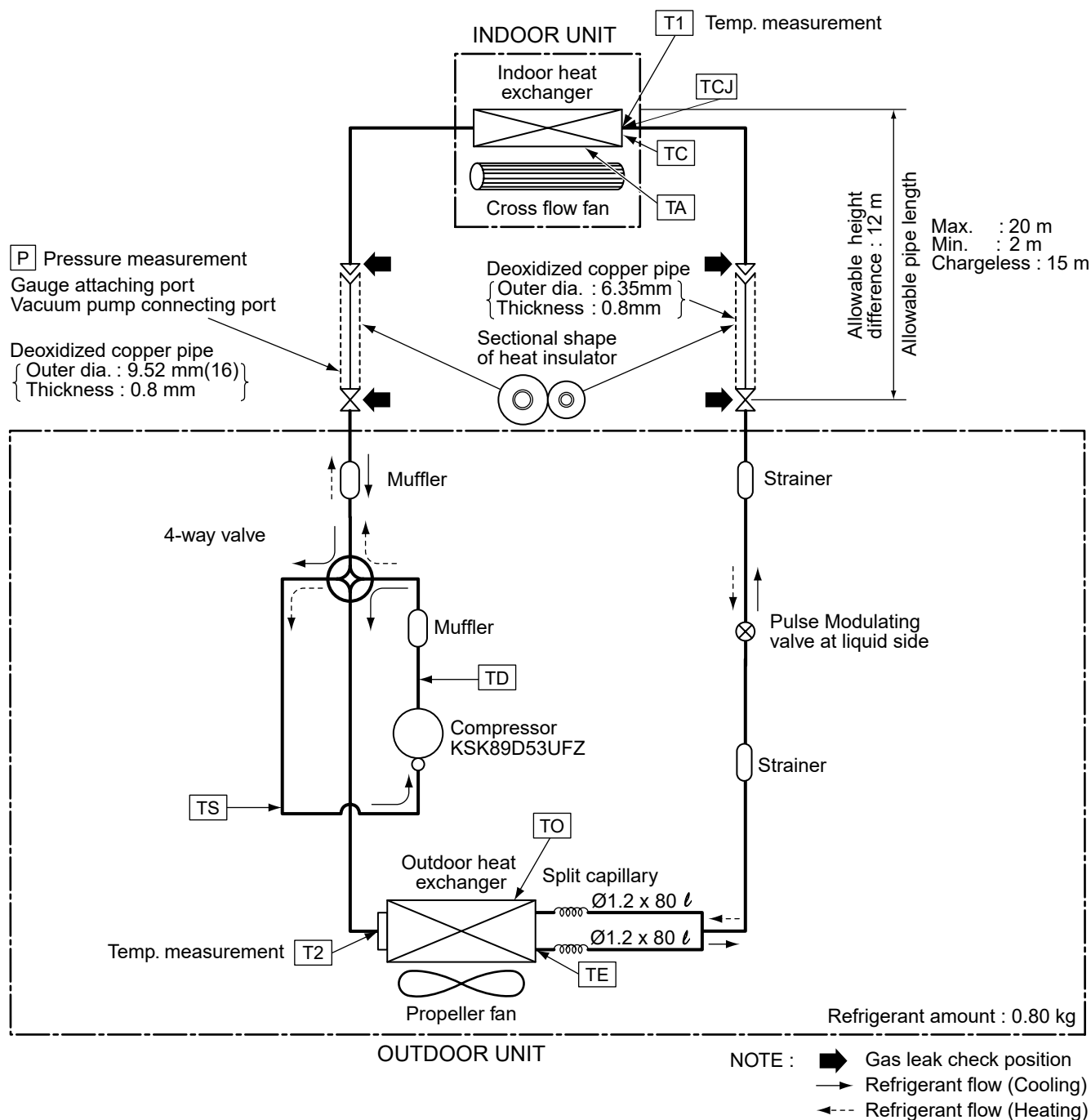
RAS-B10N4KVRG-E ; RAS-10J2AVRG-E1
RAS-10N4KVRG-TR ; RAS-10J2AVRG-TR1



NOTE :

- The maximum pipe length of this air conditioner is 15 m. When the pipe length exceeds 15 m, the additional charging of refrigerant, 20 g per 1 m for the part of pipe exceeded 15 m is required. (Max. 100g)

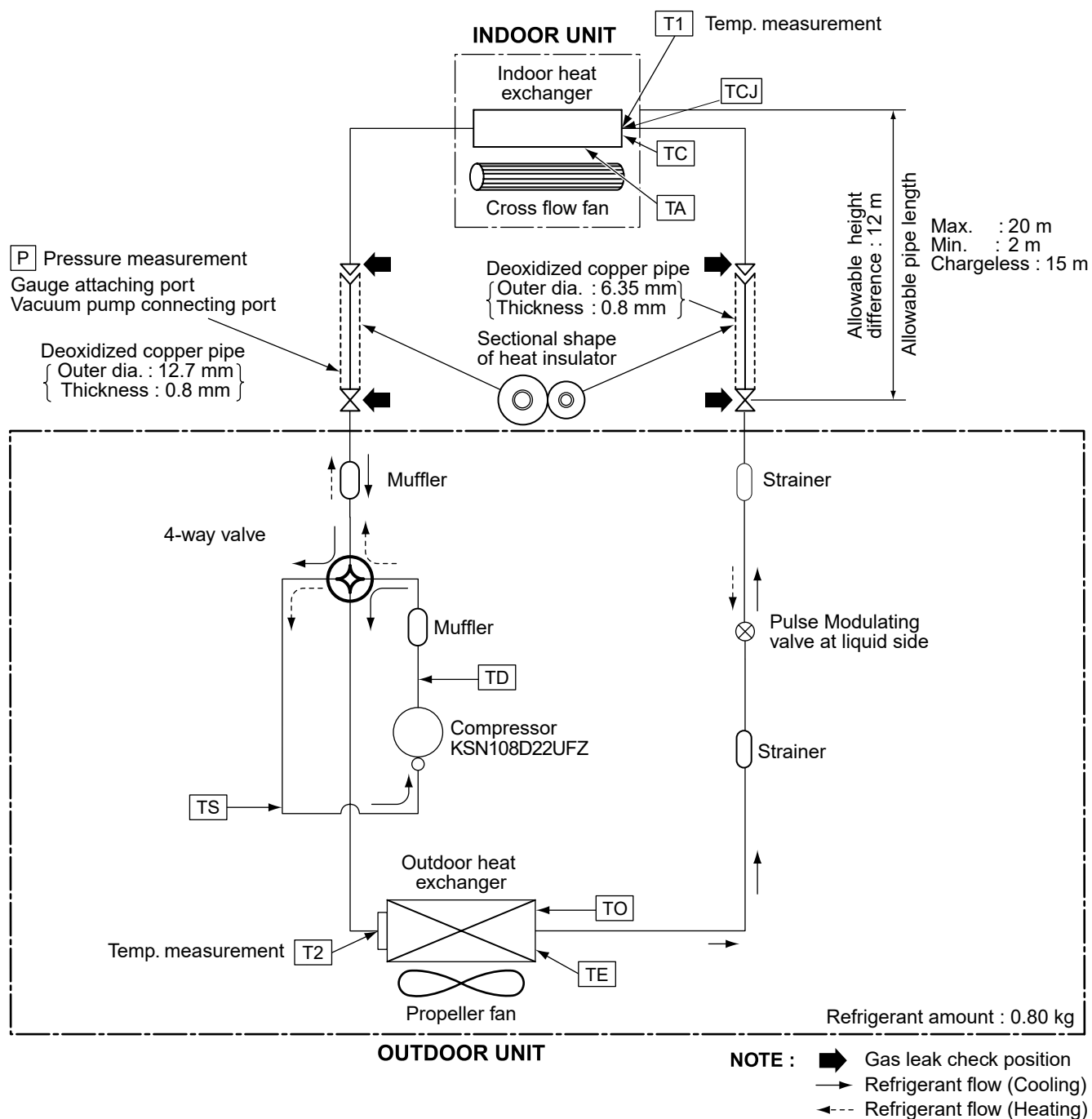
RAS-B13N4KVRG-E ; RAS-13J2AVRG-E1
 RAS-13N4KVRG-TR ; RAS-13J2AVRG-TR1



NOTE :

- The maximum pipe length of this air conditioner is 15 m. When the pipe length exceeds 15 m, the additional charging of refrigerant, 20 g per 1m for the part of pipe exceeded 15 m is required. (Max. 100 g)

RAS-B16N4KVRG-E ; RAS-16J2AVRG-E1
 RAS-16N4KVRG-TR ; RAS-16J2AVRG-TR1



NOTE :

- The maximum pipe length of this air conditioner is 15 m. When the pipe length exceeds 15m, the additional charging of refrigerant, 20 g per 1m for the part of pipe exceeded 15 m is required. (Max. 100 g)

Operation Data

<Cooling>

Temperature condition(°C)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution (rps)	Connecting piping (m)
Indoor	Outdoor			T1 (°C)	T2 (°C)				
27 / 19	35 / 24	RAS-(B)10N4KVRG*	1.1 to 1.2	12 to 13	43 to 44	High	High	51	5.0
		RAS-(B)13N4KVRG*	1.0 to 1.1	10 to 11	43 to 44	High	High	63	
		RAS-(B)16N4KVRG*	1.0 to 1.1	8 to 9	46 to 47	High	High	76	

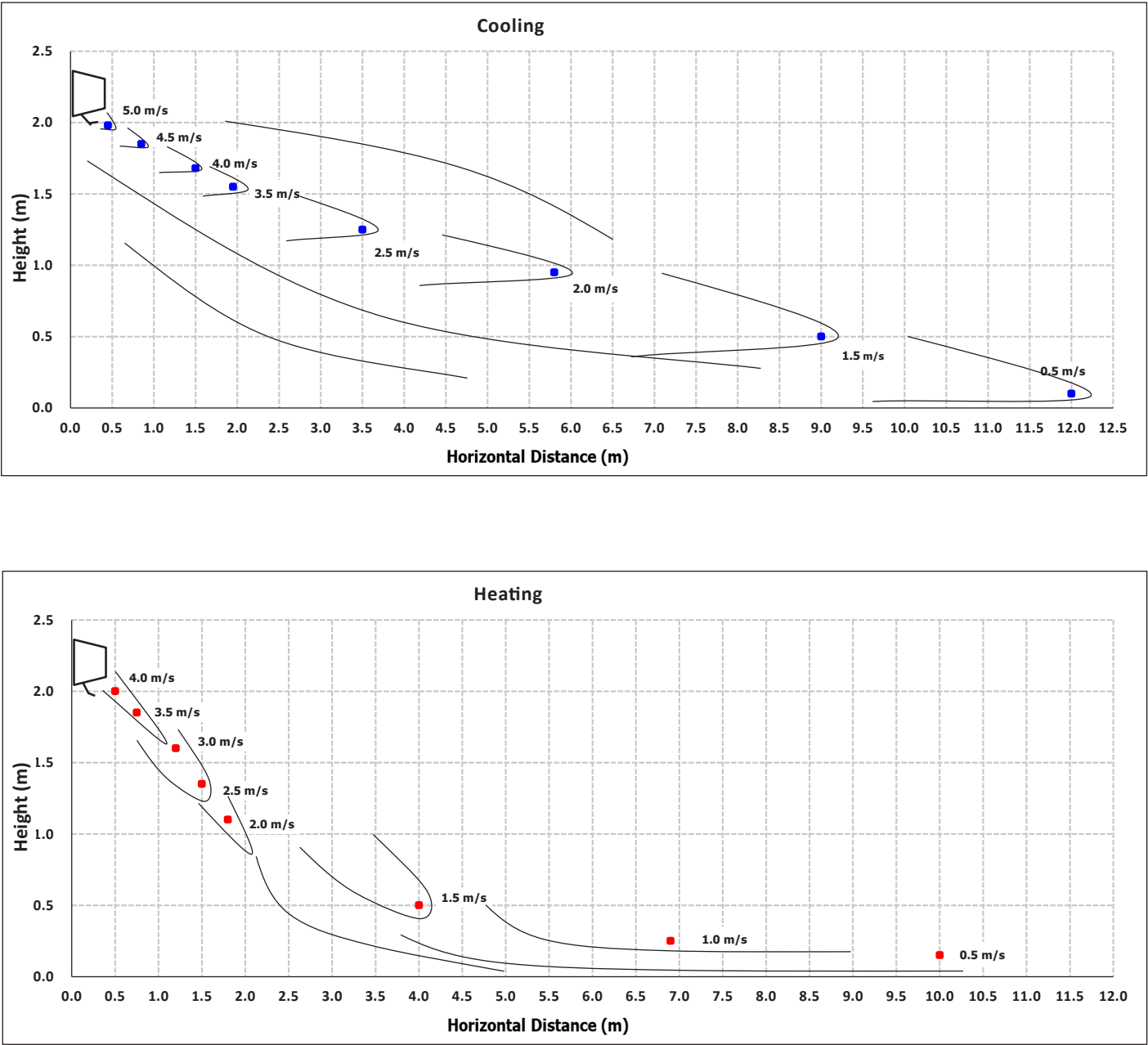
<Heating>

Temperature condition(°C)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution	Connecting piping (m)
Indoor	Outdoor			T1 (°C)	T2 (°C)				
20 / 15	7 / 6	RAS-(B)10N4KVRG*	2.4 to 2.6	39 to 40	2 to 3	High	High	74	5.0
		RAS-(B)13N4KVRG*	2.6 to 2.8	45 to 46	2 to 3	High	High	79	
		RAS-(B)16N4KVRG*	2.8 to 3.0	46 to 47	2 to 3	High	High	89	

NOTES : Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent.
(Thermistor thermometer)

6. Air Speed Distribution

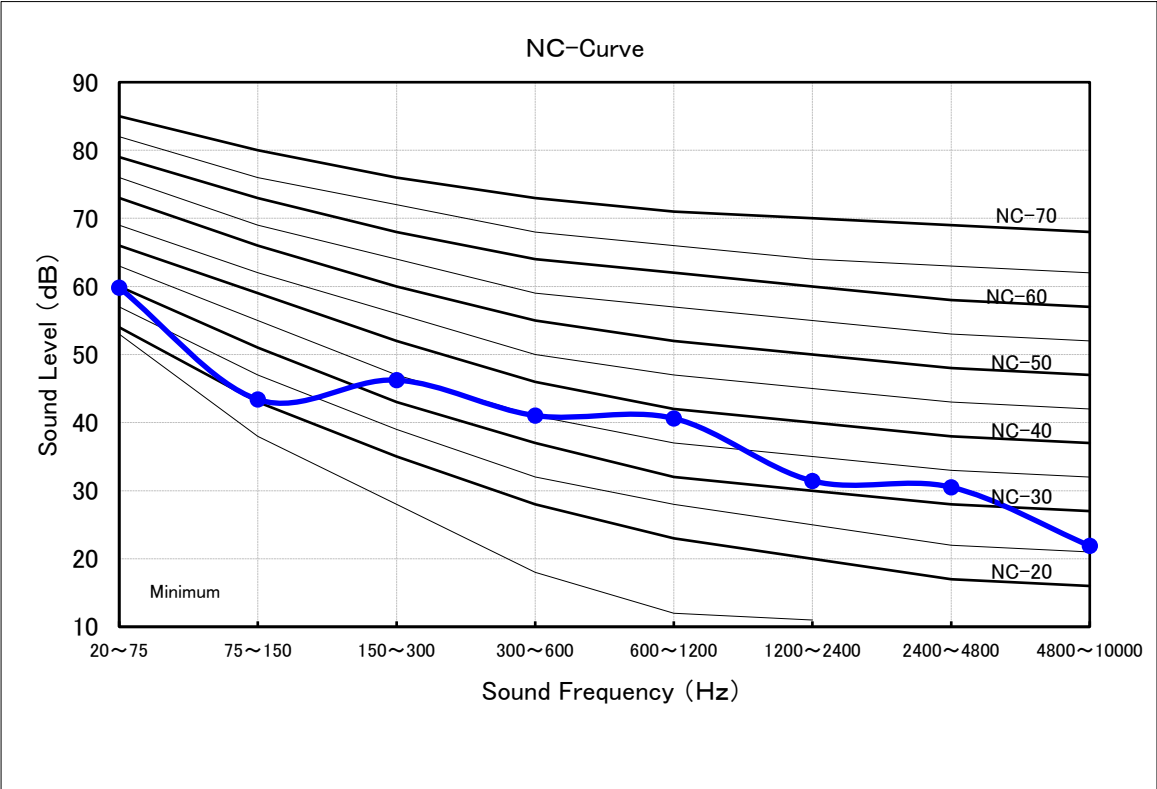
RAS-B10N4KVRG-E / RAS-B13N4KVRG-E / RAS-B16N4KVRG-E
RAS-10N4KVRG-TR / RAS-13N4KVRG-TR / RAS-16N4KVRG-TR



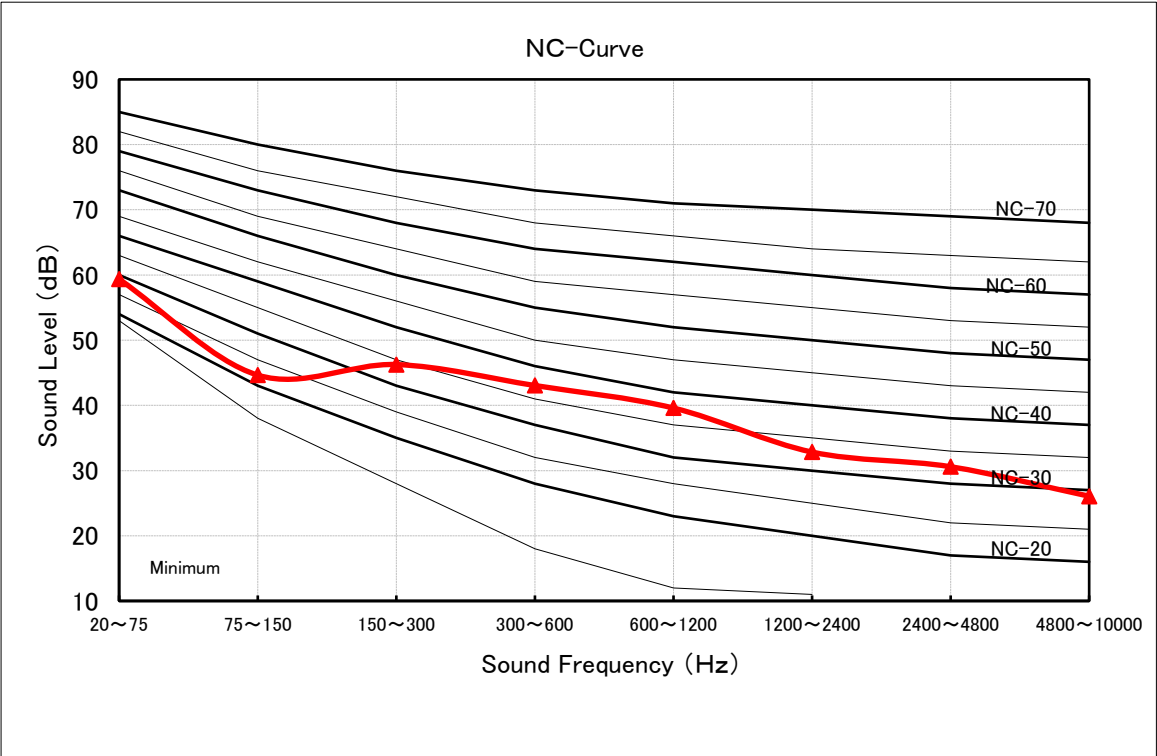
7. Sound Characteristics (NC Curve)

Outdoor Unit : RAS-10J2AVSG-E1 / TR1 (Rated Conditions)

Cooling

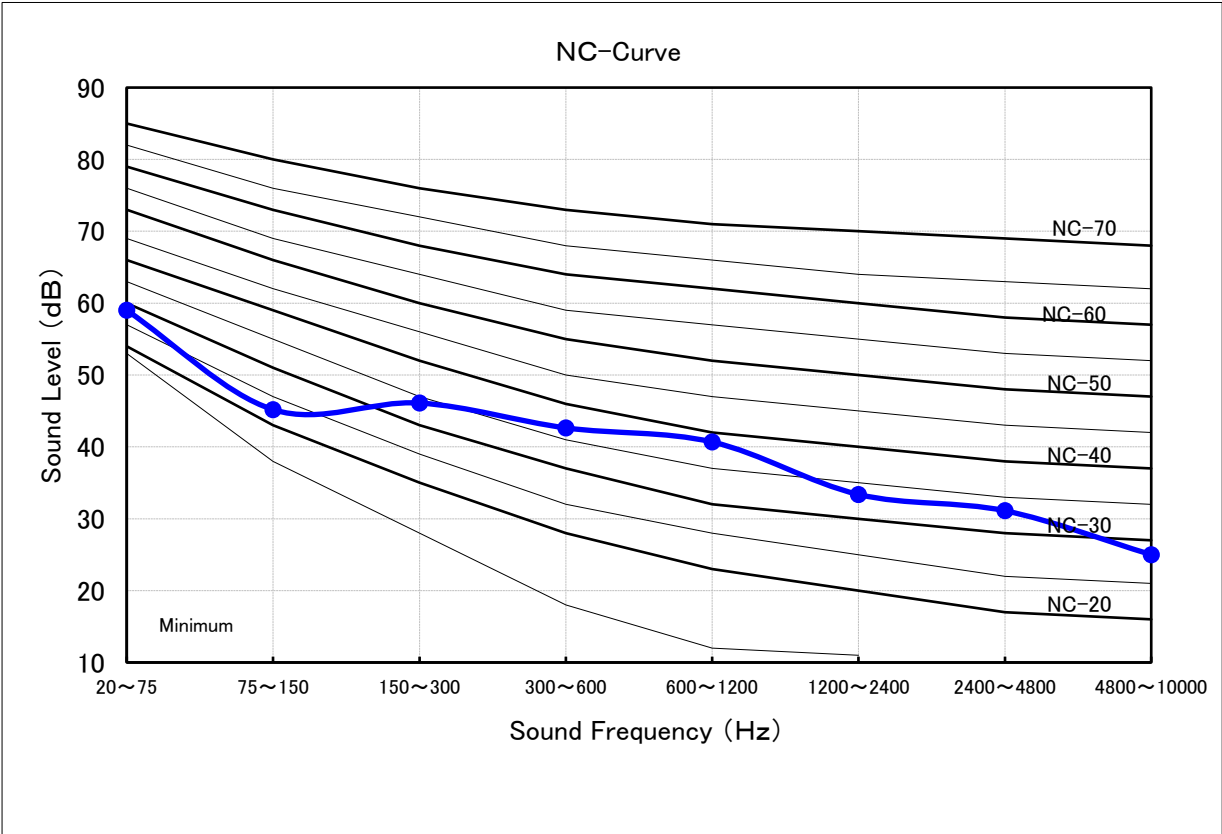


Heating

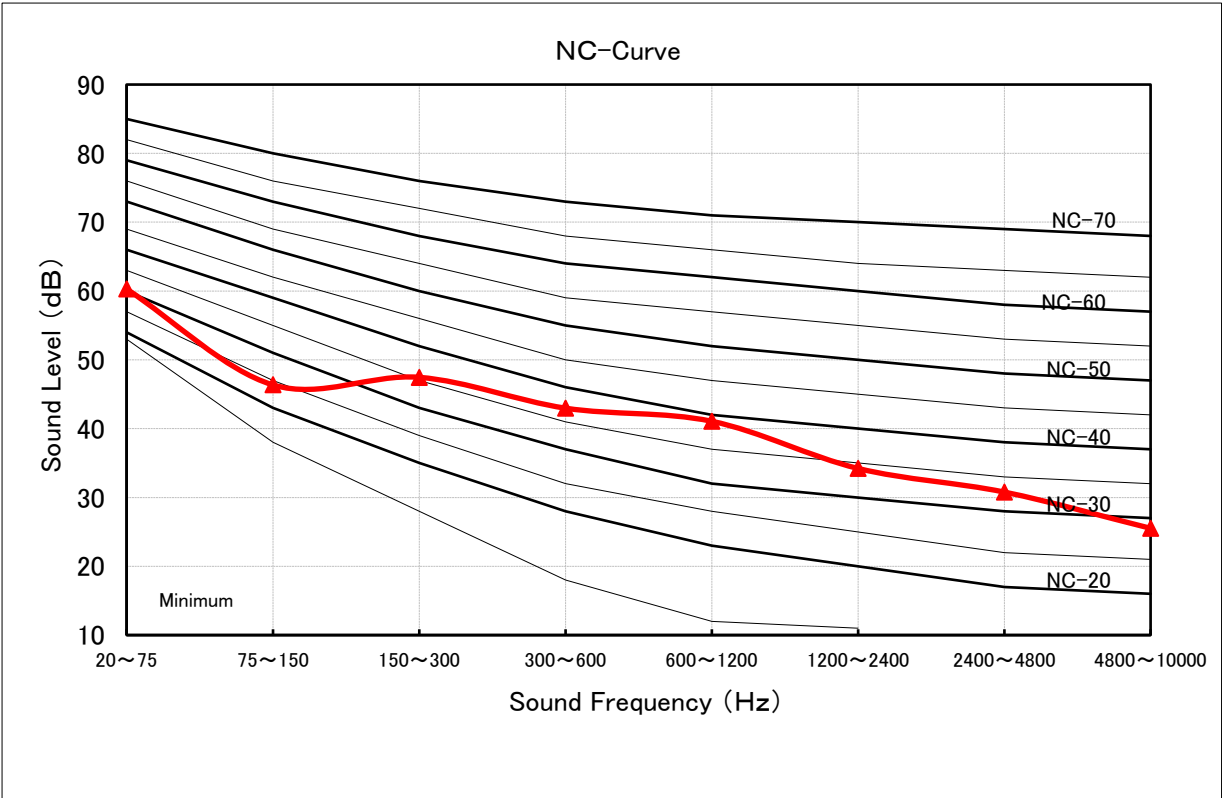


Outdoor Unit : RAS-13J2AVSG-E1 / TR1 (Rated Conditions)

Cooling

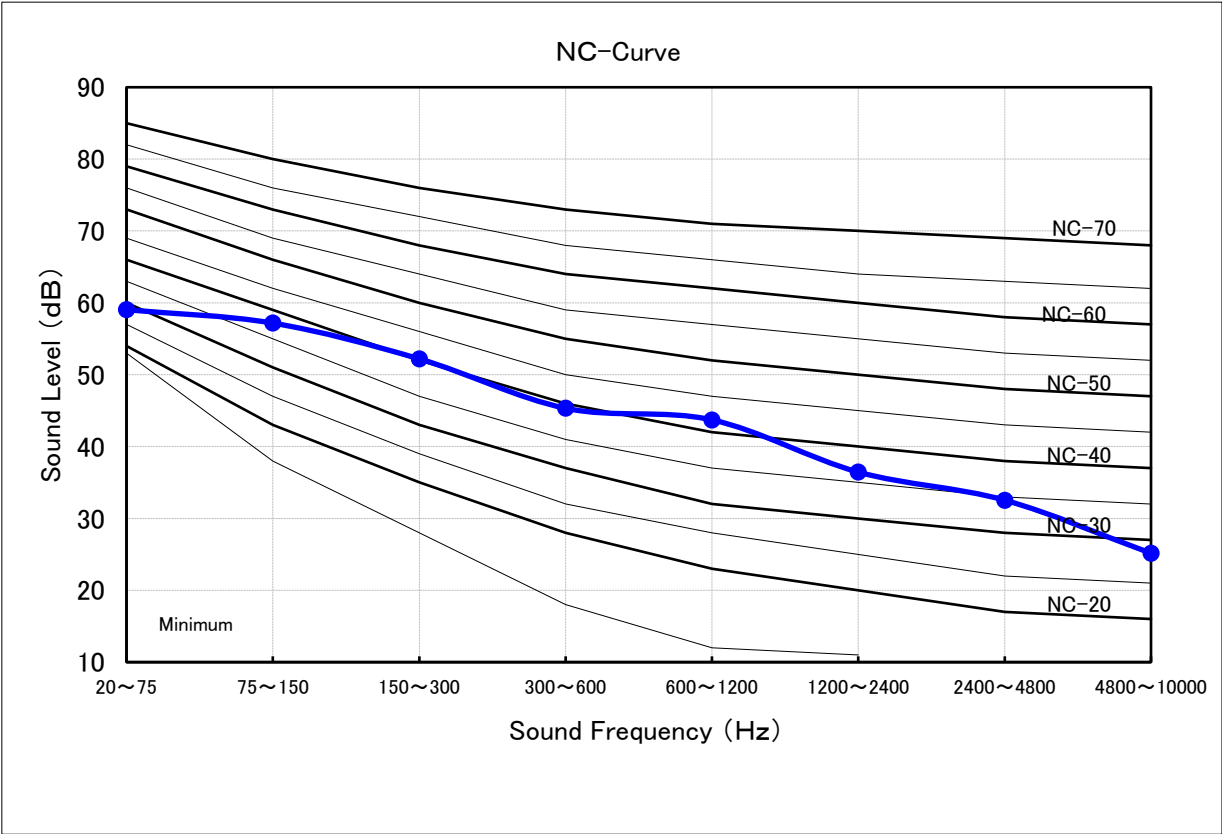


Heating

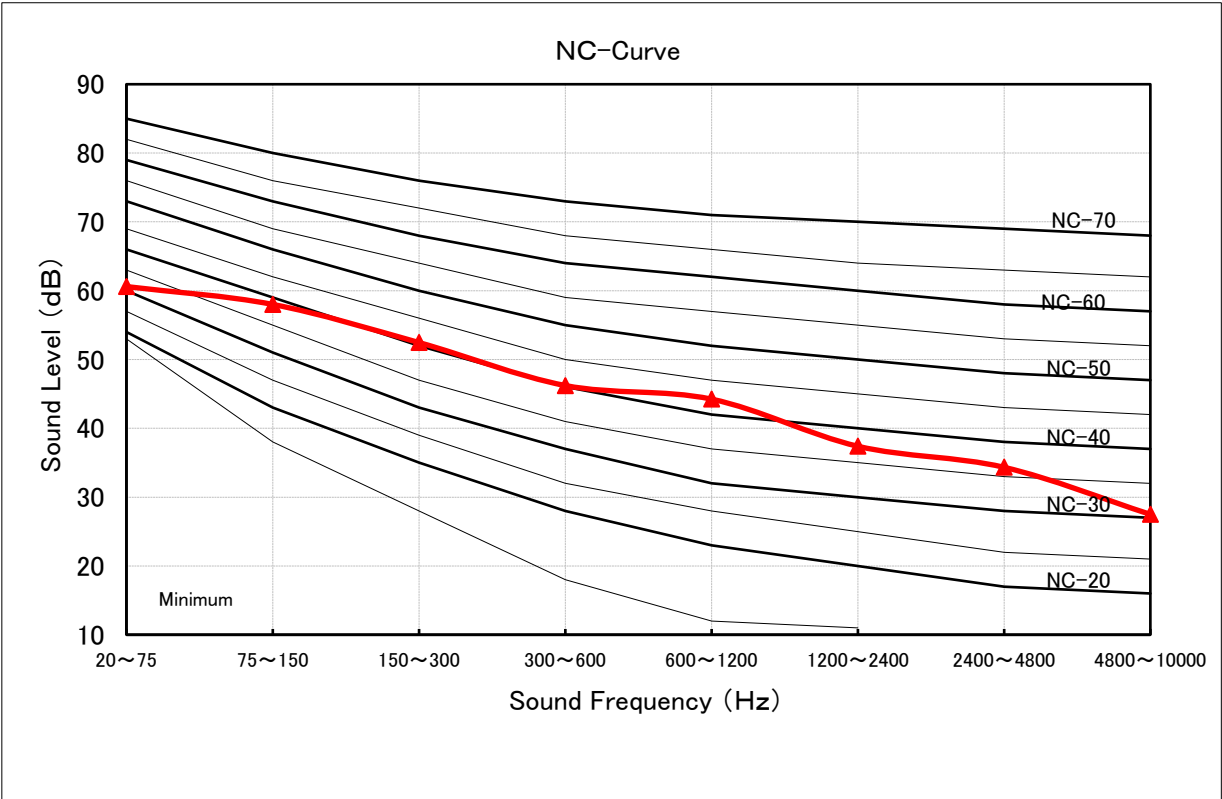


Outdoor Unit : RAS-16J2AVSG-E1 / TR1 (Rated Conditions)

Cooling



Heating



8. Capacity Table

Product models : RAS-B10N4KVRG-E : RAS-10J2AVSG-E1
RAS-10N4KVRG-TR : RAS-10J2AVSG-TR1

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)	1.90 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	2.45	2.01	2.70	2.14	2.90	2.27	2.98	2.27	3.07	2.26	3.25	2.23	3.40	2.18
21	2.42	1.99	2.68	2.12	2.86	2.25	2.95	2.24	3.03	2.24	3.21	2.21	3.36	2.16
22	2.40	1.97	2.65	2.09	2.83	2.22	2.92	2.22	3.00	2.21	3.18	2.18	3.32	2.13
23	2.37	1.95	2.62	2.07	2.80	2.20	2.89	2.19	2.97	2.19	3.14	2.16	3.29	2.11
24	2.34	1.92	2.59	2.05	2.77	2.18	2.85	2.17	2.93	2.16	3.11	2.14	3.25	2.09
25	2.32	1.90	2.56	2.02	2.74	2.15	2.82	2.14	2.90	2.14	3.07	2.11	3.21	2.06
26	2.29	1.88	2.53	2.00	2.71	2.13	2.79	2.12	2.87	2.11	3.04	2.09	3.18	2.04
27	2.26	1.86	2.50	1.98	2.68	2.10	2.76	2.10	2.84	2.09	3.00	2.06	3.14	2.02
28	2.24	1.84	2.47	1.95	2.65	2.08	2.72	2.07	2.80	2.07	2.97	2.04	3.10	1.99
29	2.21	1.82	2.44	1.93	2.62	2.05	2.69	2.05	2.77	2.04	2.93	2.02	3.07	1.97
30	2.19	1.79	2.41	1.91	2.58	2.03	2.66	2.02	2.74	2.02	2.90	1.99	3.03	1.95
31	2.16	1.77	2.38	1.89	2.55	2.00	2.63	2.00	2.70	1.99	2.86	1.97	2.99	1.92
32	2.13	1.75	2.36	1.86	2.52	1.98	2.60	1.97	2.67	1.97	2.83	1.94	2.96	1.90
33	2.11	1.73	2.33	1.84	2.49	1.96	2.56	1.95	2.64	1.94	2.79	1.92	2.92	1.88
34	2.08	1.71	2.30	1.82	2.46	1.93	2.53	1.92	2.60	1.92	2.76	1.90	2.88	1.85
35	2.05	1.69	2.27	1.79	2.43	1.91	2.50	1.90	2.57	1.90	2.72	1.87	2.85	1.83
36	2.03	1.66	2.24	1.77	2.40	1.88	2.47	1.88	2.54	1.87	2.69	1.85	2.81	1.80
37	2.00	1.64	2.21	1.75	2.37	1.86	2.44	1.85	2.51	1.85	2.65	1.82	2.78	1.78
38	1.97	1.62	2.18	1.72	2.34	1.83	2.40	1.83	2.47	1.82	2.62	1.80	2.74	1.76
39	1.95	1.60	2.15	1.70	2.30	1.81	2.37	1.80	2.44	1.80	2.58	1.78	2.70	1.73
40	1.92	1.58	2.12	1.68	2.27	1.78	2.34	1.78	2.41	1.77	2.55	1.75	2.67	1.71
41	1.90	1.56	2.09	1.66	2.24	1.76	2.31	1.75	2.37	1.75	2.51	1.73	2.63	1.69
42	1.87	1.53	2.06	1.63	2.21	1.74	2.28	1.73	2.34	1.73	2.48	1.70	2.59	1.66
43	1.84	1.51	2.03	1.61	2.18	1.71	2.24	1.70	2.31	1.70	2.44	1.68	2.56	1.64
44	1.82	1.49	2.01	1.59	2.15	1.69	2.21	1.68	2.27	1.68	2.41	1.66	2.52	1.62
45	1.79	1.47	1.98	1.56	2.12	1.66	2.18	1.66	2.24	1.65	2.37	1.63	2.48	1.59
46	1.76	1.45	1.95	1.54	2.09	1.64	2.15	1.63	2.21	1.63	2.34	1.61	2.45	1.57

Product models : RAS-B13N4KVRG-E : RAS-13J2AVSG-E1
RAS-13N4KVRG-TR : RAS-13J2AVSG-TR1

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)	2.59 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	3.43	2.75	3.79	2.92	4.05	3.10	4.17	3.09	4.29	3.08	4.55	3.03	4.76	2.96
21	3.39	2.72	3.75	2.89	4.01	3.07	4.13	3.06	4.25	3.05	4.50	3.00	4.70	2.93
22	3.35	2.69	3.70	2.86	3.97	3.03	4.08	3.02	4.20	3.01	4.45	2.97	4.65	2.89
23	3.32	2.66	3.66	2.82	3.92	3.00	4.04	2.99	4.15	2.98	4.40	2.94	4.60	2.86
24	3.28	2.63	3.62	2.79	3.88	2.97	3.99	2.96	4.11	2.95	4.35	2.90	4.55	2.83
25	3.24	2.60	3.58	2.76	3.84	2.93	3.95	2.92	4.06	2.91	4.30	2.87	4.50	2.80
26	3.21	2.57	3.54	2.73	3.79	2.90	3.90	2.89	4.02	2.88	4.25	2.84	4.45	2.77
27	3.17	2.54	3.50	2.70	3.75	2.87	3.86	2.86	3.97	2.85	4.20	2.80	4.40	2.73
28	3.13	2.51	3.46	2.67	3.71	2.83	3.81	2.82	3.92	2.81	4.16	2.77	4.35	2.70
29	3.10	2.48	3.42	2.64	3.66	2.80	3.77	2.79	3.88	2.78	4.11	2.74	4.29	2.67
30	3.06	2.45	3.38	2.60	3.62	2.77	3.72	2.76	3.83	2.75	4.06	2.71	4.24	2.64
31	3.02	2.42	3.34	2.57	3.57	2.73	3.68	2.72	3.78	2.71	4.01	2.67	4.19	2.61
32	2.99	2.39	3.30	2.54	3.53	2.70	3.63	2.69	3.74	2.68	3.96	2.64	4.14	2.58
33	2.95	2.36	3.26	2.51	3.49	2.67	3.59	2.66	3.69	2.65	3.91	2.61	4.09	2.54
34	2.91	2.33	3.22	2.48	3.44	2.63	3.54	2.62	3.65	2.62	3.86	2.58	4.04	2.51
35	2.87	2.30	3.17	2.45	3.40	2.60	3.50	2.59	3.60	2.58	3.81	2.54	3.99	2.48
36	2.84	2.27	3.13	2.42	3.36	2.57	3.46	2.56	3.55	2.55	3.76	2.51	3.94	2.45
37	2.80	2.24	3.09	2.38	3.31	2.53	3.41	2.52	3.51	2.52	3.71	2.48	3.89	2.42
38	2.76	2.21	3.05	2.35	3.27	2.50	3.37	2.49	3.46	2.48	3.67	2.45	3.83	2.38
39	2.73	2.18	3.01	2.32	3.23	2.47	3.32	2.46	3.42	2.45	3.62	2.41	3.78	2.35
40	2.69	2.15	2.97	2.29	3.18	2.43	3.28	2.42	3.37	2.42	3.57	2.38	3.73	2.32
41	2.65	2.12	2.93	2.26	3.14	2.40	3.23	2.39	3.32	2.38	3.52	2.35	3.68	2.29
42	2.62	2.10	2.89	2.23	3.09	2.37	3.19	2.36	3.28	2.35	3.47	2.32	3.63	2.26
43	2.58	2.07	2.85	2.20	3.05	2.33	3.14	2.32	3.23	2.32	3.42	2.28	3.58	2.23
44	2.54	2.04	2.81	2.17	3.01	2.30	3.10	2.29	3.18	2.28	3.37	2.25	3.53	2.19
45	2.51	2.01	2.77	2.13	2.96	2.27	3.05	2.26	3.14	2.25	3.32	2.22	3.48	2.16
46	2.47	1.98	2.73	2.10	2.92	2.23	3.01	2.22	3.09	2.22	3.27	2.18	3.42	2.13

Product models : RAS-B16N4KVRG-E : RAS-16J2AVSG-E1
RAS-16N4KVRG-TR : RAS-16J2AVSG-TR1

Specification of product at standard condition

Standard Condition	Indoor	27°C (DB) / 19°C (WB)	Total Cooling Capacity (TC)		4.60	kW
	Outdoor	35°C (DB) / 24°C (WB)	Sensible Heat Capacity (SHC)		3.36	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	4.51	3.56	4.98	3.79	5.33	4.02	5.49	4.00	5.64	3.99	5.98	3.93	6.25	3.82
21	4.46	3.52	4.92	3.75	5.27	3.98	5.43	3.96	5.58	3.95	5.91	3.88	6.18	3.78
22	4.41	3.49	4.87	3.71	5.21	3.94	5.37	3.92	5.52	3.90	5.85	3.84	6.12	3.74
23	4.36	3.45	4.82	3.66	5.16	3.89	5.31	3.88	5.46	3.86	5.78	3.80	6.05	3.70
24	4.31	3.41	4.76	3.62	5.10	3.85	5.25	3.83	5.40	3.82	5.72	3.76	5.98	3.66
25	4.26	3.37	4.71	3.58	5.04	3.81	5.19	3.79	5.34	3.78	5.65	3.72	5.91	3.62
26	4.21	3.33	4.65	3.54	4.98	3.76	5.13	3.75	5.28	3.73	5.59	3.67	5.85	3.58
27	4.17	3.29	4.60	3.50	4.93	3.72	5.07	3.70	5.22	3.69	5.53	3.63	5.78	3.54
28	4.12	3.26	4.55	3.46	4.87	3.68	5.01	3.66	5.16	3.65	5.46	3.59	5.71	3.49
29	4.07	3.22	4.49	3.42	4.81	3.63	4.95	3.62	5.10	3.60	5.40	3.55	5.64	3.45
30	4.02	3.18	4.44	3.38	4.76	3.59	4.90	3.57	5.04	3.56	5.33	3.50	5.58	3.41
31	3.97	3.14	4.39	3.34	4.70	3.55	4.84	3.53	4.97	3.52	5.27	3.46	5.51	3.37
32	3.92	3.10	4.33	3.30	4.64	3.50	4.78	3.49	4.91	3.48	5.20	3.42	5.44	3.33
33	3.88	3.06	4.28	3.26	4.58	3.46	4.72	3.44	4.85	3.43	5.14	3.38	5.38	3.29
34	3.83	3.03	4.23	3.22	4.53	3.42	4.66	3.40	4.79	3.39	5.08	3.34	5.31	3.25
35	3.78	2.99	4.17	3.18	4.47	3.37	4.60	3.36	4.73	3.35	5.01	3.29	5.24	3.21
36	3.73	2.95	4.12	3.13	4.41	3.33	4.54	3.31	4.67	3.30	4.95	3.25	5.17	3.17
37	3.68	2.91	4.07	3.09	4.35	3.29	4.48	3.27	4.61	3.26	4.88	3.21	5.11	3.12
38	3.63	2.87	4.01	3.05	4.30	3.24	4.42	3.23	4.55	3.22	4.82	3.17	5.04	3.08
39	3.58	2.83	3.96	3.01	4.24	3.20	4.36	3.19	4.49	3.17	4.75	3.12	4.97	3.04
40	3.17	2.51	3.50	2.67	3.75	2.83	3.86	2.82	3.97	2.81	4.21	2.76	4.40	2.69
41	3.09	2.44	3.41	2.59	3.65	2.76	3.76	2.74	3.87	2.73	4.09	2.69	4.28	2.62
42	3.00	2.38	3.32	2.52	3.55	2.68	3.66	2.67	3.76	2.66	3.98	2.62	4.17	2.55
43	2.92	2.31	3.23	2.46	3.46	2.61	3.56	2.60	3.66	2.59	3.88	2.55	4.06	2.48
44	2.85	2.25	3.14	2.39	3.37	2.54	3.46	2.53	3.56	2.52	3.77	2.48	3.95	2.41
45	2.77	2.19	3.06	2.33	3.27	2.47	3.37	2.46	3.47	2.45	3.67	2.41	3.84	2.35
46	2.69	2.13	2.98	2.26	3.19	2.41	3.28	2.39	3.37	2.39	3.57	2.35	3.74	2.29

9. Part Load Performance

Indoor : RAS-B10N4KVRG-E / RAS-10N4KVRG-TR

Outdoor : RAS-10J2AVSG-E1 / TR1

Operation range	Cooling		Heating	
	Q	P	Q	P
MINIMUM	W 890	190	900	180
RATING	W 2500	540	3200	740
MAXIMUM	W 3200	790	4800	1230

Cooling

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
20	2981	424	2683	381	2385	339	2087	296	1789	253	1491	211	1193	168	1061	149	1061	149	1061	149
21	2949	432	2654	388	2359	345	2064	301	1770	258	1475	214	1180	171	1050	152	1050	152	1050	152
22	2917	439	2625	395	2334	351	2042	307	1750	262	1459	218	1167	174	1038	155	1038	155	1038	155
23	2885	447	2597	402	2308	357	2020	312	1731	267	1443	222	1154	177	1027	157	1027	157	1027	157
24	2853	455	2568	409	2282	363	1997	318	1712	272	1426	226	1141	180	1016	160	1016	160	1016	160
25	2821	463	2539	416	2257	369	1975	323	1693	276	1410	230	1128	183	1004	163	1004	163	1004	163
26	2789	470	2510	423	2231	376	1952	328	1673	281	1394	234	1116	186	993	165	993	165	993	165
27	2757	478	2481	430	2205	382	1930	334	1654	286	1378	238	1103	189	981	168	981	168	981	168
28	2725	486	2452	437	2180	388	1907	339	1635	290	1362	241	1090	192	970	171	970	171	970	171
29	2693	494	2423	444	2154	394	1885	345	1616	295	1346	245	1077	196	959	174	959	174	959	174
30	2660	501	2394	451	2128	400	1862	350	1596	299	1330	249	1064	199	947	176	947	176	947	176
31	2628	509	2366	458	2103	407	1840	355	1577	304	1314	253	1051	202	936	179	936	179	936	179
32	2596	517	2337	465	2077	413	1817	361	1558	309	1298	257	1039	205	924	182	924	182	924	182
33	2564	525	2308	472	2051	419	1795	366	1539	313	1282	261	1026	208	913	185	913	185	913	185
34	2532	532	2279	479	2026	425	1772	372	1519	318	1266	264	1013	211	901	187	901	187	901	187
35	2500	540	2250	486	2000	431	1750	377	1500	323	1250	268	1000	214	890	190	890	190	890	190
36	2468	548	2221	493	1974	437	1728	382	1481	327	1234	272	987	217	879	193	879	193	879	193
37	2436	555	2192	500	1949	444	1705	388	1462	332	1218	276	974	220	867	195	867	195	867	195
38	2404	563	2163	507	1923	450	1683	393	1442	336	1202	280	962	223	856	198	856	198	856	198
39	2372	571	2135	513	1897	456	1660	399	1423	341	1186	284	949	226	844	201	844	201	844	201
40	2340	579	2106	520	1872	462	1638	404	1404	346	1170	287	936	229	833	204	833	204	833	204
41	2308	586	2077	527	1846	468	1615	409	1385	350	1154	291	923	232	821	206	821	206	821	206
42	2275	594	2048	534	1820	475	1593	415	1365	355	1138	295	910	235	810	209	810	209	810	209
43	2243	602	2019	541	1795	481	1570	420	1346	360	1122	299	897	238	799	212	799	212	799	212
44	2211	610	1990	548	1769	487	1548	426	1327	364	1106	303	885	242	787	215	787	215	787	215
45	2179	617	1961	555	1743	493	1525	431	1308	369	1090	307	872	245	776	217	776	217	776	217
46	2147	625	1932	562	1718	499	1503	436	1288	373	1074	311	859	248	764	220	764	220	764	220

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	1193	439	1073	393	954	346	835	300	716	254	596	208	477	162	358	115	335	107	335	107
-14	1259	449	1133	402	1007	355	881	307	755	260	629	213	504	165	378	118	354	109	354	109
-13	1325	460	1193	411	1060	363	928	315	795	266	663	218	530	169	398	121	373	112	373	112
-12	1391	470	1252	421	1113	371	974	322	835	272	696	223	557	173	417	124	391	114	391	114
-11	1458	481	1312	430	1166	379	1020	329	875	278	729	228	583	177	437	126	410	117	410	117
-10	1524	491	1371	439	1219	388	1067	336	914	284	762	233	610	181	457	129	429	119	429	119
-9	1590	505	1431	452	1272	398	1113	345	954	292	795	239	636	186	477	133	447	123	447	123
-8	1656	518	1491	464	1325	409	1159	355	994	300	828	246	663	191	497	136	466	126	466	126
-7	1723	532	1550	476	1378	420	1206	364	1034	308	861	252	689	196	517	140	484	129	484	129
-6	1789	546	1610	488	1431	431	1252	373	1073	316	894	258	716	201	537	144	503	133	503	133
-5	1855	559	1670	500	1484	442	1299	383	1113	324	928	265	742	206	557	147	522	136	522	136
-4	1921	573	1729	513	1537	452	1345	392	1153	332	961	271	769	211	576	151	540	139	540	139
-3	1988	587	1789	525	1590	463	1391	401	1193	340	994	278	795	216	596	154	559	143	559	143
-2	2054	600	1848	537	1643	474	1438	411	1232	347	1027	284	822	221	616	158	578	146	578	146
-1	2120	614	1908	549	1696	485	1484	420	1272	355	1060	291	848	226	636	161	596	149	596	149
0	2186	628	1968	562	1749	495	1530	429	1312	363	1093	297	875	231	656	165	615	153	615	153
1	2253	641	2027	574	1802	506	1577	439	1352	371	1126	304	901	236	676	169	634	156	634	156
2	2319	655	2087	586	1855	517	1623	448	1391	379	1159	310	928	241	696	172	652	159	652	159
3	2387	664	2121	594	1885	524	1650	454	1414	384	1178	314	943	244	707	175	663	161	663	161
4	2395	672	2155	602	1916	531	1676	460	1437	389	1197	318	958	248	718	177	674	164	674	164
5	2433	681	2190	610	1946	538	1703	466	1460	394	1216	323	973	251	730	179	684	166	684	166
6	3117	729	2806	652	2494	575	2182	498	1870	422	1559	345	1247	268	935	192	877	177	877	177
7	3200	740	2880	662	2560	584	2240	506	1920	428	1600	350	1280	273	960	195	900	180	900	180
8	3283	751	2954	672	2626	593	2298	514	1970	435	1641	356	1313	277	985	198	923	183	923	183
9	3365	763	3029	683	2692	602	2356	522	2019	442	1683	361	1346	281	1010	201	946	186	946	186
10	3448	774	3103	693	2758	611	2413	530	2069	448	1724	367	1379	285	1034	204	970	188	970	188
11	3530	786	3177	703	2824	620	2471	538	2118	455	1765	372	1412	289	1059	207	993	191	993	191
12	3613	797	3252	713	2890	629	2529	545	2168	462	1806	378	1445	294	1084	210	1016	194	1016	194
13	3695	809	3326	724	2956	638	2587	553	2217	468	1848	383	1478	298	1109	213	1039	197	1039	197
14	3778	820	3400	734	3022	647	2645	561	2267	475	1889	388	1511	302	1133	216	1063	200	1063	200
15	3861	832	3475	744	3089	657	2702	569	2316	481	1930	394	1544	306	1158	219	1086	202	1086	202
16	3943	843	3549	754	3155	666	2760	577	2366	488	1972	399	1577	310	1183	222	1109	205	1109	205
17	4026	855	3623	765	3221	675	2818	585	2415	495	2013	405	1610	315	1208	225	1132	208	1132	208
18	4108	866	3696	775	3287	684	2876	592	2465	501	2054	410	1643	319	1233	228	1155	211	1155	211
19	4191	877	3772	785	3353	693	2934	600	2515	508	2095	416	1676	323	1257	231	1179	213	1179	213
20	4274	889	3846	795	3419	702	2991	608	2564	515	2137	421	1709	327	1282	234	1202	216	1202	216
21	4356	900	3921	806	3485	711	3049	616	2614	521	2178	426	1742	332	1307	237	1225	219	1225	219
22	4439	912	3995	816	3551	720	3107	624	2663	528	2219	432	1775	336	1332	240	1248	222	1248	222
23	4521	923	4069	826	3617	729	3165	632	2713	534	2261	437	1809	340	1356	243	1272	225	1272	225
24	4604	935	4143	836	3683	738	3223	640	2762	541	2302	443	1842	344	1381	246	1295	227	1295	227

Indoor : RAS-B13N4KVRG-E / RAS-13N4KVRG-TR

Outdoor : RAS-13J2AVSG-E1 / TR1

Operation range	Cooling		Heating	
	Q	P	Q	P
MINIMUM	W 1000	250	1000	200
RATING	W 3500	800	4200	1080
MAXIMUM	W 4100	1120	5300	1550

Cooling

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
20	4174	628	3756	568	3339	507	2922	447	2504	386	2087	326	1670	265	1252	205	1193	196	1193	196
21	4129	639	3716	578	3303	516	2890	455	2477	393	2064	332	1652	270	1239	209	1180	200	1180	200
22	4084	651	3676	588	3267	526	2859	463	2450	400	2042	338	1634	275	1225	212	1167	203	1167	203
23	4039	662	3635	599	3231	535	2827	471	2423	407	2020	344	1616	280	1212	216	1154	207	1154	207
24	3994	674	3595	609	3195	544	2796	479	2396	414	1997	350	1598	285	1198	220	1141	211	1141	211
25	3949	685	3554	619	3159	553	2764	487	2370	421	1975	356	1580	290	1185	224	1128	214	1128	214
26	3904	697	3514	630	3123	563	2733	496	2343	429	1952	361	1562	294	1171	227	1116	218	1116	218
27	3859	708	3473	640	3087	572	2702	504	2316	436	1930	367	1544	299	1158	231	1103	221	1103	221
28	3814	720	3433	650	3052	581	2670	512	2289	443	1907	373	1526	304	1144	235	1090	225	1090	225
29	3770	731	3393	661	3016	590	2639	520	2262	450	1885	379	1508	309	1131	239	1077	229	1077	229
30	3725	743	3352	671	2980	600	2607	528	2235	457	1862	385	1490	314	1117	242	1064	232	1064	232
31	3680	754	3312	682	2944	609	2576	536	2208	464	1840	391	1472	319	1104	246	1051	236	1051	236
32	3635	766	3271	692	2908	618	2544	545	2181	471	1817	397	1454	323	1090	250	1039	239	1039	239
33	3590	777	3231	702	2872	627	2513	553	2154	478	1795	403	1436	328	1077	254	1026	243	1026	243
34	3545	789	3190	713	2836	637	2481	561	2127	485	1772	409	1418	333	1063	257	1013	246	1013	246
35	3500	800	3150	723	2800	646	2450	569	2100	492	1750	415	1400	338	1050	261	1000	250	1000	250
36	3455	811	3110	733	2764	655	2419	577	2073	499	1728	421	1382	343	1037	265	987	254	987	254
37	3410	823	3069	744	2728	665	2387	585	2046	506	1705	427	1364	348	1023	268	974	257	974	257
38	3365	834	3029	754	2692	674	2356	593	2019	513	1683	433	1346	353	1010	272	962	261	962	261
39	3320	846	2988	764	2656	683	2324	602	1992	520	1660	439	1328	357	996	276	949	264	949	264
40	3275	857	2948	775	2620	692	2293	610	1965	527	1638	445	1310	362	983	280	936	268	936	268
41	3231	869	2907	785	2584	702	2261	618	1938	534	1615	451	1292	367	969	283	923	272	923	272
42	3186	880	2867	796	2548	711	2230	626	1911	541	1593	457	1274	372	956	287	910	275	910	275
43	3141	892	2827	806	2513	720	2198	634	1884	548	1570	463	1256	377	942	291	897	279	897	279
44	3096	903	2786	816	2477	729	2167	642	1857	555	1548	469	1238	382	929	295	885	282	885	282
45	3051	915	2746	827	2441	739	2136	651	1831	563	1525	474	1220	386	915	298	872	286	872	286
46	3006	926	2705	837	2405	748	2104	659	1804	570	1503	480	1202	391	902	302	859	289	859	289

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	1717	625	1545	558	1373	491	1202	424	1030	358	858	291	687	224	515	157	409	116	409	116
-14	1810	654	1629	584	1448	514	1267	444	1086	374	905	304	724	234	543	164	431	121	431	121
-13	1904	684	1714	611	1523	537	1333	464	1142	391	952	318	762	245	571	172	453	127	453	127
-12	1998	713	1798	637	1598	561	1398	484	1199	408	999	332	799	256	599	179	476	132	476	132
-11	2091	743	1882	663	1673	584	1464	504	1255	425	1046	345	837	266	627	187	498	138	498	138
-10	2185	772	1967	689	1748	607	1530	524	1311	442	1093	359	874	277	656	194	520	143	520	143
-9	2257	787	2031	703	1805	619	1580	535	1354	450	1128	366	903	282	677	198	537	146	537	146
-8	2328	803	2095	717	1863	631	1630	545	1397	459	1164	373	931	288	698	202	554	149	554	149
-7	2400	818	2160	730	1920	643	1680	555	1440	468	1200	381	960	293	720	206	571	151	571	151
-6	2471	833	2224	744	1977	655	1730	566	1483	477	1236	388	988	299	741	209	588	154	588	154
-5	2543	849	2288	758	2034	667	1780	576	1526	486	1271	395	1017	304	763	213	605	157	605	157
-4	2614	864	2353	771	2091	679	1830	587	1569	494	1307	402	1046	310	784	217	622	160	622	160
-3	2686	879	2417	785	2149	691	1880	597	1611	503	1343	409	1074	315	806	221	639	163	639	163
-2	2757	894	2482	799	2206	703	1930	608	1654	512	1379	416	1103	321	827	225	657	166	657	166
-1	2829	910	2546	813	2263	715	1980	618	1697	521	1414	423	1132	326	849	229	674	168	674	168
0	2900	925	2610	826	2320	727	2030	628	1740	529	1450	430	1160	332	870	233	691	171	691	171
1	2972	940	2675	840	2378	739	2080	639	1783	538	1486	438	1189	337	892	236	708	174	708	174
2	3043	956	2739	854	2435	751	2130	649	1826	547	1522	445	1217	342	913	240	725	177	725	177
3	3093	969	2784	865	2475	761	2165	658	1856	554	1547	451	1237	347	928	243	737	179	737	179
4	3143	981	2829	876	2515	772	2200	667	1886	562	1572	457	1257	352	943	247	748	182	748	182
5	3193	994	2874	888	2554	782	2235	675	1916	569	1597	463	1277	356	958	250	760	184	760	184
6	4092	1063	3682	950	3273	836	2864	722	2455	608	2046	495	1637	381	1227	267	974	197	974	197
7	4200	1080	3780	965	3360	849	2940	734	2520	618	2100	503	1680	387	1260	272	1000	200	1000	200
8	4308	1097	3878	979	3447	862	3016	745	2585	628	2154	510	1723	393	1293	276	1026	203	1026	203
9	4417	1113	3975	994	3533	875	3092	756	2650	637	2208	518	1767	399	1325	280	1052	206	1052	206
10	4525	1130	4073	1009	3620	888	3168	768	2715	647	2263	526	1810	405	1358	284	1077	209	1077	209
11	4634	1147	4170	1024	3707	902	3243	779	2780	656	2317	534	1853	411	1390	288	1103	212	1103	212
12	4742	1164	4268	1039	3794	915	3319	790	2845	666	2371	541	1897	417	1423	293	1129	215	1129	215
13	4850	1180	4365	1054	3880	928	3395	802	2910	675	2425	549	1940	423	1455	297	1155	219	1155	219
14	4959	1197	4463	1069	3967	941	3471	813	2975	685	2479	557	1983	429	1488	301	1181	222	1181	222
15	5067	1214	4560	1084	4054	954	3547	824	3040	695	2534	565	2027	435	1520	305	1206	225	1206	225
16	5175	1231	4658	1099	4140	967	3623	836	3105	704	2588	573	2070	441	1553	309	1232	228	1232	228
17	5284	1247	4755	1114	4227	980	3699	847	3170	714	2642	580	2114	447	1585	314	1258	231	1258	231
18	5392	1264	4853	1129	4314	994	3775	858	3235	723	2696	588	2157	453	1618	318	1284	234	1284	234
19	5501	1281	4951	1144	4401	1007	3850	870	3300	733	2750	596	2200	459	1650	322	1310	237	1310	237
20	5609	1297	5048	1159	4487	1020	3926	881	3365	742	2805	604	2244	465	1683	326	1335	240	1335	240
21	5717	1314	5146	1174	4574	1033	4002	893	3430	752	2859	611	2287	471	1715	330	1361	243	1361	243
22	5826	1331	5243	1189	4661	1046	4078	904	3495	762	2913	619	2330	477	1748	335	1387	246	1387	246
23	5934	1348	5341	1203	4747	1059	4154	915	3561	771	2967	627	2374	483	1780	339	1413	250	1413	250
24	6043	1364	5438	1218	4834	1072	4230	927	3626	781	3021	635	2417	489	1813	343	1439	253	1439	253

Indoor : RAS-B16N4KVRG-E / RAS-16N4KVRG-TR

Outdoor : RAS-16J2AVSG-E1 / TR1

Operation range	Cooling		Heating	
	Q	P	Q	P
MINIMUM	W	1200	340	1100
RATING	W	4600	1350	5500
MAXIMUM	W	5300	1720	6300

Cooling

Cooling Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
20	5486	1060	4937	952	4388	845	3840	738	3291	631	2743	523	2194	416	1646	309	1431	267	1431	267
21	5426	1079	4884	970	4341	861	3799	751	3256	642	2713	533	2171	424	1628	315	1416	272	1416	272
22	5367	1098	4831	987	4294	876	3757	765	3220	654	2684	543	2147	431	1610	320	1400	277	1400	277
23	5308	1118	4778	1005	4247	892	3716	778	3185	665	2654	552	2123	439	1593	326	1385	282	1385	282
24	5249	1137	4724	1022	4199	907	3675	792	3150	677	2625	562	2100	447	1575	331	1369	286	1369	286
25	5190	1157	4671	1039	4152	922	3633	805	3114	688	2595	571	2076	454	1557	337	1354	291	1354	291
26	5131	1176	4618	1057	4105	938	3592	819	3079	700	2566	581	2053	462	1539	343	1339	296	1339	296
27	5072	1195	4565	1074	4058	953	3551	832	3043	711	2536	590	2029	469	1522	348	1323	301	1323	301
28	5013	1215	4512	1092	4011	969	3509	846	3008	723	2507	600	2005	477	1504	354	1308	306	1308	306
29	4954	1234	4459	1109	3963	984	3468	859	2973	734	2477	609	1982	485	1486	360	1292	311	1292	311
30	4895	1253	4406	1126	3916	1000	3427	873	2937	746	2448	619	1958	492	1469	365	1277	316	1277	316
31	4836	1273	4353	1144	3869	1015	3385	886	2902	757	2418	629	1934	500	1451	371	1262	321	1262	321
32	4777	1292	4299	1161	3822	1030	3344	900	2866	769	2389	638	1911	507	1433	377	1246	325	1246	325
33	4718	1311	4246	1179	3774	1046	3303	913	2831	780	2359	648	1887	515	1415	382	1231	330	1231	330
34	4659	1331	4193	1196	3727	1061	3261	927	2795	792	2330	657	1864	523	1398	388	1215	335	1215	335
35	4600	1350	4140	1213	3680	1077	3220	940	2760	803	2300	667	1840	530	1380	393	1200	340	1200	340
36	4541	1369	4087	1231	3633	1092	3179	954	2725	815	2270	676	1816	538	1362	399	1185	345	1185	345
37	4482	1389	4034	1248	3586	1108	3137	967	2689	826	2241	686	1793	545	1345	405	1169	350	1169	350
38	4423	1408	3981	1266	3538	1123	3096	980	2654	838	2211	695	1769	553	1327	410	1154	355	1154	355
39	4364	1427	3927	1283	3491	1138	3055	994	2618	849	2182	705	1746	561	1309	416	1138	359	1138	359
40	3861	1298	3475	1166	3089	1035	2703	904	2317	772	1931	641	1544	510	1158	378	1007	327	1007	327
41	3758	1298	3382	1166	3006	1035	2631	904	2255	772	1879	641	1503	510	1127	378	980	327	980	327
42	3657	1298	3292	1166	2926	1035	2560	904	2194	772	1829	641	1463	510	1097	378	954	327	954	327
43	3560	1298	3204	1166	2848	1035	2492	904	2136	772	1780	641	1424	510	1068	378	929	327	929	327
44	3464	1298	3118	1166	2771	1035	2425	904	2078	772	1732	641	1386	510	1039	378	904	327	904	327
45	3371	1298	3034	1166	2697	1035	2360	904	2023	772	1686	641	1348	510	1011	378	879	327	879	327
46	3280	1298	2952	1166	2624	1035	2296	904	1968	772	1640	641	1312	510	984	378	856	327	856	327

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100		90		80		70		60		50		40		30		20		10	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	2391	1009	2152	903	1913	796	1674	690	1435	584	1196	478	957	372	717	265	478	159	478	159
-14	2498	1042	2248	933	1998	823	1748	713	1499	604	1249	494	999	384	749	274	500	165	500	165
-13	2604	1076	2343	963	2083	850	1823	736	1562	623	1302	510	1042	396	781	283	521	170	521	170
-12	2710	1110	2439	993	2168	876	1897	759	1626	642	1355	526	1084	409	813	292	542	175	542	175
-11	2816	1143	2535	1023	2253	903	1971	782	1690	662	1408	542	1127	421	845	301	563	181	563	181
-10	2923	1177	2630	1053	2338	929	2046	805	1754	681	1461	558	1169	434	877	310	585	186	585	186
-9	3011	1191	2710	1066	2409	940	2108	815	1807	690	1506	564	1205	439	903	313	602	188	602	188
-8	3100	1205	2790	1078	2480	951	2170	824	1860	698	1550	571	1240	444	930	317	620	190	620	190
-7	3188	1219	2870	1091	2551	962	2232	834	1913	706	1594	577	1275	449	957	321	638	192	638	192
-6	3277	1233	2949	1103	2622	973	2294	844	1966	714	1638	584	1311	454	983	324	655	195	655	195
-5	3366	1247	3029	1116	2692	985	2356	853	2019	722	1683	591	1346	459	1010	328	673	197	673	197
-4	3454	1261	3109	1128	2763	996	2418	863	2072	730	1727	597	1382	465	1036	332	691	199	691	199
-3	3543	1275	3188	1141	2834	1007	2480	872	2126	738	1771	604	1417	470	1063	336	709	201	709	201
-2	3631	1289	3268	1153	2905	1018	2542	882	2179	746	1816	611	1452	475	1089	339	726	204	726	204
-1	3720	1303	3348	1166	2976	1029	2604	892	2232	754	1860	617	1488	480	1116	343	744	206	744	206
0	3808	1317	3428	1178	3047	1040	2666	901	2285	763	1904	624	1523	485	1143	347	762	208	762	208
1	3897	1331	3507	1191	3118	1051	2728	911	2338	771	1948	631	1559	490	1169	350	779	210	779	210
2	3986	1345	3587	1204	3188	1062	2790	920	2391	779	1993	637	1594	496	1196	354	797	212	797	212
3	4051	1363	3646	1220	3241	1076	2836	933	2430	789	2025	646	1620	502	1215	359	810	215	810	215
4	4116	1381	3704	1236	3293	1091	2881	945	2470	800	2058	654	1646	509	1235	364	823	218	823	218
5	4181	1399	3763	1252	3345	1105	2927	957	2509	810	2091	663	1673	516	1254	368	836	221	836	221
6	5358	1496	4822	1339	4286	1181	3751	1024	3215	866	2679	709	2143	551	1607	394	1072	236	1072	236
7	5500	1520	4950	1360	4400	1200	3850	1040	3300	880	2750	720	2200	560	1650	400	1100	240	1100	240
8	5642	1544	5078	1381	4514	1219	3949	1056	3385	894	2821	731	2257	569	1693	406	1128	244	1128	244
9	5784	1567	5205	1402	4627	1237	4049	1072	3470	907	2892	742	2314	577	1735	412	1157	247	1157	247
10	5926	1591	5333	1423	4741	1256	4148	1088	3555	921	2963	753	2370	586	1778	419	1185	251	1185	251
11	6068	1614	5461	1444	4854	1274	4247	1104	3641	935	3034	765	2427	595	1820	425	1214	255	1214	255
12	6210	1638	5589	1465	4968	1293	4347	1121	3726	948	3105	776	2484	603	1863	431	1242	259	1242	259
13	6352	1661	5716	1486	5081	1311	4446	1137	3811	962	3176	787	2541	612	1905	437	1270	262	1270	262
14	6494	1685	5844	1507	5195	1330	4545	1153	3896	975	3247	798	2597	621	1948	443	1299	266	1299	266
15	6635	1708	5972	1528	5308	1349	4645	1169	3981	989	3318	809	2654	629	1991	450	1327	270	1327	270
16	6777	1732	6100	1550	5422	1367	4744	1185	4066	1003	3389	820	2711	638	2033	456	1355	273	1355	273
17	6919	1755	6227	1571	5535	1386	4844	1201	4152	1016	3460	831	2768	647	2076	462	1384	277	1384	277
18	7061	1779	6355	1592	5649	1404	4943	1217	4237	1030	3531	843	2825	655	2118	468	1412	281	1412	281
19	7203	1802	6483	1613	5763	1423	5042	1233	4322	1044	3602	854	2881	664	2161	474	1441	285	1441	285
20	7345	1826	6611	1634	5876	1442	5142	1249	4407	1057	3673	865	2938	673	2204	481	1469	288	1469	288
21	7487	1849	6738	1655	5990	1460	5241	1265	4492	1071	3744	876	2995	681	2246	487	1497	292	1497	292
22	7629	1873	6866	1676	6103	1479	5340	1282	4577	1084	3815	887	3052	690	2289	493	1526	296	1526	296
23	7771	1897	6994	1697	6217	1497	5440	1298	4663	1098	3885	898	3108	699	2331	499	1554	299	1554	299
24	7913	1920	7122	1718	6330	1516	5539	1314	4748	1112	3956	910	3165	707	2374	505	1583	303	1583	303

10. Performance Characteristic

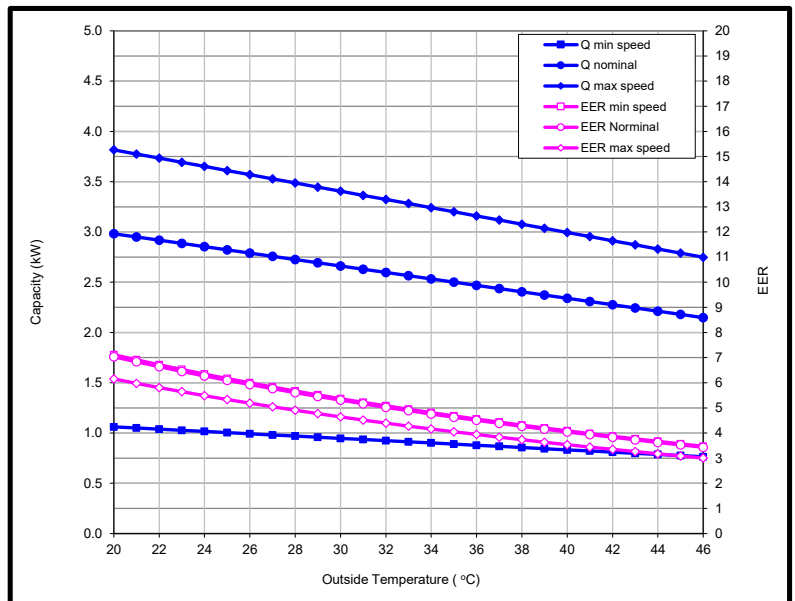
Model : RAS-B10N4KVRG-E ; RAS-10J2AVSG-E1 / RAS-10N4KVRG-TR ; RAS-10J2AVSG-TR1

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	0.89	0.19	4.68
	Rated	2.50	0.54	4.63
	Max	3.20	0.79	4.05
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	0.90	0.18	5.00
	Rated	3.20	0.74	4.32
	Max	4.70	1.23	3.82
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB	Max	3.50	1.00	3.50
Heating Low Temp. In: 20°C DB/15°C WB Out: -10°C DB	Max	2.30	0.750	3.07
Heating Low Temp. In: 20°C DB/15°C WB Out: -15°C DB	Max	1.80	0.670	2.69

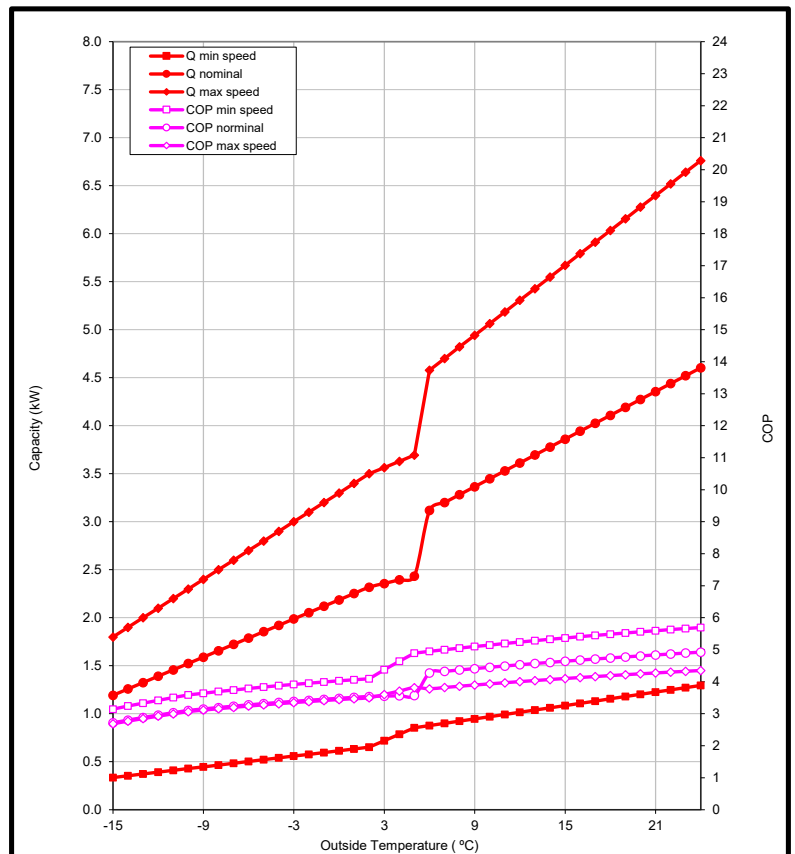
Cooling performance characteristic :

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	1.06	0.15	7.12	2.98	0.42	7.03	3.82	0.62	6.15
21	1.05	0.15	6.91	2.95	0.43	6.83	3.77	0.63	5.98
22	1.04	0.15	6.72	2.92	0.44	6.64	3.73	0.64	5.81
23	1.03	0.16	6.53	2.89	0.45	6.45	3.69	0.65	5.65
24	1.02	0.16	6.35	2.85	0.45	6.27	3.65	0.67	5.49
25	1.00	0.16	6.17	2.82	0.46	6.10	3.61	0.68	5.34
26	0.99	0.17	6.00	2.79	0.47	5.93	3.57	0.69	5.19
27	0.98	0.17	5.83	2.76	0.48	5.77	3.53	0.70	5.04
28	0.97	0.17	5.67	2.72	0.49	5.61	3.49	0.71	4.91
29	0.96	0.17	5.52	2.69	0.49	5.46	3.45	0.72	4.77
30	0.95	0.18	5.37	2.66	0.50	5.31	3.41	0.73	4.64
31	0.94	0.18	5.22	2.63	0.51	5.16	3.36	0.74	4.52
32	0.92	0.18	5.08	2.60	0.52	5.02	3.32	0.76	4.40
33	0.91	0.18	4.95	2.56	0.52	4.89	3.28	0.77	4.28
34	0.90	0.19	4.81	2.53	0.53	4.76	3.24	0.78	4.16
35	0.89	0.19	4.68	2.50	0.54	4.63	3.20	0.79	4.05
36	0.88	0.19	4.56	2.47	0.55	4.51	3.16	0.80	3.94
37	0.87	0.20	4.44	2.44	0.56	4.39	3.12	0.81	3.84
38	0.86	0.20	4.32	2.40	0.56	4.27	3.08	0.82	3.73
39	0.84	0.20	4.20	2.37	0.57	4.15	3.04	0.84	3.63
40	0.83	0.20	4.09	2.34	0.58	4.04	2.99	0.85	3.54
41	0.82	0.21	3.98	2.31	0.59	3.93	2.95	0.86	3.44
42	0.81	0.21	3.87	2.28	0.59	3.83	2.91	0.87	3.35
43	0.80	0.21	3.77	2.24	0.60	3.73	2.87	0.88	3.26
44	0.79	0.21	3.67	2.21	0.61	3.63	2.83	0.89	3.17
45	0.78	0.22	3.57	2.18	0.62	3.53	2.79	0.90	3.09
46	0.76	0.22	3.48	2.15	0.63	3.43	2.75	0.91	3.01



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	0.34	0.11	3.14	1.19	0.44	2.72	1.80	0.67	2.69
-14	0.35	0.11	3.24	1.26	0.45	2.80	1.90	0.69	2.77
-13	0.37	0.11	3.33	1.33	0.46	2.88	2.00	0.70	2.85
-12	0.39	0.11	3.42	1.39	0.47	2.96	2.10	0.72	2.92
-11	0.41	0.12	3.51	1.46	0.48	3.03	2.20	0.73	3.00
-10	0.43	0.12	3.59	1.52	0.49	3.10	2.30	0.75	3.07
-9	0.45	0.12	3.64	1.59	0.50	3.15	2.40	0.77	3.11
-8	0.47	0.13	3.69	1.66	0.52	3.19	2.50	0.79	3.16
-7	0.48	0.13	3.74	1.72	0.53	3.24	2.60	0.81	3.20
-6	0.50	0.13	3.79	1.79	0.55	3.28	2.70	0.83	3.24
-5	0.52	0.14	3.83	1.86	0.56	3.32	2.80	0.85	3.28
-4	0.54	0.14	3.88	1.92	0.57	3.35	2.90	0.88	3.31
-3	0.56	0.14	3.92	1.99	0.59	3.39	3.00	0.90	3.35
-2	0.58	0.15	3.96	2.05	0.60	3.42	3.10	0.92	3.38
-1	0.60	0.15	3.99	2.12	0.61	3.45	3.20	0.94	3.41
0	0.61	0.15	4.03	2.19	0.63	3.48	3.30	0.96	3.44
1	0.63	0.16	4.06	2.25	0.64	3.51	3.40	0.98	3.47
2	0.65	0.16	4.09	2.32	0.65	3.54	3.50	1.00	3.50
3	0.72	0.16	4.38	2.36	0.66	3.55	3.56	0.99	3.60
4	0.79	0.17	4.64	2.39	0.67	3.56	3.63	0.98	3.71
5	0.85	0.17	4.89	2.43	0.68	3.57	3.69	0.97	3.82
6	0.88	0.18	4.95	3.12	0.73	4.28	4.58	1.21	3.78
7	0.90	0.18	5.00	3.20	0.74	4.32	4.70	1.23	3.82
8	0.92	0.18	5.05	3.28	0.75	4.37	4.82	1.25	3.86
9	0.95	0.19	5.10	3.37	0.76	4.41	4.94	1.27	3.90
10	0.97	0.19	5.15	3.45	0.77	4.45	5.06	1.29	3.93
11	0.99	0.19	5.19	3.53	0.79	4.49	5.19	1.31	3.97
12	1.02	0.19	5.24	3.61	0.80	4.53	5.31	1.33	4.00
13	1.04	0.20	5.28	3.70	0.81	4.57	5.43	1.34	4.04
14	1.06	0.20	5.33	3.78	0.82	4.61	5.55	1.36	4.07
15	1.09	0.20	5.37	3.86	0.83	4.64	5.67	1.38	4.10
16	1.11	0.21	5.41	3.94	0.84	4.68	5.79	1.40	4.13
17	1.13	0.21	5.45	4.03	0.85	4.71	5.91	1.42	4.16
18	1.16	0.21	5.49	4.11	0.87	4.74	6.03	1.44	4.19
19	1.18	0.21	5.52	4.19	0.88	4.78	6.16	1.46	4.22
20	1.20	0.22	5.56	4.27	0.89	4.81	6.28	1.48	4.25
21	1.23	0.22	5.59	4.36	0.90	4.84	6.40	1.50	4.27
22	1.25	0.22	5.63	4.44	0.91	4.87	6.52	1.52	4.30
23	1.27	0.22	5.66	4.52	0.92	4.90	6.64	1.53	4.33
24	1.29	0.23	5.69	4.60	0.93	4.93	6.76	1.55	4.35



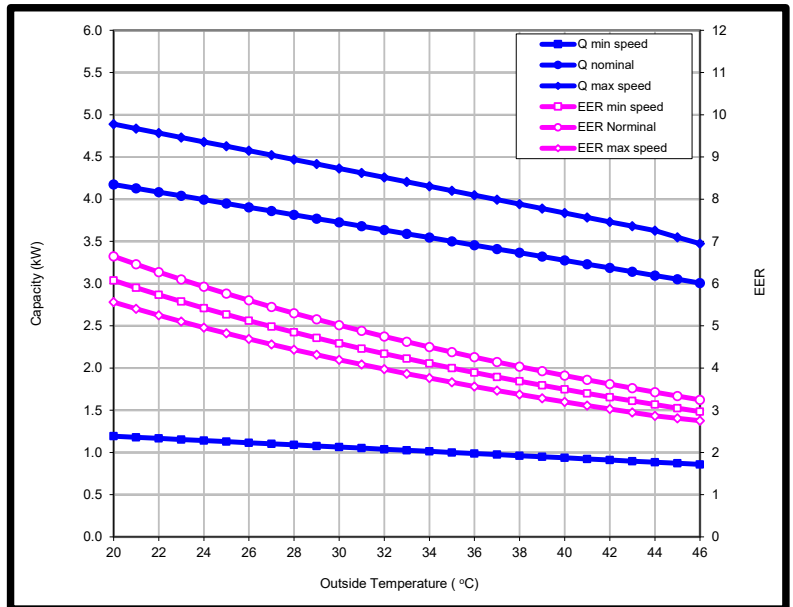
Model : RAS-B13N4KVRG-E ; RAS-13J2AVSG-E1 / RAS-13N4KVRG-TR ; RAS-13J2AVSG-TR1

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	1.00	0.25	4.00
	Rated	3.50	0.80	4.38
	Max	4.10	1.12	3.66
Heating JIS In: 20 °C DB/15°C WB Out: 7°C DB/6°C WB	Min	1.00	0.20	5.00
	Rated	4.20	1.08	3.89
	Max	5.30	1.55	3.42
Heating Low Temp. In: 20 °C DB/15°C WB Out: 2°C DB/1°C WB	Max	3.90	1.30	3.00
Heating Low Temp. In: 20 °C DB/15°C WB Out: -10°C DB	Max	2.80	1.050	2.67
Heating Low Temp. In: 20 °C DB/15°C WB Out: -15°C DB	Max	2.20	0.850	2.59

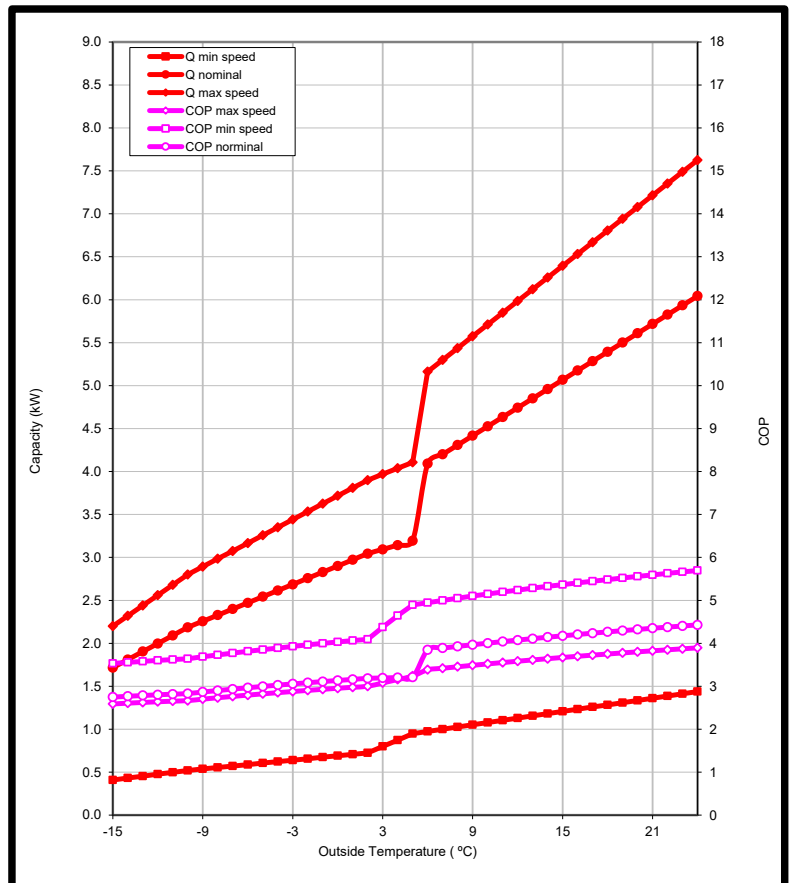
Cooling performance characteristic :

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	1.19	0.20	6.08	4.17	0.63	6.65	4.89	0.88	5.56
21	1.18	0.20	5.90	4.13	0.64	6.46	4.84	0.90	5.40
22	1.17	0.20	5.74	4.08	0.65	6.27	4.78	0.91	5.25
23	1.15	0.21	5.57	4.04	0.66	6.10	4.73	0.93	5.10
24	1.14	0.21	5.42	3.99	0.67	5.93	4.68	0.94	4.96
25	1.13	0.21	5.27	3.95	0.69	5.76	4.63	0.96	4.82
26	1.12	0.22	5.12	3.90	0.70	5.60	4.57	0.98	4.69
27	1.10	0.22	4.98	3.86	0.71	5.45	4.52	0.99	4.56
28	1.09	0.22	4.85	3.81	0.72	5.30	4.47	1.01	4.43
29	1.08	0.23	4.71	3.77	0.73	5.16	4.42	1.02	4.31
30	1.06	0.23	4.59	3.72	0.74	5.02	4.36	1.04	4.20
31	1.05	0.24	4.46	3.68	0.75	4.88	4.31	1.06	4.08
32	1.04	0.24	4.34	3.63	0.77	4.75	4.26	1.07	3.97
33	1.03	0.24	4.22	3.59	0.78	4.62	4.21	1.09	3.87
34	1.01	0.25	4.11	3.54	0.79	4.50	4.15	1.10	3.76
35	1.00	0.25	4.00	3.50	0.80	4.38	4.10	1.12	3.66
36	0.99	0.25	3.89	3.46	0.81	4.26	4.05	1.14	3.56
37	0.97	0.26	3.79	3.41	0.82	4.14	3.99	1.15	3.47
38	0.96	0.26	3.69	3.37	0.83	4.03	3.94	1.17	3.37
39	0.95	0.26	3.59	3.32	0.85	3.93	3.89	1.18	3.28
40	0.94	0.27	3.49	3.28	0.86	3.82	3.84	1.20	3.20
41	0.92	0.27	3.40	3.23	0.87	3.72	3.78	1.22	3.11
42	0.91	0.28	3.31	3.19	0.88	3.62	3.73	1.23	3.03
43	0.90	0.28	3.22	3.14	0.89	3.52	3.68	1.25	2.95
44	0.88	0.28	3.13	3.10	0.90	3.43	3.63	1.26	2.87
45	0.87	0.29	3.05	3.05	0.91	3.34	3.55	1.26	2.81
46	0.86	0.29	2.97	3.01	0.93	3.25	3.47	1.26	2.75



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	0.41	0.12	3.53	1.72	0.62	2.75	2.20	0.85	2.59
-14	0.43	0.12	3.56	1.81	0.65	2.77	2.32	0.89	2.61
-13	0.45	0.13	3.58	1.90	0.68	2.78	2.44	0.93	2.62
-12	0.48	0.13	3.60	2.00	0.71	2.80	2.56	0.97	2.64
-11	0.50	0.14	3.62	2.09	0.74	2.82	2.68	1.01	2.65
-10	0.52	0.14	3.64	2.19	0.77	2.83	2.80	1.05	2.67
-9	0.54	0.15	3.69	2.26	0.79	2.87	2.89	1.07	2.70
-8	0.55	0.15	3.73	2.33	0.80	2.90	2.98	1.09	2.73
-7	0.57	0.15	3.77	2.40	0.82	2.93	3.08	1.11	2.76
-6	0.59	0.15	3.81	2.47	0.83	2.97	3.17	1.13	2.79
-5	0.61	0.16	3.85	2.54	0.85	3.00	3.26	1.15	2.82
-4	0.62	0.16	3.89	2.61	0.86	3.03	3.35	1.18	2.85
-3	0.64	0.16	3.93	2.69	0.88	3.05	3.44	1.20	2.88
-2	0.66	0.17	3.96	2.76	0.89	3.08	3.53	1.22	2.90
-1	0.67	0.17	4.00	2.83	0.91	3.11	3.63	1.24	2.93
0	0.69	0.17	4.03	2.90	0.93	3.14	3.72	1.26	2.95
1	0.71	0.17	4.06	2.97	0.94	3.16	3.81	1.28	2.98
2	0.72	0.18	4.09	3.04	0.96	3.18	3.90	1.30	3.00
3	0.80	0.18	4.38	3.09	0.97	3.19	3.97	1.29	3.08
4	0.87	0.19	4.64	3.14	0.98	3.20	4.04	1.28	3.16
5	0.95	0.19	4.89	3.19	0.99	3.21	4.11	1.27	3.24
6	0.97	0.20	4.95	4.09	1.06	3.85	5.16	1.53	3.38
7	1.00	0.20	5.00	4.20	1.08	3.89	5.30	1.55	3.42
8	1.03	0.20	5.05	4.31	1.10	3.93	5.44	1.57	3.45
9	1.05	0.21	5.10	4.42	1.11	3.97	5.57	1.60	3.49
10	1.08	0.21	5.15	4.53	1.13	4.00	5.71	1.62	3.52
11	1.10	0.21	5.19	4.63	1.15	4.04	5.85	1.65	3.55
12	1.13	0.22	5.24	4.74	1.16	4.08	5.98	1.67	3.58
13	1.15	0.22	5.28	4.85	1.18	4.11	6.12	1.69	3.61
14	1.18	0.22	5.33	4.96	1.20	4.14	6.26	1.72	3.64
15	1.21	0.22	5.37	5.07	1.21	4.17	6.39	1.74	3.67
16	1.23	0.23	5.41	5.18	1.23	4.21	6.53	1.77	3.70
17	1.26	0.23	5.45	5.28	1.25	4.24	6.67	1.79	3.72
18	1.28	0.23	5.49	5.39	1.26	4.27	6.80	1.81	3.75
19	1.31	0.24	5.52	5.50	1.28	4.30	6.94	1.84	3.78
20	1.34	0.24	5.56	5.61	1.30	4.32	7.08	1.86	3.80
21	1.36	0.24	5.59	5.72	1.31	4.35	7.21	1.89	3.83
22	1.39	0.25	5.63	5.83	1.33	4.38	7.35	1.91	3.85
23	1.41	0.25	5.66	5.93	1.35	4.40	7.49	1.93	3.87
24	1.44	0.25	5.69	6.04	1.36	4.43	7.63	1.96	3.89



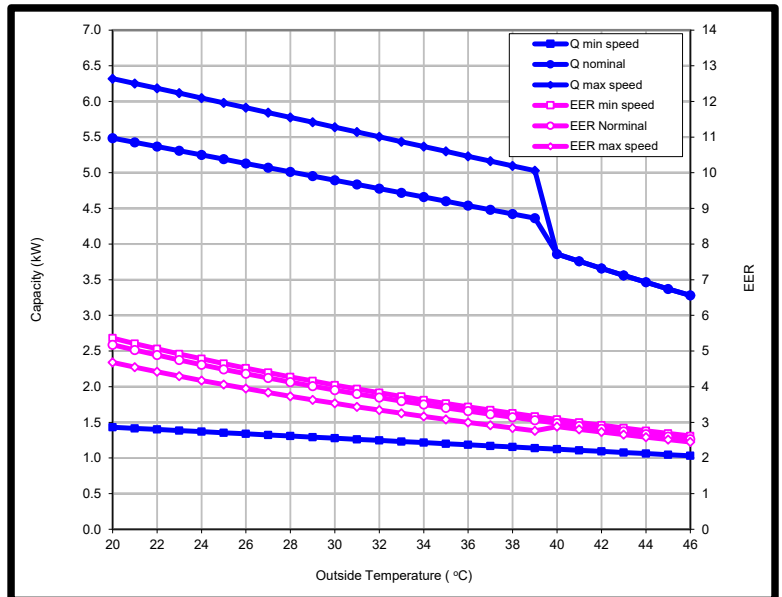
Model : RAS-B16N4KVRG-E ; RAS-16J2AVSG-E1 / RAS-16N4KVRG-TR ; RAS-16J2AVSG-TR1

Product specification :

Condition		Capacity (kW)	Power (kW)	EER/COP
Cooling JIS	Min	1.20	0.34	3.53
In: 27°C DB/19°C WB	Rated	4.60	1.35	3.41
Out: 35°C DB/24°C WB	Max	5.30	1.72	3.08
Heating JIS	Min	1.10	0.30	3.67
In: 20°C DB/15°C WB	Rated	5.50	1.52	3.62
Out: 7°C DB/6°C WB	Max	6.30	1.90	3.32
Heating Low Temp.				
In: 20°C DB/15°C WB	Max	4.50	1.60	2.81
Out: 2°C DB/1°C WB				
Heating Low Temp.				
In: 20°C DB/15°C WB	Max	3.30	1.400	2.36
Out: -10°C DB				
Heating Low Temp.				
In: 20°C DB/15°C WB	Max	2.70	1.200	2.25
Out: -15°C DB				

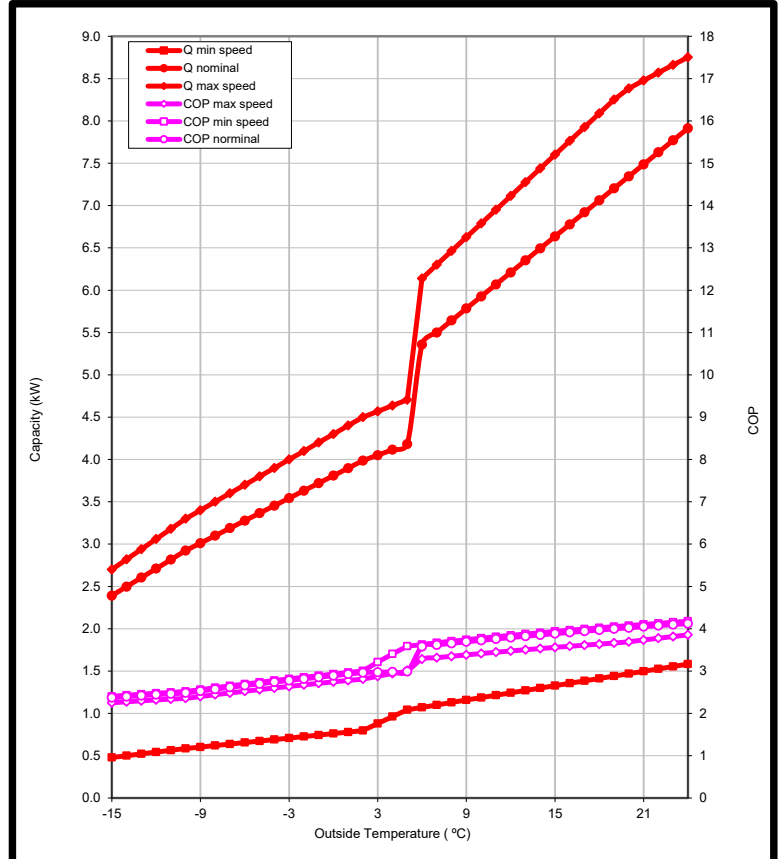
Cooling performance characteristic :

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	1.43	0.27	5.36	5.49	1.06	5.18	6.32	1.35	4.68
21	1.42	0.27	5.21	5.43	1.08	5.03	6.25	1.37	4.55
22	1.40	0.28	5.06	5.37	1.10	4.89	6.18	1.40	4.42
23	1.38	0.28	4.92	5.31	1.12	4.75	6.12	1.42	4.29
24	1.37	0.29	4.78	5.25	1.14	4.62	6.05	1.45	4.17
25	1.35	0.29	4.65	5.19	1.16	4.49	5.98	1.47	4.06
26	1.34	0.30	4.52	5.13	1.18	4.36	5.91	1.50	3.95
27	1.32	0.30	4.40	5.07	1.20	4.24	5.84	1.52	3.84
28	1.31	0.31	4.28	5.01	1.21	4.13	5.78	1.55	3.73
29	1.29	0.31	4.16	4.95	1.23	4.02	5.71	1.57	3.63
30	1.28	0.32	4.05	4.90	1.25	3.91	5.64	1.60	3.53
31	1.26	0.32	3.94	4.84	1.27	3.80	5.57	1.62	3.44
32	1.25	0.33	3.83	4.78	1.29	3.70	5.50	1.65	3.34
33	1.23	0.33	3.73	4.72	1.31	3.60	5.44	1.67	3.25
34	1.22	0.34	3.63	4.66	1.33	3.50	5.37	1.70	3.17
35	1.20	0.34	3.53	4.60	1.35	3.41	5.30	1.72	3.08
36	1.18	0.34	3.43	4.54	1.37	3.32	5.23	1.74	3.00
37	1.17	0.35	3.34	4.48	1.39	3.23	5.16	1.77	2.92
38	1.15	0.35	3.25	4.42	1.41	3.14	5.10	1.79	2.84
39	1.14	0.36	3.17	4.36	1.43	3.06	5.03	1.82	2.76
40	1.12	0.36	3.08	4.30	1.45	2.98	4.96	1.84	2.68
41	1.11	0.37	3.00	4.24	1.47	2.90	4.89	1.87	2.60
42	1.09	0.37	2.92	4.18	1.49	2.82	4.82	1.90	2.52
43	1.08	0.38	2.84	4.12	1.51	2.74	4.75	1.93	2.44
44	1.06	0.38	2.77	4.06	1.53	2.67	4.68	1.96	2.36
45	1.05	0.39	2.69	4.00	1.55	2.60	4.61	1.99	2.28
46	1.03	0.39	2.62	3.94	1.57	2.53	4.54	2.02	2.20



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	0.48	0.20	2.40	2.39	1.01	2.37	2.70	1.20	2.25
-14	0.50	0.21	2.43	2.50	1.04	2.40	2.82	1.24	2.27
-13	0.52	0.21	2.45	2.60	1.08	2.42	2.94	1.28	2.30
-12	0.54	0.22	2.47	2.71	1.11	2.44	3.06	1.32	2.32
-11	0.56	0.23	2.50	2.82	1.14	2.46	3.18	1.36	2.34
-10	0.58	0.23	2.52	2.92	1.18	2.48	3.30	1.40	2.36
-9	0.60	0.24	2.56	3.01	1.19	2.53	3.40	1.42	2.40
-8	0.62	0.24	2.61	3.10	1.21	2.57	3.50	1.43	2.44
-7	0.64	0.24	2.65	3.19	1.22	2.62	3.60	1.45	2.48
-6	0.66	0.24	2.69	3.28	1.23	2.66	3.70	1.47	2.52
-5	0.67	0.25	2.73	3.37	1.25	2.70	3.80	1.48	2.56
-4	0.69	0.25	2.78	3.45	1.26	2.74	3.90	1.50	2.60
-3	0.71	0.25	2.82	3.54	1.28	2.78	4.00	1.52	2.64
-2	0.73	0.25	2.85	3.63	1.29	2.82	4.10	1.53	2.67
-1	0.74	0.26	2.89	3.72	1.30	2.85	4.20	1.55	2.71
0	0.76	0.26	2.93	3.81	1.32	2.89	4.30	1.57	2.74
1	0.78	0.26	2.97	3.90	1.33	2.93	4.40	1.58	2.78
2	0.80	0.27	3.00	3.99	1.35	2.96	4.50	1.60	2.81
3	0.88	0.27	3.21	4.05	1.36	2.97	4.57	1.59	2.88
4	0.96	0.28	3.40	4.12	1.38	2.98	4.64	1.57	2.94
5	1.04	0.29	3.59	4.18	1.40	2.99	4.71	1.56	3.01
6	1.07	0.30	3.63	5.36	1.50	3.58	6.14	1.87	3.28
7	1.10	0.30	3.67	5.50	1.52	3.62	6.30	1.90	3.32
8	1.13	0.30	3.70	5.64	1.54	3.66	6.46	1.93	3.35
9	1.16	0.31	3.74	5.78	1.57	3.69	6.63	1.96	3.38
10	1.19	0.31	3.78	5.93	1.59	3.73	6.79	1.99	3.41
11	1.21	0.32	3.81	6.07	1.61	3.76	6.95	2.02	3.44
12	1.24	0.32	3.84	6.21	1.64	3.79	7.11	2.05	3.47
13	1.27	0.33	3.87	6.35	1.66	3.82	7.28	2.08	3.50
14	1.30	0.33	3.91	6.49	1.68	3.85	7.44	2.11	3.53
15	1.33	0.34	3.94	6.64	1.71	3.88	7.60	2.14	3.56
16	1.36	0.34	3.97	6.78	1.73	3.91	7.76	2.16	3.59
17	1.38	0.35	3.99	6.92	1.76	3.94	7.93	2.19	3.61
18	1.41	0.35	4.02	7.06	1.78	3.97	8.09	2.22	3.64
19	1.44	0.36	4.05	7.20	1.80	4.00	8.25	2.25	3.66
20	1.47	0.36	4.08	7.35	1.83	4.02	8.38	2.27	3.69
21	1.50	0.37	4.10	7.49	1.85	4.05	8.48	2.27	3.73
22	1.53	0.37	4.13	7.63	1.87	4.07	8.57	2.27	3.78
23	1.55	0.37	4.15	7.77	1.90	4.10	8.66	2.27	3.82
24	1.58	0.38	4.18	7.91	1.92	4.12	8.75	2.27	3.86



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