TOSHIBA

TCTC-E20-RES003

Engineering Data Book

Residential Inverter R32 Heat Pump Console

Indoor Units

RAS-B10J2FVG-E

RAS-B13J2FVG-E

RAS-B18J2FVG-E

RAS-10J2FVG-TR

RAS-13J2FVG-TR

RAS-18J2FVG-TR

Outdoor Units

RAS-10J2AVSG-E / TR

RAS-13J2AVSG-E / TR

RAS-18J2AVSG-E / TR

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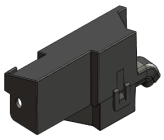
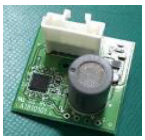
1. Line up

Indoor Unit	Outdoor Unit Common with SHORAI for single split	Model Name		Capacity Rank
		FCU	CDU (SHORAI)	
		RAS-B10J2FVG-E RAS-10J2FVG-TR	RAS-10J2AVSG-E RAS-10J2AVSG-TR	10k
		RAS-B13J2FVG-E RAS-13J2FVG-TR	RAS-13J2AVSG-E RAS-13J2AVSG-TR	13k
		RAS-B18J2FVG-E RAS-18J2FVG-TR	RAS-18J2AVSG-E RAS-18J2AVSG-TR	18k

Accessories	
 	Refrigerant leak detection sensor RB-I301-E
	Standard remote controller WH-TA12LE
	Accessory wireless adapter RB-N104S-G Application : Toshiba Home AC Controller

2. Specifications

Model	**Indoor**		RAS-B10J2FVG-E RAS-10J2FVG-TR	RAS-B13J2FVG-E RAS-13J2FVG-TR	RAS-B18J2FVG-E RAS-18J2FVG-TR
	Outdoor		RAS-10J2AVSG-E RAS-10J2AVSG-TR	RAS-13J2AVSG-E RAS-13J2AVSG-TR	RAS-18J2AVSG-E RAS-18J2AVSG-TR
Power supply		(V/Ph/Hz)	220 - 240 / 1 / 50		
Cooling	Capacity	(kW)	2.5 (0.95 - 3.2)	3.5 (1.05 - 4.1)	5.0 (1.2 - 5.6)
	Power Consumption	(kW)	0.59 (0.21 - 0.90)	0.87 (0.27 - 1.20)	1.68 (0.34 - 2.00)
	EER		4.24	4.02	2.98
	PdesignC	(kW)	2.50	3.50	5.00
	SEER		**7.20**	**7.02**	**6.80**
	Indoor Noise (H/L)	(dB)	39/26	40/27	46/34
	Outdoor Noise	(dB)	**45**	**47**	**49**
	Indoor Air Flow	m^3/min	8.2	8.8	10.0
Heating	Capacity	(kW)	3.2 (0.85 - 4.40)	4.2 (1.00 - 5.00)	6.0 (1.3 - 6.3)
	Power Consumption	(kW)	0.82 (0.18 - 1.25)	1.28 (0.22 - 1.55)	2.05 (0.31 - 2.20)
	COP		3.9	3.31	2.93
	PdesignH (Tbiv -7°C)	(kW)	2.50	3.00	4.00
	SCOP		**4.70**	**4.70**	**4.60**
	Indoor Noise (H/L)	(dB)	39/26	40/27	47/34
	Outdoor Noise	(dB)	47	49	51
	Indoor Air Flow	m^3/min	8.2	9.2	11.0
FCU	Dimensions	H x W x D (mm)	600 x 700 x 220		
		Net Weigh (kg)	16	16	16
CDU	Dimensions	H x W x D (mm)	550 x 780 x 290		
		Net Weigh (kg)	26	30	34
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	0.80	1.10
Energy Label	Cooling / Heating		**A++/A++**		
Useble 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.

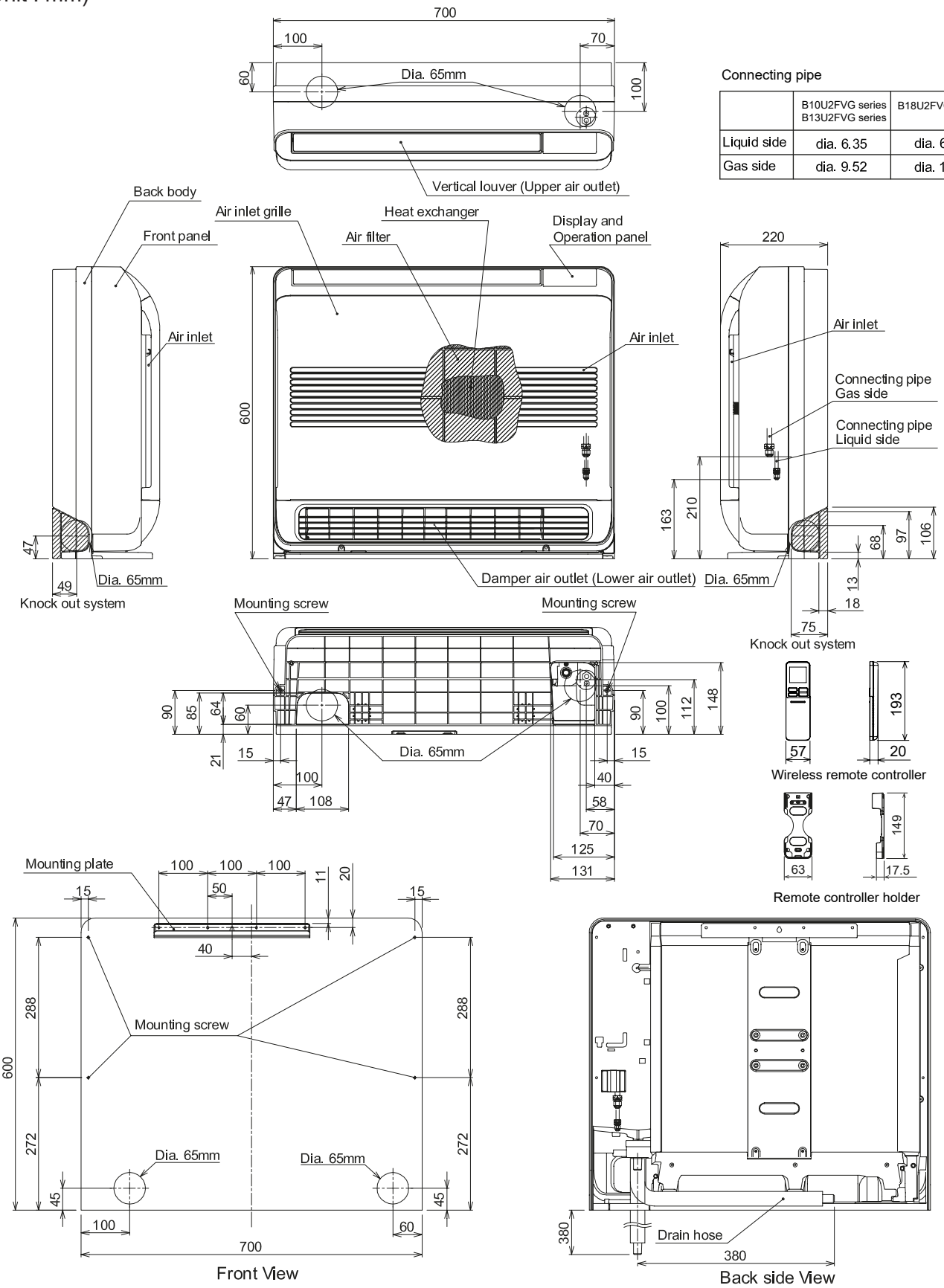
* The specifications may be subject to change without notice for purpose of improvement.

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-B10J2FVG-E, RAS-B13J2FVG-E, RAS-B18J2FVG-E
RAS-10J2FVG-TR, RAS-13J2FVG-TR, RAS-18J2FVG-TR

(Unit : mm)

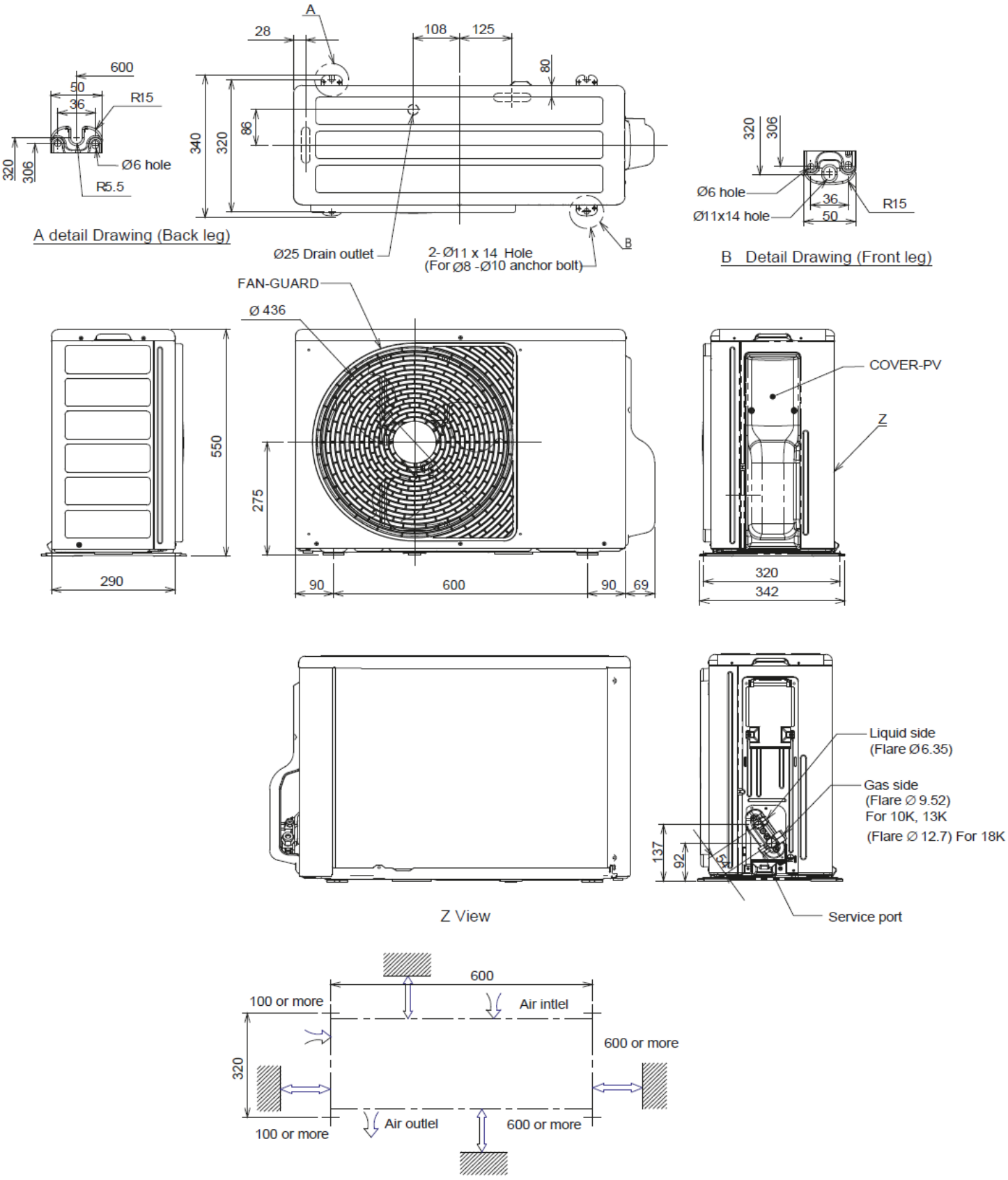


Connecting pipe

	B10U2FVG series B13U2FVG series	B18U2FVG series
Liquid side	dia. 6.35	dia. 6.35
Gas side	dia. 9.52	dia. 12.7

Outdoor Unit : RAS-10J2AVSG-E / TR, RAS-13J2AVSG-E / TR, RAS-18J2AVSG-E / TR

(Unit : mm)

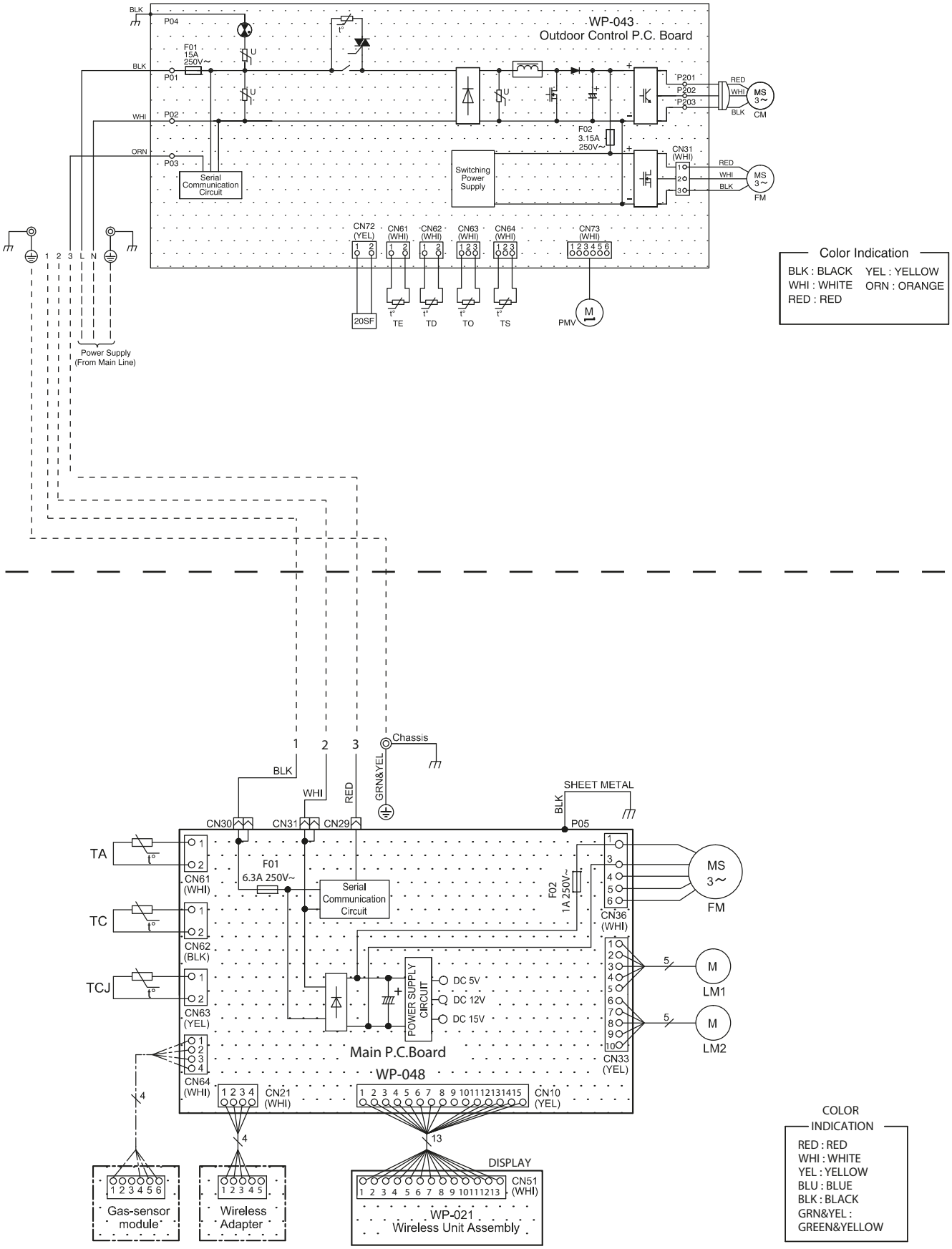


Installation dimension

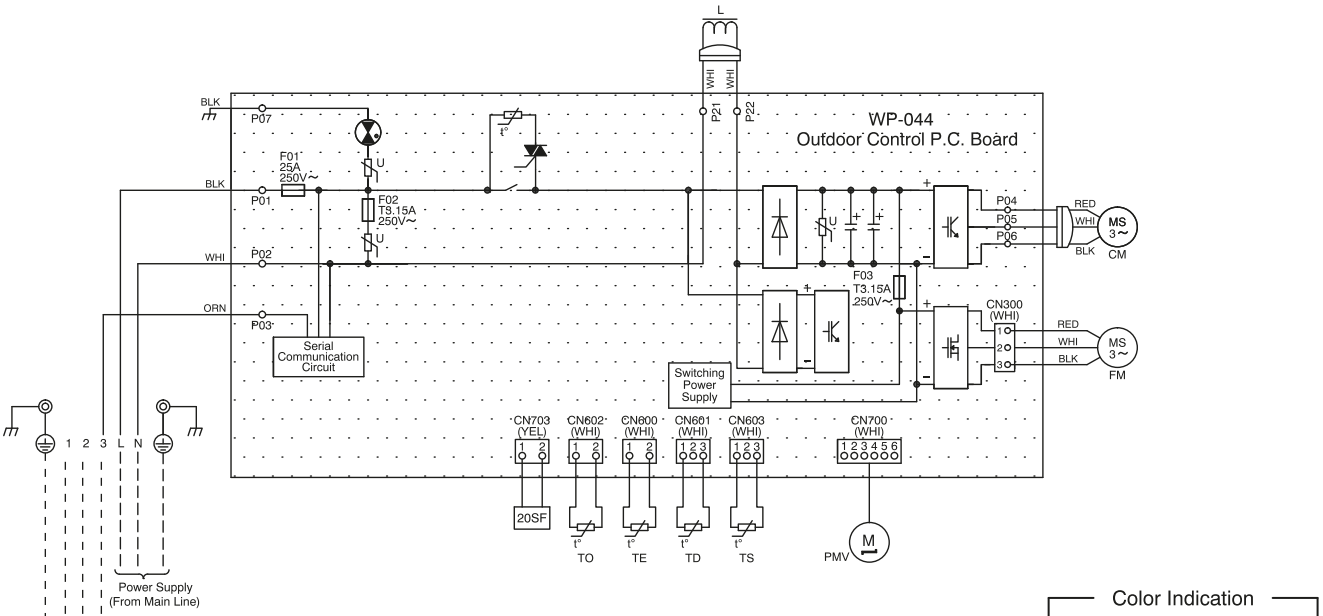
4. Wiring diagrams

RAS-B10J2FVG-E1 / RAS-10J2FVG- TR : RAS-10J2AVSG-E/ TR

RAS-B13J2FVG-E1 / RAS-13J2FVG- TR : RAS-13J2AVSG-E/ TR

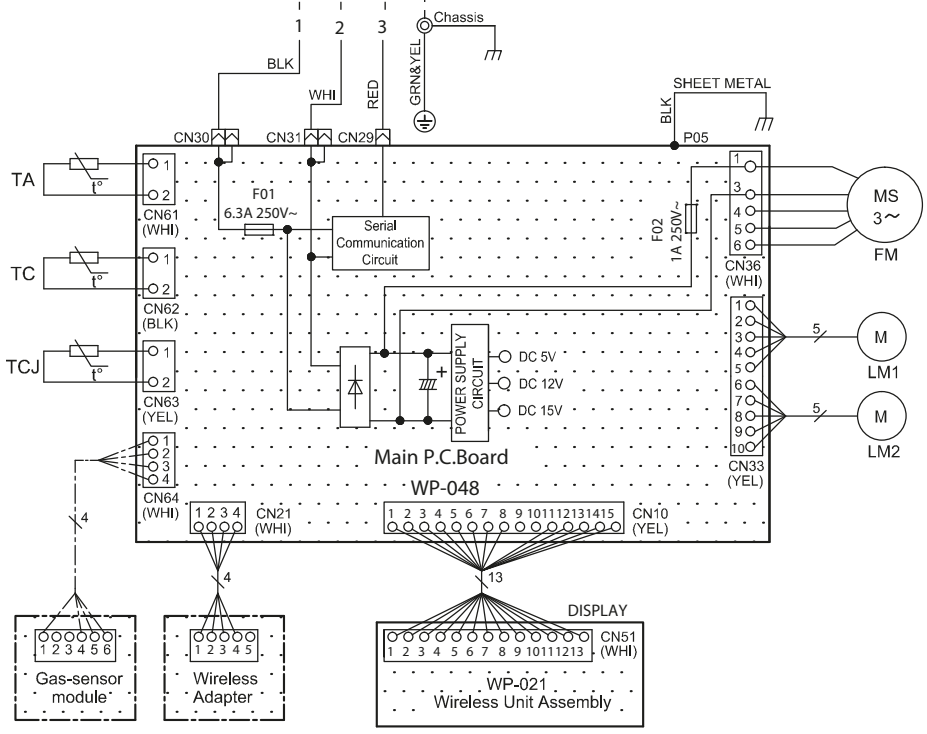


RAS-B18J2FVG-E / RAS-18J2FVG-TR : RAS-18J2AVSG-E / TR



Color Indication

BLK : BLACK YEL : YELLOW
WHI : WHITE
RED : RED
ORN : ORANGE

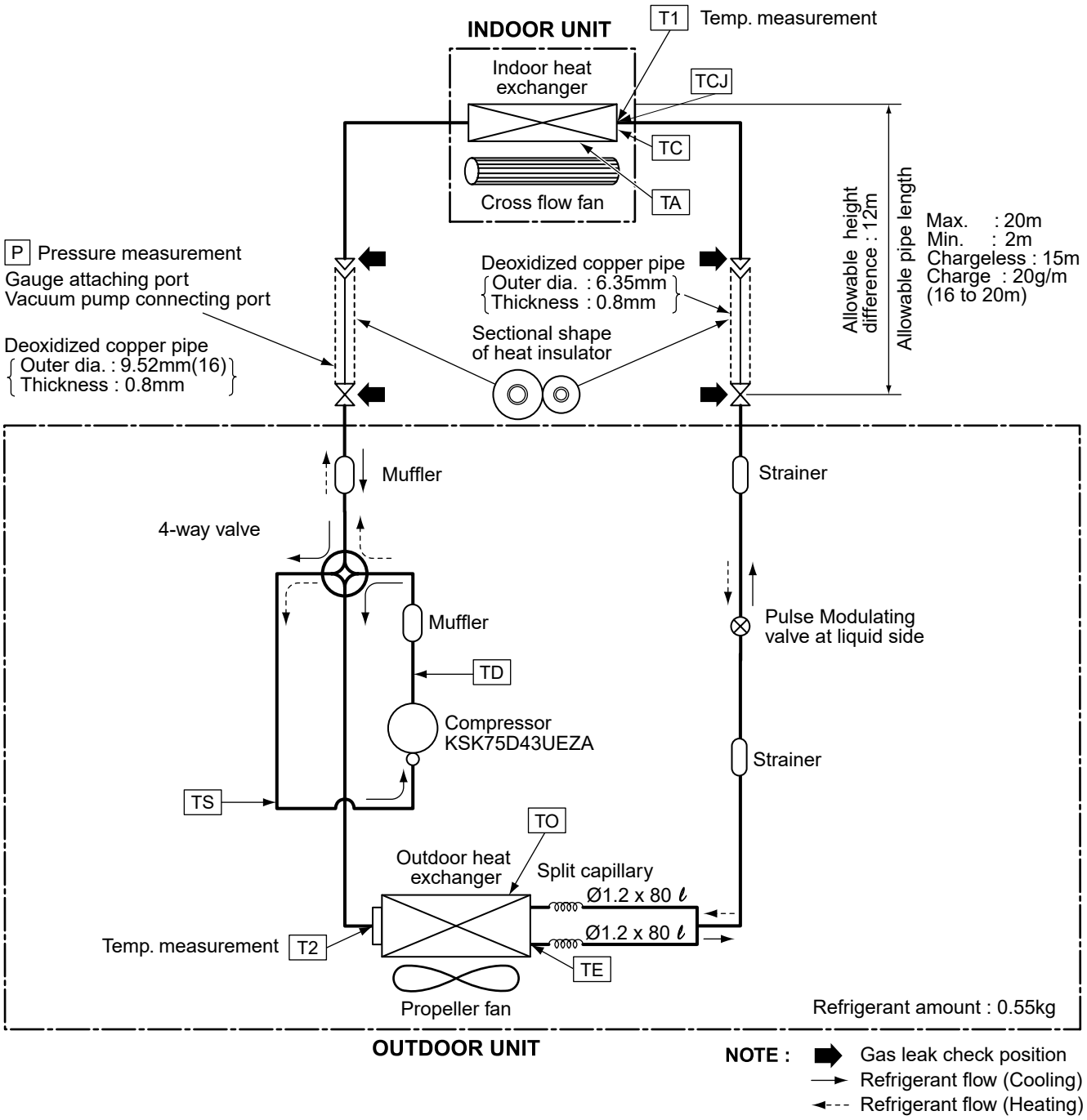


COLOR
INDICATION

RED : RED
WHI : WHITE
YEL : YELLOW
BLU : BLUE
BLK : BLACK
GRN&YEL :
GREEN&YELLOW

5. Refrigerant Cycle Diagram

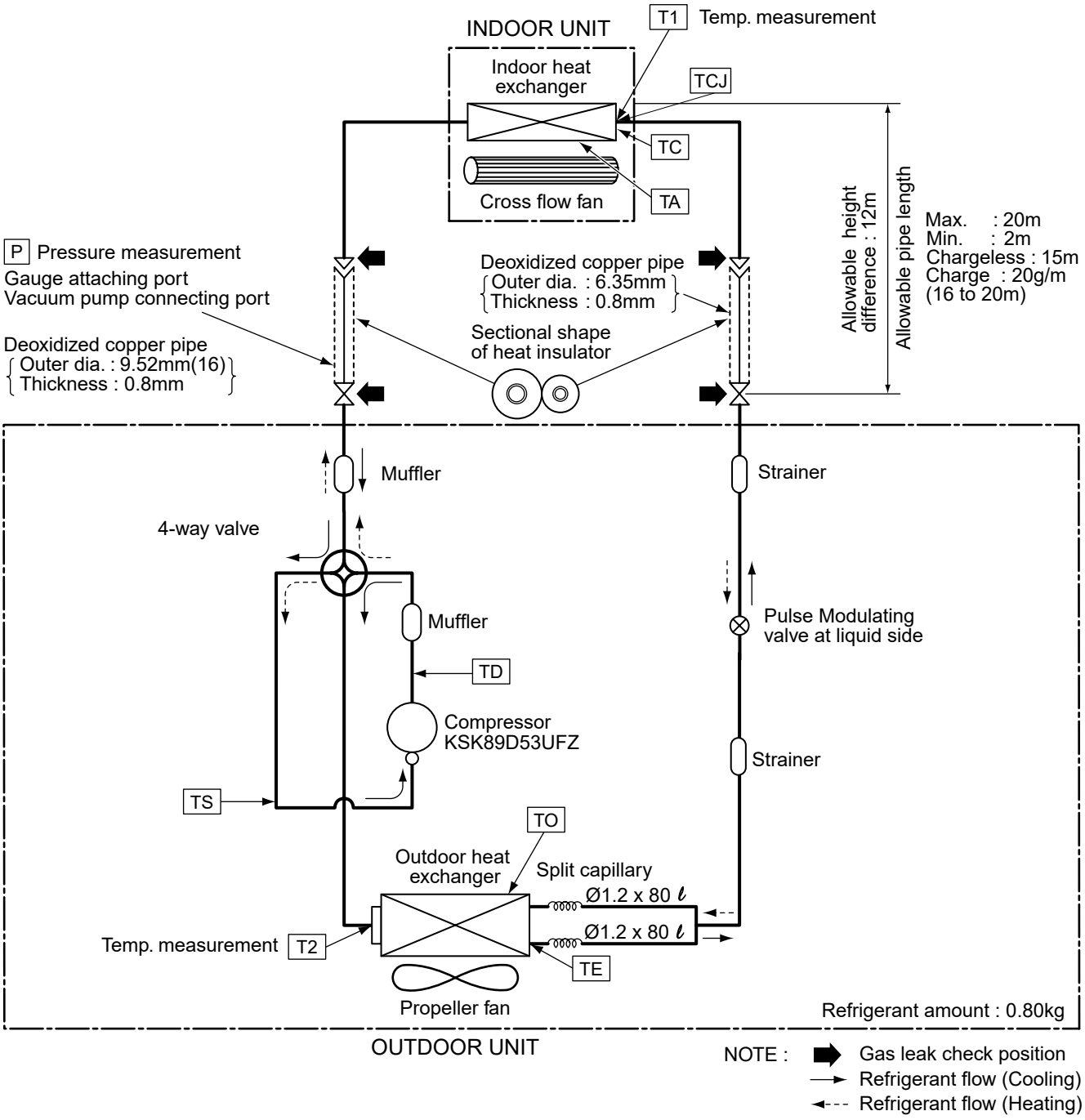
RAS-B10J2FVG-E / RAS-10J2FVG-TR : RAS-10J2AVG-E / TR



NOTE :

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

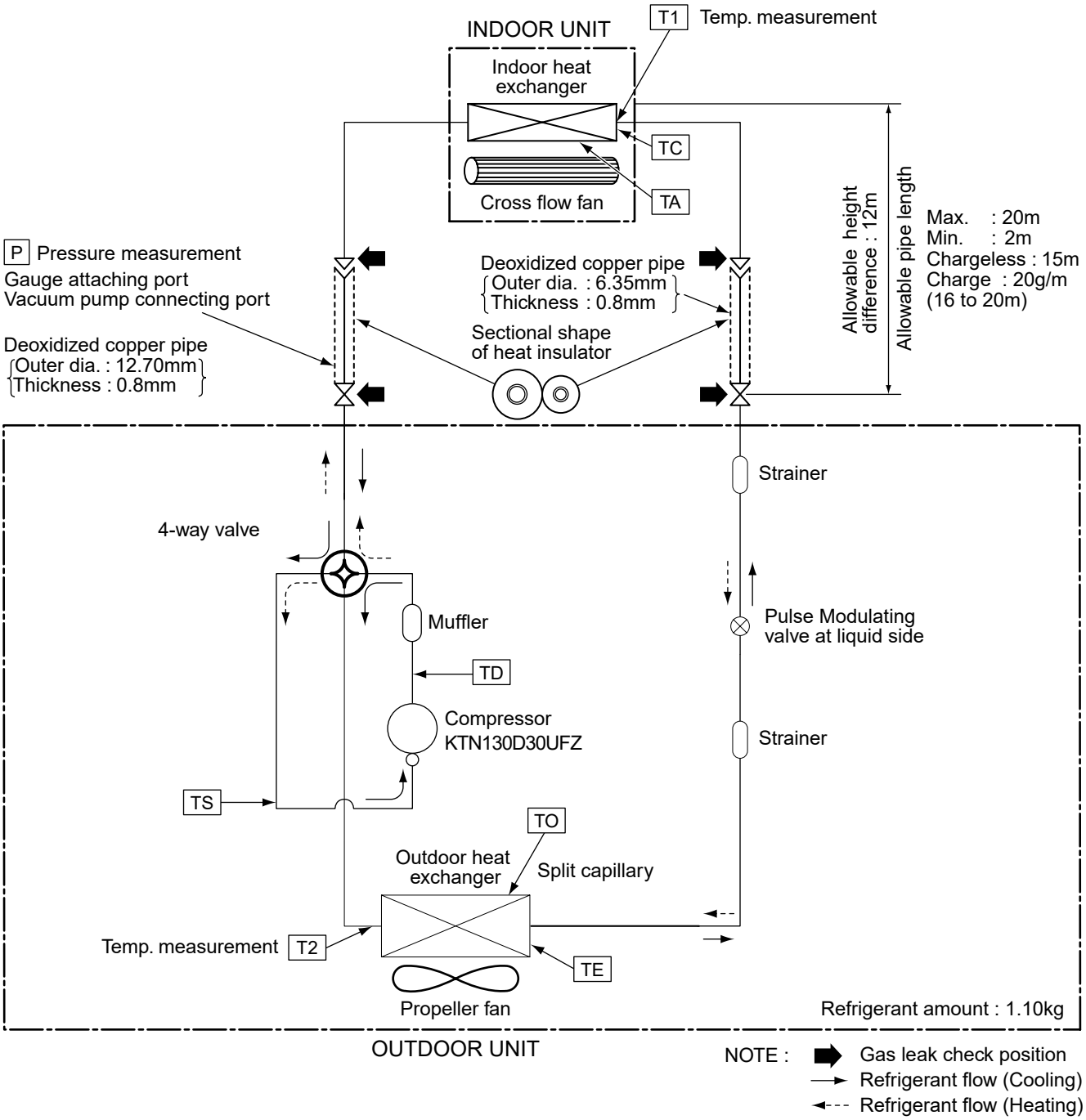
RAS-B13J2FVG-E / RAS-13J2FVG-TR : RAS-13J2AVG-E / TR



NOTE :

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

RAS-B18J2FVG-E / RAS-18J2FVG-TR : RAS-18J2AVG-E / TR



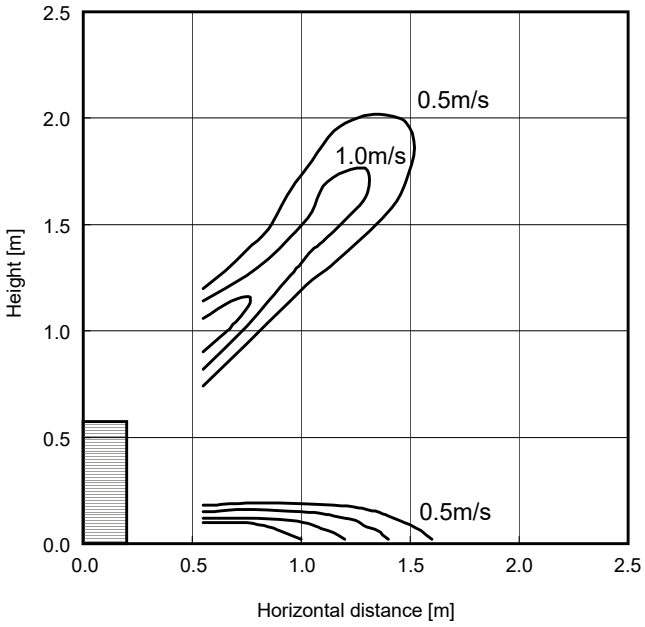
NOTE :

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

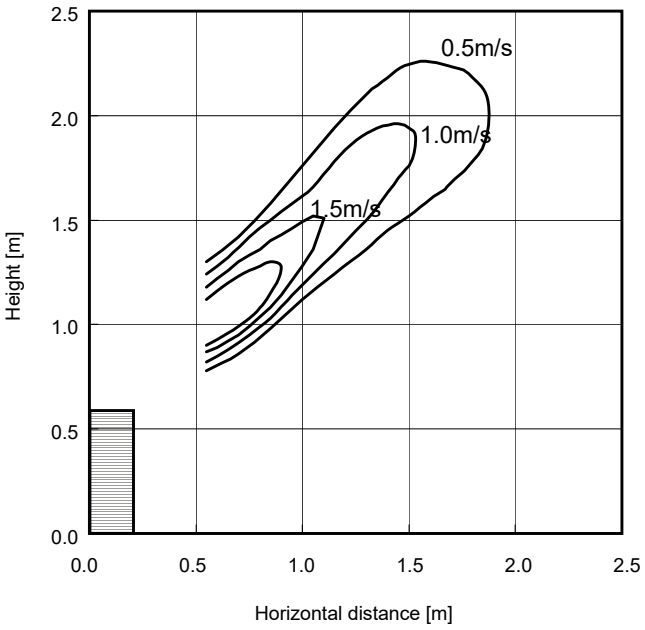
6. Air Speed Distribution

RAS-B10J2FVG-E / RAS-10J2FVG-TR

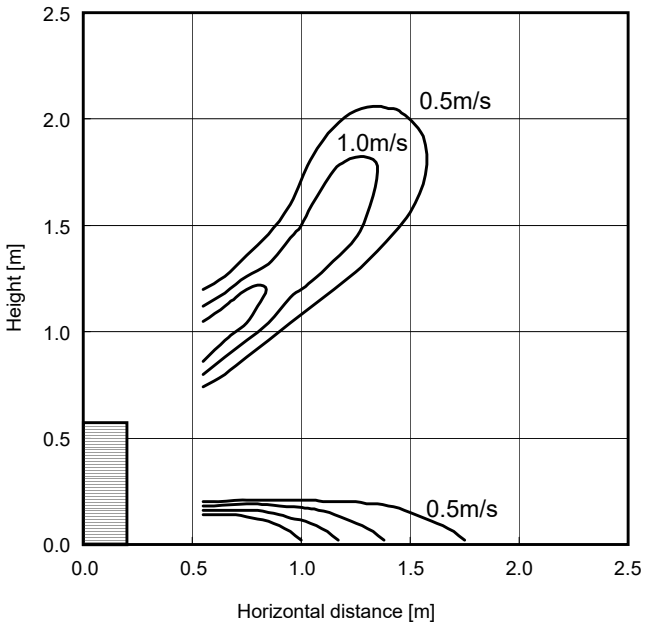
Cooling - Upper & Lower



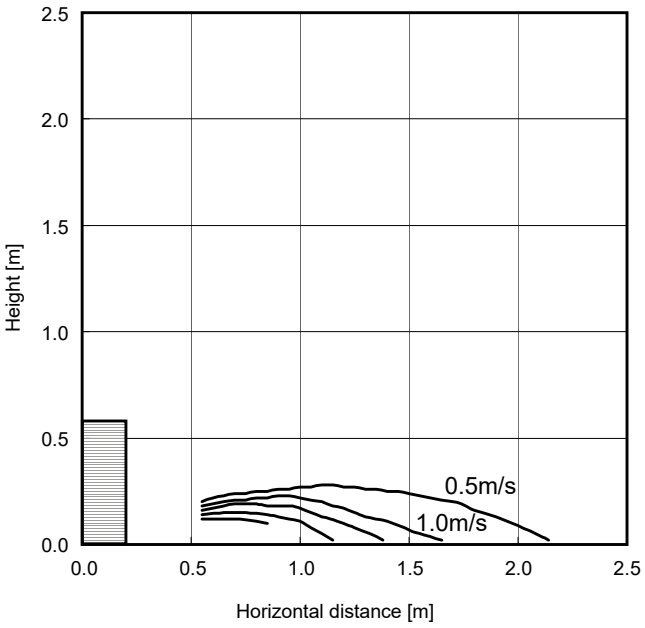
Cooling - Upper



Heating - Upper & Lower

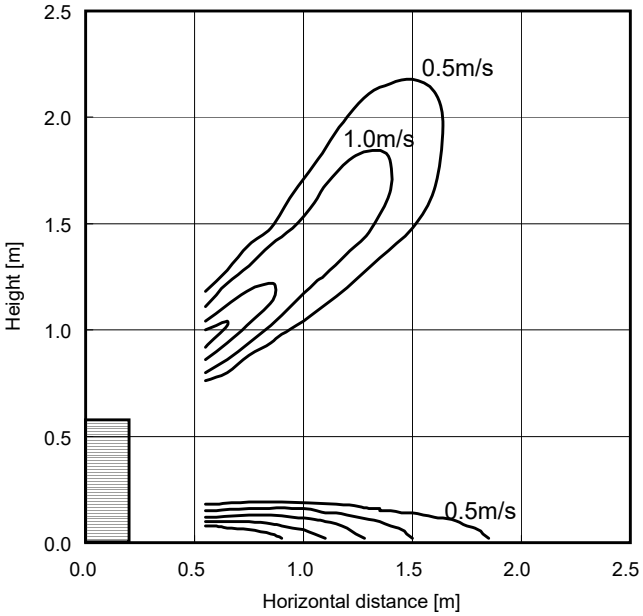


Heating - Lower

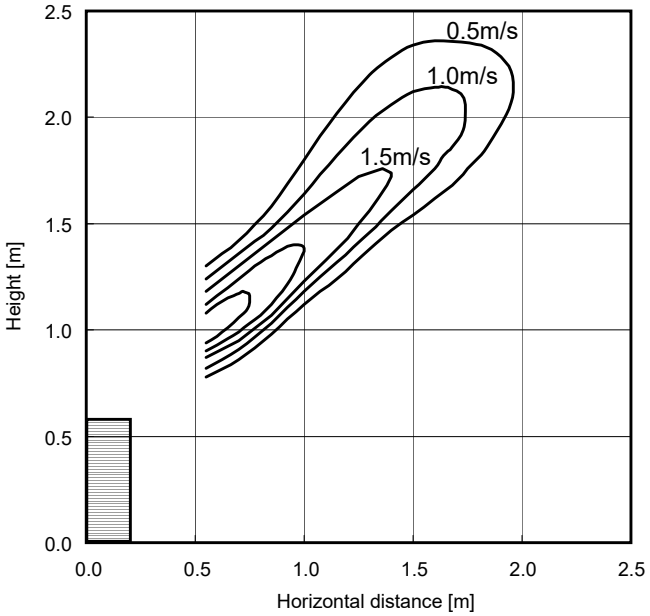


RAS-B13J2FVG-E / RAS-13J2FVG-TR

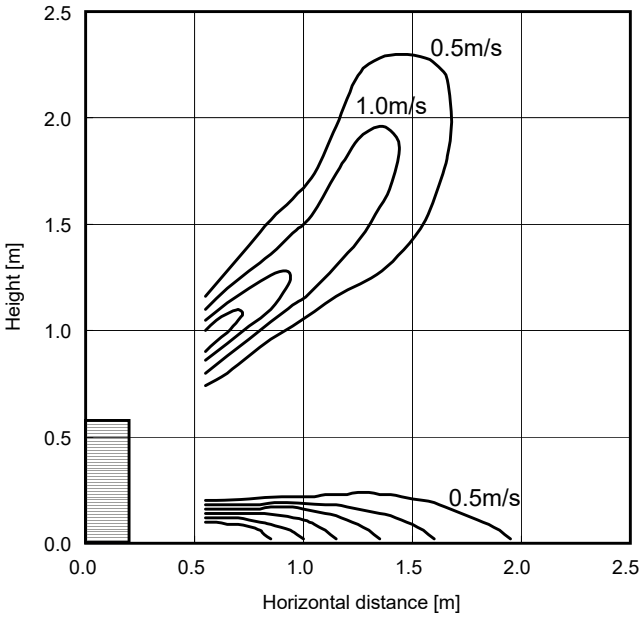
Cooling - Upper & Lower



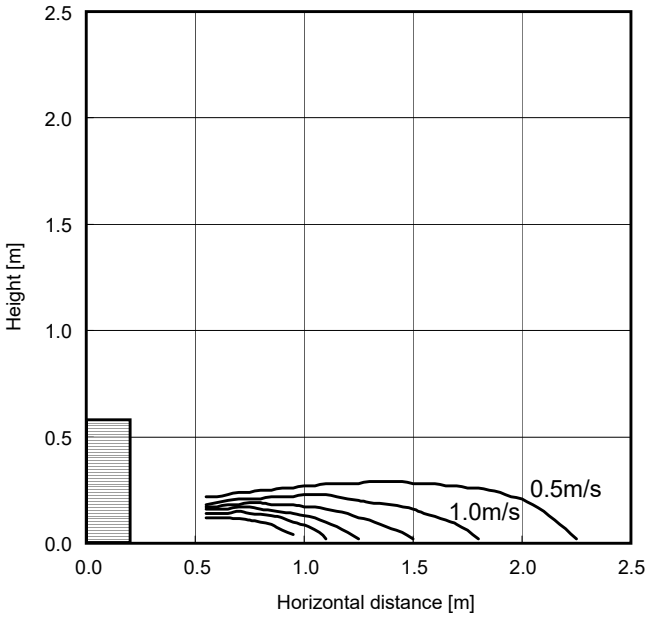
Cooling - Upper



Heating - Upper & Lower

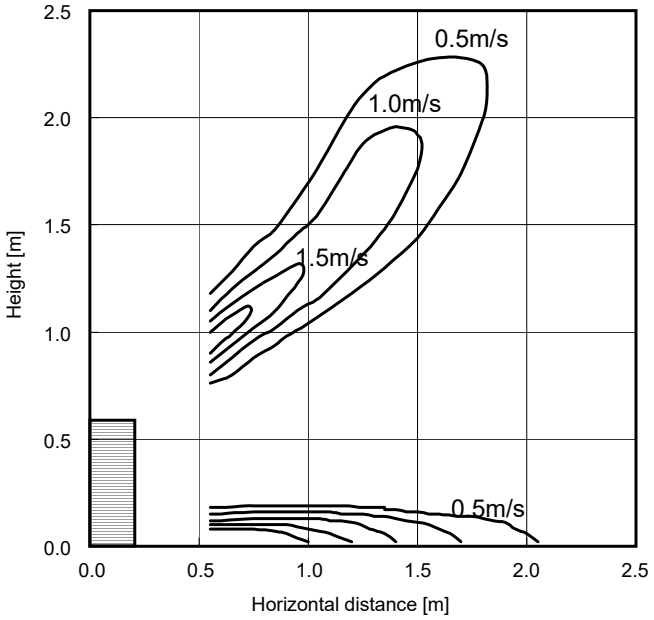


Heating - Lower

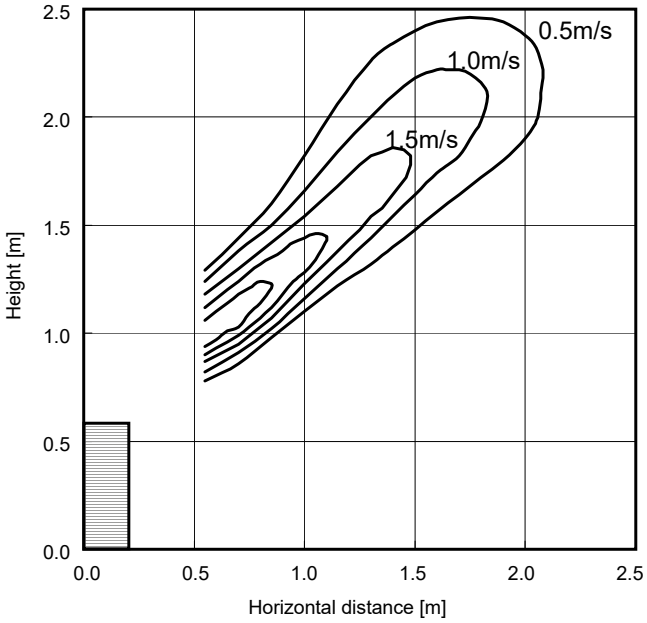


RAS-B18J2FVG-E / RAS-18J2FVG-TR

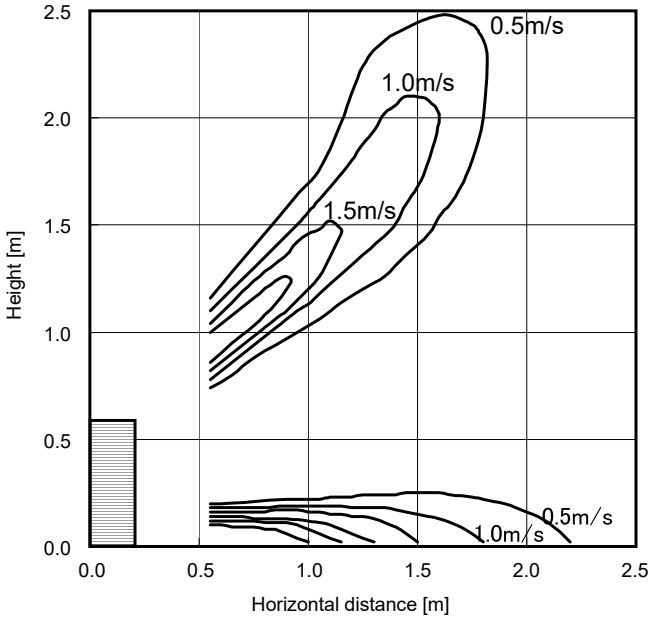
Cooling - Upper & Lower



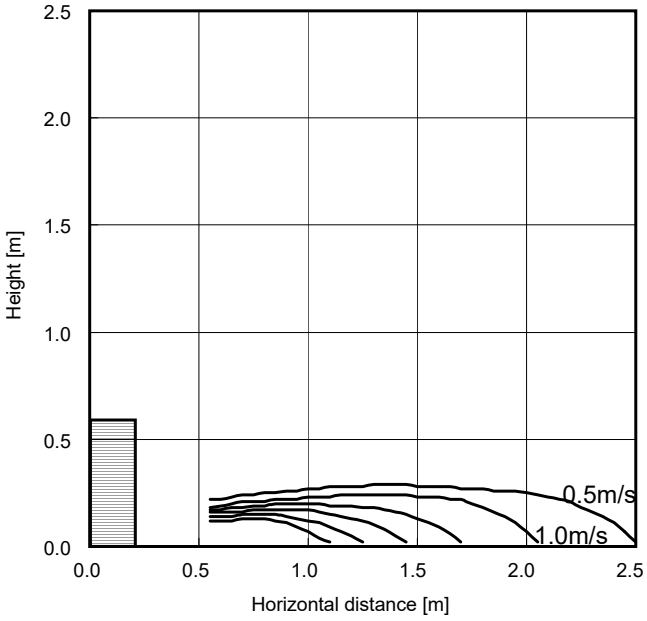
Cooling - Upper



Heating - Upper & Lower



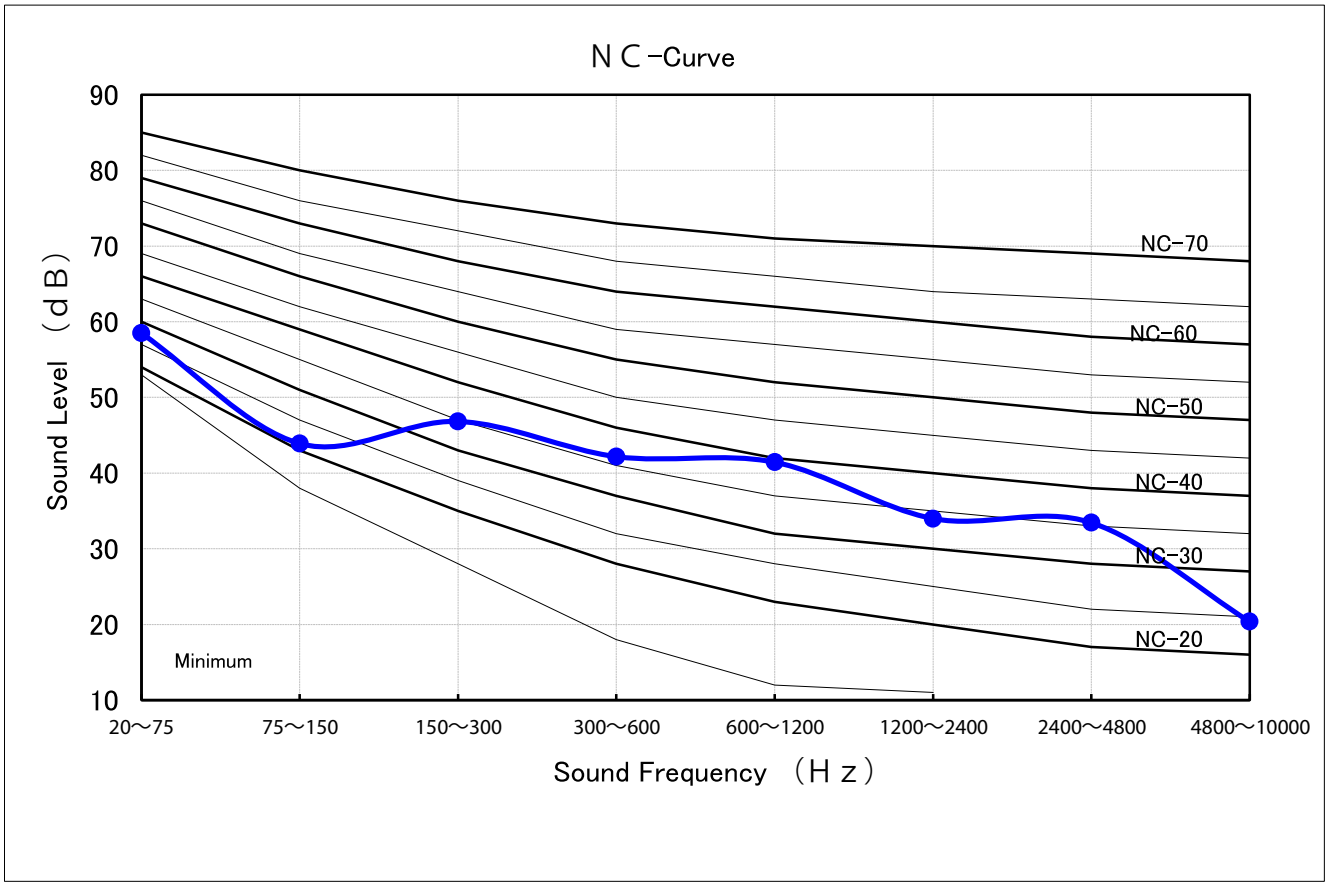
Heating - Lower



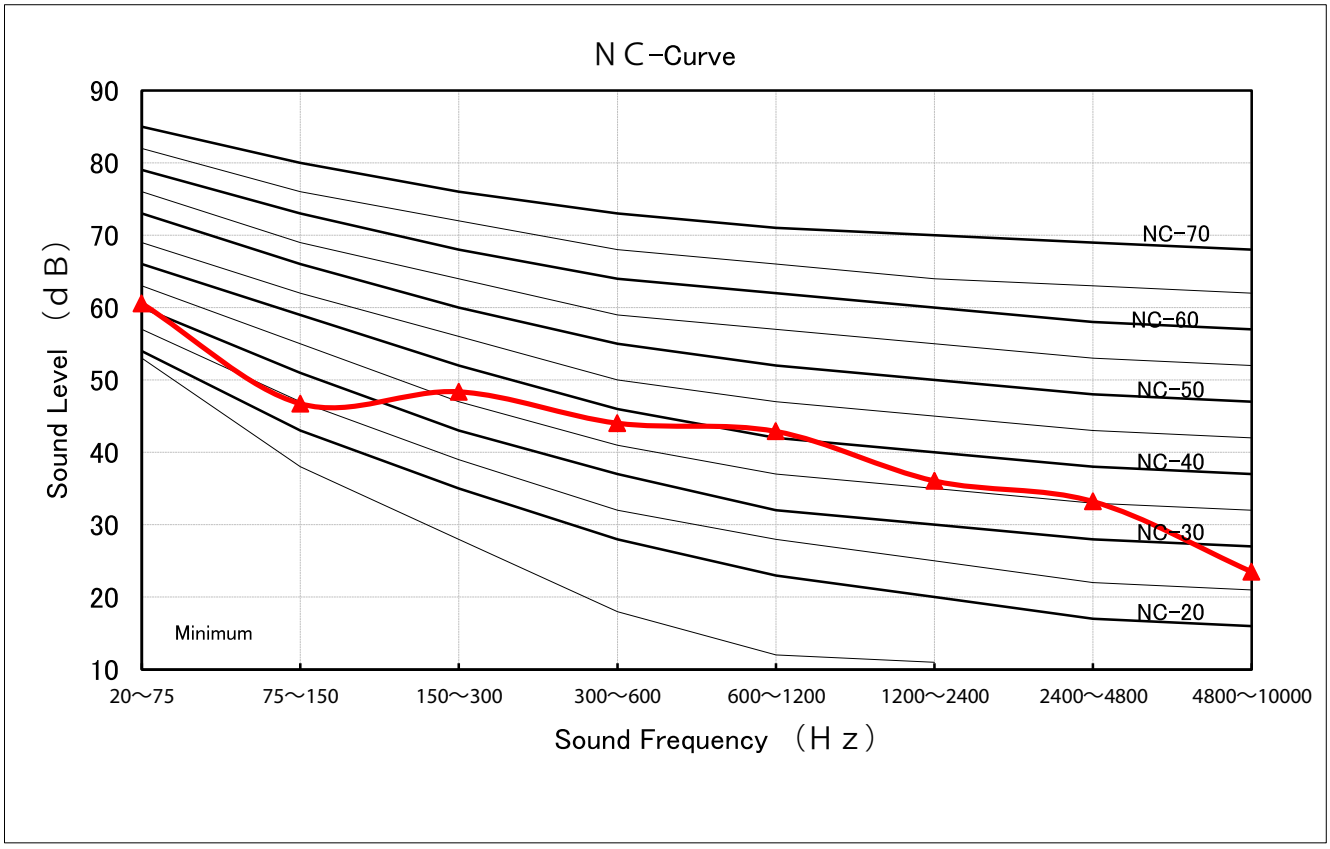
7. Sound Characteristics (NC Curve)

RAS-10J2AVSG-E / TR (Rate : Hz)

Cooling

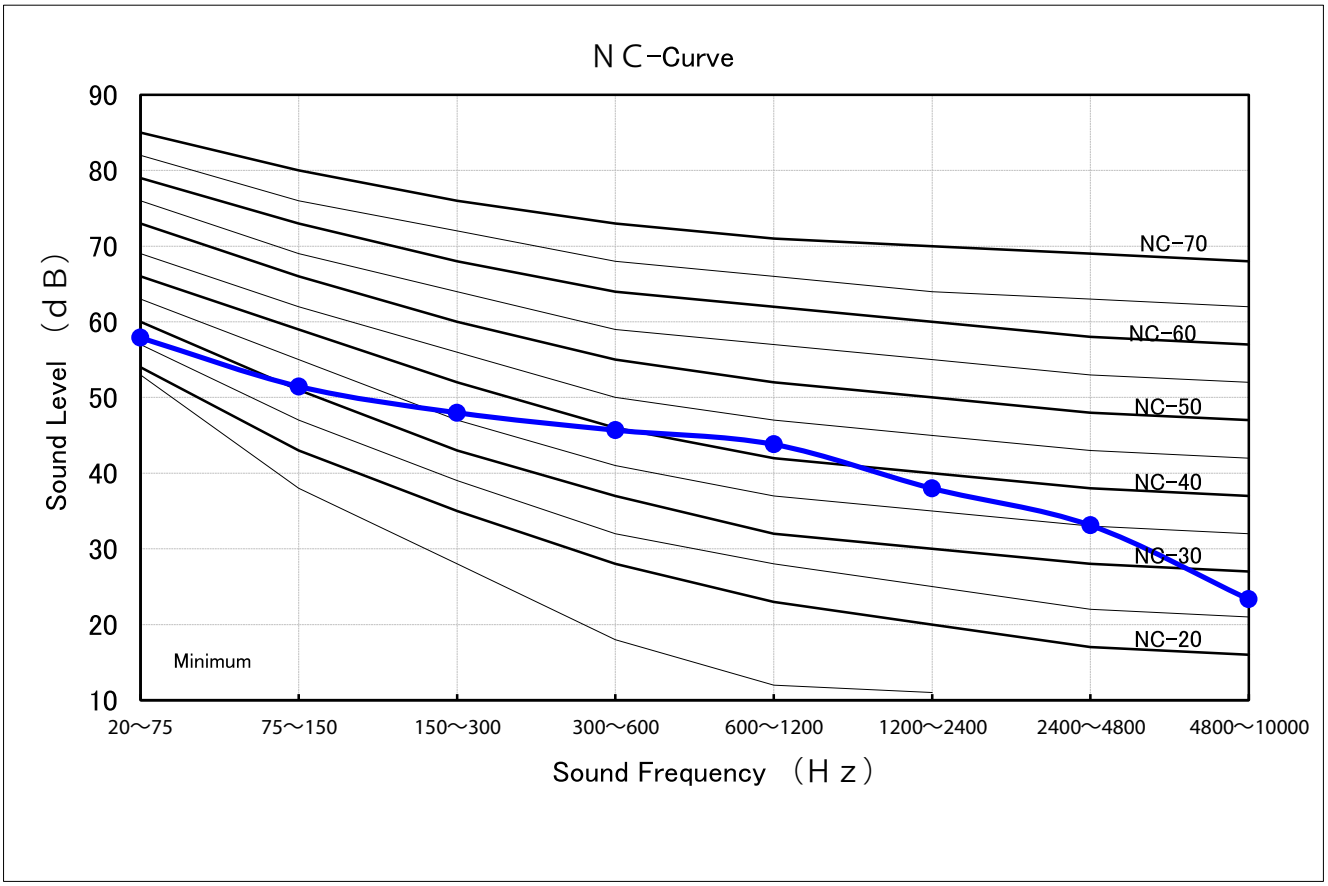


Heating

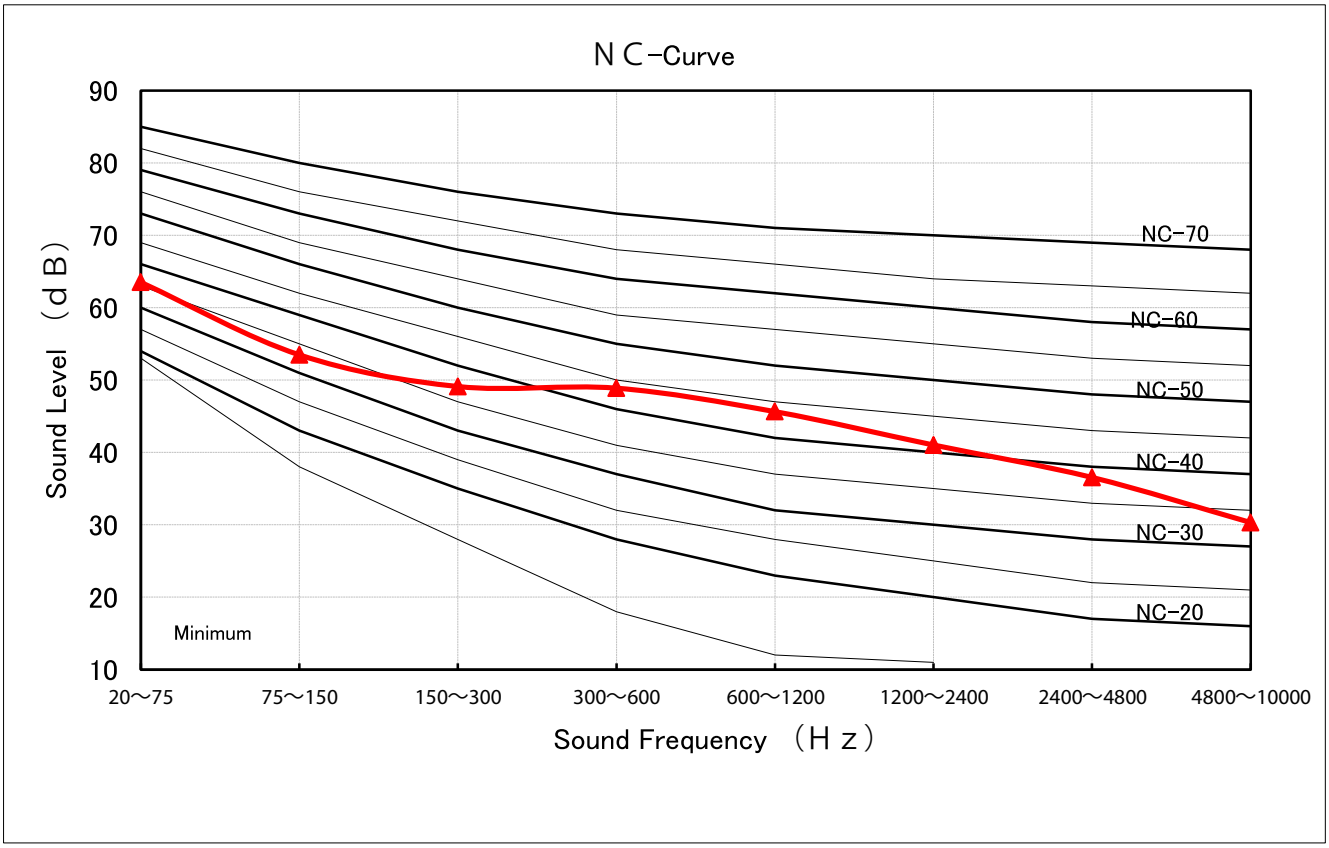


RAS-13J2AVSG-E / TR (Rate : Hz)

Cooling

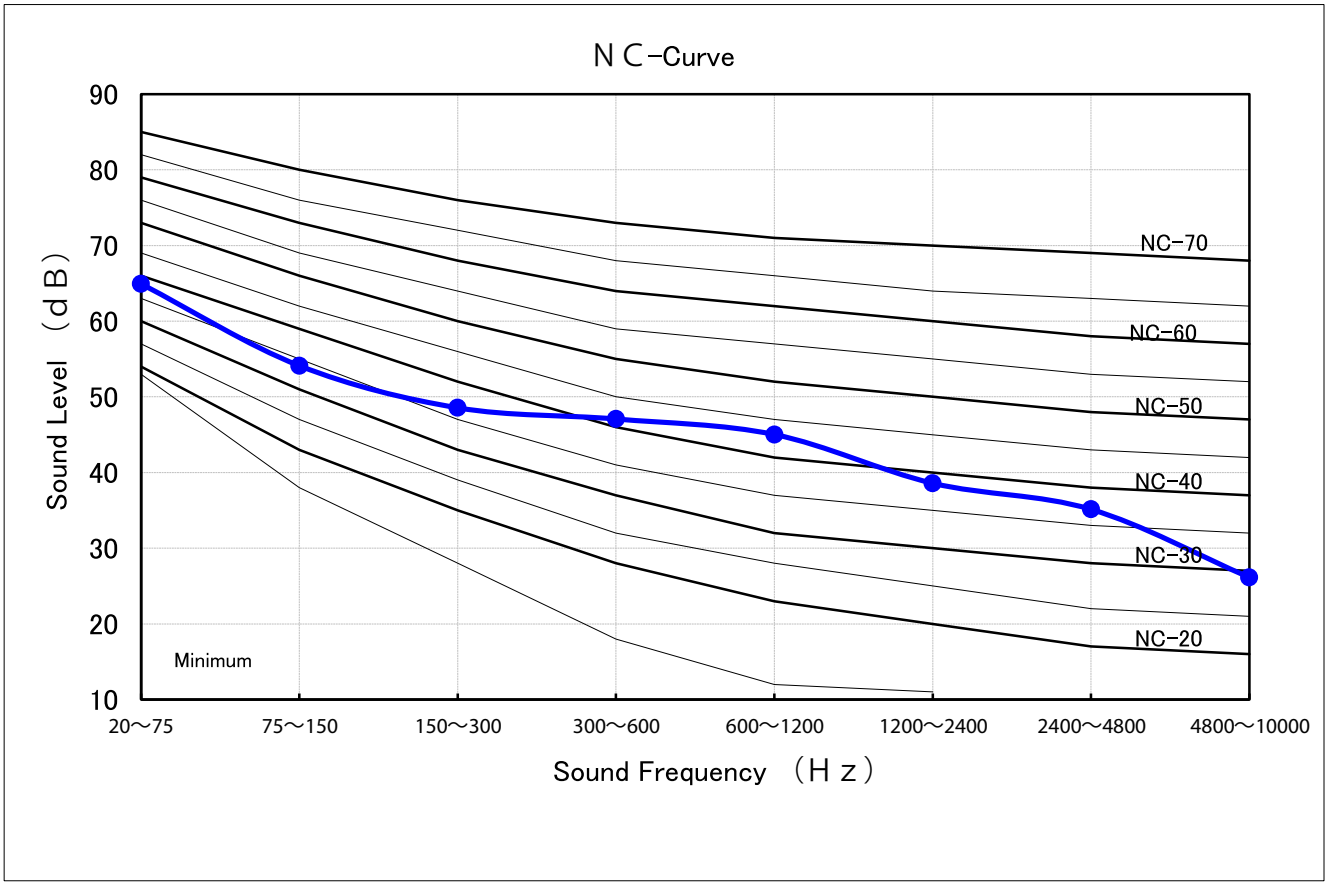


Heating

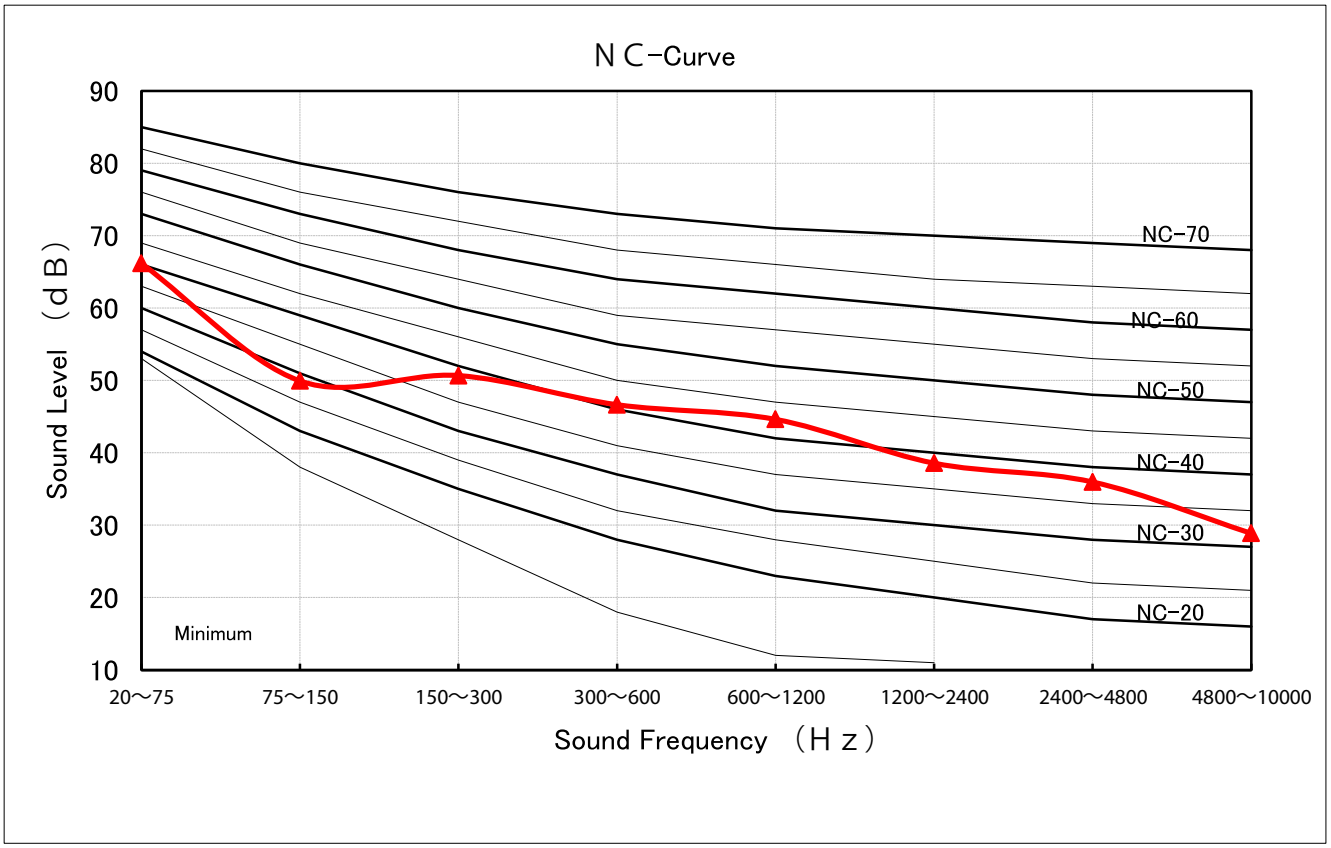


RAS-18J2AVSG-E / TR (Rate : Hz)

Cooling



Heating



8. Capacity Table

Product models : RAS-B10J2FVG-E / RAS-10J2FVG-TR : RAS-10J2AVSG-E / TR

Specification of product at standard condition

Standard Condition		
	Indoor	27°C (DB) / 19°C (WB)
	Outdoor	35°C (DB) / 24°C (WB)

Total Cooling Capacity (TC)	2.50	kW
Sensible Heat Capacity (SHC)	2.00	kW

Outdoor air temperature	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)	
DB (°C)	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-B13J2FVG-E / RAS-13J2FVG-TR / RAS-13J2AVSG-E / TR

Specification of product at standard condition

Standard Condition		
	Indoor	27°C (DB) / 19°C (WB)
	Outdoor	35°C (DB) / 24°C (WB)

Total Cooling Capacity (TC)	3.50	kW
Sensible Heat Capacity (SHC)	2.70	kW

Outdoor air temperature	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)	
DB (°C)	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-B18J2FVG-E / RAS-18J2FVG-TR : RAS-18J2AVSG-E / TR

Specification of product at standard condition

Standard Condition		
	Indoor	27°C (DB) / 19°C (WB)
	Outdoor	35°C (DB) / 24°C (WB)

Total Cooling Capacity (TC)	5.00	kW
Sensible Heat Capacity (SHC)	3.50	kW

Outdoor air temperature	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)	
DB (°C)	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	4.90	3.73	5.41	3.95	5.79	4.20	5.96	4.17	6.13	4.15	6.49	4.07	6.79	3.95
21	4.84	3.69	5.35	3.91	5.73	4.15	5.90	4.13	6.07	4.11	6.43	4.03	6.72	3.91
22	4.79	3.65	5.29	3.87	5.67	4.11	5.83	4.08	6.00	4.06	6.36	3.99	6.65	3.87
23	4.74	3.61	5.23	3.83	5.60	4.06	5.77	4.04	5.94	4.02	6.29	3.94	6.57	3.83
24	4.69	3.57	5.18	3.78	5.54	4.02	5.71	3.99	5.87	3.98	6.22	3.90	6.50	3.78
25	4.63	3.53	5.12	3.74	5.48	3.97	5.64	3.95	5.80	3.93	6.15	3.85	6.43	3.74
26	4.58	3.49	5.06	3.70	5.42	3.93	5.58	3.90	5.74	3.89	6.08	3.81	6.35	3.70
27	4.53	3.45	5.00	3.66	5.36	3.88	5.51	3.86	5.67	3.84	6.01	3.77	6.28	3.66
28	4.48	3.41	4.94	3.61	5.29	3.84	5.45	3.81	5.61	3.80	5.94	3.72	6.21	3.61
29	4.42	3.37	4.88	3.57	5.23	3.79	5.39	3.77	5.54	3.75	5.87	3.68	6.14	3.57
30	4.37	3.33	4.83	3.53	5.17	3.75	5.32	3.72	5.47	3.71	5.80	3.64	6.06	3.53
31	4.32	3.29	4.77	3.49	5.11	3.70	5.26	3.68	5.41	3.66	5.73	3.59	5.99	3.48
32	4.27	3.24	4.71	3.44	5.04	3.66	5.19	3.63	5.34	3.62	5.66	3.55	5.92	3.44
33	4.21	3.20	4.65	3.40	4.98	3.61	5.13	3.59	5.28	3.57	5.59	3.50	5.84	3.40
34	4.16	3.16	4.59	3.36	4.92	3.57	5.06	3.54	5.21	3.53	5.52	3.46	5.77	3.36
35	4.11	3.12	4.54	3.32	4.86	3.52	5.00	3.50	5.14	3.48	5.45	3.42	5.70	3.31
36	4.05	3.08	4.48	3.27	4.79	3.48	4.94	3.46	5.08	3.44	5.38	3.37	5.62	3.27
37	4.00	3.04	4.42	3.23	4.73	3.43	4.87	3.41	5.01	3.39	5.31	3.33	5.55	3.23
38	3.95	3.00	4.36	3.19	4.67	3.39	4.81	3.37	4.94	3.35	5.24	3.28	5.48	3.19
39	3.90	2.96	4.30	3.15	4.61	3.34	4.74	3.32	4.88	3.30	5.17	3.24	5.40	3.14
40	3.84	2.92	4.24	3.10	4.55	3.30	4.68	3.28	4.81	3.26	5.10	3.20	5.33	3.10
41	3.79	2.88	4.19	3.06	4.48	3.25	4.62	3.23	4.75	3.22	5.03	3.15	5.26	3.06
42	3.74	2.84	4.13	3.02	4.42	3.20	4.55	3.19	4.68	3.17	4.96	3.11	5.18	3.02
43	3.66	2.79	4.05	2.96	4.33	3.14	4.46	3.12	4.59	3.11	4.86	3.05	5.08	2.96
44	3.56	2.71	3.94	2.88	4.22	3.06	4.34	3.04	4.46	3.02	4.73	2.96	4.94	2.88
45	3.23	2.46	3.56	2.61	3.82	2.77	3.93	2.75	4.04	2.74	4.28	2.68	4.48	2.61
46	3.14	2.39	3.47	2.54	3.71	2.69	3.82	2.68	3.93	2.66	4.17	2.61	4.36	2.54

9. Part Load Performance

Indoor: RAS-B10J2FVG-E / RAS-10J2FVG-TR

Outdoor: RAS-10J2AVSG-E / TR

Operation range		Cooling		Heating	
		Q	P	Q	P
MINIMUM	W	950	210	850	180
RATING	W	2500	590	3200	820
MAXIMUM	W	3200	900	4400	1250

Cooling

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100 (Max)		90		80		78 (Rate)		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	3816	707	3434	629	3053	552	2981	463	2290	352	1908	290	1526	228	1145	167	1133	165	1133	165
21	3775	719	3397	641	3020	563	2949	472	2265	358	1887	295	1510	233	1132	170	1121	168	1121	168
22	3734	732	3360	652	2987	573	2917	480	2240	364	1867	301	1494	237	1120	173	1108	171	1108	171
23	3693	745	3324	664	2954	583	2885	489	2216	371	1846	306	1477	241	1108	176	1096	174	1096	174
24	3652	758	3287	675	2921	593	2853	497	2191	377	1826	311	1461	245	1096	179	1084	177	1084	177
25	3611	771	3250	687	2889	603	2821	505	2166	384	1805	316	1444	249	1083	182	1072	180	1072	180
26	3570	784	3213	698	2856	613	2789	514	2142	390	1785	322	1428	253	1071	185	1060	183	1060	183
27	3529	797	3176	710	2823	623	2757	522	2117	396	1764	327	1411	258	1059	188	1048	186	1048	186
28	3487	810	3139	721	2790	633	2725	531	2092	403	1744	332	1395	262	1046	191	1035	189	1035	189
29	3446	823	3102	733	2757	643	2693	539	2068	409	1723	338	1379	266	1034	194	1023	192	1023	192
30	3405	836	3065	744	2724	653	2660	548	2043	416	1703	343	1362	270	1022	197	1011	195	1011	195
31	3364	848	3028	756	2691	663	2628	556	2019	422	1682	348	1346	274	1009	200	999	198	999	198
32	3323	861	2991	767	2659	673	2596	565	1994	429	1662	353	1329	278	997	203	987	201	987	201
33	3282	874	2954	779	2626	684	2564	573	1969	435	1641	359	1313	283	985	206	974	204	974	204
34	3241	887	2917	790	2593	694	2532	582	1945	441	1621	364	1296	287	972	209	962	207	962	207
35	3200	900	2880	802	2560	704	2500	590	1920	448	1600	369	1280	291	960	212	950	210	950	210
36	3159	913	2843	813	2527	714	2468	598	1895	454	1579	375	1264	295	948	215	938	213	938	213
37	3118	926	2806	825	2494	724	2436	607	1871	461	1559	380	1247	299	935	219	926	216	926	216
38	3077	939	2769	836	2461	734	2404	615	1846	467	1538	385	1231	303	923	222	913	219	913	219
39	3036	952	2732	848	2429	744	2372	624	1821	473	1518	391	1214	308	911	225	901	222	901	222
40	2995	965	2695	859	2396	754	2340	632	1797	480	1497	396	1198	312	898	228	889	225	889	225
41	2954	977	2658	871	2363	764	2308	641	1772	486	1477	401	1181	316	886	231	877	228	877	228
42	2913	990	2621	882	2330	774	2275	649	1748	493	1456	406	1165	320	874	234	865	231	865	231
43	2871	1003	2584	894	2297	784	2243	658	1723	499	1436	412	1149	324	861	237	852	234	852	234
44	2830	1016	2547	905	2264	795	2211	666	1698	506	1415	417	1132	328	849	240	840	237	840	237
45	2789	1029	2510	917	2231	805	2179	675	1674	512	1395	422	1116	333	837	243	828	240	828	240
46	2748	1042	2473	928	2199	815	2147	683	1649	518	1374	428	1099	337	824	246	816	243	816	243

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																					
	100 (Max)		90		80		73 (Rate)		60		50		40		30		20		10		9	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	2000	1000	1800	894	1600	788	1405	631	1159	514	966	421	773	329	580	237	386	145	373	139	373	139
-14	2080	1020	1872	912	1664	804	1462	644	1206	524	1005	430	804	336	603	242	402	148	388	141	388	141
-13	2160	1040	1944	930	1728	819	1518	656	1252	534	1043	438	835	342	626	246	417	151	403	144	403	144
-12	2240	1060	2016	948	1792	835	1574	669	1299	544	1082	447	866	349	649	251	433	153	418	147	418	147
-11	2320	1080	2088	965	1856	851	1630	681	1345	555	1121	455	897	356	672	256	448	156	433	150	433	150
-10	2400	1100	2160	983	1920	867	1686	694	1391	565	1159	464	928	362	696	261	464	159	448	152	448	152
-9	2475	1104	2228	987	1980	870	1739	697	1435	567	1196	465	957	364	717	262	478	160	462	153	462	153
-8	2550	1108	2295	991	2040	873	1792	699	1478	569	1232	467	986	365	739	263	493	160	476	154	476	154
-7	2625	1113	2363	994	2100	876	1845	702	1522	571	1268	469	1014	366	761	264	507	161	490	154	490	154
-6	2700	1117	2430	998	2160	880	1897	705	1565	574	1304	471	1043	368	783	265	522	162	504	155	504	155
-5	2775	1121	2498	1002	2220	883	1950	707	1609	576	1341	472	1072	369	804	266	536	162	518	155	518	155
-4	2850	1125	2565	1006	2280	886	2003	710	1652	578	1377	474	1101	370	826	267	551	163	532	156	532	156
-3	2925	1129	2633	1009	2340	890	2055	713	1696	580	1413	476	1130	372	848	268	565	164	546	156	546	156
-2	3000	1133	2700	1013	2400	893	2108	715	1739	582	1449	478	1159	373	870	269	580	164	560	157	560	157
-1	3075	1138	2768	1017	2460	896	2161	718	1783	584	1486	479	1188	374	891	270	594	165	574	158	574	158
0	3150	1142	2835	1021	2520	899	2213	720	1826	586	1522	481	1217	376	913	271	609	165	588	158	588	158
1	3225	1146	2903	1024	2580	903	2266	723	1870	589	1558	483	1246	377	935	272	623	166	602	159	602	159
2	3300	1150	2970	1028	2640	906	2319	726	1913	591	1594	485	1275	379	957	273	638	167	616	159	616	159
3	3363	1169	3027	1045	2690	921	2357	735	1944	599	1620	491	1296	384	972	276	648	172	679	164	679	164
4	3426	1188	3083	1062	2741	936	2395	745	1976	607	1646	498	1317	389	988	280	659	177	743	169	743	169
5	3489	1207	3140	1079	2791	951	2433	755	2007	615	1673	504	1338	394	1004	284	669	182	806	174	806	174
6	4286	1231	3858	1100	3429	970	3117	807	2572	657	2143	539	1715	421	1286	303	857	185	828	177	828	177
7	4400	1250	3960	1117	3520	985	3200	820	2640	667	2200	548	1760	428	1320	308	880	188	850	180	850	180
8	4514	1269	4062	1135	3611	1000	3283	833	2708	678	2257	556	1805	434	1354	313	903	191	872	183	872	183
9	4627	1289	4164	1152	3702	1015	3365	845	2776	688	2314	565	1851	441	1388	318	925	194	894	186	894	186
10	4741	1308	4267	1169	3793	1031	3448	858	2844	698	2370	573	1896	448	1422	322	948	197	916	188	916	188
11	4854	1327	4369	1187	3883	1046	3530	871	2913	709	2427	582	1942	454	1456	327	971	200	938	191	938	191
12	4968	1347	4471	1204	3974	1061	3613	883	2981	719	2484	590	1987	461	1490	332	994	203	960	194	960	194
13	5081	1366	4573	1221	4065	1076	3695	896	3049	730	2541	599	2033	468	1524	337	1016	206	982	197	982	197
14	5195	1385	4675	1238	4156	1091	3778	909	3117	740	2597	607	2078	474	1558	341	1039	209	1004	200	1004	200
15	5308	1405	4778	1256	4247	1107	3861	922	3185	750	2654	615	2123	481	1593	346	1062	211	1025	202	1025	202
16	5422	1424	4880	1273	4338	1122	3943	934	3253	761	2711	624	2169	487	1627	351	1084	214	1047	205	1047	205
17	5535	1444	4982	1290	4428	1137	4026	947	3321	771	2768	632	2214	494	1661	356	1107	217	1069	208	1069	208
18	5632	1457	5069	1303	4505	1148	4108	960	3389	781	2825	641	2260	501	1695	360	1130	220	1091	211	1091	211
19	5686	1457	5117	1303	4548	1148	4191	972	3458	792	2881	649	2305	507	1729	365	1153	223	1113	213	1113	213
20	5739	1457	5165	1303	4591	1148	4274	985	3526	802	2938	658	2350	514	1763	370	1175	226	1135	216	1135	216
21	5791	1457	5212	1303	4633	1148	4356	998	3594	812	2995	666	2396	521	1797	375	1198	229	1157	219	1157	219
22	5842	1457	5258	1303	4674	1148	4439	1010	3662	823	3052	675	2441	527	1831	380	1221	232	1179	222	1179	222
23	5893	1457	5304	1303	4715	1148	4521	1023	3730	833	3108	683	2487	534	1865	384	1243	235	1201	225	1201	225
24	5943	1457	5349	1303	4755	1148	4604	1036	3798	843	3165	692	2532	540	1899	389	1266	238	1223	227	1223	227

Indoor: RAS-B13J2FVG-E / RAS-13J2FVG-TR
Outdoor: RAS-13J2AVG-E / TR

Operation range		Cooling		Heating	
		Q	P	Q	P
MINIMUM	W	1050	270	1000	220
RATING	W	3500	870	4200	1270
MAXIMUM	W	4100	1200	5000	1550

Cooling

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100 (Max)		100		85 (Rate)		70		65		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	4889	942	4889	942	4174	683	3422	562	3178	522	2445	404	1956	325	1467	247	1252	212	1252	212
21	4837	959	4837	959	4129	695	3386	572	3144	532	2418	412	1935	331	1451	251	1239	216	1239	216
22	4784	976	4784	976	4084	708	3349	582	3110	542	2392	419	1914	337	1435	256	1225	220	1225	220
23	4731	994	4731	994	4039	720	3312	593	3075	551	2366	426	1893	343	1419	260	1212	224	1212	224
24	4679	1011	4679	1011	3994	733	3275	603	3041	561	2339	434	1872	349	1404	265	1198	227	1198	227
25	4626	1028	4626	1028	3949	745	3238	613	3007	570	2313	441	1850	355	1388	269	1185	231	1185	231
26	4574	1045	4574	1045	3904	758	3201	623	2973	580	2287	448	1829	361	1372	274	1171	235	1171	235
27	4521	1062	4521	1062	3859	770	3165	634	2939	589	2260	456	1808	367	1356	278	1158	239	1158	239
28	4468	1080	4468	1080	3814	783	3128	644	2904	599	2234	463	1787	373	1340	283	1144	243	1144	243
29	4416	1097	4416	1097	3770	795	3091	654	2870	608	2208	471	1766	379	1325	287	1131	247	1131	247
30	4363	1114	4363	1114	3725	808	3054	664	2836	618	2182	478	1745	385	1309	292	1117	251	1117	251
31	4310	1131	4310	1131	3680	820	3017	675	2802	627	2155	485	1724	391	1293	296	1104	255	1104	255
32	4258	1148	4258	1148	3635	833	2980	685	2768	637	2129	493	1703	397	1277	301	1090	258	1090	258
33	4205	1166	4205	1166	3590	845	2944	695	2733	646	2103	500	1682	403	1262	305	1077	262	1077	262
34	4153	1183	4153	1183	3545	858	2907	705	2699	656	2076	508	1661	409	1246	310	1063	266	1063	266
35	4100	1200	4100	1200	3500	870	2870	716	2665	666	2050	515	1640	414	1230	314	1050	270	1050	270
36	4047	1217	4047	1217	3455	882	2833	726	2631	675	2024	522	1619	420	1214	319	1037	274	1037	274
37	3995	1234	3995	1234	3410	895	2796	736	2597	685	1997	530	1598	426	1198	323	1023	278	1023	278
38	3942	1252	3942	1252	3365	907	2760	746	2562	694	1971	537	1577	432	1183	328	1010	282	1010	282
39	3890	1269	3890	1269	3320	920	2723	757	2528	704	1945	544	1556	438	1167	332	996	285	996	285
40	3837	1286	3837	1286	3275	932	2686	767	2494	713	1918	552	1535	444	1151	337	983	289	983	289
41	3784	1303	3784	1303	3231	945	2649	777	2460	723	1892	559	1514	450	1135	341	969	293	969	293
42	3732	1320	3732	1320	3186	957	2612	788	2426	732	1866	567	1493	456	1120	346	956	297	956	297
43	3679	1338	3679	1338	3141	970	2575	798	2391	742	1840	574	1472	462	1104	350	942	301	942	301
44	3616	1348	3616	1348	3096	982	2539	808	2357	751	1813	581	1451	468	1088	355	929	305	929	305
45	3421	1262	3421	1262	3051	995	2502	818	2323	761	1787	589	1430	474	1072	359	915	309	915	309
46	3350	1262	3350	1262	3006	1007	2465	829	2289	770	1761	596	1408	480	1056	364	902	313	902	313

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																					
	100 (Max)		90		84 (Rate)		70		60		50		40		30		20		10		9	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	2200	1000	1980	893	1913	865	1594	708	1366	596	1139	485	911	373	683	261	455	150	455	150	455	150
-14	2280	1020	2052	911	1983	882	1652	722	1416	608	1180	495	944	381	708	267	472	153	472	153	472	153
-13	2360	1040	2124	928	2052	899	1710	737	1466	620	1222	504	977	388	733	272	489	156	489	156	489	156
-12	2440	1060	2196	946	2122	916	1768	751	1516	632	1263	514	1010	396	758	277	505	159	505	159	505	159
-11	2520	1080	2268	964	2191	934	1826	765	1565	644	1304	524	1043	403	783	282	522	162	522	162	522	162
-10	2600	1100	2340	982	2261	951	1884	779	1615	656	1346	533	1077	410	807	288	538	165	538	165	538	165
-9	2675	1117	2408	997	2326	965	1938	791	1661	666	1385	541	1108	417	831	292	554	167	554	167	554	167
-8	2750	1133	2475	1012	2391	980	1993	803	1708	676	1423	549	1139	423	854	296	569	170	569	170	569	170
-7	2825	1150	2543	1027	2457	994	2047	814	1755	686	1462	558	1170	429	877	301	585	172	585	172	585	172
-6	2900	1167	2610	1042	2522	1009	2101	826	1801	696	1501	566	1201	435	901	305	600	175	600	175	600	175
-5	2975	1183	2678	1056	2587	1023	2156	838	1848	706	1540	574	1232	442	924	309	616	177	616	177	616	177
-4	3050	1200	2745	1071	2652	1037	2210	850	1894	716	1579	582	1263	448	947	314	631	180	631	180	631	180
-3	3125	1217	2813	1086	2717	1052	2264	862	1941	726	1617	590	1294	454	970	318	647	182	647	182	647	182
-2	3200	1233	2880	1101	2783	1066	2319	873	1988	736	1656	598	1325	460	994	322	663	185	663	185	663	185
-1	3275	1250	2948	1116	2848	1081	2373	885	2034	746	1695	606	1356	466	1017	327	678	187	678	187	678	187
0	3350	1267	3015	1131	2913	1095	2428	897	2081	756	1734	614	1387	473	1040	331	694	190	694	190	694	190
1	3425	1283	3083	1146	2978	1109	2482	909	2127	766	1773	622	1418	479	1064	336	709	192	709	192	709	192
2	3500	1300	3150	1161	3043	1124	2536	921	2174	775	1812	630	1449	485	1087	340	725	195	725	195	725	195
3	3548	1289	3193	1151	3093	1139	2578	933	2210	786	1841	639	1473	492	1105	344	799	201	799	201	799	201
4	3595	1279	3236	1142	3143	1154	2619	945	2245	796	1871	647	1497	498	1123	349	874	207	874	207	874	207
5	3643	1268	3279	1132	3193	1169	2661	958	2281	807	1901	656	1520	505	1140	354	948	213	948	213	948	213
6	4871	1526	4384	1362	4092	1250	3410	1024	2923	863	2435	701	1948	540	1461	378	974	217	974	217	974	217
7	5000	1550	4500	1384	4200	1270	3500	1040	3000	876	2500	712	2000	548	1500	384	1000	220	1000	220	1000	220
8	5129	1574	4616	1405	4308	1290	3590	1056	3077	890	2565	723	2052	557	1539	390	1026	223	1026	223	1026	223
9	5258	1598	4732	1427	4417	1309	3681	1073	3155	903	2629	734	2103	565	1577	396	1052	227	1052	227	1052	227
10	5387	1622	4848	1448	4525	1329	3771	1089	3232	917	2694	745	2155	574	1616	402	1077	230	1077	230	1077	230
11	5516	1646	4965	1469	4634	1349	3861	1105	3310	931	2758	756	2206	582	1655	408	1103	234	1103	234	1103	234
12	5645	1670	5081	1491	4742	1368	3952	1121	3387	944	2823	767	2258	591	1694	414	1129	237	1129	237	1129	237
13	5774	1694	5197	1512	4850	1388	4042	1137	3465	958	2887	778	2310	599	1732	420	1155	240	1155	240	1155	240
14	5903	1718	5313	1534	4959	1408	4132	1153	3542	971	2952	789	2361	608	1771	426	1181	244	1181	244	1181	244
15	6032	1742	5429	1555	5067	1427	4223	1169	3619	985	3016	800	2413	616	1810	432	1206	247	1206	247	1206	247
16	6161	1766	5545	1577	5175	1447	4313	1185	3697	998	3081	811	2465	625	1848	438	1232	251	1232	251	1232	251
17	6290	1790	5661	1598	5284	1467	4403	1201	3774	1012	3145	822	2516	633	1887	444	1258	254	1258	254	1258	254
18	6419	1814	5777	1619	5392	1486	4494	1218	3852	1025	3210	833	2568	641	1926	449	1284	257	1284	257	1284	257
19	6548	1838	5894	1641	5501	1506	4584	1234	3929	1039	3274	845	2619	650	1965	455	1310	261	1310	261	1310	261
20	6677	1862	6010	1662	5609	1526	4674	1250	4006	1053	3339	856	2671	658	2003	461	1335	264	1335	264	1335	264
21	6806	1886	6126	1684	5717	1545	4765	1266	4084	1066	3403	867	2723	667	2042	467	1361	268	1361	268	1361	268
22	6935	1910	6242	1705	5826	1565	4855	1282	4161	1080	3468	878	2774	675	2081	473	1387	271	1387	271	1387	271
23	7065	1934	6358	1727	5934	1585	4945	1298	4239	1093	3532	889	2826	684	2119	479	1413	275	1413	275	1413	275
24	7154	1946	6438	1737	6043	1604	5035	1314	4316	1107	3597	900	2877	692	2158	485	1439	278	1439	278	1439	278

Indoor: RAS-B18J2FVG-E / RAS-18J2FVG-TR
Outdoor: RAS-18J2AVG-E / TR

Operation range		Cooling		Heating	
		Q	P	Q	P
MINIMUM	W	1200	340	1300	310
RATING	W	5000	1680	6000	2050
MAXIMUM	W	5600	2000	6300	2200

Cooling

Outdoor Temperature DB (°C)	Parts Load (%)																			
	100 (Max)		90		89 (Rate)		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	6678	1570	6010	1404	5962	1319	4675	1020	4007	865	3339	710	2671	555	2003	400	1431	267	1431	267
21	6606	1599	5946	1430	5898	1343	4624	1038	3964	881	3303	723	2642	565	1982	407	1416	272	1416	272
22	6534	1627	5881	1455	5834	1367	4574	1057	3921	896	3267	736	2614	575	1960	414	1400	277	1400	277
23	6462	1656	5816	1481	5770	1391	4524	1076	3877	912	3231	749	2585	585	1939	422	1385	282	1385	282
24	6391	1685	5751	1507	5706	1415	4473	1094	3834	928	3195	762	2556	595	1917	429	1369	286	1369	286
25	6319	1713	5687	1532	5642	1439	4423	1113	3791	944	3159	775	2527	605	1896	436	1354	291	1354	291
26	6247	1742	5622	1558	5577	1463	4373	1132	3748	960	3123	788	2499	616	1874	444	1339	296	1339	296
27	6175	1771	5557	1584	5513	1487	4322	1150	3705	975	3087	801	2470	626	1852	451	1323	301	1323	301
28	6103	1799	5493	1609	5449	1511	4272	1169	3662	991	3052	813	2441	636	1831	458	1308	306	1308	306
29	6031	1828	5428	1635	5385	1536	4222	1187	3619	1007	3016	826	2412	646	1809	465	1292	311	1292	311
30	5959	1857	5363	1661	5321	1560	4172	1206	3576	1023	2980	839	2384	656	1788	473	1277	316	1277	316
31	5887	1885	5299	1686	5257	1584	4121	1225	3532	1039	2944	852	2355	666	1766	480	1262	321	1262	321
32	5816	1914	5234	1712	5192	1608	4071	1243	3489	1054	2908	865	2326	676	1745	487	1246	325	1246	325
33	5744	1943	5169	1737	5128	1632	4021	1262	3446	1070	2872	878	2297	686	1723	495	1231	330	1231	330
34	5672	1971	5105	1763	5064	1656	3970	1281	3403	1086	2836	891	2269	697	1702	502	1215	335	1215	335
35	5600	2000	5040	1789	5000	1680	3920	1299	3360	1102	2800	904	2240	707	1680	509	1200	340	1200	340
36	5528	2029	4975	1814	4936	1704	3870	1318	3317	1117	2764	917	2211	717	1658	517	1185	345	1185	345
37	5456	2057	4911	1840	4872	1728	3819	1336	3274	1133	2728	930	2183	727	1637	524	1169	350	1169	350
38	5384	2086	4846	1866	4807	1752	3769	1355	3231	1149	2692	943	2154	737	1615	531	1154	355	1154	355
39	5313	2115	4781	1891	4743	1776	3719	1374	3188	1165	2656	956	2125	747	1594	538	1138	359	1138	359
40	4003	1606	3602	1437	4003	1540	3138	1191	2690	1010	2241	829	1793	648	1345	467	1123	364	1123	364
41	3896	1606	3506	1437	3896	1540	3054	1191	2618	1010	2182	829	1745	648	1309	467	1108	369	1108	369
42	3791	1606	3412	1437	3791	1540	2972	1191	2548	1010	2123	829	1699	648	1274	467	1092	374	1092	374
43	3690	1606	3321	1437	3690	1540	2893	1191	2480	1010	2066	829	1653	648	1240	467	1077	379	1077	379
44	3591	1606	3232	1437	3591	1540	2815	1191	2413	1010	2011	829	1609	648	1207	467	1061	384	1061	384
45	3252	1495	2927	1337	3252	1433	2549	1108	2185	940	1821	771	1457	603	1093	434	1046	389	1046	389
46	3164	1495	2848	1337	3164	1433	2481	1108	2126	940	1772	771	1418	603	1063	434	1031	394	1031	394

Heating

Outdoor Temperature DB (°C)	Parts Load (%)																					
	100 (Max)		95 (Rate)		80		70		60		50		40		30		20		10		9	
	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P	Q	P
-15	2800	1350	2536	1361	2130	1125	1864	970	1598	815	1332	660	1065	506	799	351	550	206	550	206	550	206
-14	2900	1368	2627	1379	2207	1140	1931	983	1655	826	1379	669	1103	512	827	355	569	208	569	208	569	208
-13	3000	1386	2717	1397	2283	1155	1997	996	1712	837	1427	678	1141	519	856	360	589	211	589	211	589	211
-12	3100	1404	2808	1415	2359	1170	2064	1009	1769	848	1474	687	1179	526	885	365	608	214	608	214	608	214
-11	3200	1422	2899	1433	2435	1185	2130	1022	1826	859	1522	696	1217	532	913	369	628	217	628	217	628	217
-10	3300	1440	2989	1451	2511	1200	2197	1035	1883	869	1569	704	1255	539	942	374	648	219	648	219	648	219
-9	3425	1470	3102	1482	2606	1225	2280	1056	1954	888	1629	719	1303	550	977	382	672	224	672	224	672	224
-8	3550	1500	3216	1512	2701	1250	2363	1078	2026	906	1688	734	1351	562	1013	390	697	229	697	229	697	229
-7	3675	1530	3329	1542	2796	1275	2447	1099	2097	924	1748	748	1398	573	1049	397	721	233	721	233	721	233
-6	3800	1560	3442	1572	2891	1300	2530	1121	2168	942	1807	763	1446	584	1084	405	746	238	746	238	746	238
-5	3925	1590	3555	1603	2986	1325	2613	1142	2240	960	1867	778	1493	595	1120	413	770	242	770	242	770	242
-4	4050	1620	3668	1633	3082	1350	2696	1164	2311	978	1926	792	1541	607	1156	421	795	247	795	247	795	247
-3	4175	1650	3782	1663	3177	1375	2780	1185	2382	996	1985	807	1588	618	1191	429	819	251	819	251	819	251
-2	4300	1680	3895	1693	3272	1400	2863	1207	2454	1014	2045	822	1636	629	1227	436	844	256	844	256	844	256
-1	4425	1710	4008	1723	3367	1425	2946	1229	2525	1032	2104	836	1683	640	1263	444	868	261	868	261	868	261
0	4550	1740	4121	1754	3462	1450	3029	1250	2596	1051	2164	851	1731	652	1298	452	893	265	893	265	893	265
1	4675	1770	4235	1784	3557	1475	3112	1272	2668	1069	2223	866	1779	663	1334	460	917	270	917	270	917	270
2	4800	1800	4348	1814	3652	1500	3196	1293	2739	1087	2283	880	1826	674	1370	468	942	274	942	274	942	274
3	4897	1812	4419	1839	3712	1520	3248	1311	2784	1101	2320	892	1856	683	1392	474	1039	283	1039	283	957	283
4	4994	1824	4490	1863	3772	1540	3300	1328	2829	1116	2357	904	1886	692	1414	480	1136	292	1136	292	973	292
5	5091	1837	4561	1887	3832	1560	3353	1345	2874	1131	2395	916	1916	701	1437	486	1233	300	1233	300	988	300
6	6137	2166	5845	2018	4910	1668	4296	1439	3682	1209	3069	979	2455	750	1841	520	1266	305	1266	305	1266	305
7	6300	2200	6000	2050	5040	1695	4410	1461	3780	1228	3150	995	2520	762	1890	528	1300	310	1300	310	1300	310
8	6463	2234	6155	2082	5170	1721	4524	1484	3878	1247	3231	1010	2585	773	1939	537	1334	315	1334	315	1334	315
9	6625	2268	6310	2113	5300	1747	4638	1507	3975	1266	3313	1026	2650	785	1988	545	1367	320	1367	320	1367	320
10	6788	2302	6465	2145	5430	1773	4751	1529	4073	1285	3394	1041	2715	797	2036	553	1401	324	1401	324	1401	324
11	6950	2336	6619	2177	5560	1800	4865	1552	4170	1304	3475	1057	2780	809	2085	561	1434	329	1434	329	1434	329
12	7113	2370	6774	2209	5690	1826	4979	1574	4268	1323	3556	1072	2845	821	2134	569	1468	334	1468	334	1468	334
13	7275	2404	6929	2240	5820	1852	5093	1597	4365	1342	3638	1087	2910	832	2183	578	1501	339	1501	339	1501	339
14	7438	2438	7084	2272	5950	1878	5207	1620	4463	1361	3719	1103	2975	844	2231	586	1535	344	1535	344	1535	344
15	7601	2473	7239	2304	6081	1905	5320	1642	4560	1380	3800	1118	3040	856	2280	594	1568	348	1568	348	1568	348
16	7759	2505	7394	2336	6211	1931	5434	1665	4658	1399	3882	1134	3105	868	2329	602	1602	353	1602	353	1602	353
17	7847	2505	7548	2367	6341	1957	5548	1688	4755	1418	3963	1149	3170	880	2378	610	1635	358	1635	358	1635	358
18	7935	2505	7703	2399	6471	1983	5662	1710	4853	1437	4044	1164	3235	891	2427	618	1669	363	1669	363	1669	363
19	7851	2505	7851	2429	6595	2008	5771	1731	4946	1455	4122	1179	3298	902	2473	626	1703	368	1703	368	1703	368
20	7903	2505	7903	2429	6638	2008	5809	1731	4979	1455	4149	1179	3319	902	2489	626	1736	372	1736	372	1736	372
21	7953	2505	7953	2429	6681	2008	5845	1731	5010	1455	4175	1179	3340	902	2505	626	1770	377	1770	377	1770	377
22	8002	2505	8002	2429	6722	2008	5881	1731	5041	1455	4201	1179	3361	902	2521	626	1803	382	1803	382	1803	382
23	8050	2505	8050	2429	6762	2008	5916	1731	5071	1455	4226	1179	3381	902	2536	626	1837	387	1837	387	1837	387
24	8096	2505	8096	2429	6801	2008	5951	1731	5101	1455	4251	1179	3400	902	2550	626	1870	392	1870	392	1870	392

10. Performance Characteristic

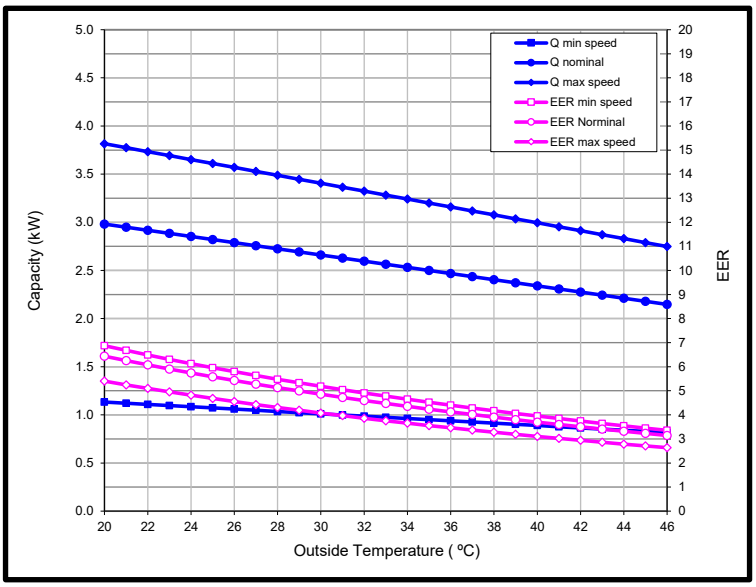
Model : RAS-B10J2FVG-E / RAS-10J2FVG-TR : RAS-10J2AVSG-E / TR

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	0.95	0.21	4.52
	Rated	2.50	0.59	4.24
	Max	3.20	0.90	3.56
Heating JIS In: 20 °C DB/15°C WB Out: 7 °C DB/6°C WB	Min	0.85	0.18	4.72
	Rated	3.20	0.82	3.90
	Max	4.40	1.25	3.52
Heating Low Temp. In: 20 °C DB/15°C WB Out: 2 °C DB/1°C WB	Max	3.30	1.15	2.87
Heating Low Temp. In: 20 °C DB/15°C WB Out: -10 °C DB	Max	2.40	1.100	2.18
Heating Low Temp. In: 20 °C DB/15°C WB Out: -15 °C DB	Max	2.00	1.000	2.00

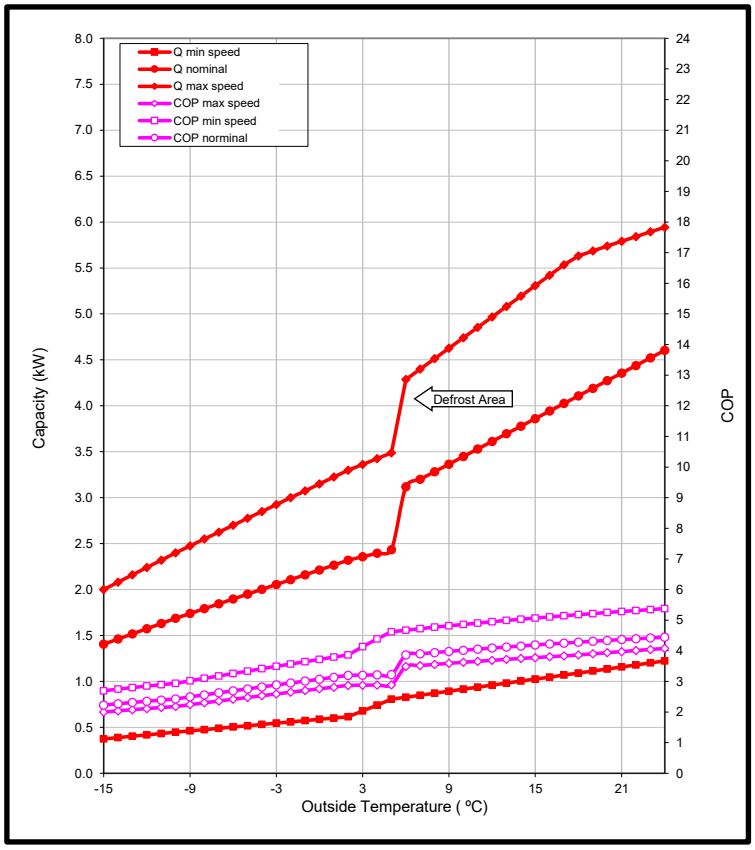
Cooling performance characteristic :

Outside	Min capacity			Nominal capacity			Max capacity		
Temp	Capacity	Power	EER	Capacity	Power	EER	Capacity	Power	EER
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
20	1.13	0.16	6.87	2.98	0.46	6.44	3.82	0.71	5.40
21	1.12	0.17	6.68	2.95	0.47	6.25	3.77	0.72	5.25
22	1.11	0.17	6.49	2.92	0.48	6.08	3.73	0.73	5.10
23	1.10	0.17	6.30	2.89	0.49	5.91	3.69	0.75	4.96
24	1.08	0.18	6.13	2.85	0.50	5.74	3.65	0.76	4.82
25	1.07	0.18	5.96	2.82	0.51	5.58	3.61	0.77	4.68
26	1.06	0.18	5.79	2.79	0.51	5.43	3.57	0.78	4.55
27	1.05	0.19	5.63	2.76	0.52	5.28	3.53	0.80	4.43
28	1.04	0.19	5.48	2.72	0.53	5.13	3.49	0.81	4.31
29	1.02	0.19	5.33	2.69	0.54	4.99	3.45	0.82	4.19
30	1.01	0.19	5.19	2.66	0.55	4.86	3.41	0.84	4.08
31	1.00	0.20	5.05	2.63	0.56	4.73	3.36	0.85	3.97
32	0.99	0.20	4.91	2.60	0.56	4.60	3.32	0.86	3.86
33	0.97	0.20	4.78	2.56	0.57	4.47	3.28	0.87	3.75
34	0.96	0.21	4.65	2.53	0.58	4.35	3.24	0.89	3.65
35	0.95	0.21	4.52	2.50	0.59	4.24	3.20	0.90	3.56
36	0.94	0.21	4.40	2.47	0.60	4.12	3.16	0.91	3.46
37	0.93	0.22	4.28	2.44	0.61	4.01	3.12	0.93	3.37
38	0.91	0.22	4.17	2.40	0.62	3.91	3.08	0.94	3.28
39	0.90	0.22	4.06	2.37	0.62	3.80	3.04	0.95	3.19
40	0.89	0.23	3.95	2.34	0.63	3.70	2.99	0.96	3.10
41	0.88	0.23	3.84	2.31	0.64	3.60	2.95	0.98	3.02
42	0.86	0.23	3.74	2.28	0.65	3.50	2.91	0.99	2.94
43	0.85	0.23	3.64	2.24	0.66	3.41	2.87	1.00	2.86
44	0.84	0.24	3.54	2.21	0.67	3.32	2.83	1.02	2.79
45	0.83	0.24	3.45	2.18	0.67	3.23	2.79	1.03	2.71
46	0.82	0.24	3.36	2.15	0.68	3.14	2.75	1.04	2.64



Heating performance characteristic :

Outside	Min capacity			Nominal capacity			Max capacity		
Temp	Capacity	Power	COP	Capacity	Power	COP	Capacity	Power	COP
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
-15	0.37	0.14	2.70	1.41	0.63	2.23	2.00	1.00	2.00
-14	0.39	0.14	2.75	1.46	0.64	2.27	2.08	1.02	2.04
-13	0.40	0.14	2.80	1.52	0.66	2.31	2.16	1.04	2.08
-12	0.42	0.15	2.85	1.57	0.67	2.35	2.24	1.06	2.11
-11	0.43	0.15	2.89	1.63	0.68	2.39	2.32	1.08	2.15
-10	0.45	0.15	2.94	1.69	0.69	2.43	2.40	1.10	2.18
-9	0.46	0.15	3.02	1.74	0.70	2.50	2.48	1.10	2.24
-8	0.48	0.15	3.10	1.79	0.70	2.56	2.55	1.11	2.30
-7	0.49	0.15	3.18	1.84	0.70	2.63	2.63	1.11	2.36
-6	0.50	0.15	3.26	1.90	0.70	2.69	2.70	1.12	2.42
-5	0.52	0.16	3.34	1.95	0.71	2.76	2.78	1.12	2.48
-4	0.53	0.16	3.41	2.00	0.71	2.82	2.85	1.13	2.53
-3	0.55	0.16	3.49	2.06	0.71	2.88	2.93	1.13	2.59
-2	0.56	0.16	3.57	2.11	0.72	2.95	3.00	1.13	2.65
-1	0.57	0.16	3.64	2.16	0.72	3.01	3.08	1.14	2.70
0	0.59	0.16	3.72	2.21	0.72	3.07	3.15	1.14	2.76
1	0.60	0.16	3.79	2.27	0.72	3.13	3.23	1.15	2.81
2	0.62	0.16	3.87	2.32	0.73	3.20	3.30	1.15	2.87
3	0.68	0.16	4.13	2.36	0.74	3.20	3.36	1.17	2.88
4	0.74	0.17	4.38	2.39	0.75	3.21	3.43	1.19	2.88
5	0.81	0.17	4.62	2.43	0.75	3.22	3.49	1.21	2.89
6	0.83	0.18	4.67	3.12	0.81	3.86	4.29	1.23	3.48
7	0.85	0.18	4.72	3.20	0.82	3.90	4.40	1.25	3.52
8	0.87	0.18	4.77	3.28	0.83	3.94	4.51	1.27	3.56
9	0.89	0.19	4.82	3.37	0.85	3.98	4.63	1.29	3.59
10	0.92	0.19	4.86	3.45	0.86	4.02	4.74	1.31	3.62
11	0.94	0.19	4.91	3.53	0.87	4.05	4.85	1.33	3.66
12	0.96	0.19	4.95	3.61	0.88	4.09	4.97	1.35	3.69
13	0.98	0.20	4.99	3.70	0.90	4.12	5.08	1.37	3.72
14	1.00	0.20	5.03	3.78	0.91	4.16	5.19	1.39	3.75
15	1.03	0.20	5.07	3.86	0.92	4.19	5.31	1.40	3.78
16	1.05	0.21	5.11	3.94	0.93	4.22	5.42	1.42	3.81
17	1.07	0.21	5.14	4.03	0.95	4.25	5.54	1.44	3.83
18	1.09	0.21	5.18	4.11	0.96	4.28	5.63	1.46	3.86
19	1.11	0.21	5.22	4.19	0.97	4.31	5.69	1.46	3.90
20	1.14	0.22	5.25	4.27	0.99	4.34	5.74	1.46	3.94
21	1.16	0.22	5.28	4.36	1.00	4.37	5.79	1.46	3.97
22	1.18	0.22	5.32	4.44	1.01	4.39	5.84	1.46	4.01
23	1.20	0.22	5.35	4.52	1.02	4.42	5.89	1.46	4.04
24	1.22	0.23	5.38	4.60	1.04	4.44	5.94	1.46	4.08



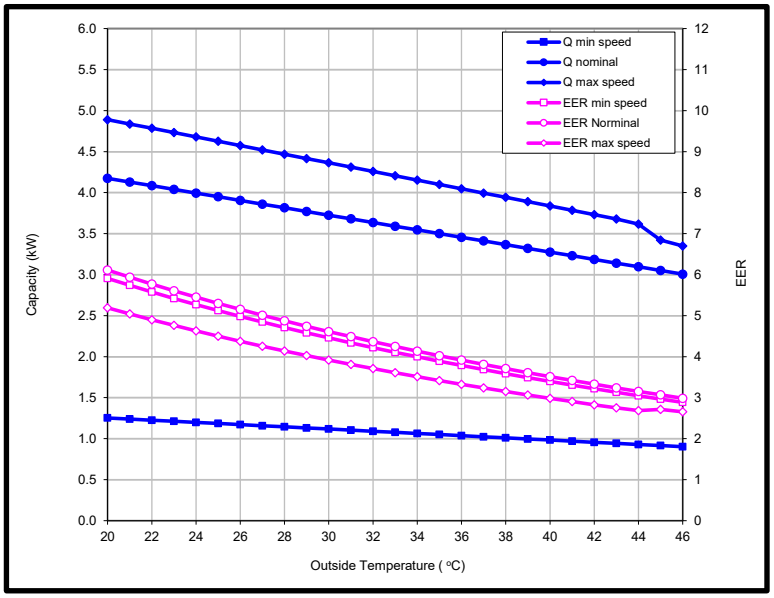
Model : RAS-B13J2FVG-E / RAS-13J2FVG-TR : RAS-13J2AVSG-E / TR

Product specification :

Condition		Capacity (kW)	Power (kW)	EER/COP
Cooling JIS	Min	1.05	0.27	3.89
In: 27 °C DB/19°C WB	Rated	3.50	0.87	4.02
Out: 35°C DB/24°C WB	Max	4.10	1.20	3.42
Heating JIS	Min	1.00	0.22	4.55
In: 20 °C DB/15°C WB	Rated	4.20	1.27	3.31
Out: 7 °C DB/6°C WB	Max	5.00	1.55	3.23
Heating Low Temp. In: 20 °C DB/15°C WB Out: 2°C DB/1°C WB	Max	3.50	1.30	2.69
Heating Low Temp. In: 20 °C DB/15°C WB Out: -10 °C DB	Max	2.60	1.100	2.36
Heating Low Temp. In: 20 °C DB/15°C WB Out: -15 °C DB	Max	2.20	1.000	2.20

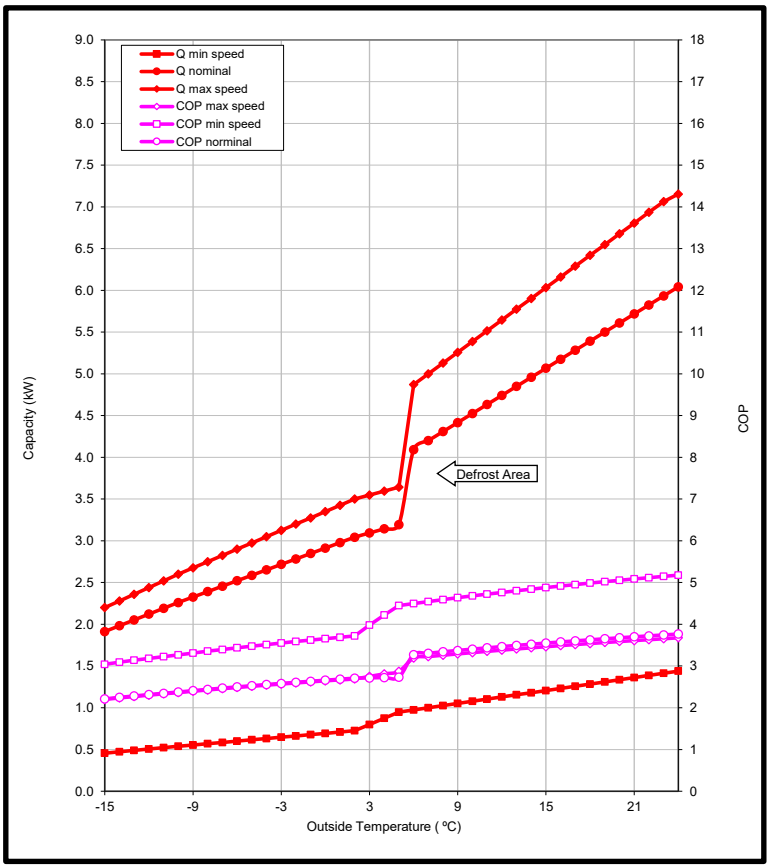
Cooling performance characteristic :

Outside	Min capacity			Nominal capacity			Max capacity		
Temp	Capacity	Power	EER	Capacity	Power	EER	Capacity	Power	EER
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
20	1.25	0.21	5.91	4.17	0.68	6.11	4.89	0.94	5.19
21	1.24	0.22	5.74	4.13	0.70	5.94	4.84	0.96	5.04
22	1.23	0.22	5.58	4.08	0.71	5.77	4.78	0.98	4.90
23	1.21	0.22	5.42	4.04	0.72	5.61	4.73	0.99	4.76
24	1.20	0.23	5.27	3.99	0.73	5.45	4.68	1.01	4.63
25	1.18	0.23	5.12	3.95	0.75	5.30	4.63	1.03	4.50
26	1.17	0.24	4.98	3.90	0.76	5.15	4.57	1.05	4.38
27	1.16	0.24	4.84	3.86	0.77	5.01	4.52	1.06	4.26
28	1.14	0.24	4.71	3.81	0.78	4.87	4.47	1.08	4.14
29	1.13	0.25	4.58	3.77	0.80	4.74	4.42	1.10	4.03
30	1.12	0.25	4.46	3.72	0.81	4.61	4.36	1.11	3.92
31	1.10	0.25	4.34	3.68	0.82	4.49	4.31	1.13	3.81
32	1.09	0.26	4.22	3.63	0.83	4.37	4.26	1.15	3.71
33	1.08	0.26	4.11	3.59	0.85	4.25	4.21	1.17	3.61
34	1.06	0.27	4.00	3.54	0.86	4.13	4.15	1.18	3.51
35	1.05	0.27	3.89	3.50	0.87	4.02	4.10	1.20	3.42
36	1.04	0.27	3.78	3.46	0.88	3.92	4.05	1.22	3.33
37	1.02	0.28	3.68	3.41	0.89	3.81	3.99	1.23	3.24
38	1.01	0.28	3.59	3.37	0.91	3.71	3.94	1.25	3.15
39	1.00	0.29	3.49	3.32	0.92	3.61	3.89	1.27	3.07
40	0.98	0.29	3.40	3.28	0.93	3.51	3.84	1.29	2.98
41	0.97	0.29	3.31	3.23	0.94	3.42	3.78	1.30	2.90
42	0.96	0.30	3.22	3.19	0.96	3.33	3.73	1.32	2.83
43	0.94	0.30	3.13	3.14	0.97	3.24	3.68	1.34	2.75
44	0.93	0.30	3.05	3.10	0.98	3.15	3.62	1.35	2.68
45	0.92	0.31	2.96	3.05	0.99	3.07	3.42	1.26	2.71
46	0.90	0.31	2.89	3.01	1.01	2.98	3.35	1.26	2.65



Heating performance characteristic :

Outside	Min capacity			Nominal capacity			Max capacity		
Temp	Capacity	Power	COP	Capacity	Power	COP	Capacity	Power	COP
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
-15	0.46	0.15	3.04	1.91	0.86	2.21	2.20	1.00	2.20
-14	0.47	0.15	3.09	1.98	0.88	2.25	2.28	1.02	2.24
-13	0.49	0.16	3.14	2.05	0.90	2.28	2.36	1.04	2.27
-12	0.51	0.16	3.18	2.12	0.92	2.32	2.44	1.06	2.30
-11	0.52	0.16	3.23	2.19	0.93	2.35	2.52	1.08	2.33
-10	0.54	0.16	3.27	2.26	0.95	2.38	2.60	1.10	2.36
-9	0.55	0.17	3.31	2.33	0.97	2.41	2.68	1.12	2.40
-8	0.57	0.17	3.35	2.39	0.98	2.44	2.75	1.13	2.43
-7	0.58	0.17	3.40	2.46	0.99	2.47	2.83	1.15	2.46
-6	0.60	0.17	3.44	2.52	1.01	2.50	2.90	1.17	2.49
-5	0.62	0.18	3.48	2.59	1.02	2.53	2.98	1.18	2.51
-4	0.63	0.18	3.51	2.65	1.04	2.56	3.05	1.20	2.54
-3	0.65	0.18	3.55	2.72	1.05	2.58	3.13	1.22	2.57
-2	0.66	0.18	3.59	2.78	1.07	2.61	3.20	1.23	2.59
-1	0.68	0.19	3.62	2.85	1.08	2.64	3.28	1.25	2.62
0	0.69	0.19	3.66	2.91	1.10	2.66	3.35	1.27	2.64
1	0.71	0.19	3.69	2.98	1.11	2.68	3.43	1.28	2.67
2	0.72	0.19	3.72	3.04	1.12	2.71	3.50	1.30	2.69
3	0.80	0.20	3.98	3.09	1.14	2.72	3.55	1.29	2.75
4	0.87	0.21	4.22	3.14	1.15	2.72	3.60	1.28	2.81
5	0.95	0.21	4.45	3.19	1.17	2.73	3.64	1.27	2.87
6	0.97	0.22	4.50	4.09	1.25	3.27	4.87	1.53	3.19
7	1.00	0.22	4.55	4.20	1.27	3.31	5.00	1.55	3.23
8	1.03	0.22	4.59	4.31	1.29	3.34	5.13	1.57	3.26
9	1.05	0.23	4.64	4.42	1.31	3.37	5.26	1.60	3.29
10	1.08	0.23	4.68	4.53	1.33	3.40	5.39	1.62	3.32
11	1.10	0.23	4.72	4.63	1.35	3.44	5.52	1.65	3.35
12	1.13	0.24	4.76	4.74	1.37	3.47	5.65	1.67	3.38
13	1.15	0.24	4.80	4.85	1.39	3.49	5.77	1.69	3.41
14	1.18	0.24	4.84	4.96	1.41	3.52	5.90	1.72	3.44
15	1.21	0.25	4.88	5.07	1.43	3.55	6.03	1.74	3.46
16	1.23	0.25	4.92	5.18	1.45	3.58	6.16	1.77	3.49
17	1.26	0.25	4.95	5.28	1.47	3.60	6.29	1.79	3.51
18	1.28	0.26	4.99	5.39	1.49	3.63	6.42	1.81	3.54
19	1.31	0.26	5.02	5.50	1.51	3.65	6.55	1.84	3.56
20	1.34	0.26	5.05	5.61	1.53	3.68	6.68	1.86	3.59
21	1.36	0.27	5.09	5.72	1.55	3.70	6.81	1.89	3.61
22	1.39	0.27	5.12	5.83	1.56	3.72	6.94	1.91	3.63
23	1.41	0.27	5.15	5.93	1.58	3.74	7.06	1.93	3.65
24	1.44	0.28	5.18	6.04	1.60	3.77	7.15	1.95	3.68



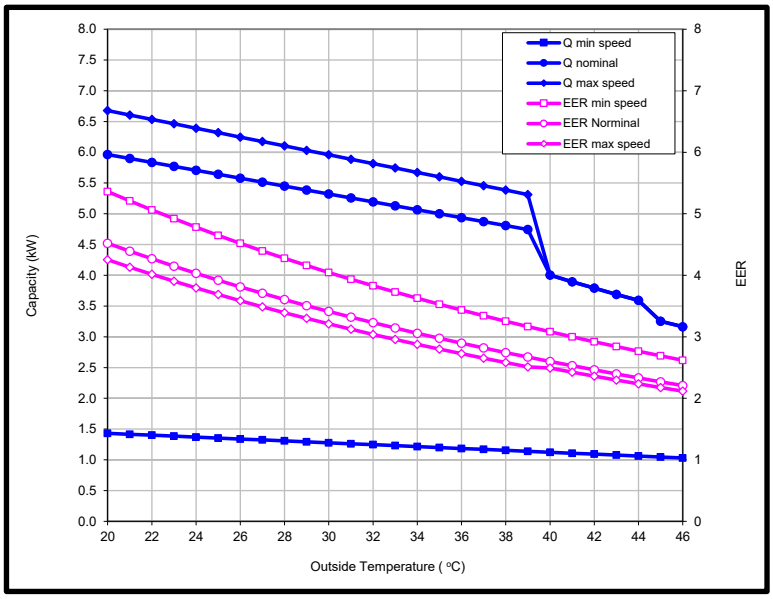
Model : RAS-B18J2FVG-E / RAS-18J2FVG-TR : RAS-18J2AVSG-E / TR

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	5.00	1.68	2.98
Out: 35°C DB/24°C WB	Max	5.60	2.00	2.80
Heating JIS	Min	1.30	0.31	4.19
In: 20 °C DB/15°C WB	Rated	6.00	2.05	2.93
Out: 7°C DB/6°C WB	Max	6.30	2.20	2.86
Heating Low Temp. In: 20 °C DB/15°C WB Out: 2°C DB/1°C WB	Max	4.80	1.80	2.67
Heating Low Temp. In: 20 °C DB/15°C WB Out: -10 °C DB	Max	3.30	1.440	2.29
Heating Low Temp. In: 20 °C DB/15°C WB Out: -15 °C DB	Max	2.80	1.350	2.07

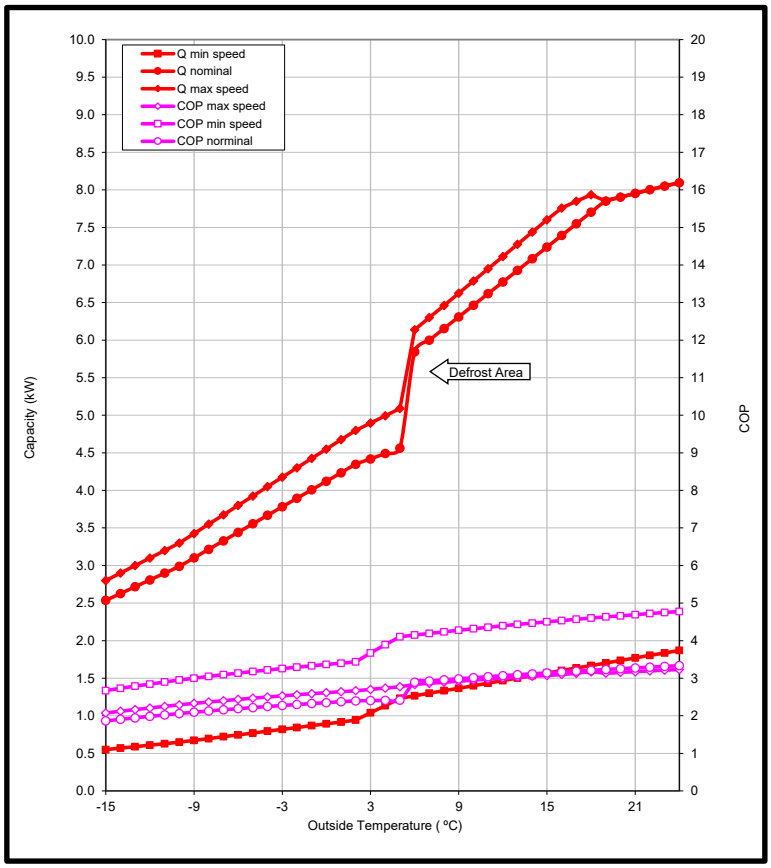
Cooling performance characteristic :

Outside Temp	Min capacity			Nominal capacity			Max capacity		
	Capacity	Power	EER	Capacity	Power	EER	Capacity	Power	EER
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
20	1.43	0.27	5.36	5.96	1.32	4.52	6.68	1.57	4.25
21	1.42	0.27	5.21	5.90	1.34	4.39	6.61	1.60	4.13
22	1.40	0.28	5.06	5.83	1.37	4.27	6.53	1.63	4.02
23	1.38	0.28	4.92	5.77	1.39	4.15	6.46	1.66	3.90
24	1.37	0.29	4.78	5.71	1.42	4.03	6.39	1.68	3.79
25	1.35	0.29	4.65	5.64	1.44	3.92	6.32	1.71	3.69
26	1.34	0.30	4.52	5.58	1.46	3.81	6.25	1.74	3.59
27	1.32	0.30	4.40	5.51	1.49	3.71	6.17	1.77	3.49
28	1.31	0.31	4.28	5.45	1.51	3.61	6.10	1.80	3.39
29	1.29	0.31	4.16	5.39	1.54	3.51	6.03	1.83	3.30
30	1.28	0.32	4.05	5.32	1.56	3.41	5.96	1.86	3.21
31	1.26	0.32	3.94	5.26	1.58	3.32	5.89	1.89	3.12
32	1.25	0.33	3.83	5.19	1.61	3.23	5.82	1.91	3.04
33	1.23	0.33	3.73	5.13	1.63	3.14	5.74	1.94	2.96
34	1.22	0.34	3.63	5.06	1.66	3.06	5.67	1.97	2.88
35	1.20	0.34	3.53	5.00	1.68	2.98	5.60	2.00	2.80
36	1.18	0.34	3.43	4.94	1.70	2.90	5.53	2.03	2.73
37	1.17	0.35	3.34	4.87	1.73	2.82	5.46	2.06	2.65
38	1.15	0.35	3.25	4.81	1.75	2.74	5.38	2.09	2.58
39	1.14	0.36	3.17	4.74	1.78	2.67	5.31	2.11	2.51
40	1.12	0.36	3.08	4.00	1.54	2.60	4.00	1.61	2.49
41	1.11	0.37	3.00	3.90	1.54	2.53	3.90	1.61	2.43
42	1.09	0.37	2.92	3.79	1.54	2.46	3.79	1.61	2.36
43	1.08	0.38	2.84	3.69	1.54	2.40	3.69	1.61	2.30
44	1.06	0.38	2.77	3.59	1.54	2.33	3.59	1.61	2.24
45	1.05	0.39	2.69	3.25	1.43	2.27	3.25	1.49	2.18
46	1.03	0.39	2.62	3.16	1.43	2.21	3.16	1.49	2.12



Heating performance characteristic :

Outside Temp	Min capacity			Nominal capacity			Max capacity		
	Capacity	Power	COP	Capacity	Power	COP	Capacity	Power	COP
(°C)	(kW)	(kW)	(-)	(kW)	(kW)	(-)	(kW)	(kW)	(-)
-15	0.55	0.21	2.67	2.54	1.36	1.86	2.80	1.35	2.07
-14	0.57	0.21	2.73	2.63	1.38	1.91	2.90	1.37	2.12
-13	0.59	0.21	2.79	2.72	1.40	1.95	3.00	1.39	2.16
-12	0.61	0.21	2.84	2.81	1.42	1.98	3.10	1.40	2.21
-11	0.63	0.22	2.90	2.90	1.43	2.02	3.20	1.42	2.25
-10	0.65	0.22	2.95	2.99	1.45	2.06	3.30	1.44	2.29
-9	0.67	0.22	3.00	3.10	1.48	2.09	3.43	1.47	2.33
-8	0.70	0.23	3.05	3.22	1.51	2.13	3.55	1.50	2.37
-7	0.72	0.23	3.09	3.33	1.54	2.16	3.68	1.53	2.40
-6	0.75	0.24	3.14	3.44	1.57	2.19	3.80	1.56	2.44
-5	0.77	0.24	3.18	3.56	1.60	2.22	3.93	1.59	2.47
-4	0.79	0.25	3.22	3.67	1.63	2.25	4.05	1.62	2.50
-3	0.82	0.25	3.26	3.78	1.66	2.27	4.18	1.65	2.53
-2	0.84	0.26	3.30	3.89	1.69	2.30	4.30	1.68	2.56
-1	0.87	0.26	3.33	4.01	1.72	2.33	4.43	1.71	2.59
0	0.89	0.27	3.37	4.12	1.75	2.35	4.55	1.74	2.61
1	0.92	0.27	3.40	4.23	1.78	2.37	4.68	1.77	2.64
2	0.94	0.27	3.43	4.35	1.81	2.40	4.80	1.80	2.67
3	1.04	0.28	3.67	4.42	1.84	2.40	4.90	1.81	2.70
4	1.14	0.29	3.89	4.49	1.86	2.41	4.99	1.82	2.74
5	1.23	0.30	4.10	4.56	1.89	2.42	5.09	1.84	2.77
6	1.27	0.31	4.15	5.85	2.02	2.90	6.14	2.17	2.83
7	1.30	0.31	4.19	6.00	2.05	2.93	6.30	2.20	2.86
8	1.33	0.31	4.24	6.15	2.08	2.96	6.46	2.23	2.89
9	1.37	0.32	4.28	6.31	2.11	2.99	6.63	2.27	2.92
10	1.40	0.32	4.32	6.46	2.15	3.01	6.79	2.30	2.95
11	1.43	0.33	4.36	6.62	2.18	3.04	6.95	2.34	2.97
12	1.47	0.33	4.39	6.77	2.21	3.07	7.11	2.37	3.00
13	1.50	0.34	4.43	6.93	2.24	3.09	7.28	2.40	3.03
14	1.53	0.34	4.47	7.08	2.27	3.12	7.44	2.44	3.05
15	1.57	0.35	4.50	7.24	2.30	3.14	7.60	2.47	3.07
16	1.60	0.35	4.54	7.39	2.34	3.17	7.76	2.50	3.10
17	1.64	0.36	4.57	7.55	2.37	3.19	7.85	2.50	3.13
18	1.67	0.36	4.60	7.70	2.40	3.21	7.93	2.50	3.17
19	1.70	0.37	4.63	7.85	2.43	3.23	7.85	2.50	3.13
20	1.74	0.37	4.66	7.90	2.43	3.25	7.90	2.50	3.16
21	1.77	0.38	4.69	7.95	2.43	3.27	7.95	2.50	3.18
22	1.80	0.38	4.72	8.00	2.43	3.29	8.00	2.50	3.19
23	1.84	0.39	4.75	8.05	2.43	3.31	8.05	2.50	3.21
24	1.87	0.39	4.78	8.10	2.43	3.33	8.10	2.50	3.23



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