

# *Residential Inverter Heat Pump R32*

## *HAORI Series*

### Indoor Units

**RAS-10N4KVRG-EE**

**RAS-13N4KVRG-EE**

**RAS-16N4KVRG-EE**

### Outdoor Units

**RAS-10N4AVRG-EE**

**RAS-13N4AVRG-EE**


**RAS-16N4AVRG-EE**

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## 1. Line up

Outdoor Unit	Indoor Unit	Model Name		Capacity Rank
		CDU	FCU	
		RAS-10N4AVRG-EE	RAS-10N4KVRG-EE	10k
		RAS-13N4AVRG-EE	RAS-13N4KVRG-EE	13k
		RAS-16N4AVRG-EE	RAS-16N4KVRG-EE	16k

## Accessories

Appearance	Model Name	Remark
	WH-UA01UE	<p>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</p> <p>( packed with indoor unit )</p>
	RB-RXS33-E	<p>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</p> <p>( optional remote controller )</p>
	Toshiba Home AC Controller Application	<p>Adapter built-in</p> <p>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.</p>

## 2. Specifications

System	Size	10k	13k	16k
	Indoor	RAS-10N4KVRG-EE	RAS-13N4KVRG-EE	RAS-16N4KVRG-EE
	Outdoor	RAS-10N4AVRG-EE	RAS-13N4AVRG-EE	RAS-16N4AVRG-EE
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
	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 <sup>3</sup> /hr)	600	670	690
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
	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 <sup>3</sup> /hr)	610	680	730
FCU	Dimensions	H x W x D (mm)	300 x 987 x 210	
		Net Weight (kg)	11	11
CDU	Dimensions	H x W x D (mm)	550 x 780 x 290	
		Net Weight (kg)	26	30
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	<b>A / A</b>	<b>A / A</b>	<b>A / A</b>
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.

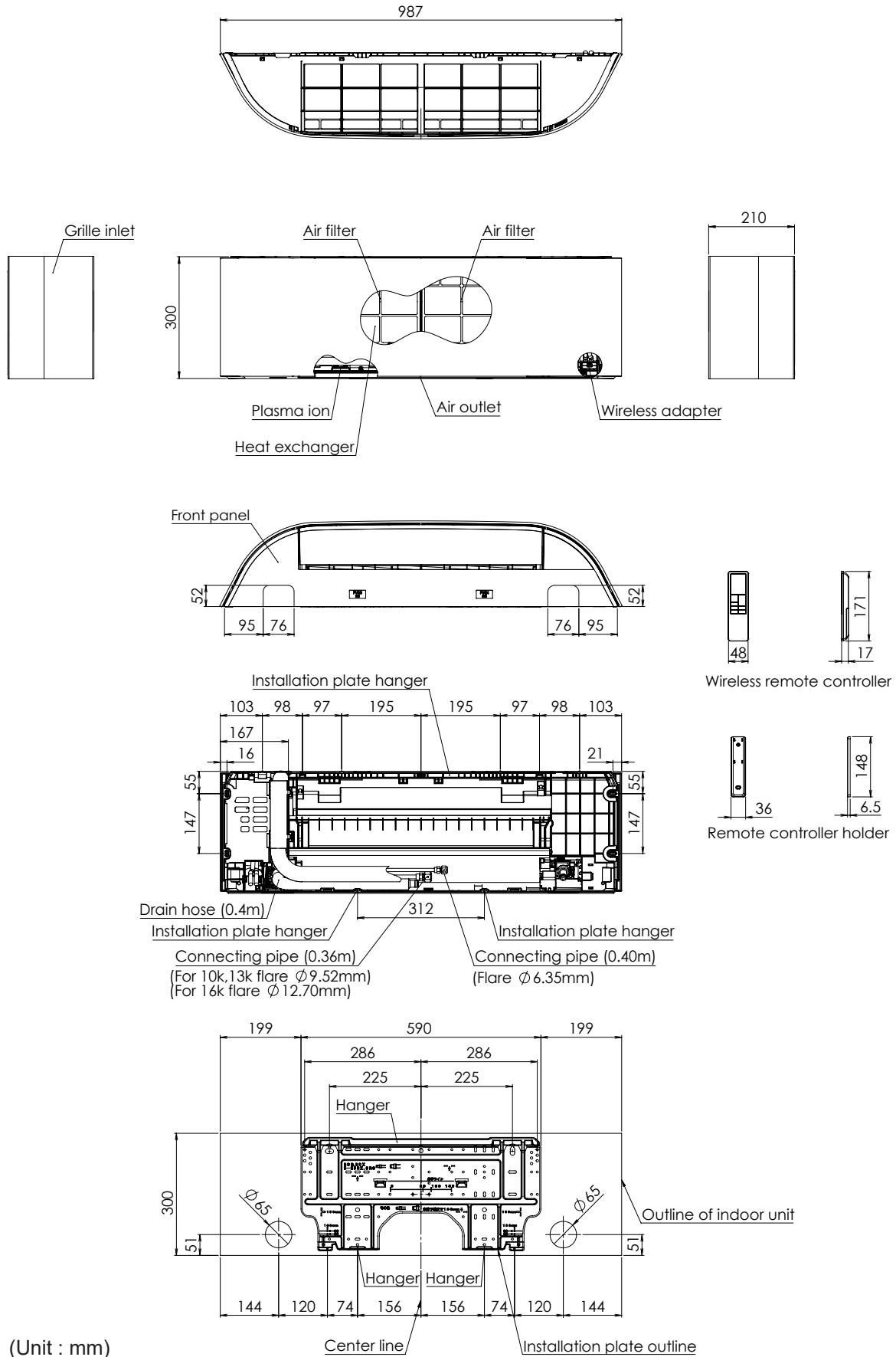
Cooling : Capacity test condition, inside : 27 °C (Db) / 19 °C (Wb), outside : 35 °C (Db) / 24 °C (Wb)

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

Piping length : 5 m per Indoor Unit.

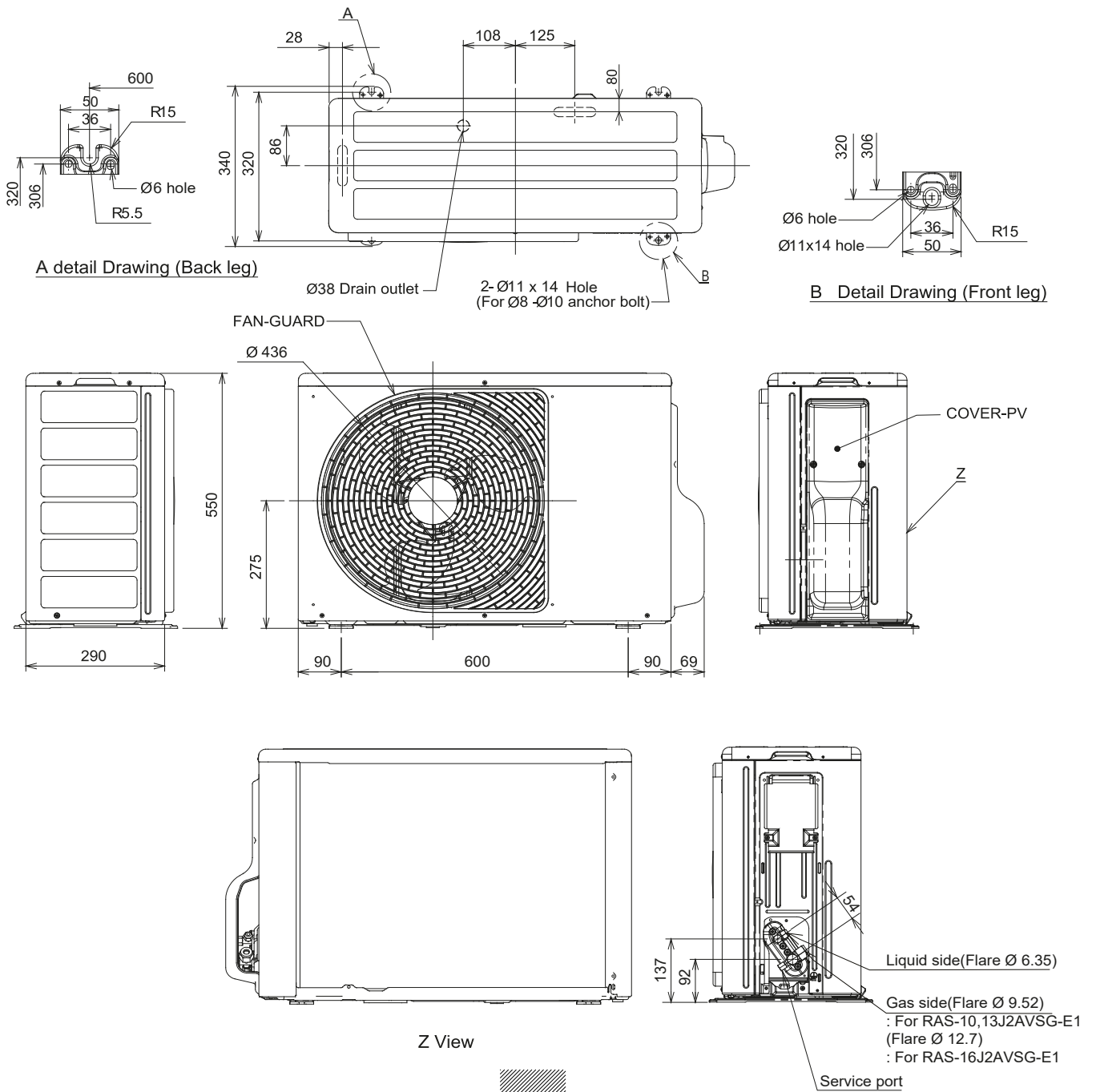
### 3. Dimension

Indoor Unit : RAS-10N4KVRG-EE, RAS-13N4KVRG-EE, RAS-16N4KVRG-EE



(Unit : mm)

Outdoor Unit : RAS-10N4AVRG-EE, RAS-13N4AVRG-EE, RAS-16N4AVRG-EE

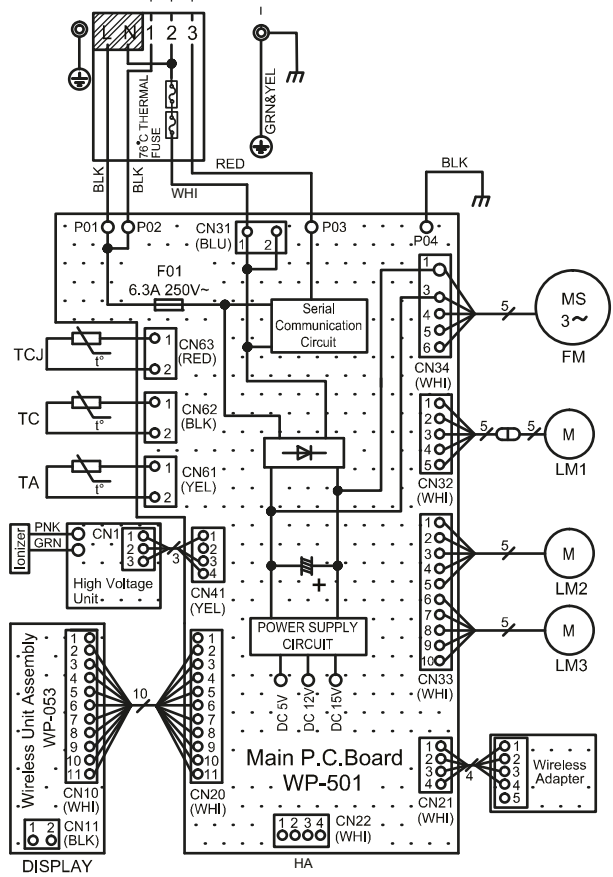
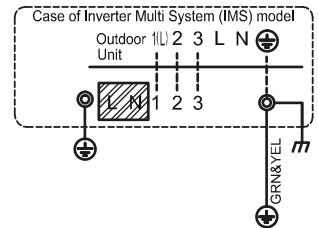
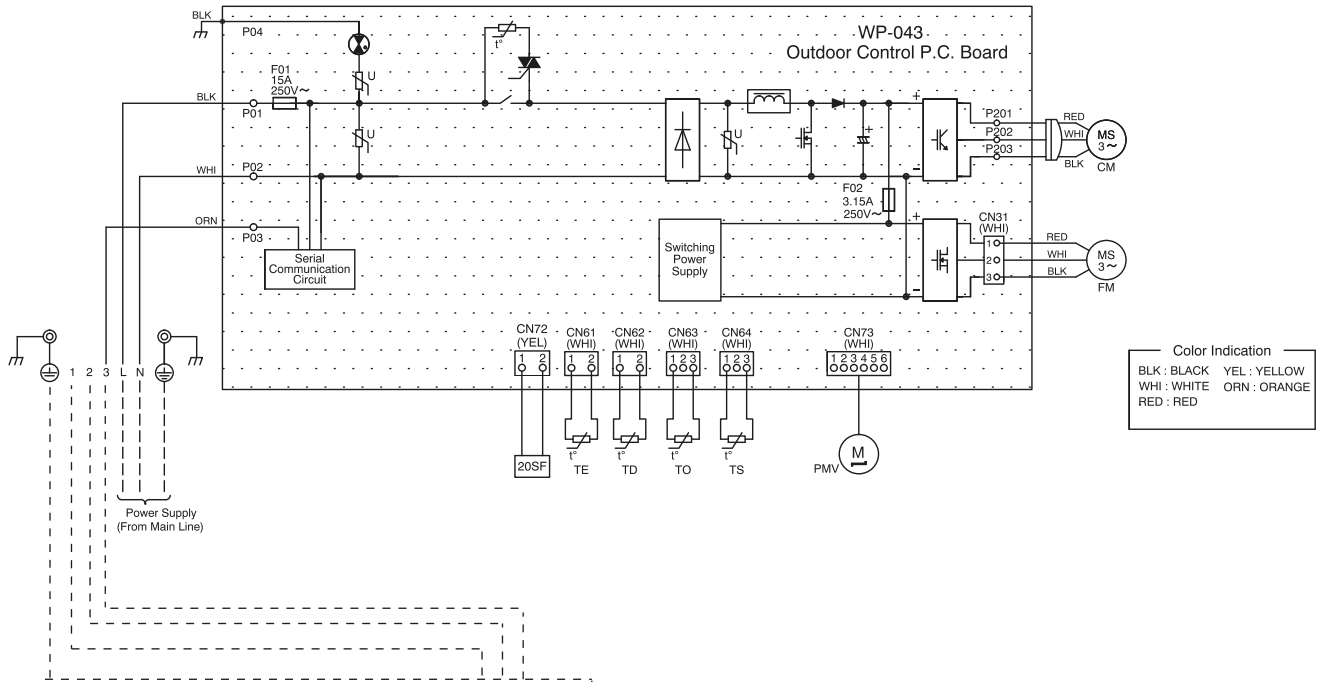


(Unit : mm)

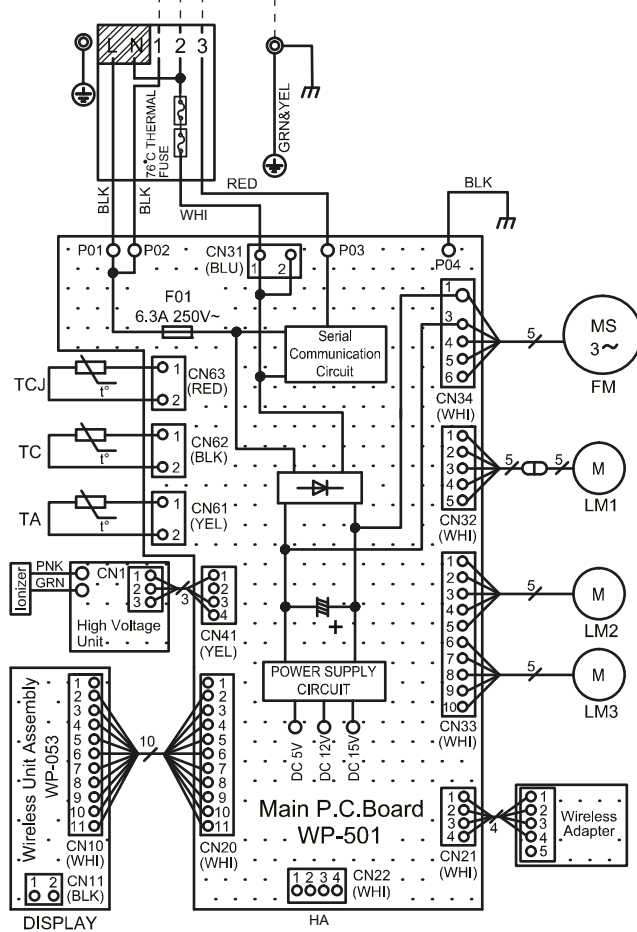
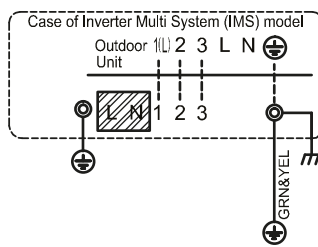
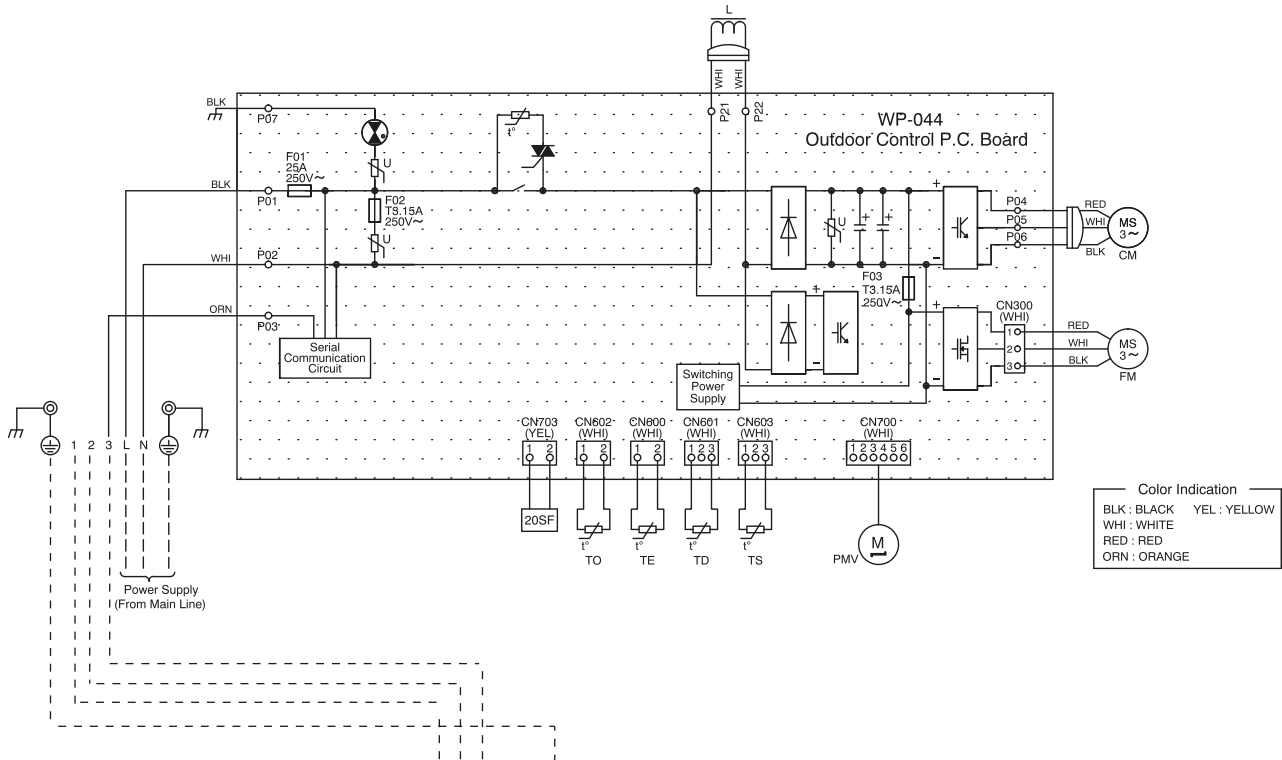
Installation dimension

### 4. Wiring diagrams

RAS-10N4KVRG-EE ; RAS-10N4AVRG-EE / RAS-13N4KVRG-EE ; RAS-13N4AVRG-EE



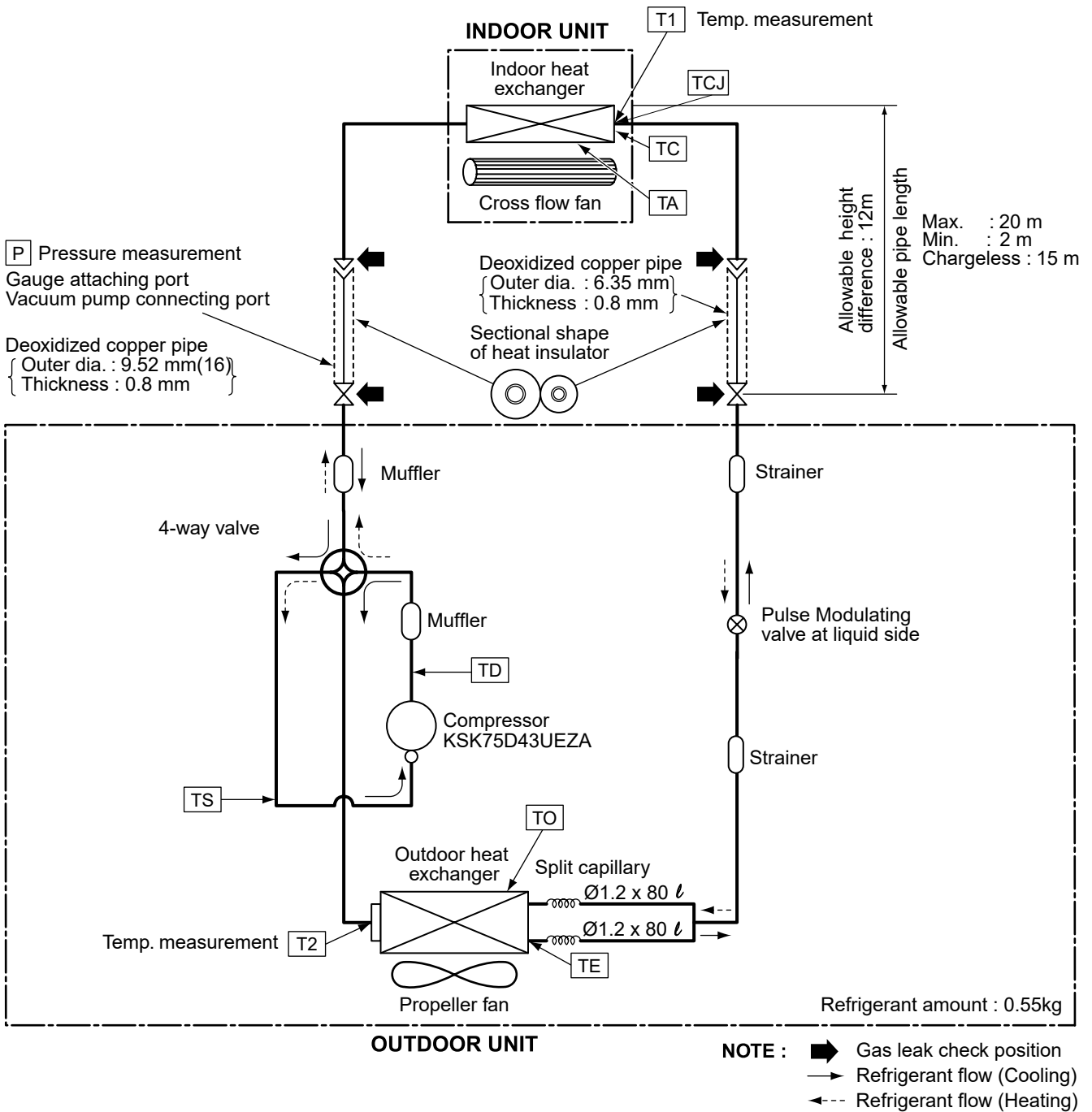
RAS-16N4KVRG-EE ; RAS-16N4AVRG-EE





### 5. Refirgerant cycle diagrams

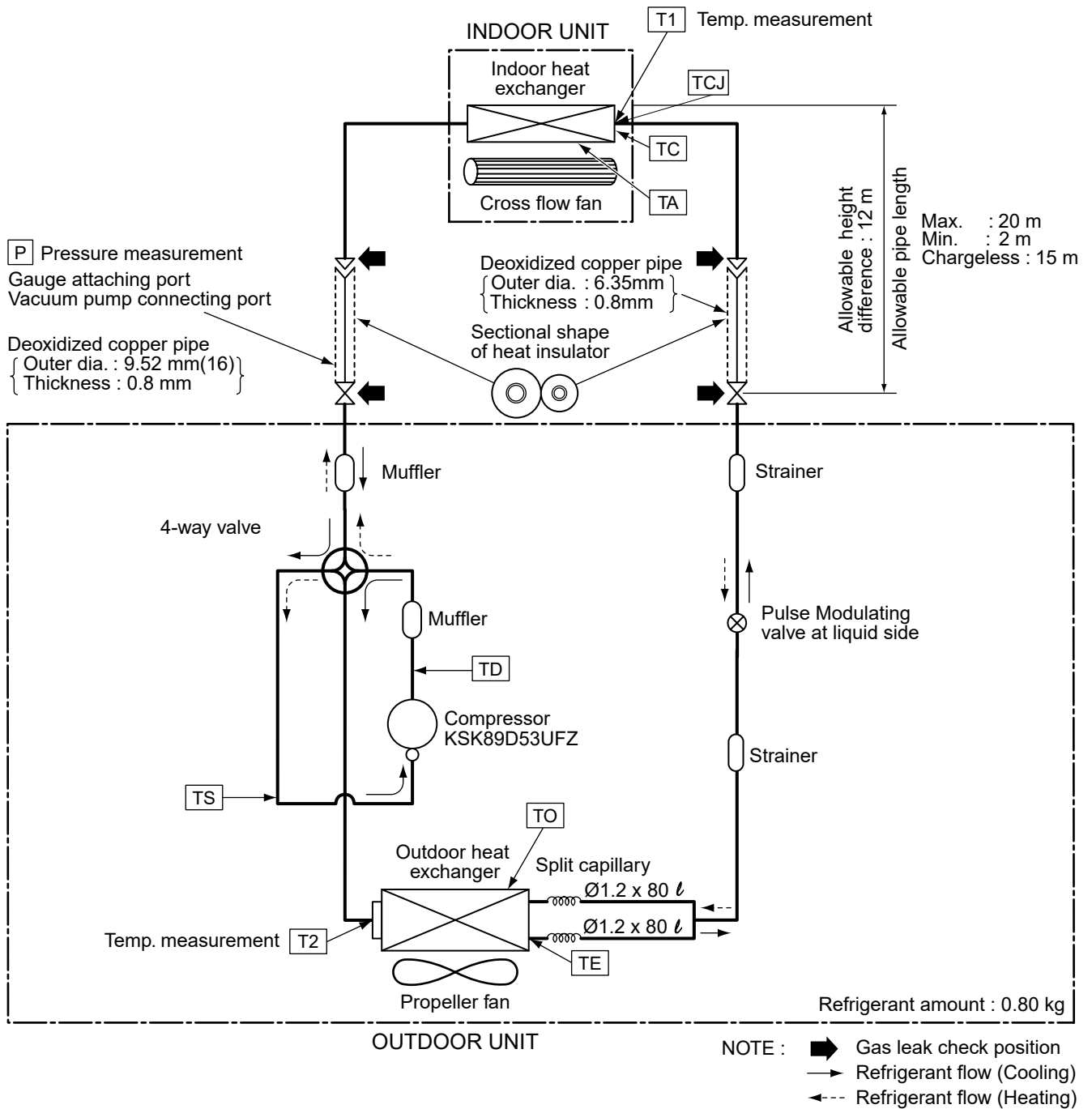
RAS-10N4KVRG-EE ; RAS-10N4AVRG-EE



**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)

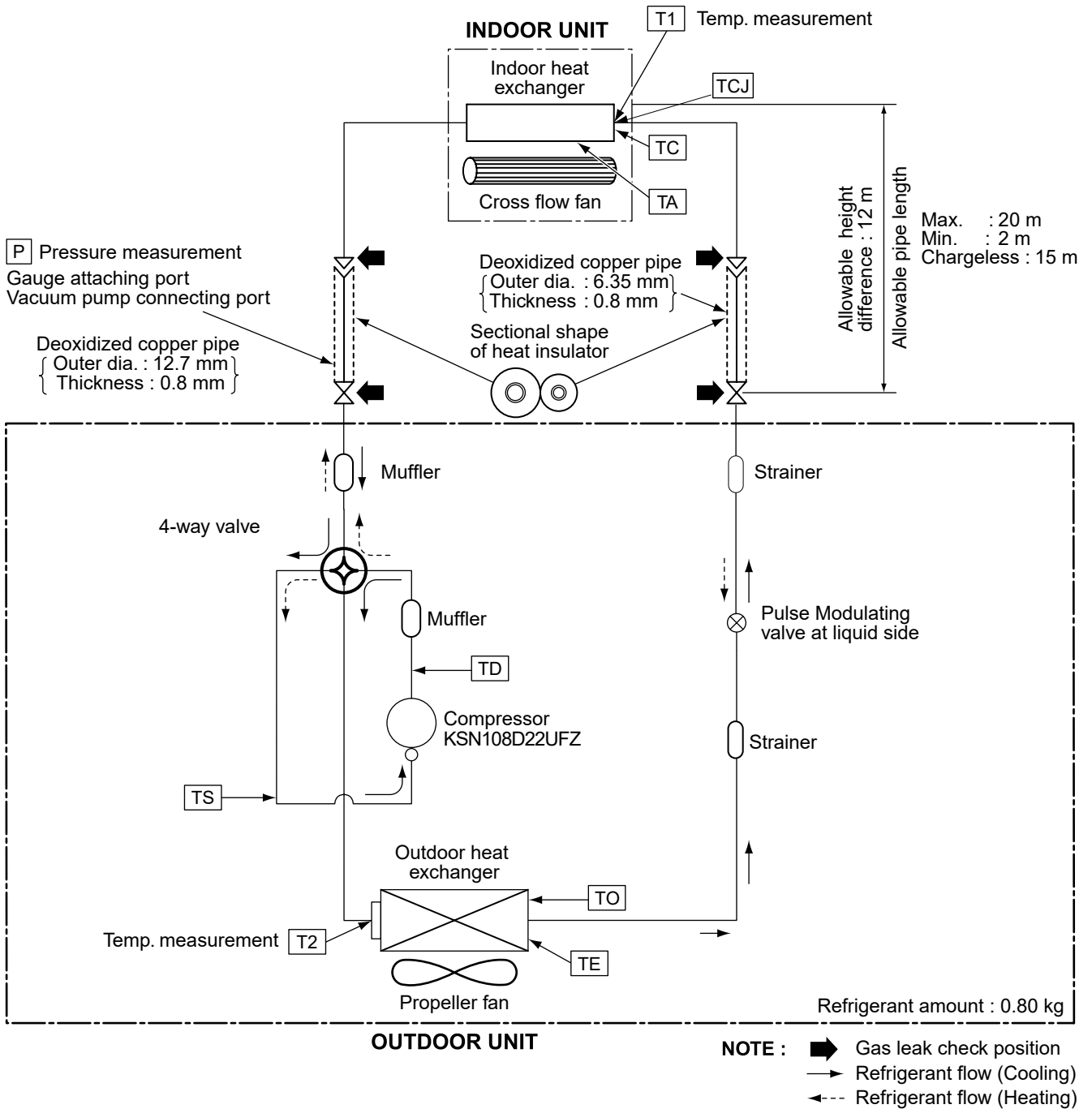
RAS-13N4KVRG-EE ; RAS-13N4AVRG-EE



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-16N4KVRG-EE ; RAS-16N4AVRG-EE



**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

## &lt;Cooling&gt;

Temperature condition(°C)		Model name	Standard pressure <b>P (MPa)</b>	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-10N4KVRG*	1.1 to 1.2	12 to 13	43 to 44	High	High	51	5.0
		RAS-13N4KVRG*	1.0 to 1.1	10 to 11	43 to 44	High	High	63	
		RAS-16N4KVRG*	1.0 to 1.1	8 to 9	46 to 47	High	High	76	

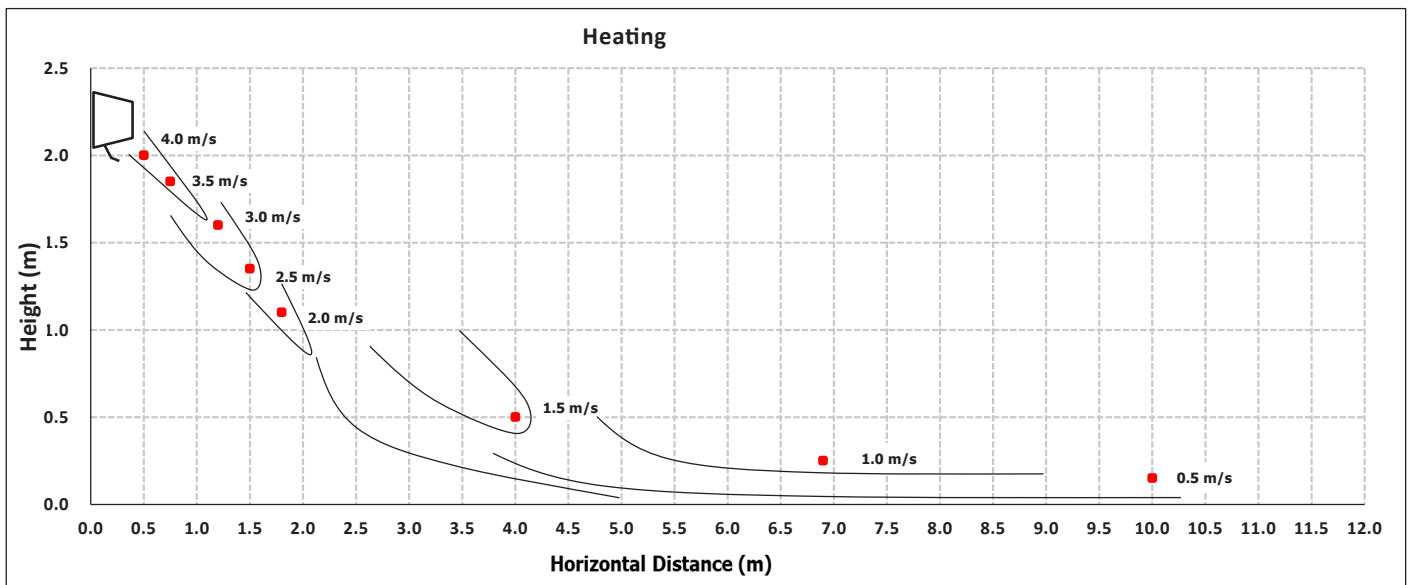
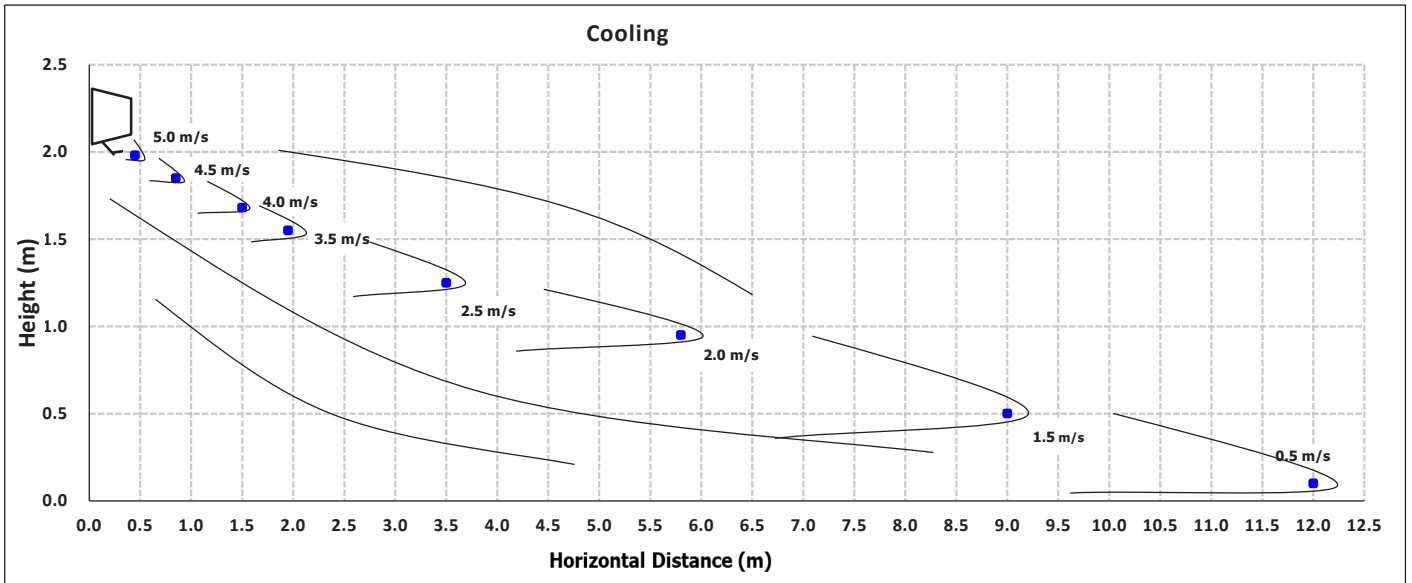
## &lt;Heating&gt;

Temperature condition(°C)		Model name	Standard pressure <b>P (MPa)</b>	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-10N4KVRG*	2.4 to 2.6	39 to 40	2 to 3	High	High	74	5.0
		RAS-13N4KVRG*	2.6 to 2.8	45 to 46	2 to 3	High	High	79	
		RAS-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

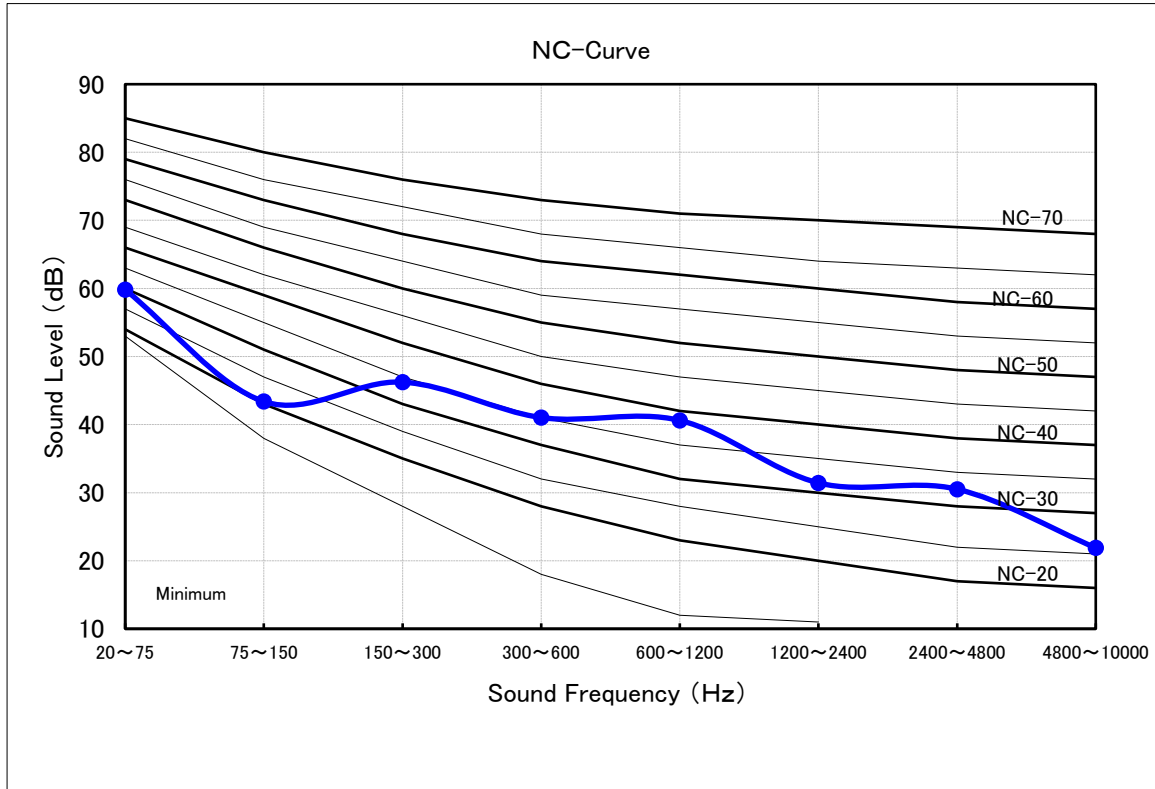
RAS-10N4KVRG-EE / RAS-13N4KVRG-EE / RAS-16N4KVRG-EE



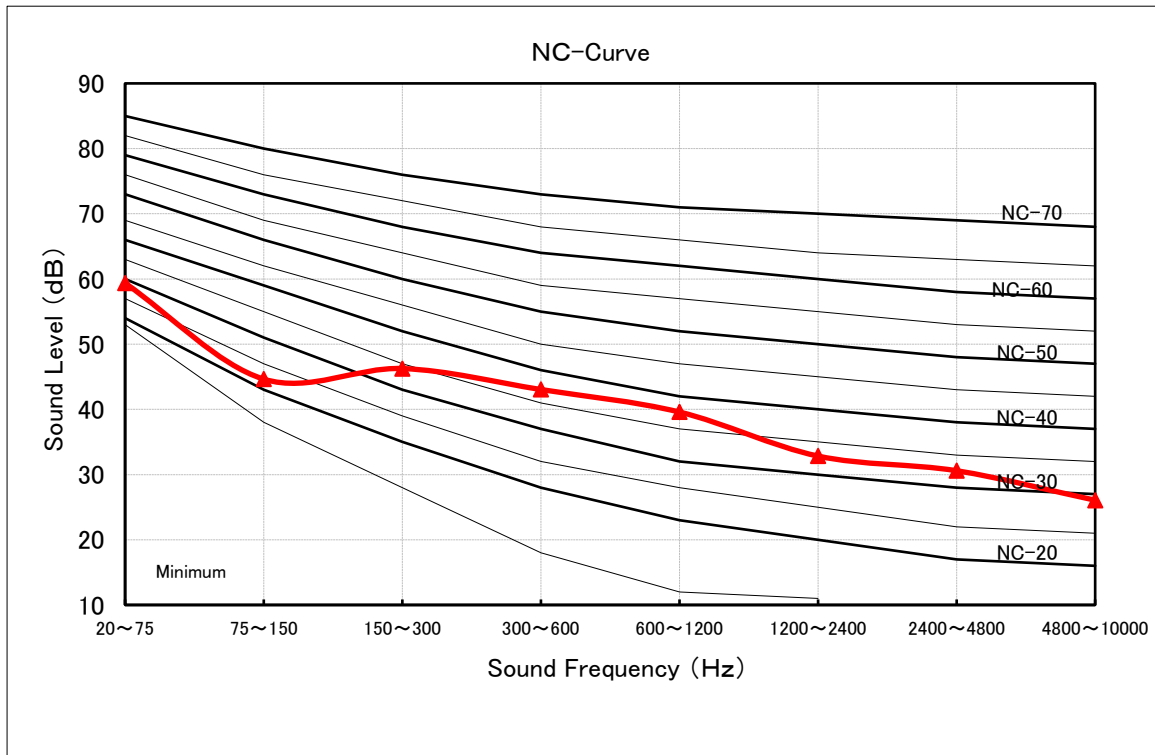
## 7. Sound Characteristics (NC Curve)

Outdoor Unit : RAS-10N4AVRG-EE (Rated Conditions)

Cooling

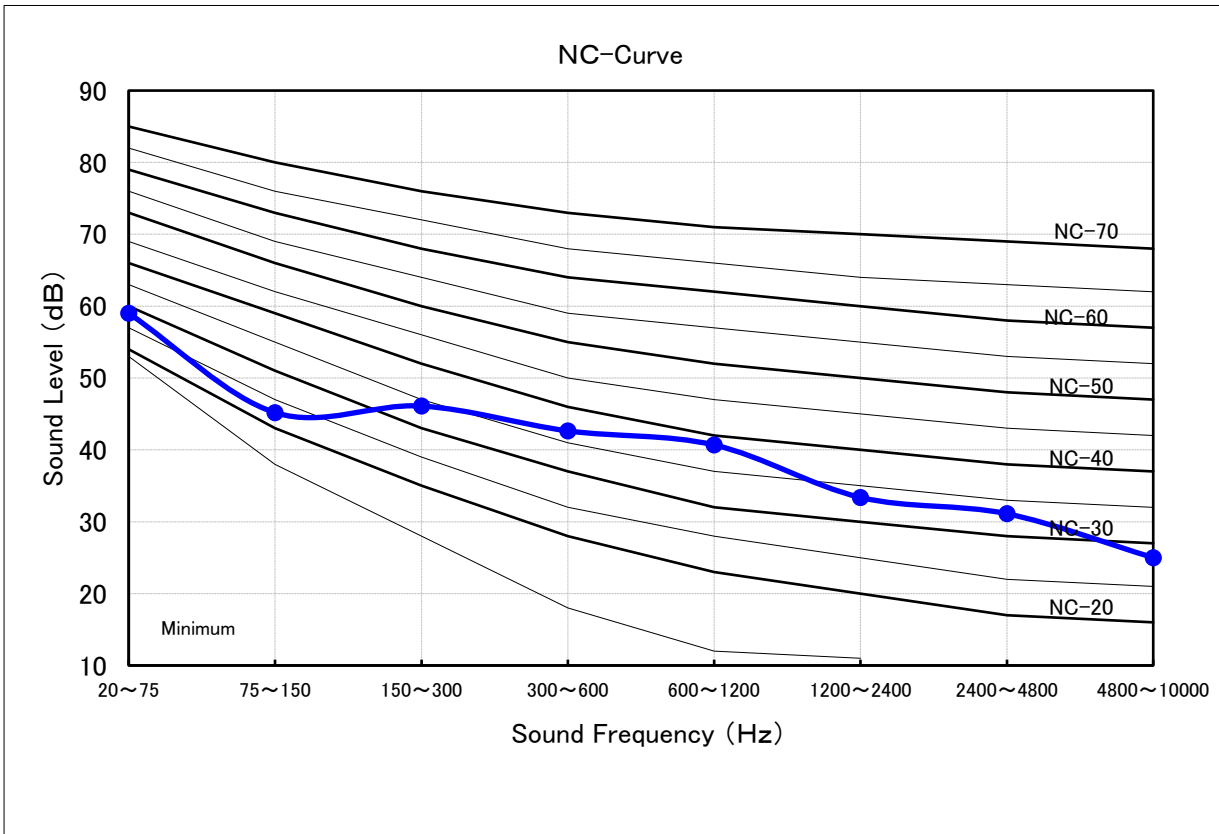


Heating

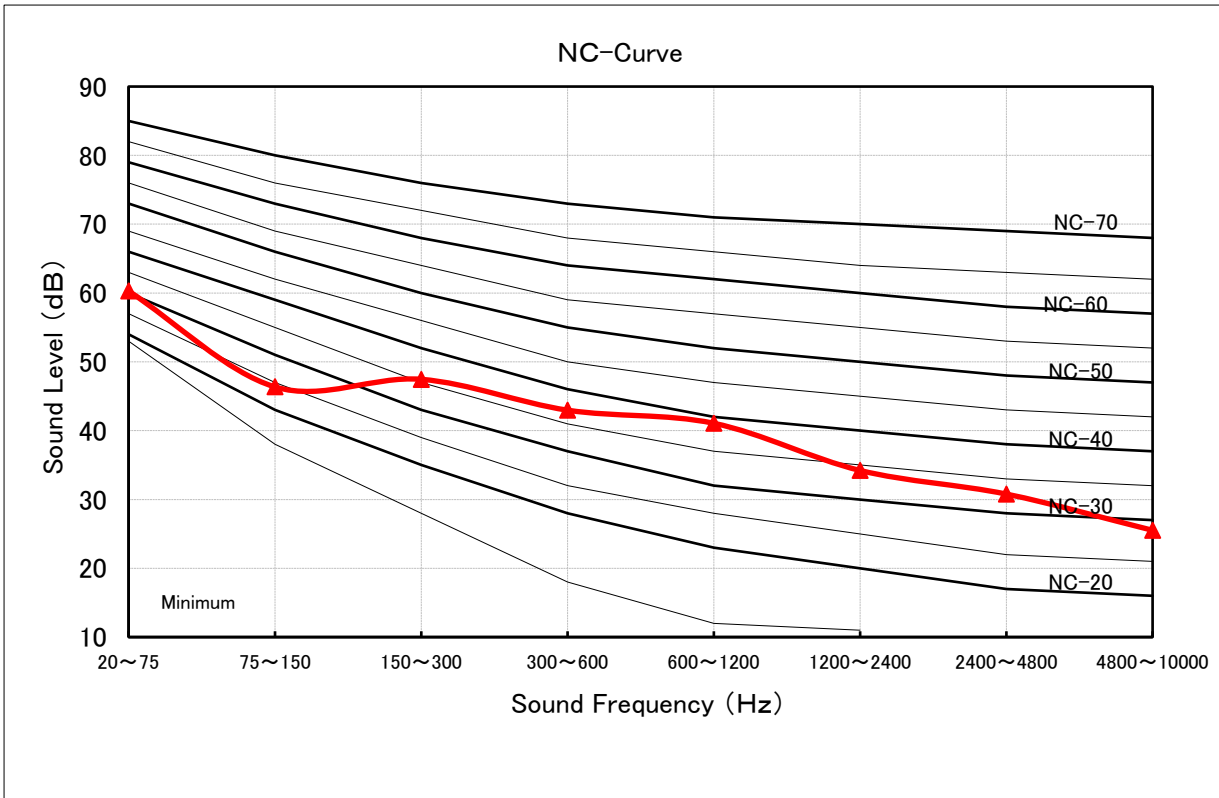


Outdoor Unit : RAS-13N4AVRG-EE (Rated Conditions)

Cooling

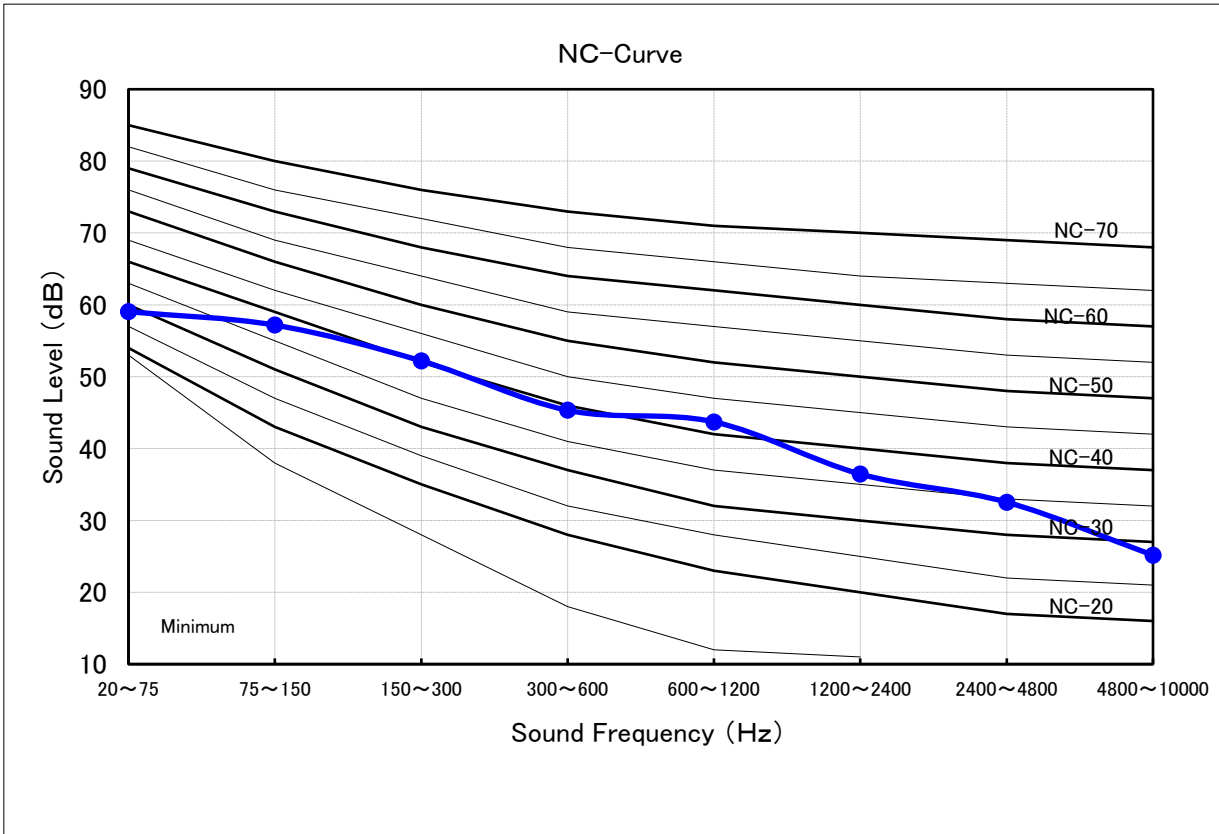


Heating

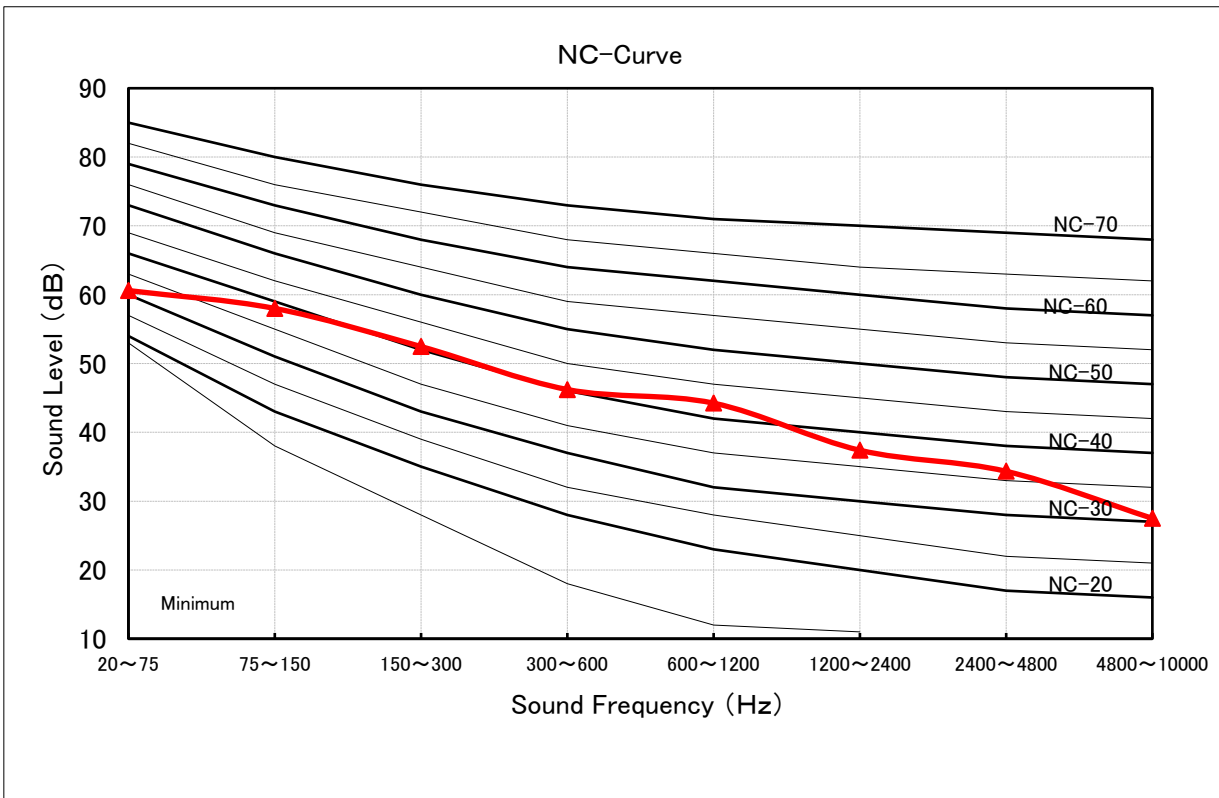


Outdoor Unit : RAS-16N4AVRG-EE (Rated Conditions)

Cooling



Heating





## 8. Capacity Table

Product models : RAS-10N4KVRG-EE : RAS-10N4AVRG-EE

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
<b>35</b>	<b>2.05</b>	<b>1.69</b>	<b>2.27</b>	<b>1.79</b>	<b>2.43</b>	<b>1.91</b>	<b>2.50</b>	<b>1.90</b>	<b>2.57</b>	<b>1.90</b>	<b>2.72</b>	<b>1.87</b>	<b>2.85</b>	<b>1.83</b>
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-13N4KVRG-EE : RAS-13N4AVRG-EE

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
<b>35</b>	<b>2.87</b>	<b>2.30</b>	<b>3.17</b>	<b>2.45</b>	<b>3.40</b>	<b>2.60</b>	<b>3.50</b>	<b>2.59</b>	<b>3.60</b>	<b>2.58</b>	<b>3.81</b>	<b>2.54</b>	<b>3.99</b>	<b>2.48</b>
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-16N4KVRG-EE : RAS-16N4AVRG-EE

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)

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
<b>35</b>	<b>3.78</b>	<b>2.99</b>	<b>4.17</b>	<b>3.18</b>	<b>4.47</b>	<b>3.37</b>	<b>4.60</b>	<b>3.36</b>	<b>4.73</b>	<b>3.35</b>	<b>5.01</b>	<b>3.29</b>	<b>5.24</b>	<b>3.21</b>
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







# 10. Performance Characteristic

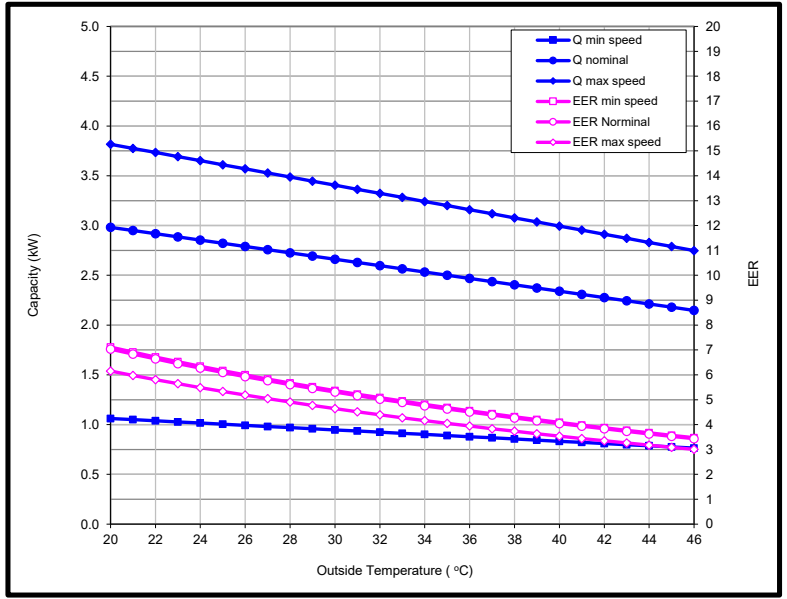
Model : RAS-10N4KVRG-EE : RAS-10N4AVRG-EE

**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

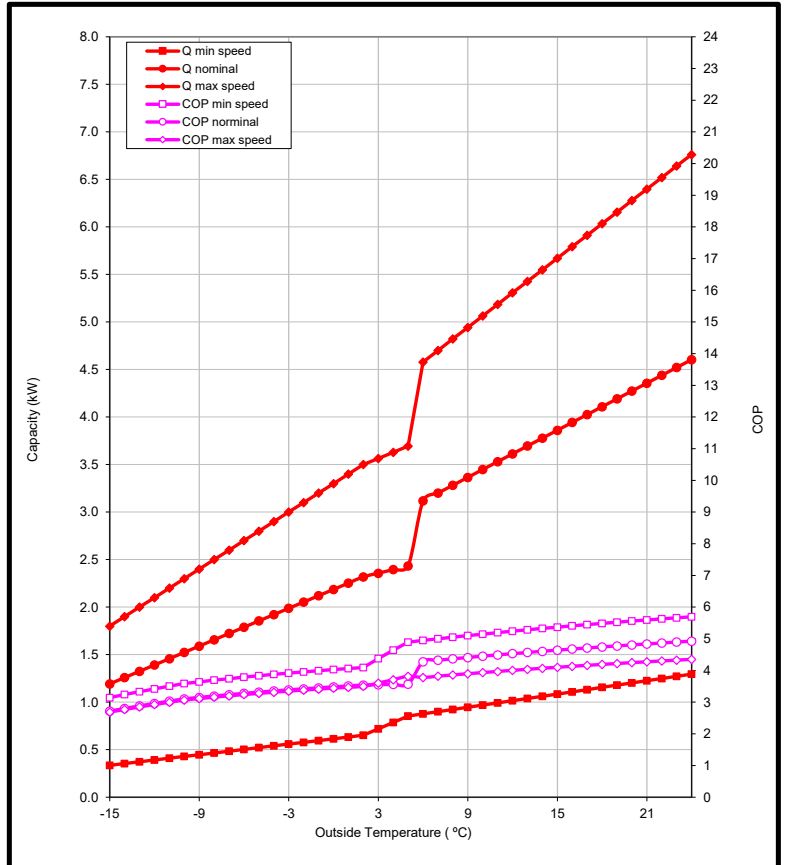
**Cooling performance characteristic :**

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
<b>35</b>	<b>0.89</b>	<b>0.19</b>	<b>4.68</b>	<b>2.50</b>	<b>0.54</b>	<b>4.63</b>	<b>3.20</b>	<b>0.79</b>	<b>4.05</b>
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 (-)
<b>-15</b>	<b>0.34</b>	<b>0.11</b>	<b>3.14</b>	<b>1.19</b>	<b>0.44</b>	<b>2.72</b>	<b>1.80</b>	<b>0.67</b>	<b>2.69</b>
-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
<b>-10</b>	<b>0.43</b>	<b>0.12</b>	<b>3.59</b>	<b>1.52</b>	<b>0.49</b>	<b>3.10</b>	<b>2.30</b>	<b>0.75</b>	<b>3.07</b>
-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
<b>2</b>	<b>0.65</b>	<b>0.16</b>	<b>4.09</b>	<b>2.32</b>	<b>0.65</b>	<b>3.54</b>	<b>3.50</b>	<b>1.00</b>	<b>3.50</b>
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
<b>7</b>	<b>0.90</b>	<b>0.18</b>	<b>5.00</b>	<b>3.20</b>	<b>0.74</b>	<b>4.32</b>	<b>4.70</b>	<b>1.23</b>	<b>3.82</b>
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



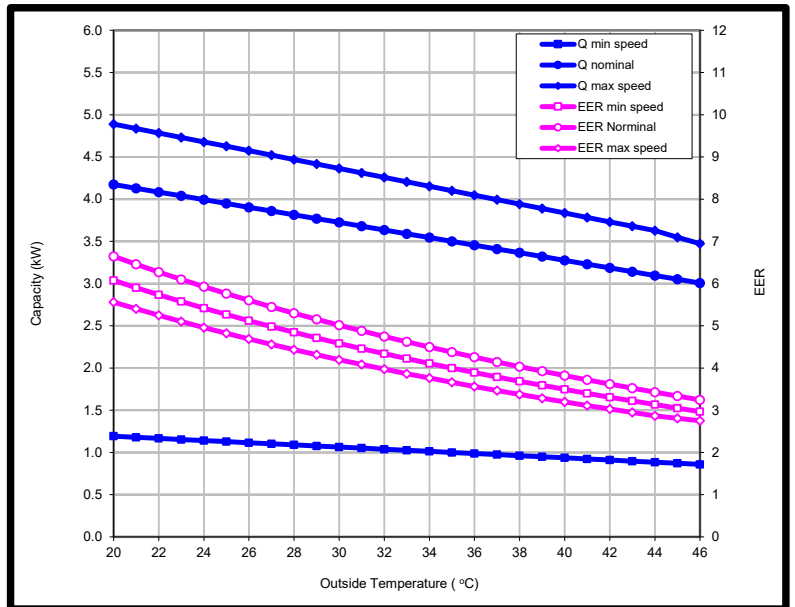
Model : RAS-13N4KVRG-EE : RAS-13N4AVRG-EE

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
	Max	2.80	1.050	2.67
Heating Low Temp. In: 20 °C DB/15°C WB Out: -10°C DB	Max	2.20	0.850	2.59
	Max	2.20	0.850	2.59

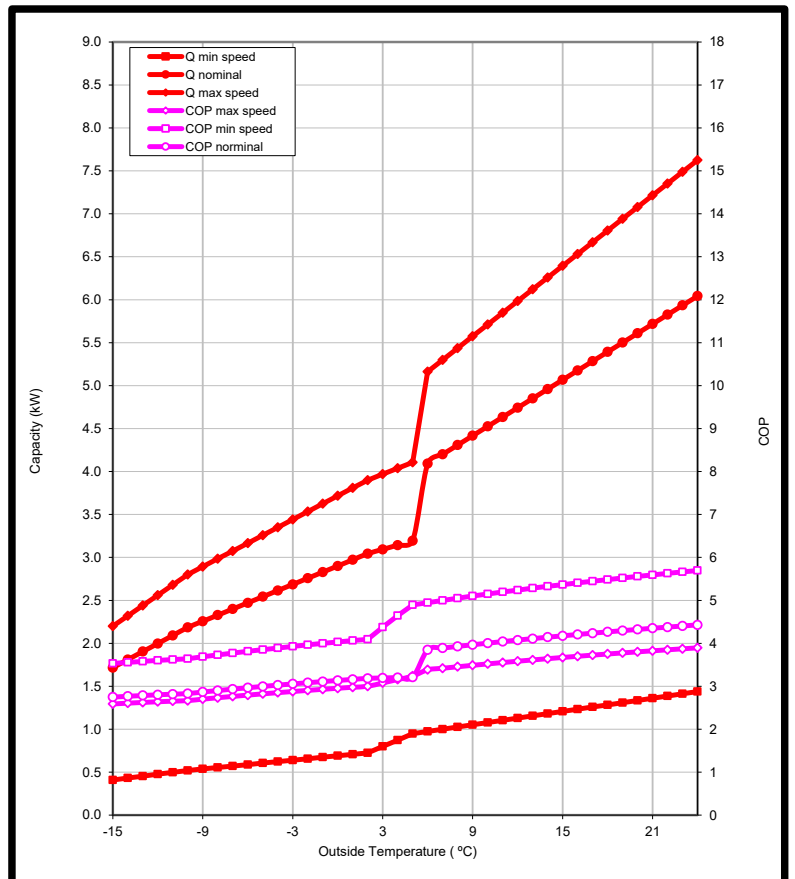
Cooling performance characteristic :

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





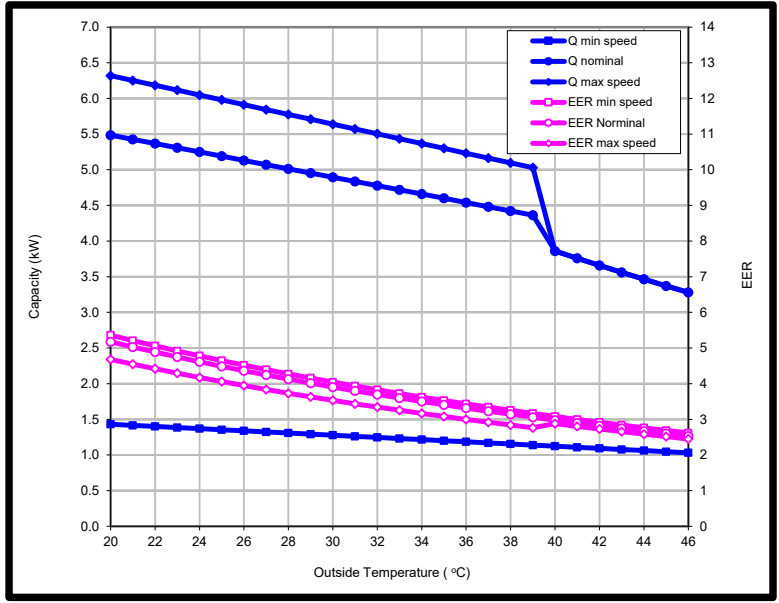
Model : RAS-16N4KVRG-EE : RAS-16N4AVRG-EE

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	1.20	0.34	3.53
	Rated	4.60	1.35	3.41
	Max	5.30	1.72	3.08
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	1.10	0.30	3.67
	Rated	5.50	1.52	3.62
	Max	6.30	1.90	3.32
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB	Max	4.50	1.60	2.81
	Max	3.30	1.400	2.36
Heating Low Temp. In: 20°C DB/15°C WB Out: -10°C DB	Max	2.70	1.200	2.25

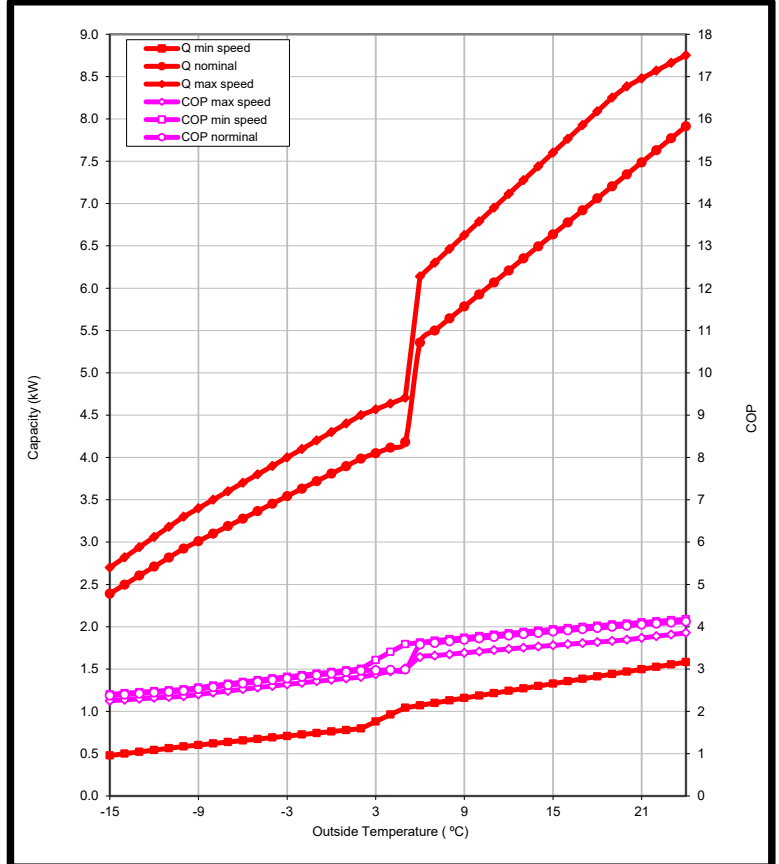
Cooling performance characteristic :

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
<b>35</b>	<b>1.20</b>	<b>0.34</b>	<b>3.53</b>	<b>4.60</b>	<b>1.35</b>	<b>3.41</b>	<b>5.30</b>	<b>1.72</b>	<b>3.08</b>
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	4.90	1.86	2.60
42	1.09	0.37	2.92	4.18	1.49	2.82	4.84	1.88	2.52
43	1.08	0.38	2.84	4.12	1.51	2.74	4.78	1.90	2.44
44	1.06	0.38	2.77	4.06	1.53	2.67	4.72	1.92	2.36
45	1.05	0.39	2.69	4.00	1.55	2.60	4.66	1.94	2.28
46	1.03	0.39	2.62	3.94	1.57	2.53	4.60	1.96	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 (-)
<b>-15</b>	<b>0.48</b>	<b>0.20</b>	<b>2.40</b>	<b>2.39</b>	<b>1.01</b>	<b>2.37</b>	<b>2.70</b>	<b>1.20</b>	<b>2.25</b>
-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
<b>-10</b>	<b>0.58</b>	<b>0.23</b>	<b>2.52</b>	<b>2.92</b>	<b>1.18</b>	<b>2.48</b>	<b>3.30</b>	<b>1.40</b>	<b>2.36</b>
-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
<b>2</b>	<b>0.80</b>	<b>0.27</b>	<b>3.00</b>	<b>3.99</b>	<b>1.35</b>	<b>2.96</b>	<b>4.50</b>	<b>1.60</b>	<b>2.81</b>
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
<b>7</b>	<b>1.10</b>	<b>0.30</b>	<b>3.67</b>	<b>5.50</b>	<b>1.52</b>	<b>3.62</b>	<b>6.30</b>	<b>1.90</b>	<b>3.32</b>
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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