

TOSHIBA**Leading Innovation >>>**

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Engineering Databook

RAS-10N3KVP-A / RAS-10N3AVP-A

RAS-13N3KVP-A / RAS-13N3AVP-A

RAS-16N3KVP-A / RAS-16N3AVP-A



Specifications

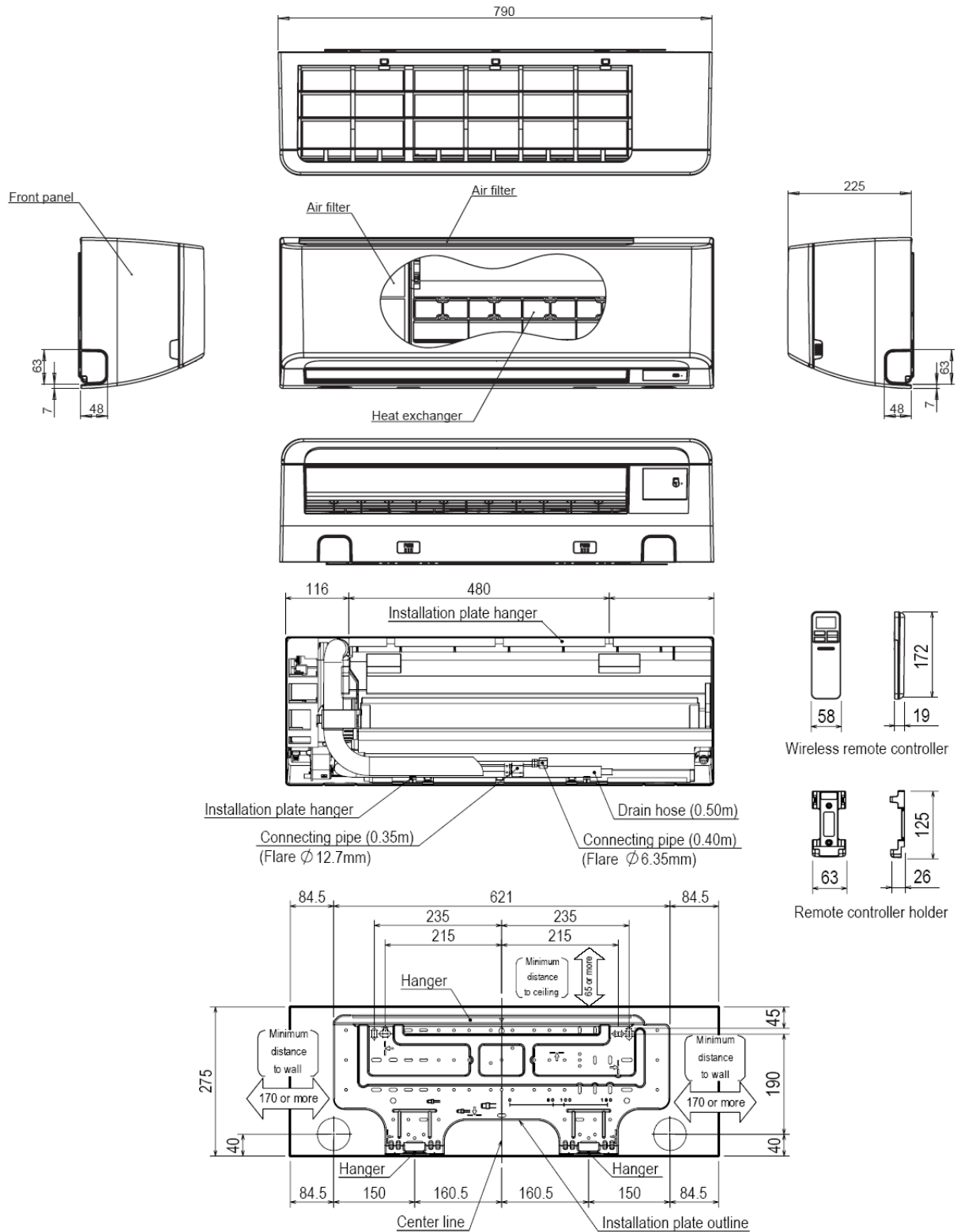
Type				Heat Pump		
Indoor Unit				RAS-10N3KVP-A	RAS-13N3KVP-A	RAS-16N3KVP-A
Outdoor Unit				RAS-10N3AVP-A	RAS-13N3AVP-A	RAS-16N3AVP-A
Cooling Capacity	- Rated	CO	(kW)	2.51	3.52	4.53
Cooling Capacity	- Range	CO	(kW)	0.50-3.50	0.60-4.50	0.80-5.00
Power Consumption	(min-rated-max)	CO	(kW)	0.10-0.49-0.87	0.11-0.84-1.37	0.15-1.34-1.82
Operating Current	(min-rated-max)	CO	(A)	0.60-2.45-3.98	0.65-3.84-6.20	0.89-6.06-8.15
EER	(min-rated-max)	CO		4.02-5.12-5.00	3.28-4.19-5.45	2.75-3.38-5.33
AEEER		CO		5.0	4.1	3.3
Star Rating				4.5	3.0	2.0
Heating Capacity	- Rated	RC	(kW)	3.21	4.22	5.53
Heating Capacity	- Range	RC	(kW)	0.50-6.50	0.50-7.70	0.70-8.00
Power Consumption	(min-rated-max)	RC	(kW)	0.09-0.63-1.82	0.10-0.95-2.33	0.15-1.47-2.51
Operating Current	(min-rated-max)	RC	(A)	0.53-3.04-8.07	0.60-4.35-10.33	0.89-6.58-11.12
COP		RC		3.57-5.10-5.56	3.30-4.44-5.00	3.19-3.76-4.67
ACOP	(min-rated-max)	RC		4.97	4.32	3.66
Star Rating				4.5	3.0	2.0
Indoor Unit				RAS-10N3KVP-A	RAS-13N3KVP-A	RAS-16N3KVP-A
Airflow Volume	(h)	CO	(m ³ /h - l/s)	630-175	660-183	690-192
Moisture removal			(l/h)	1.5	2.0	2.5
Sound Pressure	(h-q)	CO	dB(A)	42-23	43-24	45-25
Dimension	(HxWxD)		(mm)	275x790x225	275x790x225	275x790x225
Net weight			(kg)	10	10	10
Sound Power	(h)	CO	dB(A)	55	56	58
Fan Motor Output			(W)	30	30	30
Outdoor Unit				RAS-10N3AVP-A	RAS-13N3AVP-A	RAS-16N3AVP-A
Dimension	(HxWxD)		(mm)	630x800x300	630x800x300	630x800x300
Net weight			(kg)	41	41	41
Refrigerant type				R410a	R410a	R410a
Sound Pressure	(h)	CO	dB(A)	46	48	49
Sound Power	(h)	CO	dB(A)	59	61	62
Operating Range		CO	°C	-10~46	-10~46	-10~46
Sound Pressure	(h)	RC	dB(A)	47	50	50
Sound Power	(h)	RC	dB(A)	60	63	63
Operating Range		RC	°C	-15~24	-15~24	-15~24
Pipe Size						
Liquid side			(mm/inch)	6.35(1/4")	6.35(1/4")	6.35(1/4")
Gas side			(mm/inch)	9.52(3/8")	9.52(3/8")	12.70(1/2")
Maximum Piping Length			(m)	25(extra charge 20g/m)	25(extra charge 20g/m)	25(extra charge 20g/m)
Maximum Piping Height difference			(m)	10	10	10
Chargeless Length			(m)	15	15	15
Compressor type				DC Tw in Rotary	DC Tw in Rotary	DC Tw in Rotary
Power Supply			(Ph/Hz/V)	220-240/1/50	220-240/1/50	220-240/1/50

CO = cooling mode

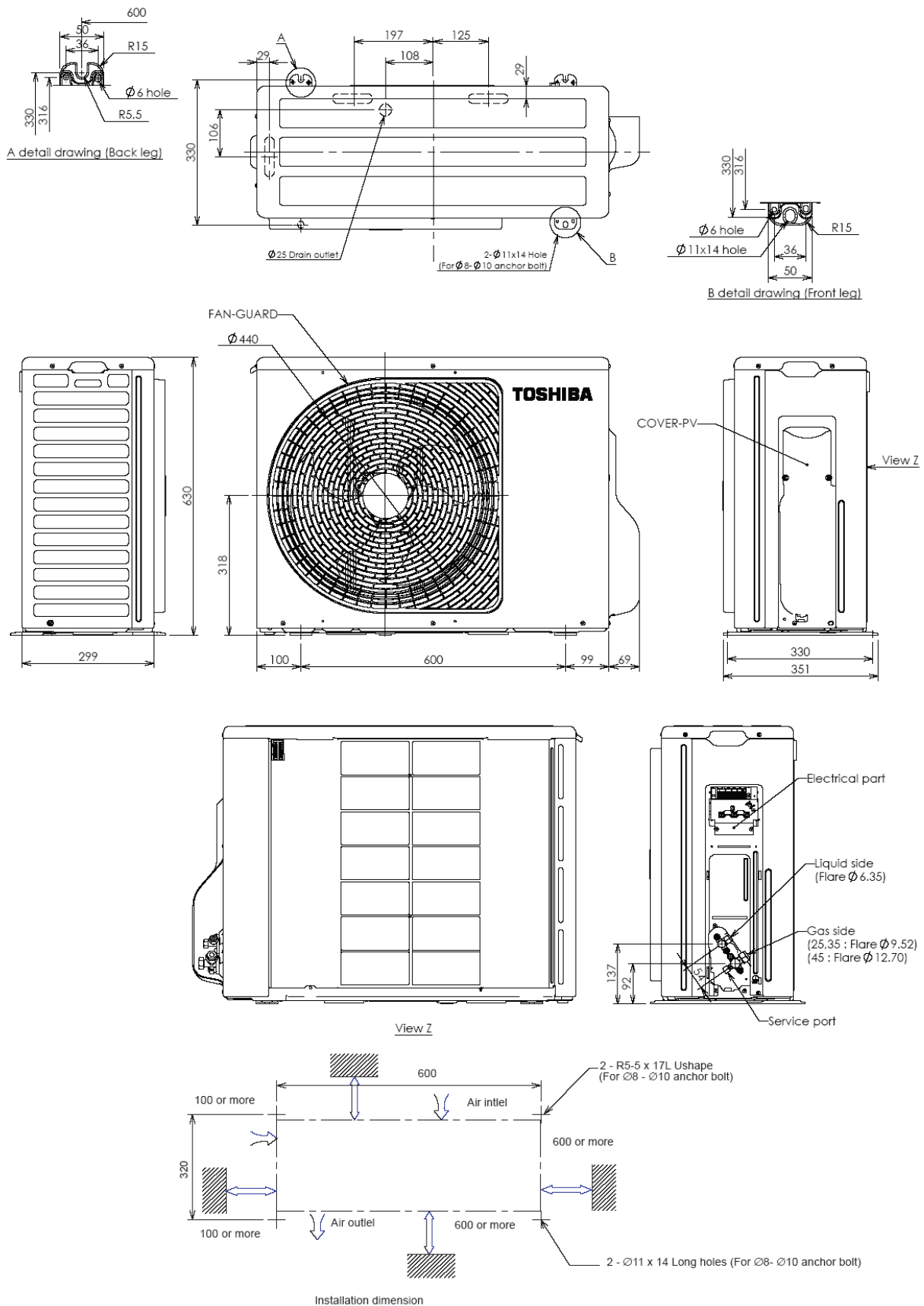
RC = heating mode

Dimensions of Indoor & outdoor units

RAS-10N3KVP-A, RAS-13N3KVP-A, RAS-16N3KVP-A

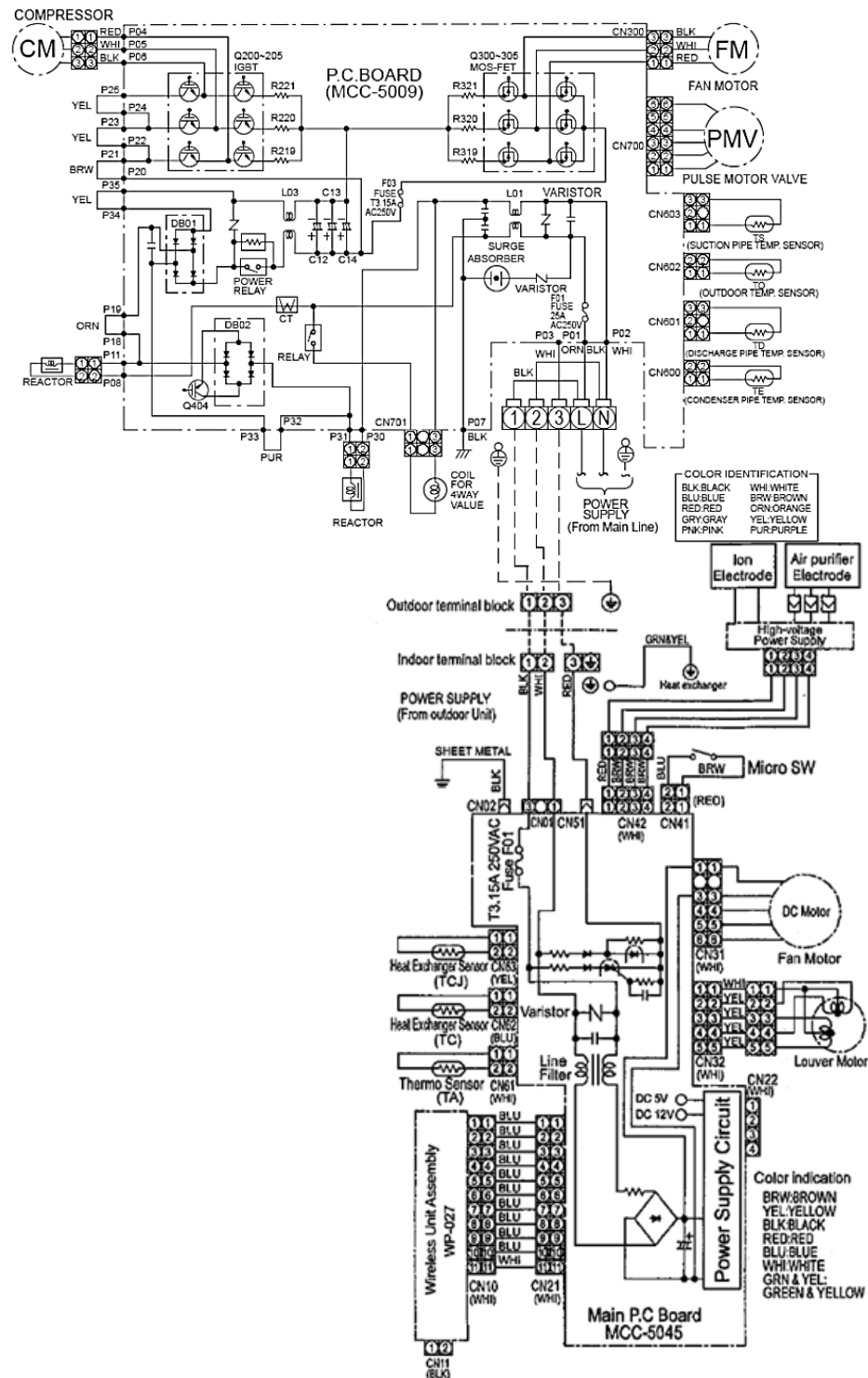


RAS-10N3AVP-A, RAS-13N3AVP-A, RAS-16N3AVP-A



Wiring Diagram

RAS-10N3KVP-A / RAS-10N3AVP-A
 RAS-13N3KVP-A / RAS-13N3AVP-A
 RAS-16N3KVP-A / RAS-16N3AVP-A



Sensible Capacity Table

Trend of Total & Sensible Heat Capacity / Indoor Air & Outdoor Air Temperature.

Product models: RAS-10N3KVP-A / RAS-10N3AVP-A

Specification of product at standard condition.

Standard Condition	Indoor	27°CDB / 19°CWB	Total Cooling Capacity (TC)	2.51 kW
	Outdoor	35°CDB / 24°CWB	Sensible Heat Capacity (SHC)	2.10 kW

Outdoor air temp. CDB	Indoor air temp.													
	14.0°CWB 20.0°CDB		16.0°CWB 23.0°CDB		18.0°CWB 26.0°CDB		19.0°CWB 27.0°CDB		20.0°CWB 28.0°CDB		22.0°CWB 30.0°CDB		24.0°CWB 32.0°CDB	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
21.0	2.43	2.18	2.69	2.33	2.88	2.48	2.96	2.48	3.05	2.48	3.23	2.46	3.37	2.42
23.0	2.38	2.14	2.63	2.28	2.81	2.42	2.90	2.42	2.98	2.43	3.16	2.41	3.30	2.37
25.0	2.33	2.09	2.57	2.23	2.75	2.37	2.83	2.37	2.91	2.37	3.09	2.36	3.23	2.32
27.0	2.27	2.04	2.51	2.18	2.69	2.32	2.77	2.32	2.85	2.32	3.01	2.30	3.15	2.27
29.0	2.22	1.99	2.45	2.13	2.63	2.26	2.70	2.26	2.78	2.26	2.94	2.25	3.08	2.21
31.0	2.17	1.95	2.39	2.08	2.56	2.21	2.64	2.21	2.71	2.21	2.87	2.20	3.01	2.16
33.0	2.11	1.90	2.34	2.03	2.50	2.15	2.57	2.15	2.65	2.16	2.80	2.14	2.93	2.11
35.0	2.06	1.85	2.28	1.98	2.44	2.10	2.51	2.10	2.58	2.10	2.73	2.09	2.86	2.05
37.0	2.01	1.80	2.22	1.92	2.38	2.05	2.45	2.05	2.52	2.05	2.66	2.03	2.79	2.00
39.0	1.96	1.76	2.16	1.87	2.31	1.99	2.38	1.99	2.45	1.99	2.59	1.98	2.71	1.95
41.0	1.90	1.71	2.10	1.82	2.25	1.94	2.32	1.94	2.38	1.94	2.52	1.93	2.64	1.90
43.0	1.85	1.66	2.04	1.77	2.19	1.89	2.25	1.88	2.32	1.89	2.45	1.87	2.57	1.84
45.0	1.80	1.61	1.98	1.72	2.13	1.83	2.19	1.83	2.25	1.83	2.38	1.82	2.49	1.79
46.0	1.77	1.59	1.96	1.70	2.09	1.80	2.16	1.80	2.22	1.80	2.35	1.79	2.46	1.76

Trend of Total & Sensible Heat Capacity / Indoor Air & Outdoor Air Temperature.

Product models: RAS-13N3KVP-A / RAS-13N3AVP-A

Specification of product at standard condition.

Standard Condition	Indoor	27°CDB / 19°CWB	Total Cooling Capacity (TC)	3.52 kW
	Outdoor	35°CDB / 24°CWB	Sensible Heat Capacity (SHC)	2.80 kW

Outdoor air temp. CDB	Indoor air temp.													
	14.0°CWB 20.0°CDB		16.0°CWB 23.0°CDB		18.0°CWB 26.0°CDB		19.0°CWB 27.0°CDB		20.0°CWB 28.0°CDB		22.0°CWB 30.0°CDB		24.0°CWB 32.0°CDB	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
21.0	3.17	2.72	3.51	2.90	3.75	3.08	3.86	3.07	3.98	3.07	4.21	3.04	4.40	2.98
23.0	3.14	2.69	3.47	2.87	3.72	3.05	3.83	3.04	3.94	3.04	4.17	3.01	4.36	2.95
25.0	3.11	2.66	3.43	2.84	3.68	3.02	3.78	3.01	3.89	3.01	4.12	2.98	4.31	2.92
27.0	3.07	2.63	3.39	2.80	3.63	2.98	3.74	2.97	3.85	2.97	4.07	2.94	4.26	2.88
29.0	3.03	2.59	3.35	2.77	3.58	2.94	3.69	2.93	3.79	2.93	4.02	2.90	4.20	2.85
31.0	2.99	2.56	3.30	2.73	3.53	2.90	3.64	2.89	3.74	2.89	3.96	2.86	4.14	2.81
33.0	2.94	2.52	3.25	2.68	3.48	2.85	3.58	2.85	3.68	2.85	3.90	2.82	4.08	2.76
35.0	2.89	2.48	3.19	2.64	3.42	2.81	3.52	2.80	3.62	2.80	3.83	2.77	4.01	2.72
37.0	2.84	2.43	3.13	2.59	3.35	2.75	3.45	2.75	3.55	2.74	3.76	2.72	3.93	2.66
39.0	2.78	2.38	3.07	2.54	3.29	2.70	3.38	2.69	3.48	2.69	3.68	2.66	3.85	2.61
41.0	2.73	2.34	3.01	2.49	3.23	2.65	3.32	2.64	3.42	2.64	3.62	2.62	3.79	2.56
43.0	2.67	2.29	2.95	2.44	3.16	2.59	3.25	2.59	3.35	2.59	3.54	2.56	3.71	2.51
45.0	2.61	2.23	2.88	2.38	3.08	2.53	3.17	2.52	3.26	2.52	3.45	2.50	3.61	2.45
46.0	2.58	2.21	2.85	2.35	3.05	2.50	3.14	2.50	3.23	2.50	3.42	2.47	3.58	2.42

Trend of Total & Sensible Heat Capacity / Indoor Air & Outdoor Air Temperature.

Product models: RAS-16N3KVP-A / RAS-16N3AVP-A

Specification of product at standard condition.

Standard Condition

Indoor	27°CDB / 19°CWB
Outdoor	35°CDB / 24°CWB

Total Cooling Capacity (TC)	4.53 kW
Sensible Heat Capacity (SHC)	3.40 kW

Outdoor air temp. CDB	Indoor air temp.													
	14.0°CWB 20.0°CDB		16.0°CWB 23.0°CDB		18.0°CWB 26.0°CDB		19.0°CWB 27.0°CDB		20.0°CWB 28.0°CDB		22.0°CWB 30.0°CDB		24.0°CWB 32.0°CDB	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
21.0	4.09	3.31	4.51	3.53	4.83	3.75	4.97	3.73	5.12	3.72	5.42	3.67	5.67	3.58
23.0	4.04	3.28	4.47	3.49	4.78	3.71	4.92	3.70	5.06	3.69	5.36	3.64	5.61	3.55
25.0	4.00	3.25	4.42	3.45	4.73	3.67	4.87	3.66	5.01	3.65	5.30	3.60	5.55	3.51
27.0	3.95	3.21	4.36	3.41	4.67	3.62	4.81	3.61	4.95	3.60	5.24	3.55	5.48	3.47
29.0	3.90	3.16	4.31	3.37	4.61	3.58	4.75	3.56	4.88	3.55	5.17	3.50	5.41	3.42
31.0	3.84	3.12	4.24	3.32	4.55	3.53	4.68	3.51	4.81	3.50	5.10	3.45	5.33	3.37
33.0	3.78	3.07	4.18	3.27	4.48	3.47	4.61	3.46	4.74	3.45	5.02	3.40	5.25	3.32
35.0	3.72	3.02	4.11	3.21	4.40	3.41	4.53	3.40	4.66	3.39	4.93	3.34	5.16	3.26
37.0	3.65	2.96	4.03	3.15	4.32	3.35	4.44	3.34	4.57	3.33	4.84	3.28	5.06	3.20
39.0	3.58	2.90	3.95	3.09	4.23	3.28	4.35	3.27	4.48	3.26	4.74	3.21	4.96	3.14
41.0	3.51	2.85	3.88	3.03	4.15	3.22	4.28	3.21	4.40	3.20	4.66	3.16	4.87	3.08
43.0	3.44	2.79	3.80	2.97	4.07	3.15	4.19	3.14	4.31	3.13	4.56	3.09	4.77	3.02
45.0	3.35	2.72	3.70	2.89	3.96	3.07	4.08	3.06	4.20	3.06	4.45	3.01	4.65	2.94
46.0	3.32	2.69	3.67	2.86	3.93	3.04	4.04	3.03	4.16	3.03	4.40	2.98	4.60	2.91

Part Load Performance

Single Split Type

Indoor: RAS-10N3KVP-A

Outdoor: RAS-10N3AVP-A

	Cooling		Heating	
	Q	W	Q	W
Minimum	500	100	500	90
Rating	2510	490	3210	630
Maximum	3500	870	6500	1820

Cooling

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
46	Q	2156	1940	1725	1509	1293	1078	862	647	431	429
	W	567	511	454	398	342	285	229	173	116	116
43	Q	2252	2027	1802	1577	1351	1126	901	676	450	449
	W	546	492	438	383	329	275	220	166	112	111
40	Q	2349	2114	1879	1644	1409	1174	940	705	470	468
	W	525	473	421	369	316	264	212	160	108	107
35	Q	2510	2259	2008	1757	1506	1255	1004	753	502	500
	W	490	441	393	344	295	246	198	149	100	100
30	Q	2671	2404	2137	1870	1603	1336	1068	801	534	532
	W	455	410	364	319	274	229	184	138	93	93
25	Q	2832	2549	2266	1982	1699	1416	1133	850	566	564
	W	420	378	336	295	253	211	169	128	86	86
20	Q	2993	2694	2395	2095	1796	1497	1197	898	599	596
	W	385	346	308	270	232	193	155	117	79	79

Heating

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
20	Q	4287	3858	3430	3001	2572	2143	1715	1286	857	668
	W	757	680	603	526	449	373	296	219	142	108
15	Q	3873	3485	3098	2711	2324	1936	1549	1162	775	603
	W	708	636	564	492	420	349	277	205	133	101
10	Q	3459	3113	2767	2421	2075	1729	1383	1038	692	539
	W	659	592	525	458	392	325	258	191	124	94
7	Q	3210	2889	2568	2247	1926	1605	1284	963	642	500
	W	630	566	502	438	374	310	246	182	118	90
5	Q	2440	2196	1952	1708	1464	1220	976	732	488	380
	W	580	521	462	403	344	286	227	168	109	83
2	Q	2326	2093	1861	1628	1396	1163	930	698	465	362
	W	558	501	444	388	331	274	218	161	105	80
0	Q	2250	2025	1800	1575	1350	1125	900	675	450	350
	W	543	487	432	377	322	267	212	157	102	78
-5	Q	2059	1853	1647	1442	1236	1030	824	618	412	321
	W	505	454	402	351	300	249	197	146	95	72
-7	Q	1983	1785	1587	1388	1190	992	793	595	397	309
	W	490	440	391	341	291	241	192	142	92	70
-10	Q	1802	1622	1441	1261	1081	901	721	541	360	281
	W	464	417	370	323	276	229	181	134	87	66
-15	Q	1388	1249	1110	971	833	694	555	416	278	216
	W	415	373	331	289	247	205	162	120	78	59

Part Load Performance

Single Split Type

Indoor: RAS-13N3KVP-A

Outdoor: RAS-13N3AVP-A

	Cooling		Heating	
	Q	W	Q	W
Minimum	600	110	500	100
Rating	3520	840	4220	950

Cooling

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
46	Q	3022	2720	2418	2115	1813	1511	1209	907	604	515
	W	966	865	764	662	561	460	359	258	156	127
43	Q	3153	2838	2523	2207	1892	1577	1261	946	631	537
	W	937	839	741	643	545	446	348	250	152	123
40	Q	3301	2971	2641	2310	1980	1650	1320	990	660	563
	W	896	802	708	615	521	427	333	239	145	117
35	Q	3520	3168	2816	2464	2112	1760	1408	1056	704	600
	W	840	752	664	576	488	400	312	224	136	110
30	Q	3740	3366	2992	2618	2244	1870	1496	1122	748	638
	W	784	702	620	537	455	373	291	209	127	103
25	Q	3974	3577	3179	2782	2384	1987	1590	1192	795	677
	W	714	639	564	490	415	340	265	190	116	94
20	Q	4173	3756	3338	2921	2504	2086	1669	1252	835	711
	W	659	590	521	452	383	314	245	176	107	86

Heating

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
20	Q	5634	5070	4507	3944	3380	2817	2253	1690	1127	668
	W	1141	1025	909	794	678	562	446	330	215	120
15	Q	5089	4580	4071	3563	3054	2545	2036	1527	1018	603
	W	1068	959	851	743	634	526	418	309	201	112
10	Q	4549	4094	3639	3184	2729	2275	1820	1365	910	539
	W	988	888	787	687	587	487	386	286	186	104
7	Q	4220	3798	3376	2954	2532	2110	1688	1266	844	500
	W	950	854	757	661	564	468	371	275	179	100
5	Q	3204	2884	2563	2243	1923	1602	1282	961	641	380
	W	874	785	697	608	519	430	342	253	164	92
2	Q	3060	2754	2448	2142	1836	1530	1224	918	612	363
	W	836	751	666	581	497	412	327	242	157	88
0	Q	2954	2659	2363	2068	1772	1477	1182	886	591	350
	W	823	739	656	572	489	405	322	238	155	87
-5	Q	2703	2433	2162	1892	1622	1351	1081	811	541	320
	W	760	683	606	529	451	374	297	220	143	80
-7	Q	2610	2349	2088	1827	1566	1305	1044	783	522	309
	W	734	660	585	511	436	362	287	213	138	77
-10	Q	2374	2136	1899	1662	1424	1187	950	712	475	281
	W	696	626	555	484	414	343	272	202	131	73
-15	Q	1820	1638	1456	1274	1092	910	728	546	364	216
	W	620	557	494	431	368	306	243	180	117	65

Part Load Performance

Single Split Type

Indoor: RAS-16N3KVP-A

Outdoor: RAS-16N3AVP-A

	Cooling		Heating	
	Q	W	Q	W
Minimum	800	150	700	150
Rating	4530	1340	5530	1470

Cooling

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
46	Q	3889	3500	3111	2722	2333	1945	1556	1167	778	687
	W	1541	1375	1209	1042	876	710	544	378	211	173
43	Q	4058	3652	3246	2841	2435	2029	1623	1217	812	717
	W	1495	1334	1173	1012	850	689	528	366	205	167
40	Q	4248	3823	3398	2973	2549	2124	1699	1274	850	750
	W	1430	1276	1121	967	813	659	505	350	196	160
35	Q	4530	4077	3624	3171	2718	2265	1812	1359	906	800
	W	1340	1195	1051	906	762	617	473	328	184	150
30	Q	4814	4332	3851	3370	2888	2407	1925	1444	963	850
	W	1250	1115	981	846	711	576	441	306	172	140
25	Q	5114	4603	4091	3580	3069	2557	2046	1534	1023	903
	W	1139	1016	893	770	648	525	402	279	156	128
20	Q	5370	4833	4296	3759	3222	2685	2148	1611	1074	948
	W	1052	938	825	712	598	485	371	258	144	118

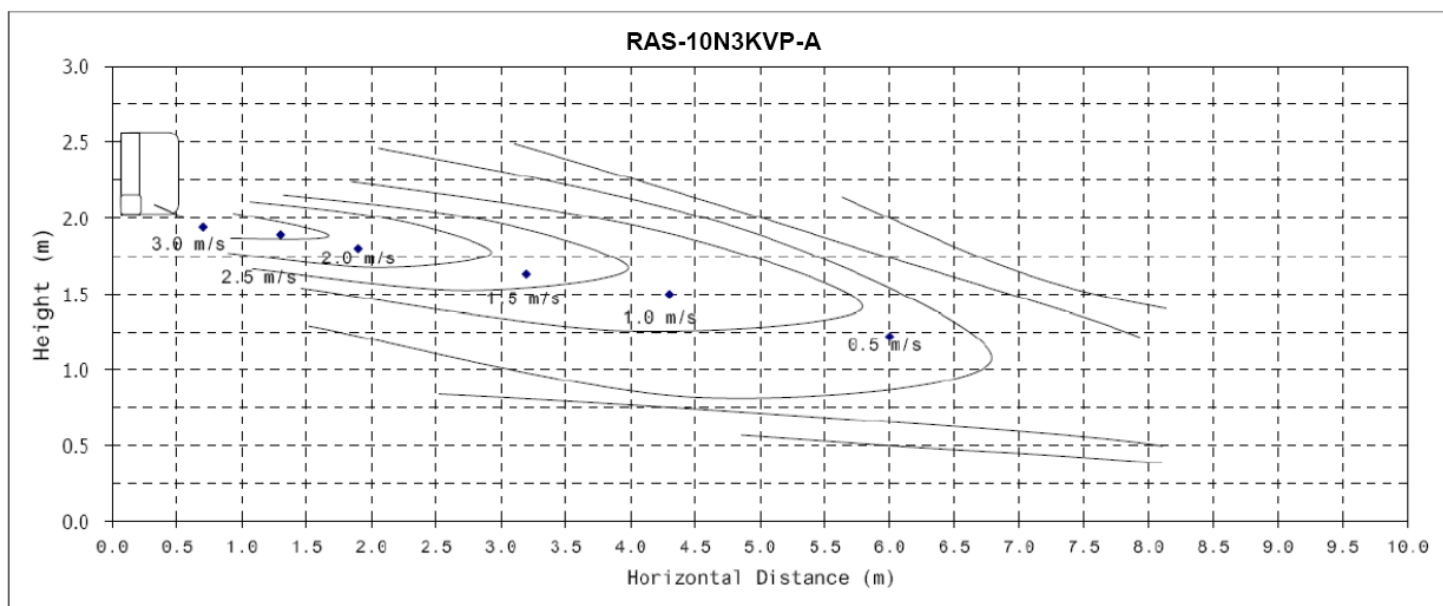
Heating

OD temp.		Load (%)									
		100	90	80	70	60	50	40	30	20	10
20	Q	7383	6644	5906	5168	4430	3691	2953	2215	1477	935
	W	1609	1446	1282	1118	955	791	628	464	300	180
15	Q	6669	6002	5335	4668	4002	3335	2668	2001	1334	844
	W	1506	1353	1200	1047	894	740	587	434	281	169
10	Q	5961	5365	4769	4173	3577	2981	2385	1788	1192	755
	W	1394	1252	1110	969	827	685	543	402	260	156
7	Q	5530	4977	4424	3871	3318	2765	2212	1659	1106	700
	W	1470	1204	1068	931	795	659	523	386	250	150
5	Q	4199	3779	3359	2939	2519	2099	1680	1260	840	532
	W	1233	1107	982	857	731	606	481	355	230	138
2	Q	4009	3608	3207	2806	2406	2005	1604	1203	802	508
	W	1179	1059	939	820	700	580	460	340	220	132
0	Q	3871	3484	3097	2710	2323	1936	1548	1161	774	490
	W	1160	1042	924	806	688	570	453	335	217	130
-5	Q	3542	3188	2834	2479	2125	1771	1417	1063	708	448
	W	1072	963	854	745	636	527	418	309	200	120
-7	Q	3421	3079	2737	2395	2053	1710	1368	1026	684	433
	W	1036	931	825	720	615	509	404	299	193	116
-10	Q	3111	2800	2489	2177	1866	1555	1244	933	622	394
	W	982	882	782	683	583	483	383	283	183	110
-15	Q	2385	2147	1908	1670	1431	1193	954	716	477	302
	W	875	786	697	608	519	430	341	252	163	98

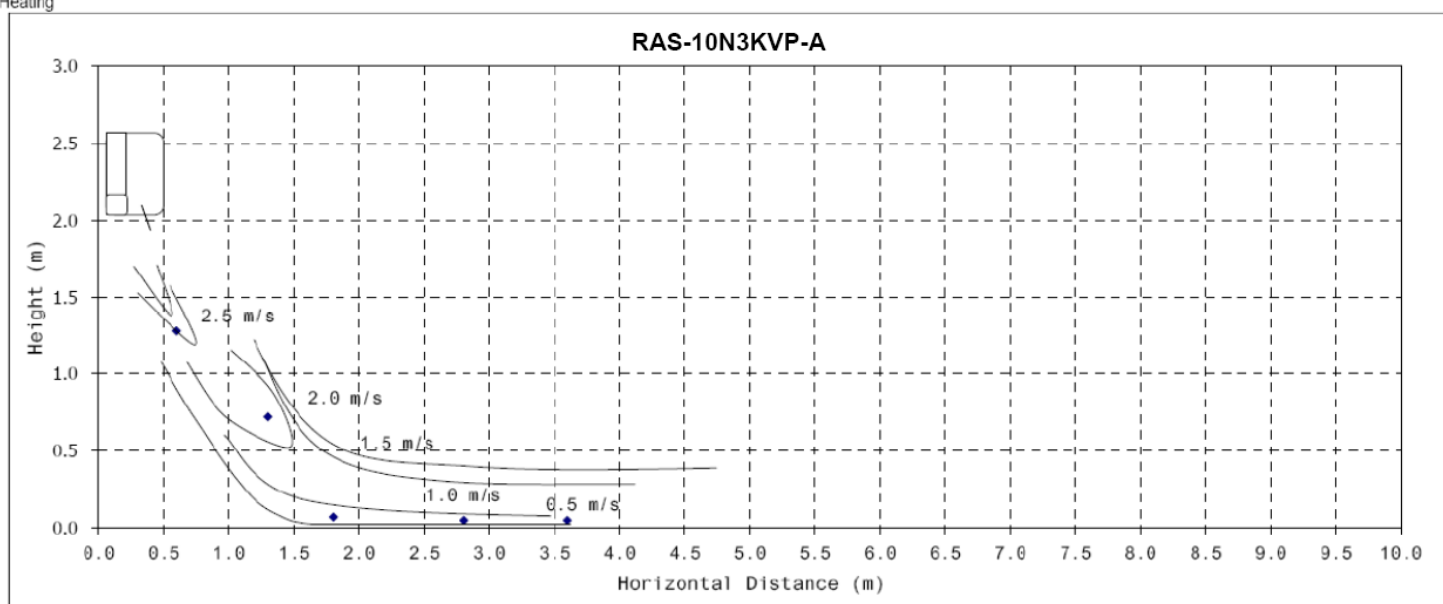
Air Speed Distribution

RAS-10N3KVP-A / RAS-10N3AVP-A

Cooling

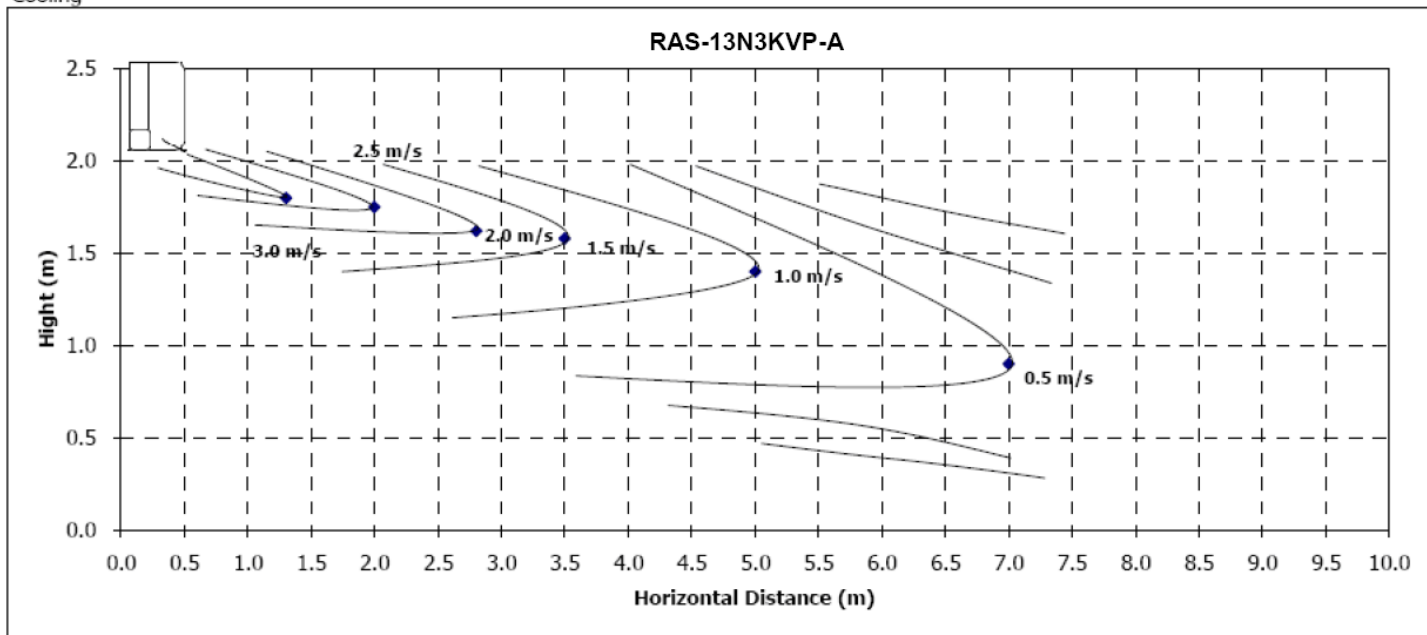


Heating

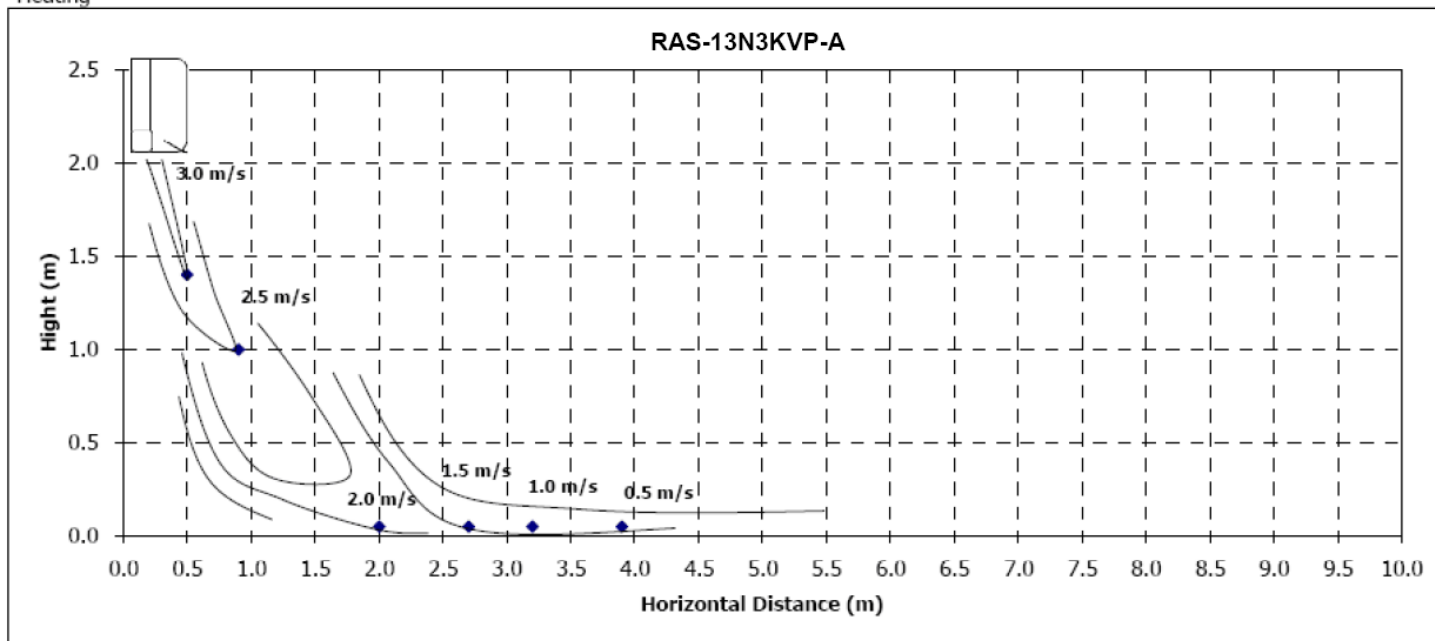


RAS-13N3KVP-A / RAS-13N3AVP-A

Cooling

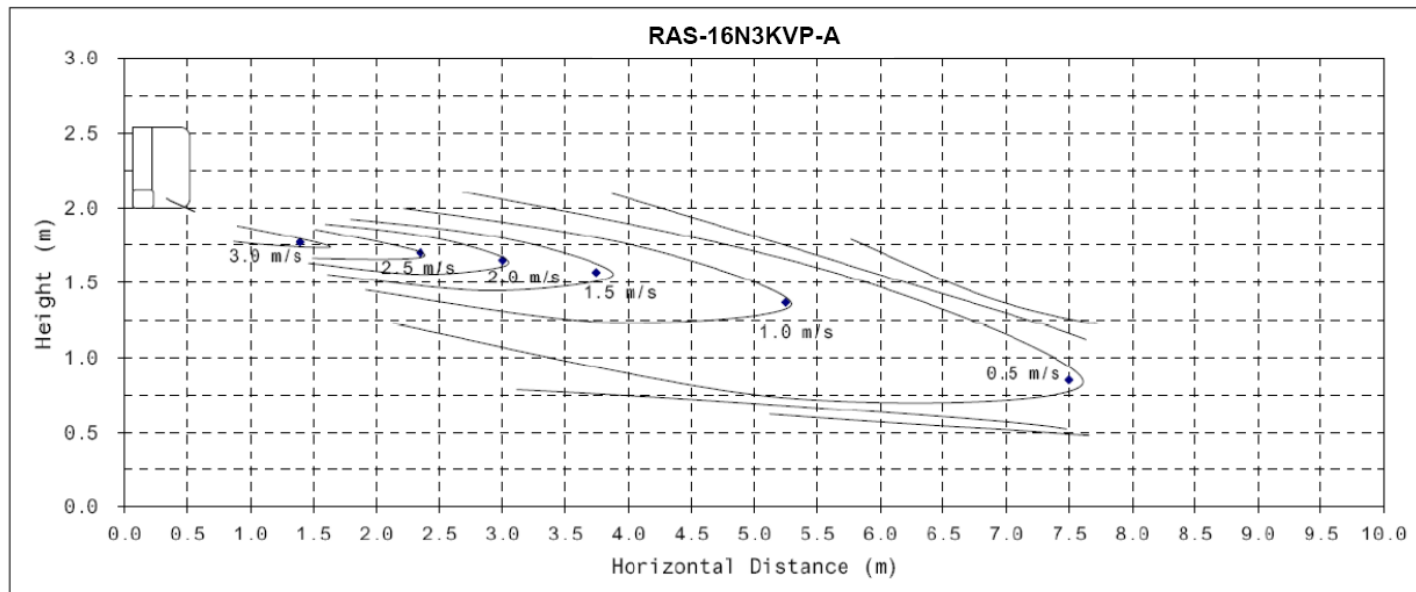


Heating

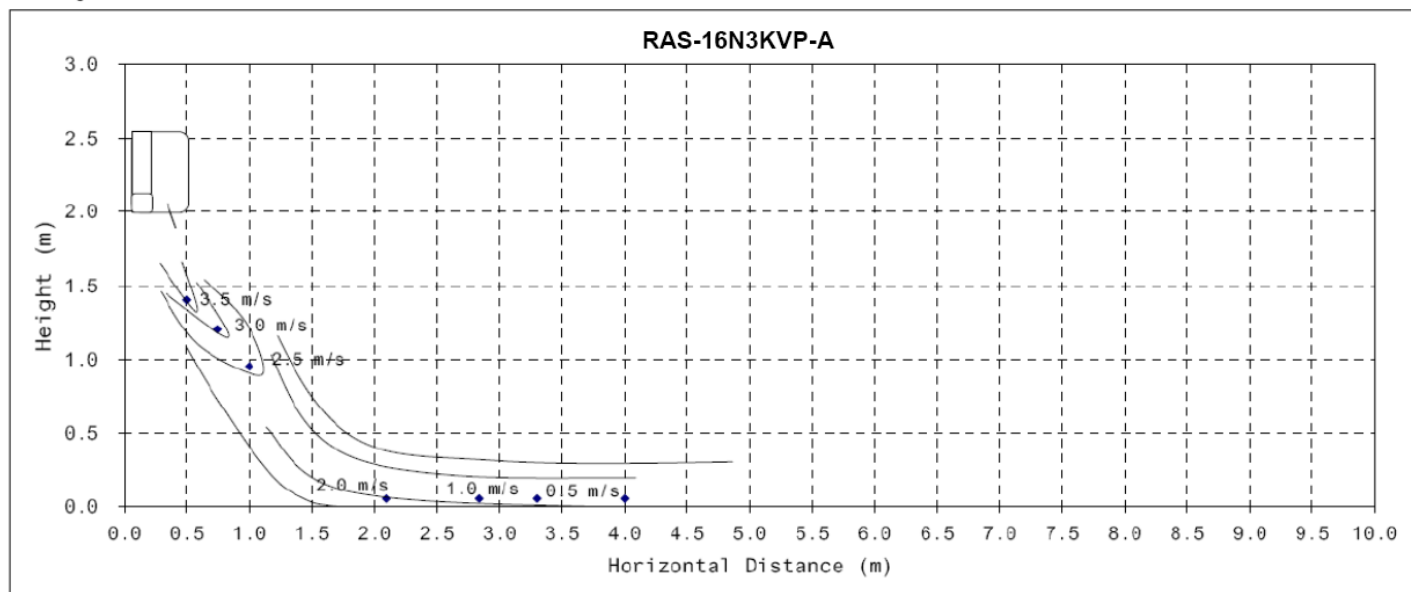


RAS-16N3KVP-A / RAS-16N3AVP-A

Cooling



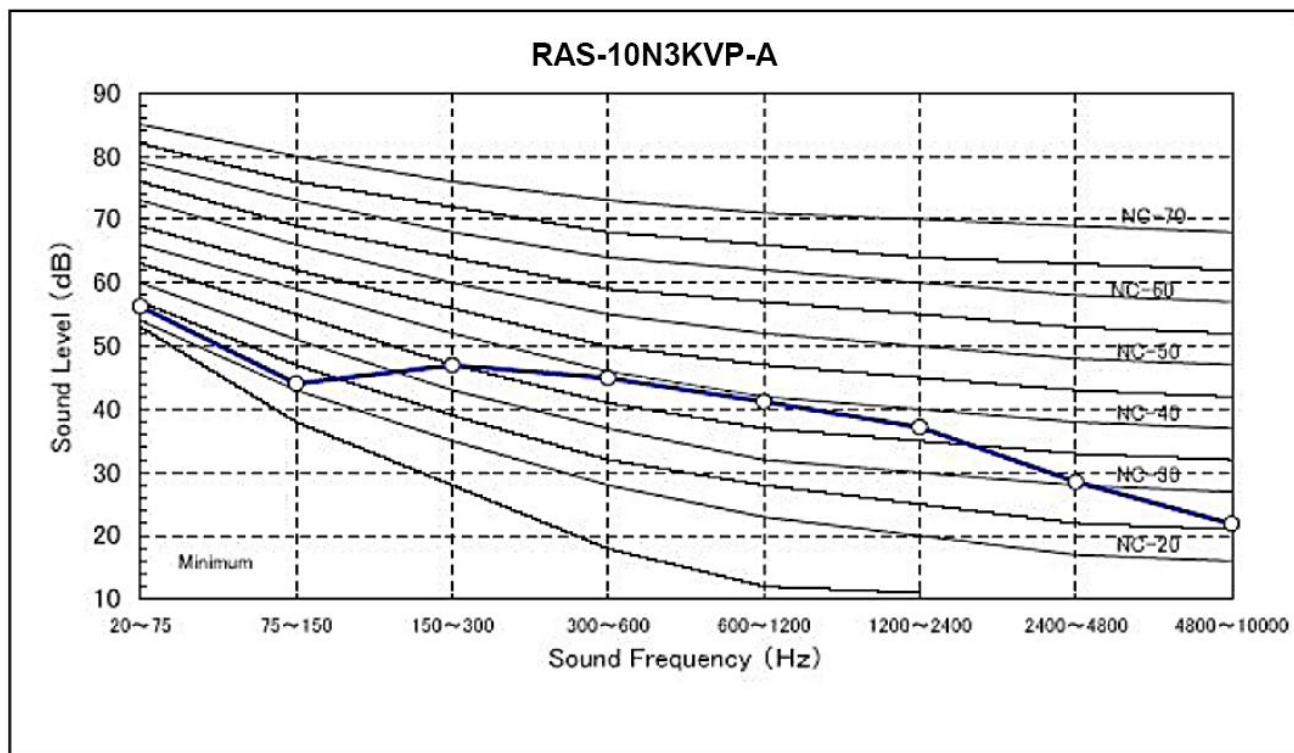
Heating



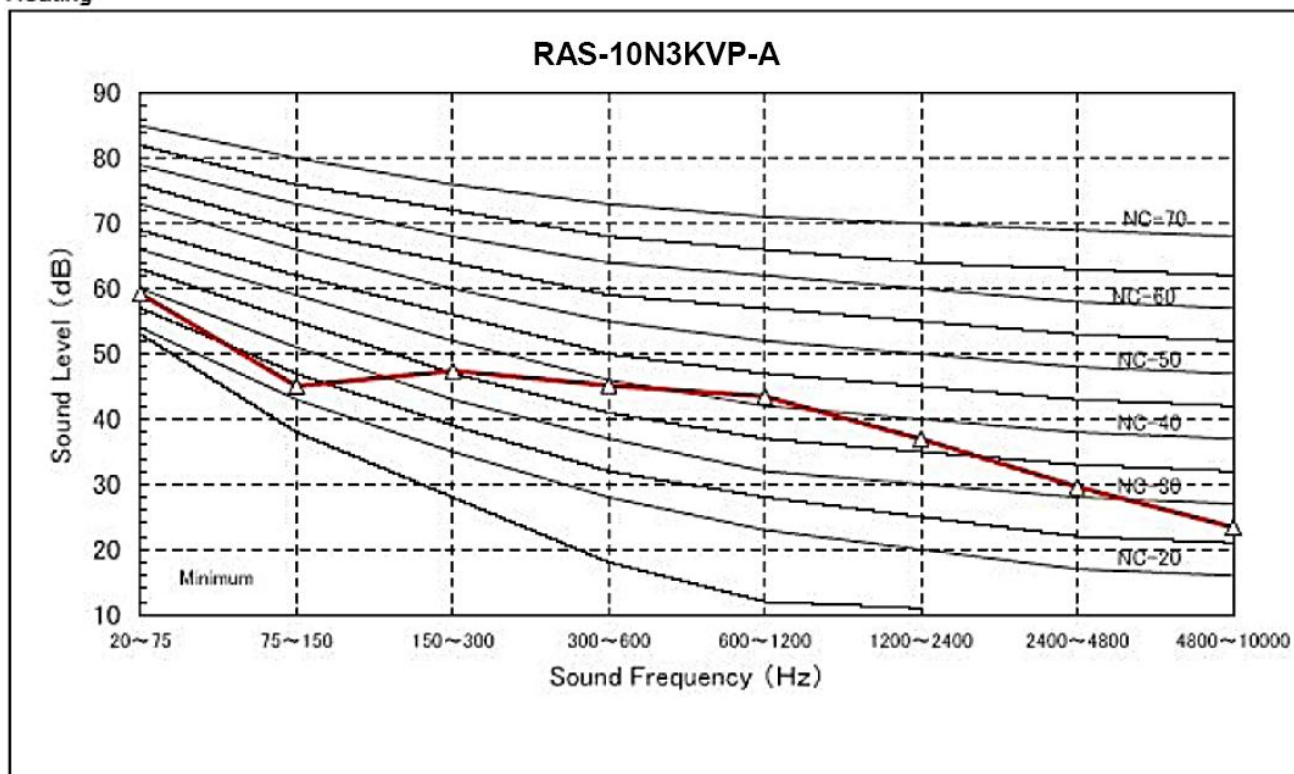
Sound Characteristics (NC Curve)

RAS-10N3KVP-A / RAS-10N3AVP-A

Cooling

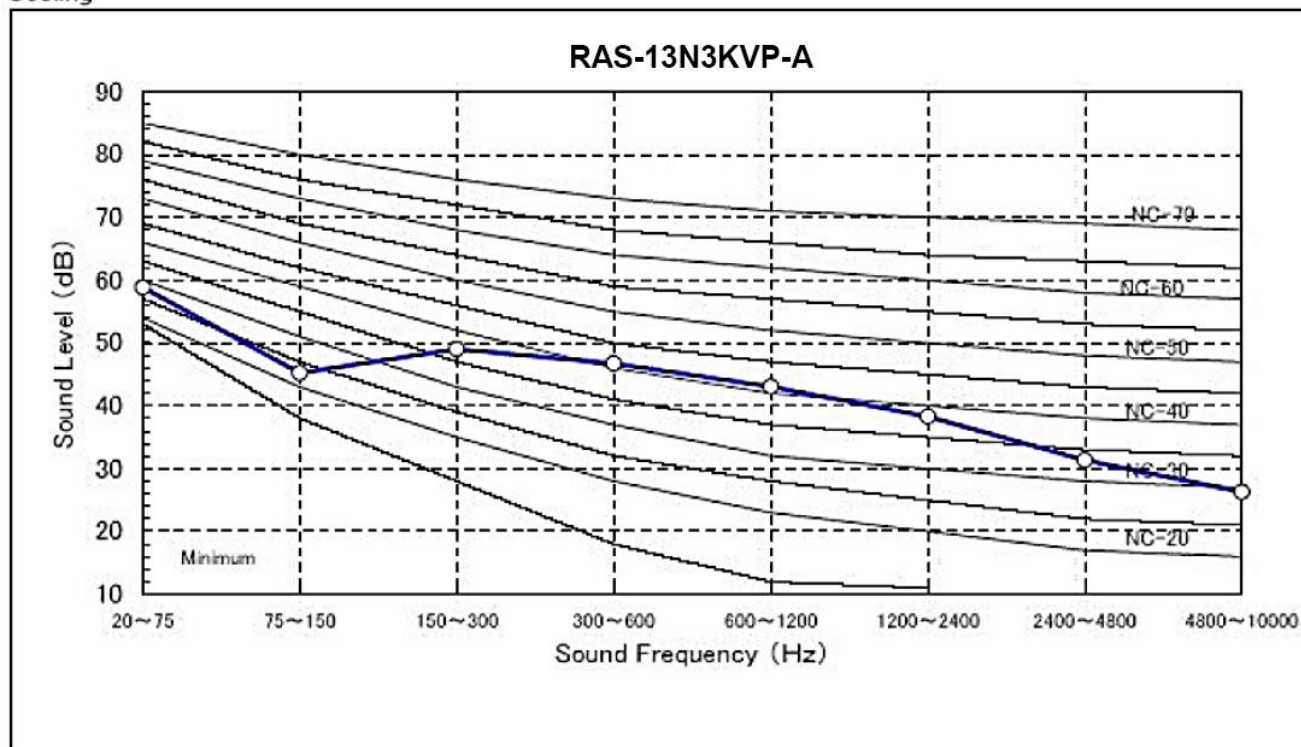


Heating

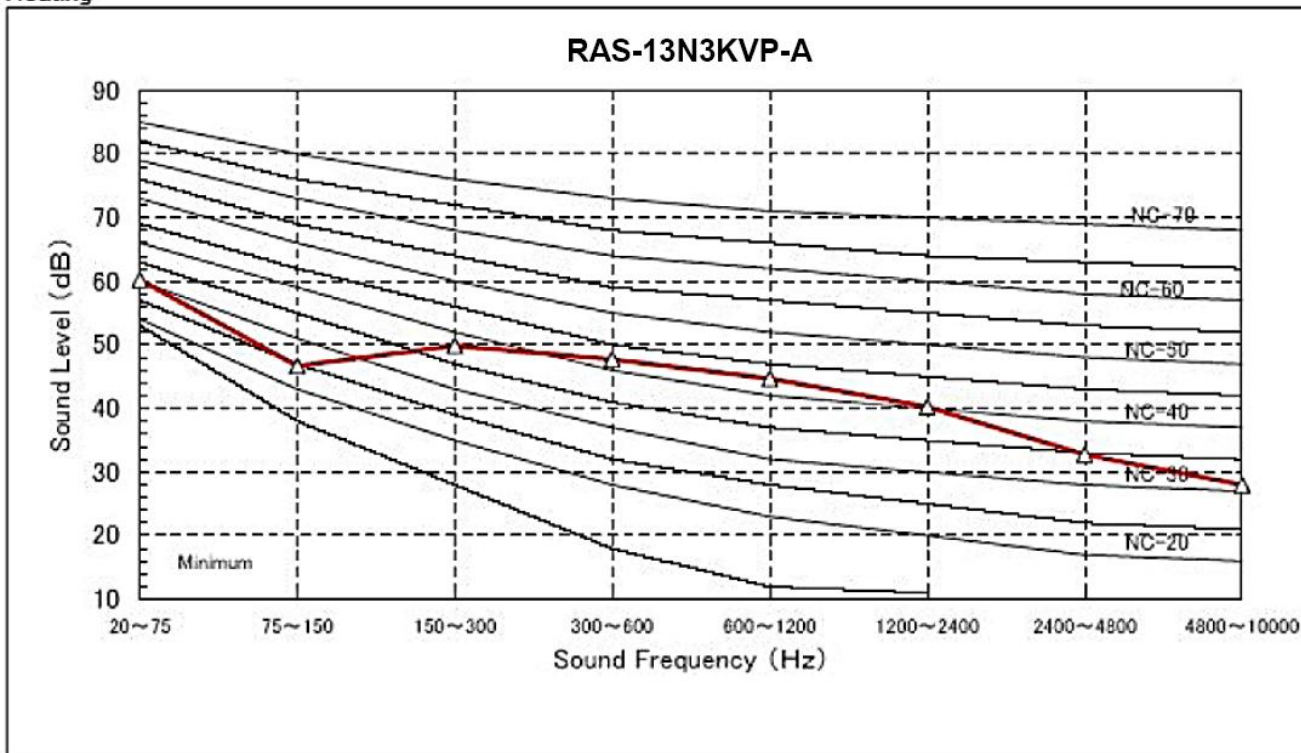


RAS-13N3KVP-A / RAS-13N3AVP-A

Cooling

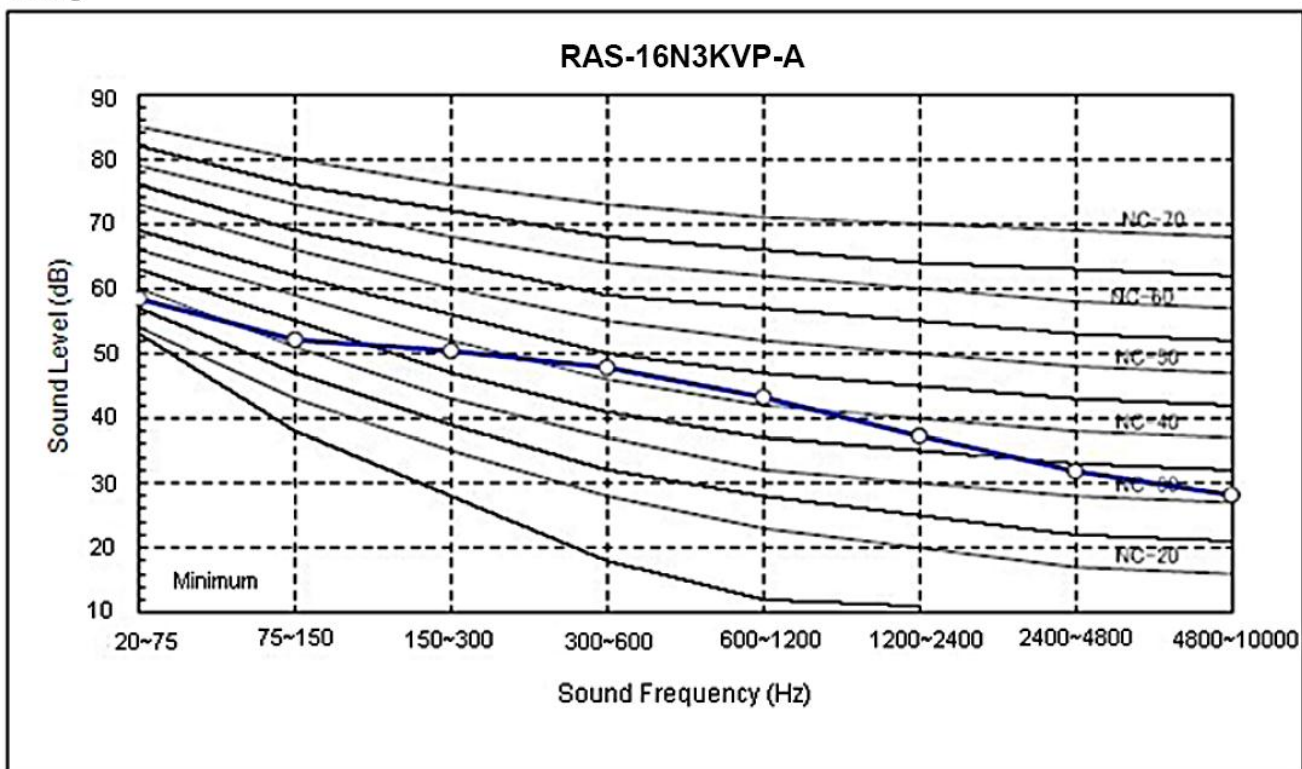


Heating

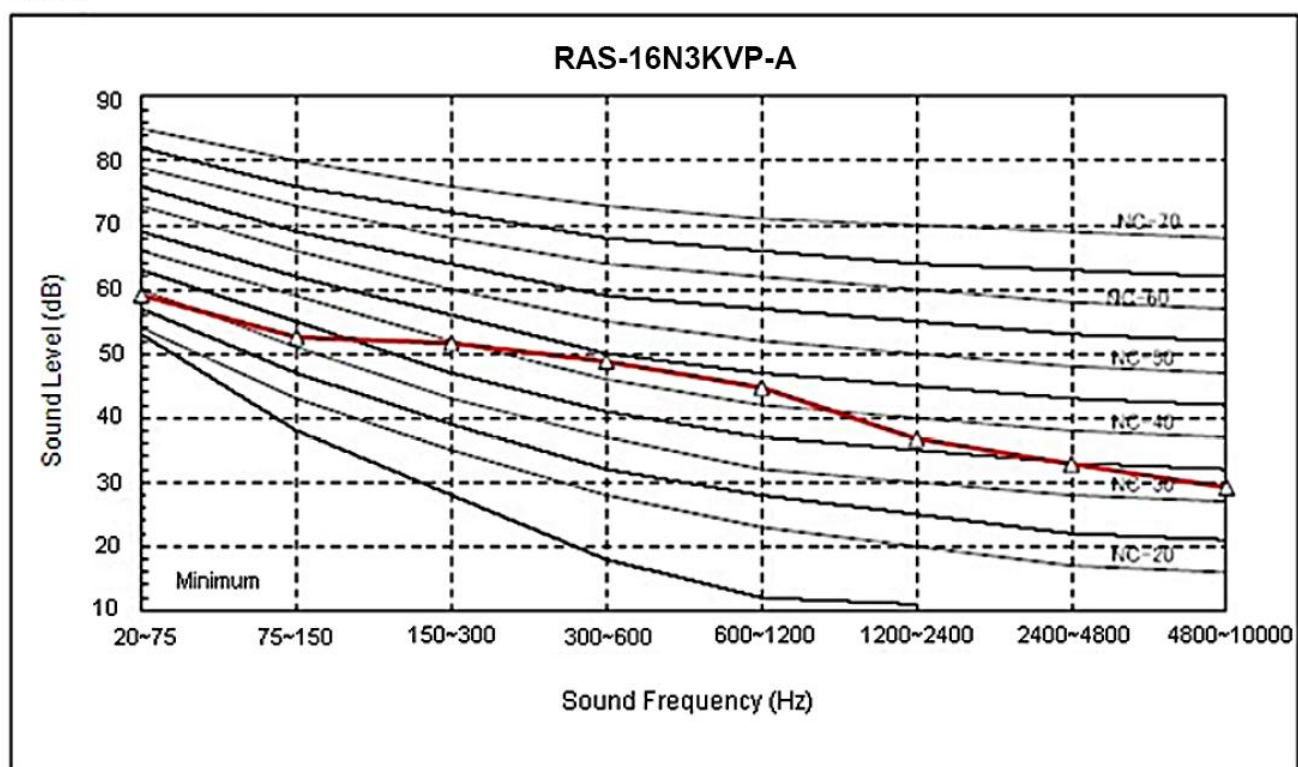


RAS-16N3KVP-A / RAS-16N3AVP-A

Cooling



Heating



Performance Characteristic

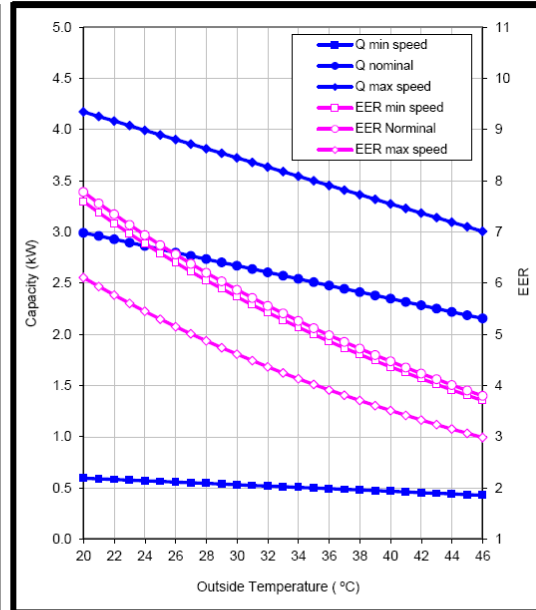
Model : RAS-10N3KVP-A / RAS-10N3AVP-A

Product specification :

Condition		Capacity (kW)	Power (kW)	EER or COP
Cooling JIS In: 27°C DB/19°C WB Out: 35°C DB/24°C WB	Min	0.50	0.10	5.00
	Nominal	2.51	0.49	5.12
	Max	3.50	0.87	4.02
Heating JIS In: 20°C DB/15°C WB Out: 7°C DB/6°C WB	Min	0.50	0.09	5.56
	Nominal	3.21	0.63	5.10
	Max	6.50	1.82	3.57
Heating Low Temp. In: 20°C DB/15°C WB Out: 2°C DB/1°C WB		4.70	1.65	2.85

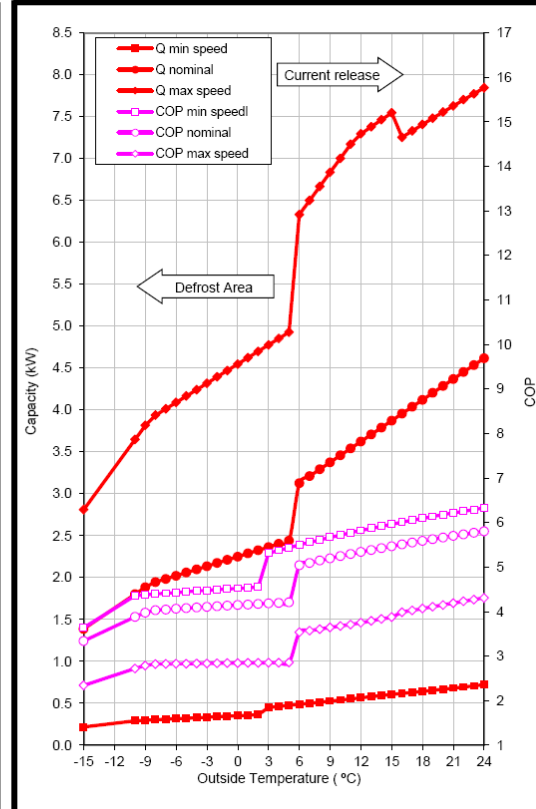
Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Nominal capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
20	0.60	0.08	7.60	2.99	0.38	7.78	4.17	0.68	6.11
21	0.59	0.08	7.38	2.96	0.39	7.56	4.13	0.70	5.94
22	0.58	0.08	7.17	2.93	0.40	7.35	4.08	0.71	5.77
23	0.58	0.08	6.97	2.90	0.41	7.14	4.04	0.72	5.61
24	0.57	0.08	6.77	2.86	0.41	6.94	3.99	0.73	5.45
25	0.56	0.09	6.59	2.83	0.42	6.75	3.95	0.75	5.30
26	0.56	0.09	6.40	2.80	0.43	6.56	3.90	0.76	5.15
27	0.55	0.09	6.23	2.77	0.43	6.38	3.86	0.77	5.01
28	0.54	0.09	6.06	2.74	0.44	6.21	3.81	0.78	4.87
29	0.54	0.09	5.89	2.70	0.45	6.04	3.77	0.80	4.74
30	0.53	0.09	5.73	2.67	0.45	5.87	3.72	0.81	4.61
31	0.53	0.09	5.58	2.64	0.46	5.71	3.68	0.82	4.49
32	0.52	0.10	5.43	2.61	0.47	5.56	3.63	0.83	4.37
33	0.51	0.10	5.28	2.57	0.48	5.41	3.59	0.85	4.25
34	0.51	0.10	5.14	2.54	0.48	5.26	3.54	0.86	4.13
35	0.50	0.10	5.00	2.51	0.49	5.12	3.50	0.87	4.02
36	0.49	0.10	4.87	2.48	0.50	4.99	3.46	0.88	3.92
37	0.49	0.10	4.74	2.45	0.50	4.85	3.41	0.89	3.81
38	0.48	0.10	4.61	2.41	0.51	4.72	3.37	0.91	3.71
39	0.47	0.11	4.49	2.38	0.52	4.60	3.32	0.92	3.61
40	0.47	0.11	4.37	2.35	0.53	4.47	3.28	0.93	3.51
41	0.46	0.11	4.25	2.32	0.53	4.35	3.23	0.94	3.42
42	0.46	0.11	4.14	2.28	0.54	4.24	3.19	0.96	3.33
43	0.45	0.11	4.03	2.25	0.55	4.12	3.14	0.97	3.24
44	0.44	0.11	3.92	2.22	0.55	4.01	3.10	0.98	3.15
45	0.44	0.11	3.81	2.19	0.56	3.91	3.05	0.99	3.07
46	0.43	0.12	3.71	2.16	0.57	3.80	3.01	1.01	2.98



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	0.22	0.06	3.64	1.39	0.42	3.34	2.81	1.20	2.34
-10	0.29	0.07	4.36	1.80	0.46	3.88	3.65	1.34	2.72
-9	0.30	0.07	4.38	1.88	0.47	3.98	3.82	1.37	2.79
-8	0.30	0.07	4.39	1.95	0.48	4.03	3.94	1.40	2.82
-7	0.31	0.07	4.41	1.98	0.49	4.05	4.01	1.42	2.82
-6	0.31	0.07	4.43	2.02	0.50	4.06	4.09	1.45	2.83
-5	0.32	0.07	4.45	2.06	0.51	4.08	4.17	1.47	2.83
-4	0.33	0.07	4.46	2.10	0.51	4.09	4.24	1.50	2.83
-3	0.33	0.07	4.48	2.14	0.52	4.11	4.32	1.52	2.84
-2	0.34	0.08	4.49	2.17	0.53	4.12	4.40	1.55	2.84
-1	0.34	0.08	4.51	2.21	0.54	4.13	4.47	1.57	2.84
0	0.35	0.08	4.52	2.25	0.54	4.15	4.55	1.60	2.84
1	0.36	0.08	4.54	2.29	0.55	4.16	4.62	1.62	2.85
2	0.36	0.08	4.55	2.33	0.56	4.17	4.70	1.65	2.85
3	0.45	0.08	5.31	2.36	0.57	4.18	4.78	1.68	2.85
4	0.46	0.09	5.38	2.40	0.57	4.20	4.85	1.70	2.85
5	0.47	0.09	5.44	2.44	0.58	4.21	4.93	1.73	2.86
6	0.49	0.09	5.50	2.50	0.62	5.04	6.33	1.79	3.53
7	0.50	0.09	5.56	3.21	0.63	5.10	6.50	1.82	3.57
8	0.51	0.09	5.61	3.29	0.64	5.15	6.67	1.85	3.61
9	0.53	0.09	5.67	3.38	0.65	5.20	6.84	1.88	3.64
10	0.54	0.09	5.72	3.46	0.66	5.25	7.00	1.90	3.68
11	0.55	0.10	5.77	3.54	0.67	5.29	7.17	1.93	3.71
12	0.56	0.10	5.82	3.62	0.68	5.34	7.30	1.95	3.75
13	0.58	0.10	5.87	3.71	0.69	5.38	7.38	1.95	3.79
14	0.59	0.10	5.92	3.79	0.70	5.43	7.46	1.95	3.84
15	0.60	0.10	5.96	3.87	0.71	5.47	7.55	1.95	3.88
16	0.62	0.10	6.01	3.96	0.72	5.51	7.25	1.82	3.98
17	0.63	0.10	6.05	4.04	0.73	5.55	7.33	1.82	4.03
18	0.64	0.11	6.09	4.12	0.74	5.59	7.41	1.82	4.07
19	0.65	0.11	6.14	4.20	0.75	5.63	7.48	1.82	4.11
20	0.67	0.11	6.18	4.29	0.76	5.66	7.56	1.82	4.15
21	0.68	0.11	6.22	4.37	0.77	5.70	7.63	1.82	4.19
22	0.69	0.11	6.25	4.45	0.78	5.74	7.70	1.82	4.23
23	0.71	0.11	6.29	4.54	0.79	5.77	7.77	1.82	4.27
24	0.72	0.11	6.33	4.62	0.80	5.80	7.85	1.82	4.31

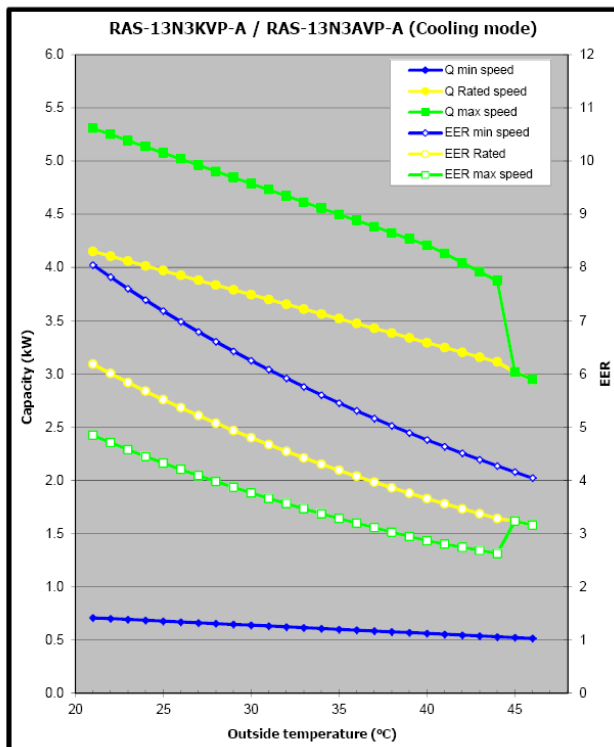


Model : RAS-13N3KVP-A / RAS-13N3AVP-A**Product specification :**

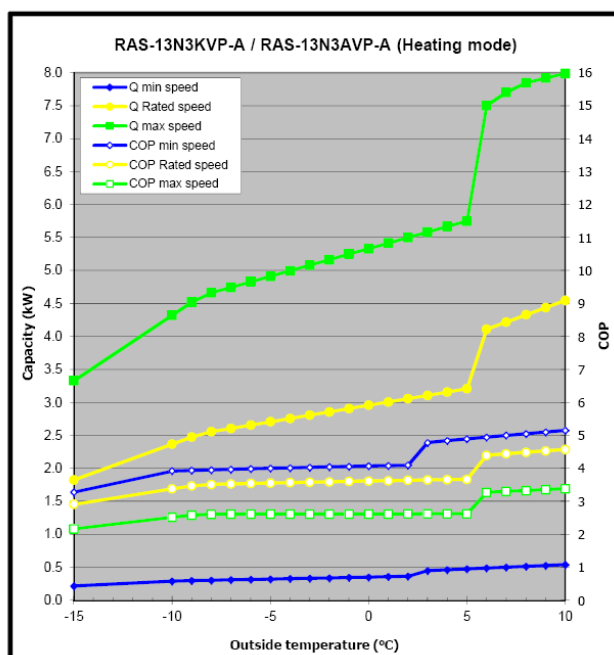
Condition		Capacity (kW)	Power (kW)	EER or COP	
Cooling JIS In : 27°CDb/19°CWb Out : 35°CDb/24°CWb	Min	0.60	0.11	5.45	
	Nominal	3.52	0.84	4.19	
	Max	4.50	1.37	3.28	
Heating JIS In : 20°CDb/ 15°CWb Out : 7°CDb/6°CWb	Min	0.50	0.10	5.00	
	Nominal	4.22	0.95	4.44	
	Max	7.70	2.33	3.30	
Heating Low Temp. In : 20°CDb/ 15°CWb Out : 2°CDb/1°CWb		Max	5.50	2.10	2.62

Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Rated capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
21	0.71	0.09	8.05	4.15	0.67	6.18	5.31	1.10	4.85
22	0.70	0.09	7.82	4.11	0.68	6.01	5.25	1.11	4.71
23	0.69	0.09	7.60	4.06	0.70	5.84	5.19	1.13	4.58
24	0.68	0.09	7.39	4.02	0.71	5.68	5.14	1.15	4.45
25	0.68	0.09	7.18	3.97	0.72	5.52	5.08	1.17	4.33
26	0.67	0.10	6.99	3.93	0.73	5.37	5.02	1.19	4.21
27	0.66	0.10	6.79	3.88	0.74	5.22	4.96	1.21	4.09
28	0.65	0.10	6.61	3.84	0.76	5.08	4.90	1.23	3.98
29	0.65	0.10	6.43	3.79	0.77	4.94	4.85	1.25	3.87
30	0.64	0.10	6.25	3.75	0.78	4.80	4.79	1.27	3.77
31	0.63	0.10	6.08	3.70	0.79	4.67	4.73	1.29	3.66
32	0.62	0.11	5.92	3.66	0.80	4.55	4.67	1.31	3.56
33	0.62	0.11	5.76	3.61	0.82	4.42	4.62	1.33	3.47
34	0.61	0.11	5.60	3.57	0.83	4.31	4.56	1.35	3.38
35	0.60	0.11	5.45	3.52	0.84	4.19	4.50	1.37	3.28
36	0.59	0.11	5.31	3.47	0.85	4.08	4.44	1.39	3.20
37	0.58	0.11	5.17	3.43	0.86	3.97	4.38	1.41	3.11
38	0.58	0.11	5.03	3.38	0.88	3.86	4.33	1.43	3.03
39	0.57	0.12	4.89	3.34	0.89	3.76	4.27	1.45	2.95
40	0.56	0.12	4.76	3.29	0.90	3.66	4.21	1.47	2.87
41	0.55	0.12	4.64	3.25	0.91	3.56	4.13	1.47	2.80
42	0.55	0.12	4.51	3.20	0.92	3.47	4.05	1.47	2.74
43	0.54	0.12	4.39	3.16	0.94	3.37	3.96	1.47	2.69
44	0.53	0.12	4.27	3.11	0.95	3.28	3.88	1.47	2.63
45	0.52	0.13	4.16	3.02	0.93	3.23	3.02	0.93	3.23
46	0.52	0.13	4.05	2.95	0.93	3.16	2.95	0.93	3.16

**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	0.22	0.07	3.28	1.82	0.63	2.91	3.33	1.54	2.17
-10	0.29	0.07	3.92	2.37	0.70	3.38	4.32	1.72	2.52
-9	0.30	0.08	3.94	2.48	0.71	3.47	4.52	1.75	2.58
-8	0.30	0.08	3.96	2.56	0.73	3.51	4.66	1.79	2.61
-7	0.31	0.08	3.97	2.61	0.74	3.53	4.73	1.82	2.61
-6	0.31	0.08	3.99	2.66	0.75	3.54	4.83	1.85	2.61
-5	0.32	0.08	4.00	2.71	0.76	3.55	4.91	1.88	2.61
-4	0.33	0.08	4.02	2.76	0.77	3.57	5.00	1.91	2.61
-3	0.33	0.08	4.03	2.81	0.78	3.58	5.08	1.94	2.61
-2	0.34	0.08	4.04	2.86	0.80	3.59	5.16	1.97	2.62
-1	0.34	0.08	4.06	2.91	0.81	3.60	5.25	2.01	2.62
0	0.35	0.09	4.07	2.96	0.82	3.62	5.33	2.04	2.62
1	0.36	0.09	4.08	3.01	0.83	3.63	5.42	2.07	2.62
2	0.36	0.09	4.09	3.06	0.84	3.64	5.50	2.10	2.62
3	0.45	0.09	4.78	3.11	0.85	3.65	5.58	2.13	2.62
4	0.46	0.10	4.84	3.16	0.86	3.66	5.67	2.16	2.62
5	0.47	0.10	4.89	3.21	0.87	3.67	5.75	2.19	2.62
6	0.49	0.10	4.95	4.11	0.94	4.40	7.50	2.29	3.27
7	0.50	0.10	5.00	4.22	0.95	4.44	7.70	2.33	3.30
8	0.51	0.10	5.05	4.33	0.96	4.49	7.85	2.36	3.33
9	0.53	0.10	5.10	4.44	0.98	4.53	7.92	2.36	3.36
10	0.54	0.10	5.15	4.55	0.99	4.57	7.99	2.36	3.39

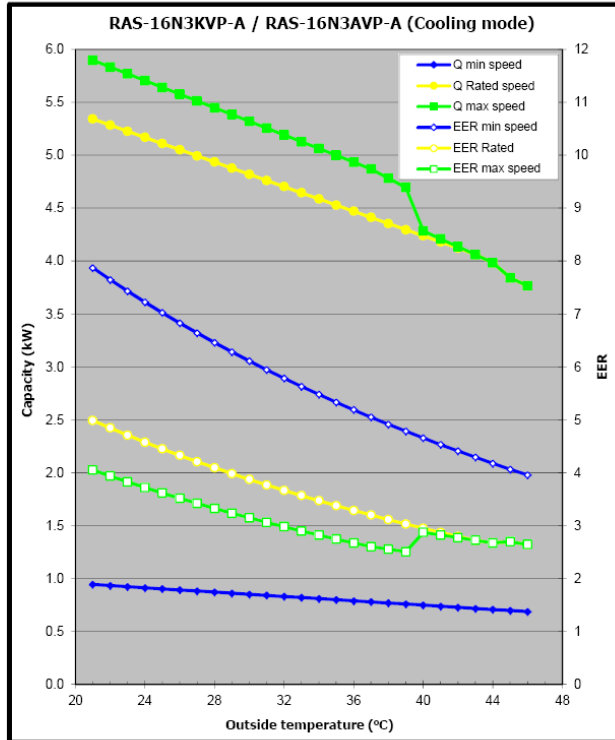


Model : RAS-16N3KVP-A / RAS-16N3AVP-A**Product specification :**

Condition		Capacity (kW)	Power (kW)	EER or COP
Cooling JIS In : 27°CDB/19°CWB Out : 35°CDB/24°CWB	Min	0.80	0.15	5.33
	Nominal	4.53	1.34	3.38
	Max	5.00	1.82	2.75
Heating JIS In : 20°CDB/ 15°CWB Out : 7°CDB/6°CWB	Min	0.70	0.15	4.67
	Nominal	5.53	1.47	3.76
	Max	8.00	2.51	3.19
Heating Low Temp. In : 20°CDB/ 15°CWB Out : 2°CDB/1°CWB		Max	5.80	2.22
			2.22	2.61

Cooling performance characteristic :

Outside Temp (°C)	Min capacity			Rated capacity			Max capacity		
	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)	Capacity (kW)	Power (kW)	EER (-)
21	0.94	0.12	7.87	5.34	1.07	4.99	5.90	1.45	4.05
22	0.93	0.12	7.65	5.29	1.09	4.85	5.83	1.48	3.94
23	0.92	0.12	7.43	5.23	1.11	4.71	5.77	1.51	3.83
24	0.91	0.13	7.23	5.17	1.13	4.58	5.71	1.53	3.72
25	0.90	0.13	7.02	5.11	1.15	4.45	5.64	1.56	3.62
26	0.89	0.13	6.83	5.05	1.17	4.33	5.58	1.59	3.52
27	0.88	0.13	6.64	5.00	1.19	4.21	5.51	1.61	3.42
28	0.87	0.13	6.46	4.94	1.21	4.10	5.45	1.64	3.33
29	0.86	0.14	6.28	4.88	1.22	3.98	5.39	1.66	3.24
30	0.85	0.14	6.11	4.82	1.24	3.88	5.32	1.69	3.15
31	0.84	0.14	5.95	4.76	1.26	3.77	5.26	1.72	3.06
32	0.83	0.14	5.79	4.70	1.28	3.67	5.19	1.74	2.98
33	0.82	0.15	5.63	4.65	1.30	3.57	5.13	1.77	2.90
34	0.81	0.15	5.48	4.59	1.32	3.47	5.06	1.79	2.82
35	0.80	0.15	5.33	4.53	1.34	3.38	5.00	1.82	2.75
36	0.79	0.15	5.19	4.47	1.36	3.29	4.94	1.85	2.67
37	0.78	0.15	5.05	4.41	1.38	3.20	4.87	1.87	2.60
38	0.77	0.16	4.92	4.36	1.40	3.12	4.78	1.87	2.56
39	0.76	0.16	4.79	4.30	1.42	3.03	4.70	1.87	2.51
40	0.75	0.16	4.66	4.24	1.44	2.95	4.62	1.89	2.47
41	0.74	0.16	4.53	4.18	1.46	2.87	4.54	1.91	2.43
42	0.73	0.17	4.41	4.12	1.47	2.80	4.46	1.93	2.39
43	0.72	0.17	4.29	4.06	1.49	2.73	4.38	1.95	2.35
44	0.71	0.17	4.18	3.98	1.49	2.67	4.30	1.97	2.31
45	0.70	0.17	4.07	3.94	1.42	2.70	4.24	1.42	2.70
46	0.69	0.17	3.96	3.77	1.42	2.64	3.77	1.42	2.64

**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	0.30	0.10	3.06	2.39	0.97	2.47	3.46	1.65	2.09
-10	0.41	0.11	3.66	3.10	1.08	2.87	4.49	1.85	2.43
-9	0.42	0.11	3.68	3.25	1.11	2.94	4.70	1.89	2.49
-8	0.42	0.11	3.69	3.35	1.13	2.98	4.85	1.92	2.52
-7	0.43	0.12	3.71	3.42	1.14	2.99	4.94	1.95	2.53
-6	0.44	0.12	3.72	3.48	1.16	3.00	5.04	1.98	2.54
-5	0.45	0.12	3.73	3.55	1.18	3.01	5.13	2.01	2.55
-4	0.46	0.12	3.75	3.61	1.20	3.02	5.23	2.04	2.56
-3	0.47	0.12	3.76	3.68	1.21	3.03	5.32	2.07	2.57
-2	0.47	0.13	3.77	3.74	1.23	3.04	5.42	2.10	2.58
-1	0.48	0.13	3.79	3.81	1.25	3.05	5.51	2.13	2.59
0	0.49	0.13	3.80	3.88	1.27	3.06	5.61	2.16	2.60
1	0.50	0.13	3.81	3.94	1.28	3.07	5.70	2.19	2.60
2	0.51	0.13	3.82	4.01	1.30	3.08	5.80	2.22	2.61
3	0.63	0.14	4.46	4.07	1.32	3.09	5.90	2.25	2.62
4	0.65	0.14	4.52	4.14	1.34	3.10	5.99	2.28	2.63
5	0.66	0.15	4.57	4.20	1.35	3.11	6.09	2.31	2.64
6	0.68	0.15	4.62	5.39	1.45	3.72	7.67	2.41	3.18
7	0.70	0.15	4.67	5.53	1.47	3.76	7.76	2.41	3.22
8	0.72	0.15	4.71	5.67	1.49	3.80	7.85	2.41	3.26
9	0.74	0.15	4.76	5.82	1.52	3.84	7.94	2.41	3.29
10	0.75	0.16	4.80	5.96	1.54	3.87	8.03	2.41	3.33

