

2.2. MULTIZONE OUTDOOR SERIES

2.2.1. MULTIZONE OUTDOOR (RAM-40QHA1/55QHA1/65QHA1/72QHA1)

Model RAM	Units	RAM-40QHA1	RAM-55QHA1	RAM-65QHA1	RAM-72QHA1	
Power Supply		AC 1Ph, 220-240V, 50Hz				
Nominal Cooling Capacity	kW	4.0(1.50-4.5)	5.4 (1.5-5.9)	6.3 (1.5-6.6)	7.1 (2.4-8.8)	
Cooling Power Input	W	1245 (200-1800)	1795 (200-1980)	2095 (200-2200)	2140(460-3200)	
Nominal Heating Capacity	kW	5.0(1.1-5.6)	7.2 (1.5-7.2)	7.2 (1.5-7.2)	8.6 (2.8-9.5)	
Heating Power Input	W	1350 (200-1780)	2110 (200-2100)	1900 (200-2110)	2180 (480-3120)	
Standby mode power consumption	W	20	20	20	20	
Sound Pressure Level (Sleep)	C	dBA	49 (43)	52 (45)	52 (45)	53 (46)
	H	dBA	51(44)	53 (45)	53 (45)	56 (48)
Starting current	A	10	10	10	16	
Recommended fuse size	A	16	16	16	30	
Power Cable*	No.	2 pcs + Earth				
Cable Size**	mm ²	4.0				
Interconnection wires	No.	2 pcs + Earth				
Wire size	mm ²	2.0				
Dimensions						
Width (Packing)	mm	750 (905)	850 (1008)	850 (1008)	850 (1008)	
Height (Packing)	mm	570 (633)	650 (698)	650 (698)	800 (848)	
Depth (Packing)	mm	280 (394)	298 (394)	298 (394)	298 (394)	
Net Weight (Gross)	kg	40 (44)	50 (55)	50 (55)	55 (60)	
Cabinet		Synthetic Resin Paint Baked on Galvanised Steel Plate				
Colour (Munsell Code)		Beige (5Y 7/2)				
System						
Refrigerant Flow Control		Micro-Computer Control Expansion Valve				
Compressor		DC Twin Rotary				
Compressor oil type		HAF68D1	HAF68D1	HAF68D1	HAF68D1	
Compressor coil resistance	Ω	1.063 at 25°C	1.063 at 25°C	1.063 at 25°C	1.063 at 25°C	
		1.268 at 75°C	1.268 at 75°C	1.268 at 75°C	1.268 at 75°C	
Condenser Fan		Propeller Fan				
Quantity		1	1	1	1	
Air flow rate (C/H)	m ³ /min	27/27	36/36	36/36	45/45	
Refrigerant Piping		Flare-Nut and/or Flange Connection (Factory supplied)				
Liquid Line	mm	Ø6.35x2	Ø6.35x2	Ø6.35x3	Ø6.35x4	
	(in.)	(1/4) x 2	(1/4) x 2	(1/4) x 3	(1/4)x4	
Gas Line	mm	Ø9.52 x 2	Ø9.52 x 2	Ø9.52 x 3	Ø9.52 x 3, Ø12.7 x 1	
	(in.)	(3/8) x 2	(3/8) x 2	(3/8) x 3	(3/8) x 3, (1/2) x 1	
Piping length max/height	m	35/20	35/20	45/20	60/20	
Charge less pipe length	m	35	35	35	30	
Additional charge	g/m	-	-	20	20	
Individual pipe length max	m	25	25	25	25	
Refrigerant Type		R410A				
Refrigerant Charge	g	1600	1650	1650	2300	

*Power cables are not included; please install the unit with cable sizes that comply with local regulations.

**Cable size depends on length (refer to chapter 13 for more details)

NOTE:

- The Sound Pressure Level is based on the following conditions:
 - 1 meter from the unit front surface and 1 meter from floor level

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

2.2.2. MULTIZONE OUTDOOR (RAM-90QHA1/130QHA1)

Model RAM		Units	RAM-90QHA1	RAM-130QHA1
Power Supply			AC 1Ph, 220-240V, 50Hz	
Nominal Cooling Capacity		kW	9.0 (1.5-9.5)	12.6 (1.5-13.2)
Cooling Power Input		W	2360 (200-3850)	4190 (400-4400)
Nominal Heating Capacity		kW	11.0 (1.5-11.5)	14.4 (1.5-14.4)
Heating Power Input		W	2460 (200-3850)	3800 (400-4220)
Standby mode power consumption		W	20	40
Sound Pressure Level	C	dBA	55 (46)	55 (48)
	H	dBA	58 (52)	56 (48)
Starting current		A	16	20
Recommended fuse size		A	30	30
Power Cable*		No.	2 pcs + Earth	
Cable Size**		mm ²	4.0	
Interconnection wires		No.	2 pcs + Earth	
Wire size		mm ²	2.0	
Dimensions				
Width (Packing)		mm	950 (1073)	855 (1070)
Height (Packing)		mm	800 (867)	1450 (1590)
Depth (Packing)		mm	370 (510)	308 (450)
Net Weight (Gross)		kg	71 (78)	113 (130)
Cabinet			Synthetic Resin Paint Baked on Galvanised Steel Plate	Synthetic Resin Paint Baked on Galvanised Steel Plate
Colour (Munsell Code)			Beige (5Y 7/2)	Beige (5Y 7/2)
System				
Refrigerant Flow Control			Micro-Computer Control Expansion Valve	
Compressor			DC 2-Cylinder Rotary	DC 2-Cylinder Rotary x 2
Compressor oil type			HAF68D1	HAF68D1
Compressor coil resistance		Ω	0.40 at 25°C	1.063 at 25°C
			0.48 at 75°C	1.268 at 75°C
Condenser Fan			Propeller fan	
Quantity			1	2
Air flow rate (C/H)		m ³ /min	65 / 65	72 / 72
Refrigerant Piping			Flare-Nut and/or Flange Connection (Factory supplied)	
Liquid Line		mm	Ø6.35x5	Ø6.35 x 6
		(in.)	(1/4) x 5	(1/4) x 6
Gas Line		mm	Ø9.52 x 3 + Ø12.7 x 2	Ø9.52 x 6
		(in.)	(3/8) x 3 + (1/2) x 2	(3/8) x 6
Pipe run				INDOOR 1,2,3 INDOOR 4,5,6
Piping length max/height		m	75/20	45 / 20 45 / 20
Charge less pipe length		m	30	35 35
Additional charge		g/m	15	20 20
Individual pipe length		m	25	25 25
Refrigerant Type			R410A	
Refrigerant Charge		g	2700	Compressor A 1650 Compressor B 1650

*Power cables are not included; please install the unit with cable sizes that comply with local regulations.

**Cable size depends on length (refer to chapter 13 for more details)

NOTE:

- The Sound Pressure Level is based on the following conditions:
 - 1 meter from the unit front surface and 1 meter from floor level

The above data was measured in an anechoic chamber so that reflected sound should be taken into consideration when installing the unit.

4.2.7 RAM-55QHA1

COOLING [50Hz, 230V]

	INDOOR		OUTDOOR TEMPERATURE (°CDB)																				
	EWB	EDB	-10			21			27			32			35			40			43		
	°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
RAM-55QHA1	12.0	18	5466	3757	1303	4333	3507	1083	4010	3237	1276	4428	3595	1651	4266	3437	1723	3996	3239	1849	3834	3081	1921
	14.0	20	5466	3757	1303	4656	3507	1083	4333	3271	1291	4752	3595	1669	4590	3476	1741	4266	3239	1867	4104	3121	1957
	16.0	22	5466	3998	1323	4979	3507	1097	4610	3271	1306	5076	3595	1687	4914	3476	1777	4590	3239	1903	4428	3121	1975
	18.0	25	5861	4287	1344	5301	3810	1112	4886	3541	1321	5400	3911	1705	5184	3753	1777	4860	3516	1921	4644	3358	1992
	19.0	27	6059	4432	1364	5486	4013	1126	5071	3709	1336	5616	4108	1723	5400	3950	1795	5076	3713	1921	4860	3555	1992
	22.0	30	6717	4384	1364	6085	3979	1126	5624	3675	1336	6210	4069	1741	5994	3911	1813	5400	3792	1992	5022	3713	2100
	24.0	32	7178	4384	1384	6500	3979	1140	5993	3675	1352	6642	4069	1741	6372	3911	1831	5616	3871	2046	5130	3832	2172

HEATING [50Hz, 230V]

	INDOOR		OUTDOOR TEMPERATURE (°CDB)																				
	EDB		-15			-10			-5			0			7			10			15		
	°C		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
RAM-55QHA1	16		2592	0	1554	4104	0	1596	5062	0	1709	6163	0	1913	7279	0	1938	7942	0	1991	9166	0	2090
	18		2556	0	1575	4068	0	1617	5011	0	1754	6098	0	1961	7243	0	2037	7913	0	2079	9130	0	2188
	20		2520	0	1596	4032	0	1638	4968	0	1785	6048	0	1995	7200	0	2100	7740	0	2174	9072	0	2289
	22		2484	0	1617	3996	0	1659	4896	0	1831	5983	0	2043	7157	0	2184	7826	0	2253	9029	0	2384
	24		2448	0	1638	3960	0	1680	4853	0	1875	5933	0	2092	7114	0	2268	7783	0	2339	8899	0	2480

COOLING [50Hz, 230V]

	INDOOR		OUTDOOR TEMPERATURE (°CDB)																				
	EWB	EDB	-10			21			27			32			35			40			43		
	°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
RAM-65QHA1	12.0	18	7015	4499	1593	5055	3818	1204	4679	3524	1419	5166	3913	1835	4977	3741	1915	4662	3526	2055	4473	3354	2135
	14.0	20	7015	4499	1593	5432	3818	1204	5055	3561	1435	5544	3913	1855	5355	3784	1935	4977	3526	2075	4788	3397	2175
	16.0	22	7015	4788	1618	5808	3818	1220	5378	3561	1452	5922	3913	1875	5733	3784	1975	5355	3526	2115	5166	3397	2195
	18.0	25	7522	5134	1643	6185	4148	1235	5701	3854	1469	6300	4257	1895	6048	4085	1975	5670	3827	2135	5418	3655	2214
	19.0	27	7775	5307	1668	6400	4368	1251	5916	4038	1485	6552	4472	1915	6300	4300	1995	5922	4042	2135	5670	3870	2214
	22.0	30	8620	5249	1668	7099	4331	1251	6561	4001	1485	7245	4429	1935	6993	4257	2015	6300	4128	2214	5859	4042	2334
	24.0	32	9212	5249	1692	7583	4331	1267	6991	4001	1502	7749	4429	1935	7434	4257	2035	6552	4214	2274	5985	4171	2414

HEATING [50Hz, 230V]

	INDOOR		OUTDOOR TEMPERATURE (°CDB)																							
	EDB		-15			-10			-7			-5			0			7			10			15		
	°C		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
RAM-65QHA1	16		2592	0	1554	4104	0	1596	4679	0	1664	5062	0	1709	6163	0	1913	7279	0	1938	7942	0	1991	9166	0	2090
	18		2556	0	1575	4068	0	1617	4634	0	1699	5011	0	1754	6098	0	1961	7243	0	2037	7913	0	2079	9130	0	2188
	20		2520	0	1596	4032	0	1638	4594	0	1726	4968	0	1785	6048	0	1995	7200	0	2100	7740	0	2174	9072	0	2289
	22		2484	0	1617	3996	0	1659	4536	0	1762	4896	0	1831	5983	0	2043	7157	0	2184	7826	0	2253	9029	0	2384
	24		2448	0	1638	3960	0	1680	4496	0	1797	4853	0	1875	5933	0	2092	7114	0	2268	7783	0	2339	8899	0	2480

4.2.9 RAM-72QHA1

COOLING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDW)																					
EWB	EDB	-10			21			27			32			35			40			43			
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
RAM-72QHA1	12	18	6089	3023	1316	5895	3445	1336	5456	3180	1575	5822	3413	1969	5609	3263	2054	5254	3075	2204	5041	2925	2290
	14	20	6089	3023	1316	6334	3445	1336	5895	3213	1593	6248	3413	1990	6035	3300	2076	5609	3075	2226	5396	2963	2333
	16	22	6089	3216	1337	6773	3445	1354	6272	3213	1612	6674	3413	2012	6461	3300	2119	6035	3075	2268	5822	2963	2354
	18	25	6530	3449	1357	7212	3743	1371	6648	3478	1630	7100	3713	2033	6816	3563	2119	6390	3338	2290	6106	3188	2375
	19	27	6750	3565	1378	7463	3942	1389	6899	3644	1649	7384	3900	2054	7100	3750	2140	6674	3525	2290	6390	3375	2375
	22	30	7483	3526	1378	8279	3909	1389	7651	3611	1649	8165	3863	2076	7881	3713	2161	7100	3600	2375	6603	3525	2504
	24	32	7997	3526	1398	8843	3909	1406	8153	3611	1667	8733	3863	2076	8378	3713	2183	7384	3675	2440	6745	3638	2589

HEATING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																							
EDB		-15			-10			-7			-5			0			7			10			15		
°C		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
RAM-72QHA1	16	3060	0156	14845	0160	45523	0167	25976	0171	87276	0192	28594	0194	89376	0200	10821	0209								
	18	3018	0158	34803	0162	55471	0170	75916	0176	27200	0197	18551	0204	79342	0208	910778	0219								
	20	2975	0160	44760	0164	65423	0173	45865	0179	47140	0200	58500	0211	09138	0218	10710	0230								
	22	2933	0162	54718	0166	75355	0177	15780	0184	7064	0205	38449	0219	49240	0226	10659	0239								
	24	2890	0164	64675	0168	85307	0180	65729	0188	47004	0210	28398	0227	9189	0235	10506	0249								

COOLING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																					
EWB	EDB	-10			21			27			32			35			40			43			
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
RAM-90QHA1	12	18	7470	5240	1405	8460	6987	1668	7830	6449	1966	7380	6113	2171	7110	5845	2266	6660	5509	2431	6390	5240	2525
	14	20	7470	5240	1405	9090	6987	1668	8460	6516	1989	7920	6113	2195	7650	5912	2289	7110	5509	2454	6840	5307	2572
	16	22	7470	5576	1427	9720	6987	1690	9000	6516	2012	8460	6113	2218	8190	5912	2336	7650	5509	2502	7380	5307	2596
	18	25	8010	5979	1449	10350	7591	1712	9540	7054	2035	9000	6651	2242	8640	6382	2336	8100	5979	2525	7740	5710	2620
	19	27	8280	6181	1471	10710	7994	1734	9900	7390	2058	9360	6987	2266	9000	6718	2360	8460	6315	2525	8100	6046	2620
	22	30	9180	6113	1471	11880	7927	1734	10980	7323	2058	10350	6920	2289	9990	6651	2384	9000	6449	2620	8370	6315	2761
	24	32	9810	6113	1492	12690	7927	1756	11700	7323	2082	11070	6920	2289	10620	6651	2407	9360	6584	2690	8550	6516	2856

HEATING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																							
EDB		-15			-10			-7			-5			0			7			10			15		
°C		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI			
RAM-90QHA1	16	3960	0182	6270	0187	7148	0194	7733	0200	29416	0224	11121	0227	12133	0233	14003	0244								
	18	3905	0184	56215	0189	7080	0199	7656	0205	9317	0229	11066	0238	12089	0243	13948	0256								
	20	3850	0187	6160	0191	7018	0202	7590	0209	19240	0233	11000	0246	11825	0254	13860	0268								
	22	3795	0189	6105	0194	6930	0206	7480	0214	9141	0239	10934	0258	11957	0264	13794	0279								
	24	3740	0191	6050	0196	6868	0210	7414	0219	9064	0245	10868	0265	11891	0274	13596	0290								

4.2.11 RAM-130QHA1

COOLING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																					
EWB	EDB	-10			21			27			32			35			40			43			
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
RAM-130QHA1	12.0	18	14029	8999	3186	10111	7635	2407	9358	7048	2837	10332	7826	3671	9954	7482	3830	9324	7052	4110	8946	6708	4269
	14.0	20	14029	8999	3186	10864	7635	2407	10111	7121	2871	11088	7826	3711	10710	7568	3870	9954	7052	4150	9576	6794	4349
	16.0	22	14029	9575	3236	11617	7635	2439	10756	7121	2904	11844	7826	3751	11466	7568	3950	10710	7052	4229	10332	6794	4389
	18.0	25	15043	10268	3285	12370	8296	2471	11401	7709	2937	12600	8514	3791	12096	8170	3950	11340	7654	4269	10836	7310	4429
	19.0	27	15550	10614	3335	12800	8736	2502	11832	8076	2971	13104	8944	3830	12600	8600	3990	11844	8084	4269	11340	7740	4429
	22.0	30	17240	10498	3335	14198	8663	2502	13122	8002	2971	14490	8858	3870	13986	8514	4030	12600	8256	4429	11718	8084	4668
	24.0	32	18424	10498	3385	15166	8663	2534	13983	8002	3004	15498	8858	3870	14868	8514	4070	13104	8428	4549	11970	8342	4828

HEATING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDW)																							
EDB		-15			-10			-7			-5			0			7			10			15		
°C		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
RAM-130QHA1	16	5184	0	3108	8208	0	3192	9357	0	3328	10123	0	3419	12326	0	3826	14558	0	3877	15883	0	3982	18331	0	4179
	18	5112	0	3150	8136	0	3234	9268	0	3398	10022	0	3507	12197	0	3923	14486	0	4074	15826	0	4158	18259	0	4376
	20	5040	0	3192	8064	0	3276	9187	0	3452	9936	0	3570	12096	0	3990	14400	0	4200	15480	0	4347	18144	0	4578
	22	4968	0	3234	7992	0	3318	9072	0	3525	9792	0	3662	11966	0	4087	14314	0	4368	15653	0	4507	18058	0	4767
	24	4896	0	3276	7920	0	3360	8991	0	3594	9706	0	3751	11866	0	4183	14227	0	4536	15566	0	4679	17798	0	4960

4.3 CORRECTION FACTOR ACCORDING TO PIPING LENGTH

Correction Factor for **Cooling Capacity** according to Piping Length

The cooling capacity should be corrected according to the following formula:

$$CCA = CC \times F$$

CCA: Actual Corrected Cooling Capacity (kcal/h)

CC: Cooling Capacity in the Performance Table (kcal/h)

F: Correction Factor Based on the Equivalent Piping Length

Correction Factor for **Heating Capacity** according to Piping Length

The heating capacity should be corrected according to the following formula:

$$HCA = HC \times F$$

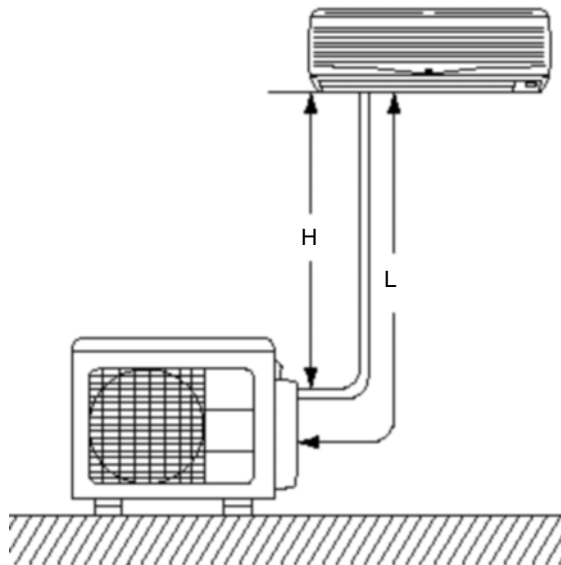
HCA: Actual Corrected Heating Capacity (kcal/h)

HC: Heating Capacity in the Performance Table (kcal/h)

F: Correction Factor Based on the Equivalent Piping Length

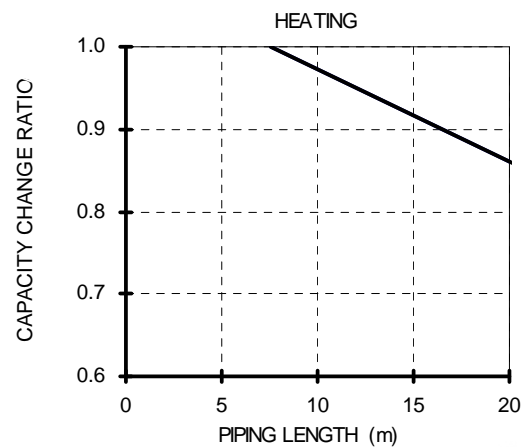
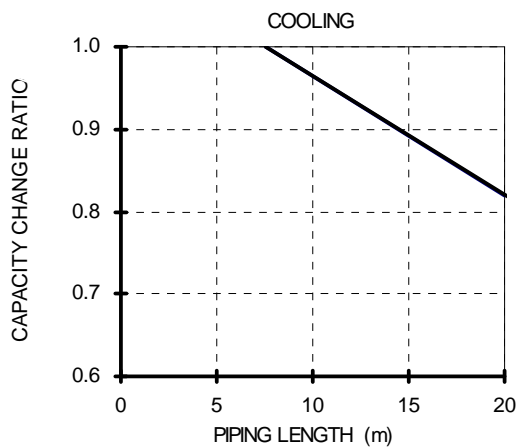
The correction factors are shown in the following figure.
Equivalent Piping Length for:

- One 90° Elbow is 0.5m.
- One 180° Curve is 1.5m.
- One Multi-Kit is 0.5m.



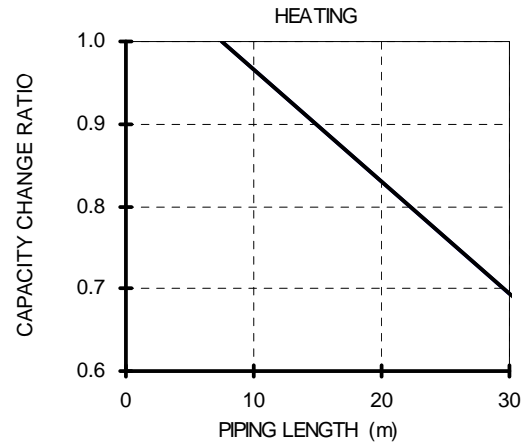
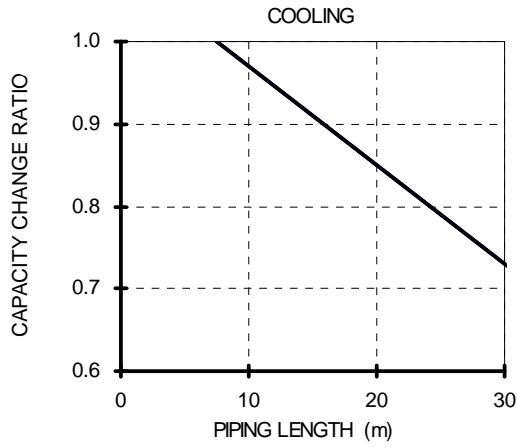
- H: Vertical Distance Between Indoor Unit and Outdoor Units in Meters
- L: Actual One-Way Piping Length Between Indoor Unit and Outdoor Unit in Meters
- EL: Equivalent Total Distance Between Indoor Unit and Outdoor Unit in Meters (Equivalent One-Way Piping Length)

Inverter 2.5kW
RAS/RAC-25YHA2



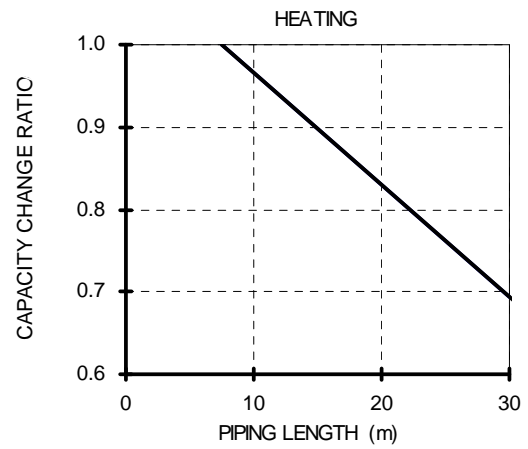
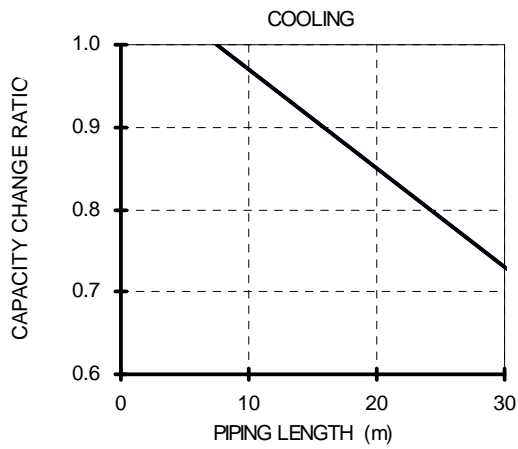
Inverter 7.0 kW

RAS/RAC-70YHA2



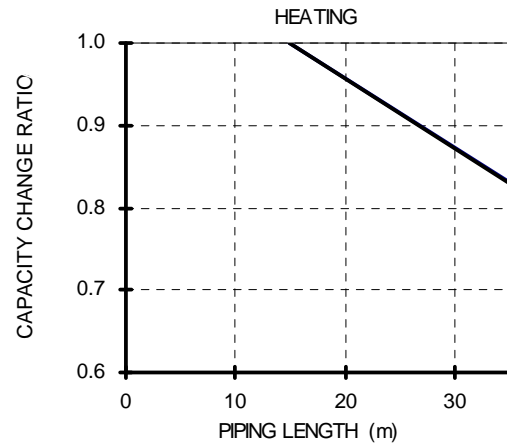
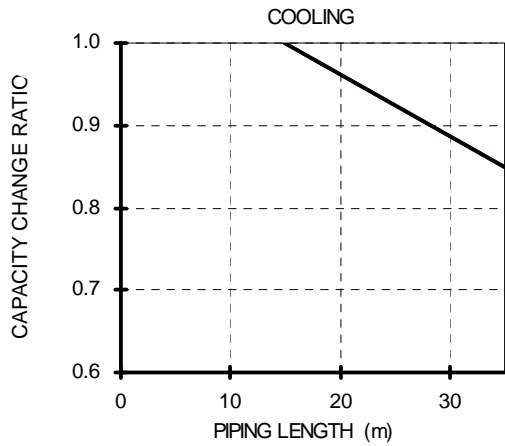
Inverter 8.0 kW

RAS/RAC-80YHA2



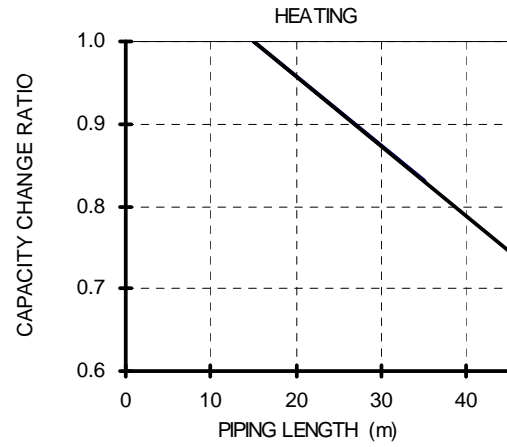
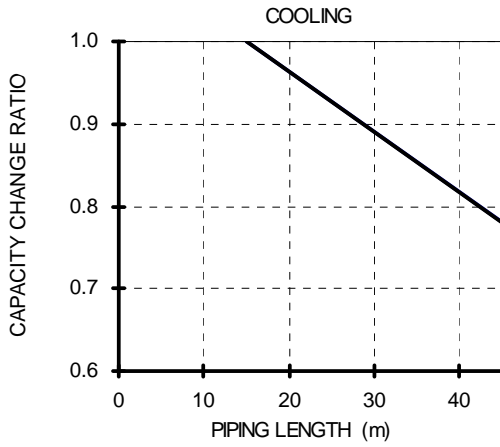
2 Rooms Multizone

RAM-55QHA1



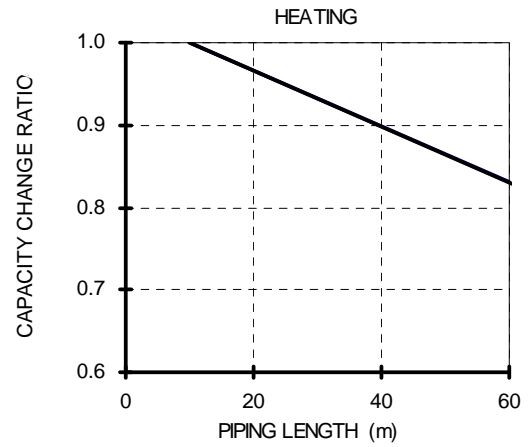
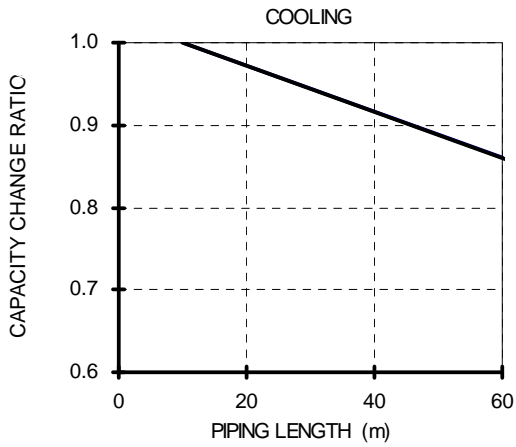
3 Rooms Multizone

RAM-65QHA1



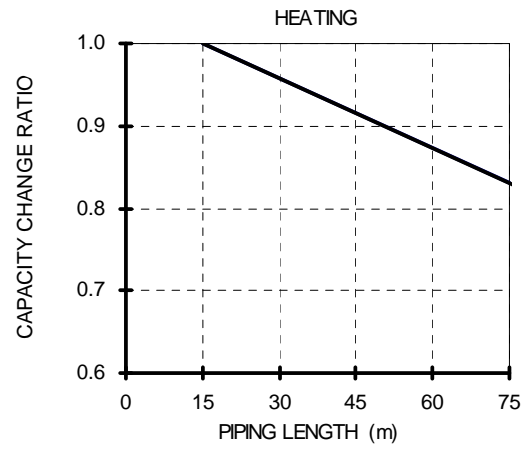
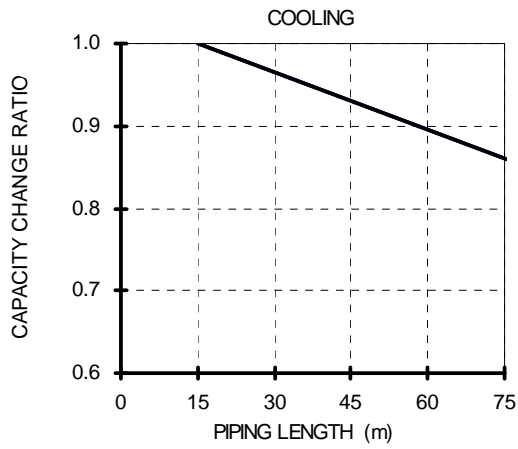
4 Rooms Multizone

RAM-72QHA1



5 Rooms Multizone

RAM-90QHA1



6 Rooms Multizone

RAM-130QHA1

