

RAC

Technical Data Book

RAC(Pearl) for North America (R410A, 60Hz, HP)



Model : AR09/12KSVDHWKNCV
AR09/12KSVDHWKXCV

History

Version	Modification	Date	Remark
Ver 1.0	Release RAC (Pearl) TDB for North America	16.06.20	
Ver.1.1	Add heating capacity data of -5°F OD temp. condition in capacity table (p.6)	16.08.03	

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Indoor Units

Model Names

AR	09	K	S	W	D	H	WK	N	/	CV
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		Buyer

(1) Classification

AR	RAC
AF	FAC/PAC

(2) Capacity

	x 1000 Btu/h
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(3) Year

F	2013
H	2014
J	2015
K	2016

(4) Product Type

R	On/Off R410A CO
Q	On/Off R410A HP
V	INVERTER R410A CO
S	INVERTER R410A HP

(5) Rating Voltage

F	208~230V, 60Hz, 1Φ, No Virus Doctor
S	208~230V, 60Hz, 1Φ, Virus Doctor
A	115V, 60Hz, 1Φ, No Virus Doctor
Z	115V, 60Hz, 1Φ, Virus Doctor

(6) Design Segment

D	Pearl
S	Max Heat
P	Quantum

(7) Version

	A - Z (1 digit)
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(8) Color

WK	Twilight White
UR	Blue
GM	Gray

(9) Set

N	Indoor Unit
X	Outdoor Unit

2 Specifications

RAC

Type				RAC	RAC		
Model Name		Indoor Unit		AR09KSWDHWKNCV	AR12KSWDHWKNCV		
		Outdoor Unit		AR09KSWDHWKXCV	AR12KSWDHWKXCV		
System	Mode			-	Heat Pump		
				kW	0.90/2.64/3.81	0.9/3.52/4.00	
	Capacity	Cooling (Min / Std / Max)		Btu/h	3,100/9,000/13,000	3,100/12,000/13,600	
				US RT	0.26/0.75/1.08	0.26/1.00/1.14	
						kW	0.8/3.69/6.1
		Heating (Min / Std / Max)		Btu/h	2,700/12,600/20,800	2,700/13,600/22,500	
				US RT	0.23/1.05/1.73	0.23/1.13/1.88	
						kW	0.20/0.57/0.90
	Power	Power Input (Nominal)	Cooling (Min / Std / Max)		kV	0.17/0.85/1.75	0.17/0.93/1.90
			Heating (Min / Std / Max)			A	1.4/2.9/4.5
		Current Input (Nominal)	Cooling (Min / Std / Max)		A	1.0/3.9/7.5	1.00/4.30/8.5
			Heating (Min / Std / Max)			A	10.3
		MCA			A	15.0	15.0
		MOP			A	15.0	15.0
	Energy Efficiency	EER (Nominal Cooling)		-	4.63	4.14	
		EER (Nominal Cooling, US)		Btu/Wh	15.79	14.12	
		COP (Nominal Heating)		-	4.34	4.30	
		Energy Grade		SEER	28.1	26.1	
	Piping Connections	Liquid Pipe		Φ, mm	6.35	6.35	
				Φ, inch	1/4"	1/4"	
		Gas Pipe		Φ, mm	9.52	9.52	
				Φ, inch	3/8"	3/8"	
		Installation Limitation	Max. Length (Outdoor to indoor)		m	15	15
					ft	49	49
Max. Height (Between ID/OD)			m	8	8		
			ft	26	26		
Field Wiring	Power Source Wire		mm ²	1.5	1.5		
	Transmission Cable		mm ²	Power 1.0/Comm 0.75	Power 1.0/Comm 0.75		
Refrigerant	Type		-	R410A	R410A		
	Control Method		-	-	-		
	Factory Charging		kg	1.15	1.15		
			lbs	2.54	2.54		
Indoor Unit	Power Supply		Φ, #, V, Hz	1,2,208-230,60	1,2,208-230,60		
	Fan	Type		-	Cross Flow Fan	Cross Flow Fan	
		Motor	Output		W	27	27
			Number of Unit		EA	1	1
		Air Flow Rate		Turbo / High / Mid / Low	CFM	420/380/330/270	460/420/360/310
		External Static Pressure		Min / Std / Max	Pa	-	-
				In Wg	-	-	
	Drain	Drain Pipe		Φ,mm	18Φ,550mm	18Φ,550mm	
	Sound	Sound Pressure		High / Low	40/20	41/20	
		Sound Power		Cooling	-	-	
	External Dimension	Net Weight		kg	11.2	11.2	
				lbs	24.69	24.69	
		Shipping Weight		kg	13.5	13.5	
				lbs	29.76	29.76	
Net Dimensions (WxHxD)		mm	896*261*261	896*261*261			
		inch	35.28*10.28*10.28	35.28*10.28*10.28			
Shipping Dimensions (WxHxD)		mm	956*317*335	956*317*335			
		inch	37.64*12.48*13.19	37.64*12.48*13.19			
Outdoor Unit	Power Supply		Φ, #, V, Hz	1,2,208-230,60	1,2,208-230,60		
	Compressor	Type		-	BLDC Rotary	BLDC Rotary	
		Model		-	DA128A1FA-20F	DA128A1FA-20F	
		Output		kW	3.83	3.83	
				Oil	POE	POE	
	Fan	Air Flow Rate		Cooling	CFM	1700	1700
	Sound	Sound Pressure		Cooling	dB(A)	45	46
		Sound Power		Cooling	-	-	
	External Dimension	Net Weight		kg	40.0	40	
				lbs	88.18	88.18	
		Shipping Weight		kg	44.0	44	
				lbs	97.00	97.00	
		Net Dimensions (WxHxD)		mm	880*638*310	880*638*310	
				inch	34.65*25.12*12.20	34.65*25.12*12.20	
		Shipping Dimensions (WxHxD)		mm	1023*730*413	1023*730*413	
	inch			40.28*28.74*16.26	40.28*28.74*16.26		
	Operating Temp.	Cooling		°F	14.0~114.8	14.0~114.8	
		Heating		°F	5.0~75.2	5.0~75.2	

* Specifications may be subject to change without prior notice.

1) Nominal capacity are based on (Refrigerant Piping : 24.6ft(7.5m) , Level Differences : 0ft);

.Cooling : Indoor temperature : 80°F DB, 67°F WB / Outdoor temperature : 95°F DB, 75°F WB

.Heating : Indoor temperature : 70°F DB, 60°F WB / Outdoor temperature : 47°F DB, 43°F WB

2) Sound pressure was acquired in a dead room. Thus actual noise level may be different depending on the installation conditions.

3 Capacity table

RAC

AR09KSWDHWKNCV + AR09KSWDHWKXCV

Cooling

TC(Total Capacity), SHC(Sensible Heat Capacity), PI(Power Input)

Outdoor Air Temp. (°F, DB)	Indoor Temperature (°F)																				
	68 (DB)			72 (DB)			77 (DB)			80 (DB)			82 (DB)			86 (DB)			90 (DB)		
	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)
14	10.82	6.06	0.45	9.52	6.85	0.45	10.82	7.79	0.46	10.82	8.65	0.46	12.11	8.72	0.46	13.41	9.12	0.46	13.41	10.19	0.46
32	11.05	6.19	0.44	9.76	7.03	0.44	11.05	7.96	0.45	11.05	8.84	0.45	12.35	8.89	0.45	13.65	9.28	0.45	13.65	10.37	0.45
50	11.26	6.31	0.44	9.96	7.17	0.44	11.26	8.11	0.45	11.26	9.01	0.44	12.56	9.04	0.45	13.85	9.42	0.45	13.85	10.53	0.45
68	11.50	6.44	0.42	10.20	7.35	0.42	11.50	8.28	0.43	11.50	9.20	0.43	12.80	9.21	0.43	14.09	9.58	0.44	14.09	10.71	0.44
77	10.68	5.98	0.46	9.38	6.76	0.46	10.68	7.69	0.47	10.68	8.54	0.47	11.98	8.62	0.47	13.27	9.03	0.48	13.27	10.09	0.48
90	9.49	5.31	0.53	8.19	5.90	0.53	9.49	6.83	0.54	9.49	7.59	0.54	10.78	7.76	0.55	12.08	8.21	0.55	12.08	9.18	0.56
95	9.00	5.04	0.56	7.70	5.55	0.56	9.00	6.48	0.57	9.00	7.20	0.57	10.30	7.41	0.57	11.59	7.88	0.58	11.59	8.81	0.58
104	9.76	5.46	0.78	8.46	6.09	0.78	9.76	7.03	0.79	9.76	7.81	0.80	11.05	7.96	0.81	12.35	8.40	0.82	12.35	9.39	0.82
110	10.20	5.71	0.90	8.91	6.41	0.91	10.20	7.35	0.93	10.20	8.16	0.94	11.50	8.28	0.95	12.80	8.70	0.97	12.80	9.72	0.98
115	10.65	5.96	1.04	9.35	6.73	1.05	10.65	7.66	1.07	10.65	8.52	1.08	11.94	8.60	1.09	13.24	9.00	1.11	13.24	10.06	1.13

Heating

TC : Total Capacity PI: Power Input

Outdoor Air Temp. (°F, DB)	Indoor Temperature (°F, DB)											
	61		64		68		70		72		75	
	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)
5	11.18	1.68	10.96	1.72	10.75	1.75	10.75	1.76	10.75	1.77	10.75	1.79
14	12.55	1.65	12.30	1.59	12.06	1.62	12.06	1.63	12.06	1.63	12.06	1.65
23	13.91	1.43	13.64	1.46	13.37	1.49	13.37	1.49	13.37	1.50	13.37	1.52
32	15.28	1.30	14.98	1.33	14.68	1.35	14.68	1.36	14.68	1.37	14.68	1.38
36	15.82	1.25	15.51	1.27	15.21	1.30	15.21	1.31	15.21	1.31	15.21	1.33
41	12.77	0.79	12.52	0.81	12.28	0.82	12.15	0.83	12.03	0.83	11.79	0.84
47	13.24	0.82	12.98	0.83	12.73	0.85	12.60	0.85	12.60	0.86	12.47	0.87
50	13.94	0.84	13.67	0.86	13.40	0.89	13.27	0.89	13.27	0.90	13.13	0.91
59	15.11	0.92	14.82	0.93	14.52	0.95	14.38	0.96	14.38	0.96	14.24	0.97
68	16.28	0.98	15.96	1.00	15.65	1.02	15.49	1.02	15.49	1.03	15.34	1.04
75	17.22	1.03	16.88	1.05	16.55	1.07	16.38	1.08	16.38	1.08	16.22	1.09

AR12KSWDHWKNCV + AR12KSWDHWKXCV

Cooling

TC(Total Capacity), SHC(Sensible Heat Capacity), PI(Power Input)

Outdoor Air Temp. (°F, DB)	Indoor Temperature (°F)																				
	68 (DB)			72 (DB)			77 (DB)			80 (DB)			82 (DB)			86 (DB)			90 (DB)		
	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)	TC (MBH)	SHC (MBH)	PI (kW)
14	13.34	6.67	0.71	12.04	7.95	0.71	13.34	8.81	0.72	13.34	9.87	0.72	14.64	9.66	0.72	15.93	9.88	0.72	15.93	11.15	0.73
32	13.48	6.74	0.71	12.18	8.04	0.71	13.48	8.90	0.72	13.48	9.97	0.72	14.77	9.75	0.72	16.07	9.96	0.72	16.07	11.25	0.73
50	13.65	6.82	0.71	12.35	8.15	0.71	13.65	9.01	0.72	13.65	10.10	0.71	14.94	9.86	0.72	16.24	10.07	0.72	16.24	11.37	0.73
68	13.78	6.89	0.69	12.49	8.24	0.70	13.78	9.10	0.70	13.78	10.20	0.71	15.08	9.95	0.72	16.38	10.15	0.72	16.38	11.46	0.73
77	13.20	6.60	0.74	11.91	7.86	0.74	13.20	8.71	0.75	13.20	9.77	0.75	14.50	9.57	0.76	15.80	9.79	0.77	15.80	11.06	0.77
90	12.35	6.18	0.80	11.05	7.30	0.81	12.35	8.15	0.82	12.35	9.14	0.82	13.65	9.01	0.83	14.94	9.27	0.84	14.94	10.46	0.84
95	12.00	6.00	0.83	10.70	7.06	0.84	12.00	7.92	0.85	12.00	8.88	0.85	13.30	8.78	0.85	14.59	9.05	0.86	14.59	10.22	0.86
104	11.94	5.97	0.94	10.65	7.03	0.95	11.94	7.88	0.96	11.94	8.84	0.97	13.24	8.74	0.98	14.54	9.01	0.99	14.54	10.17	1.00
110	11.91	5.95	1.01	10.61	7.00	1.02	11.91	7.86	1.04	11.91	8.81	1.05	13.20	8.71	1.07	14.50	8.99	1.08	14.50	10.15	1.09
115	11.87	5.94	1.08	10.58	6.98	1.09	11.87	7.84	1.11	11.87	8.79	1.12	13.17	8.69	1.13	14.47	8.97	1.15	14.47	10.13	1.18

Heating

TC : Total Capacity, PI: Power Input

Outdoor Air Temp. (°F, DB)	Indoor Temperature (°F, DB)											
	61		64		68		70		72		75	
	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)	TC (MBH)	PI (kW)
5	12.21	1.82	11.97	1.86	11.74	1.90	11.74	1.91	11.74	1.92	11.74	1.94
14	13.65	1.69	13.38	1.72	13.12	1.76	13.12	1.77	13.12	1.77	13.12	1.79
23	15.09	1.55	14.79	1.58	14.50	1.61	14.50	1.62	14.50	1.63	14.50	1.65
32	16.53	1.41	16.20	1.44	15.89	1.47	15.89	1.48	15.89	1.49	15.89	1.50
36	17.10	1.36	16.77	1.39	16.44	1.42	16.44	1.42	16.44	1.43	16.44	1.44
41	13.80	0.86	13.53	0.88	13.26	0.90	13.13	0.90	13.00	0.91	12.74	0.92
47	14.29	0.89	14.01	0.91	13.74	0.93	13.60	0.93	13.60	0.94	13.46	0.95
50	15.03	0.92	14.74	0.94	14.45	0.98	14.30	0.98	14.30	0.99	14.16	1.00
59	16.27	1.02	15.95	1.04	15.64	1.06	15.48	1.07	15.48	1.07	15.33	1.08
68	17.51	1.10	17.16	1.12	16.83	1.14	16.66	1.15	16.66	1.16	16.49	1.17
75	18.49	1.16	18.13	1.19	17.78	1.21	17.60	1.22	17.60	1.22	17.42	1.23

- Capacities are based on following conditions;

. Cooling mode indoor air temperature (, DB/WB) : 68/57, 72/61, 77/64, 80/67, 82/70, 86/72, 90/75

. Heating mode outdoor air : 85%RH. However, the condition rated capacity is 47 DB / 43 WB.

. Refrigerant piping length : 7.5m (24.6ft) . Level difference : 0m.

. In case of Inverter models, the cooling capacity on the capacity table can be higher than nominal capacity as inverter compressors operate with different Hz depending on outdoor and indoor temperatures.

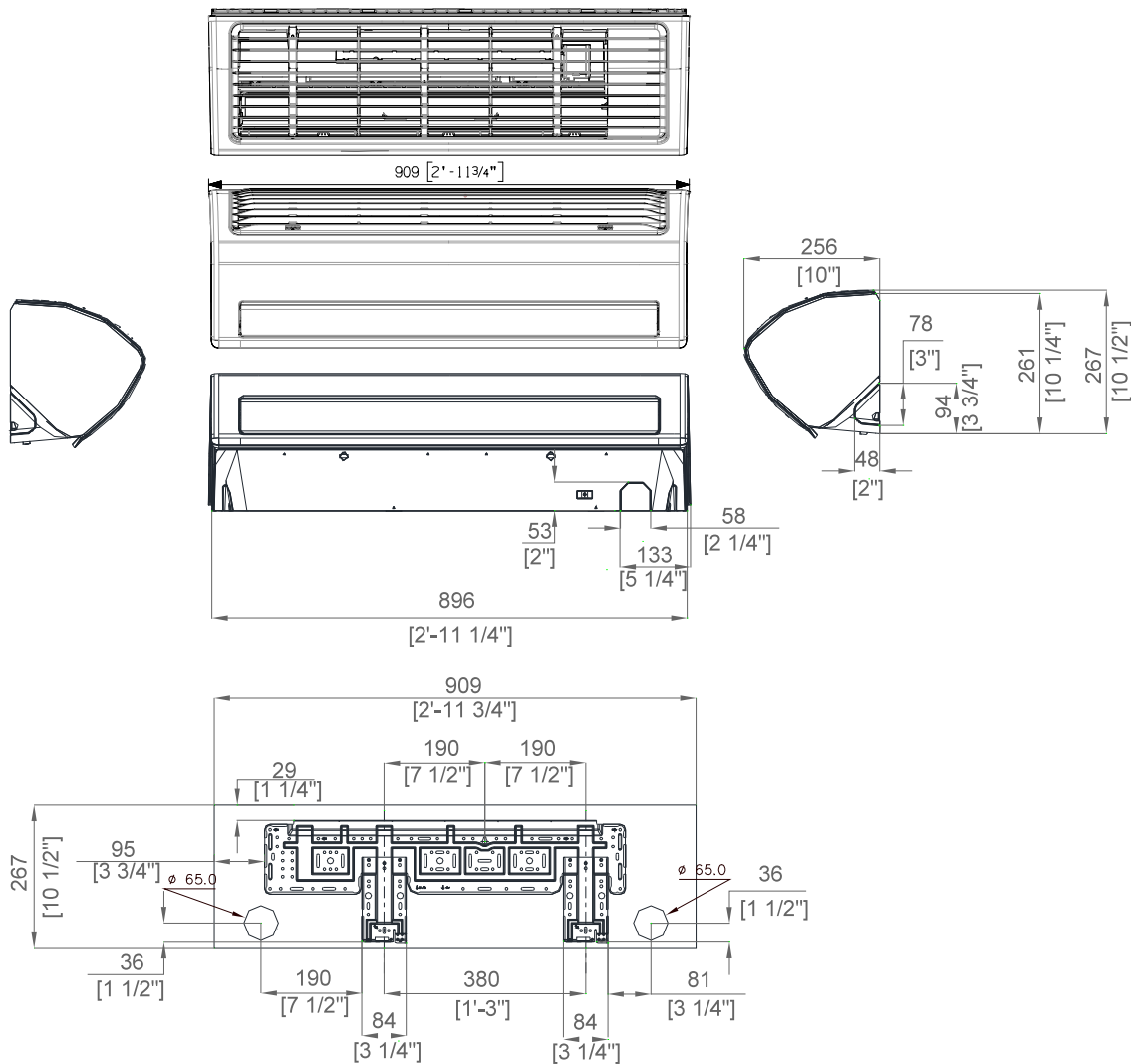
- The specifications, designs and information in this Databook is subject to change without notice.

4 Dimensional drawing

Indoor

AR09KSWDHWKNCV, AR12KSWDHWKNCV

Units : mm / inches



No.	Name	Description	
		9kBtu	12kBtu
1	Refrigerant gas pipe	Ø9.52 Flare	
2	Refrigerant liquid pipe	Ø6.35 Flare	
3	Drain pipe connection	18 Hose	

4

Dimensional drawing

Outdoor

AR09KSWDHWKXCV, AR12KSWDHWKXCV

Units : mm / inches

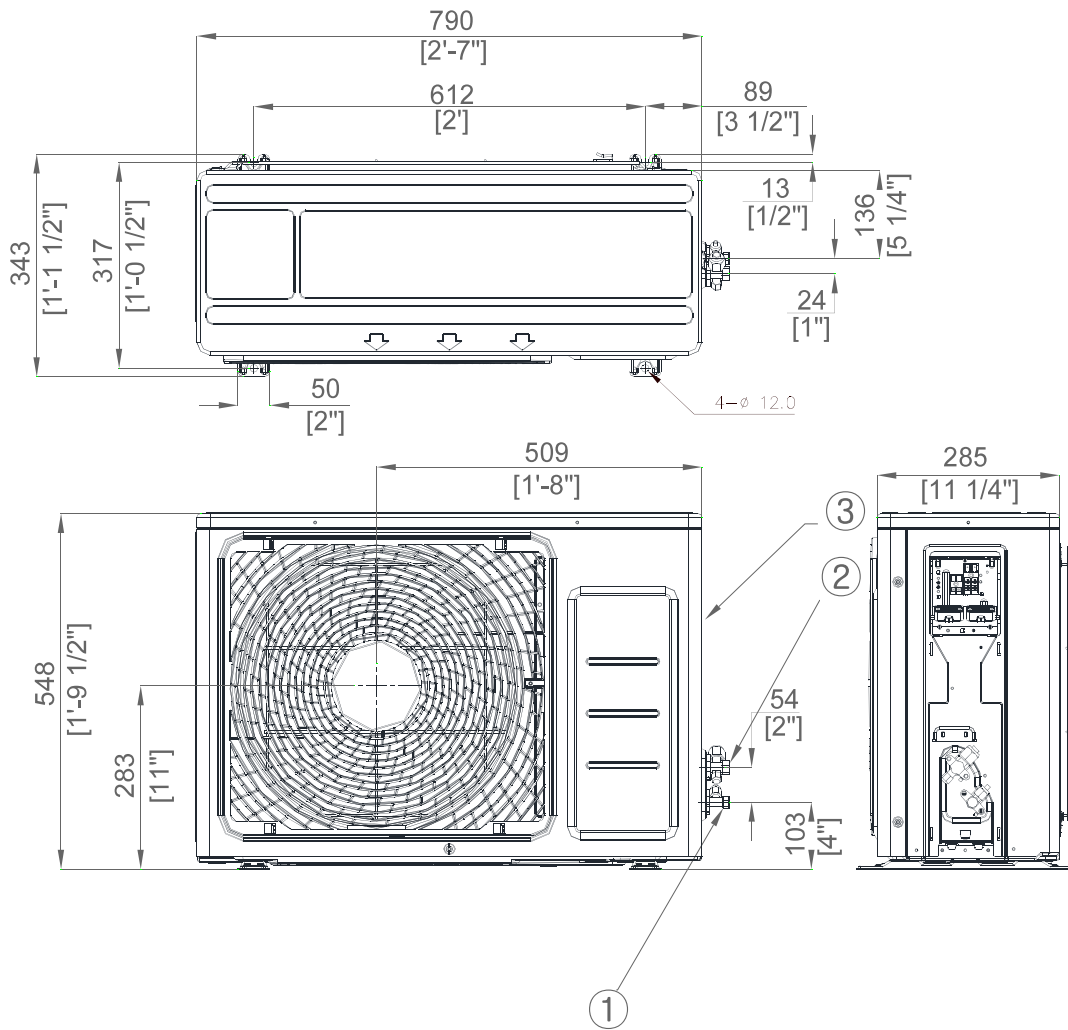


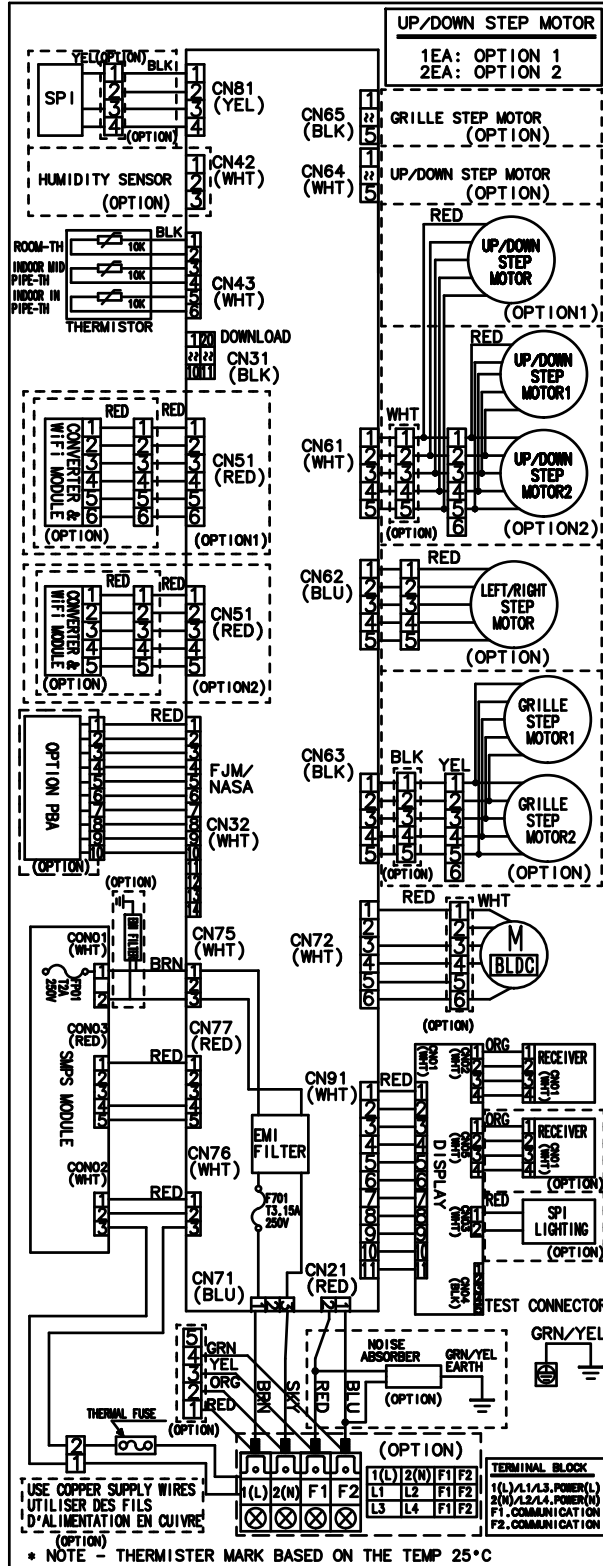
Table of descriptions

1	Refrigerant liquid pipe	Ø6.35 Flare
2	Refrigerant gas pipe	Ø9.52 Flare
3	Power & Comm. wiring conduits	
4		
5		
6		

5 Electrical wiring diagram

RAC : Indoor unit

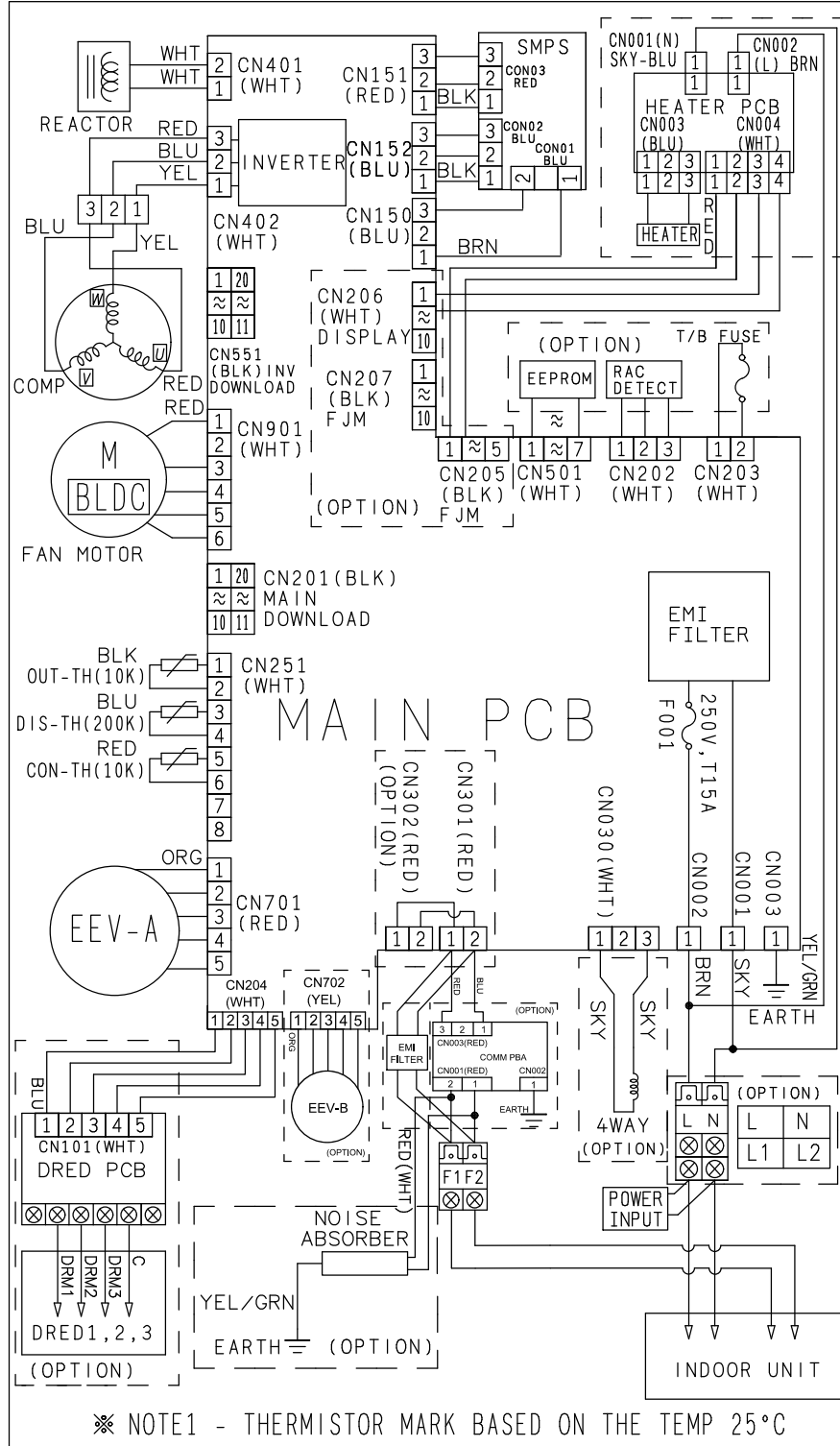
AR09KSWDHWKNCV, AR12KSWDHWKNCV



5 Electrical wiring diagram

RAC : Outdoor unit

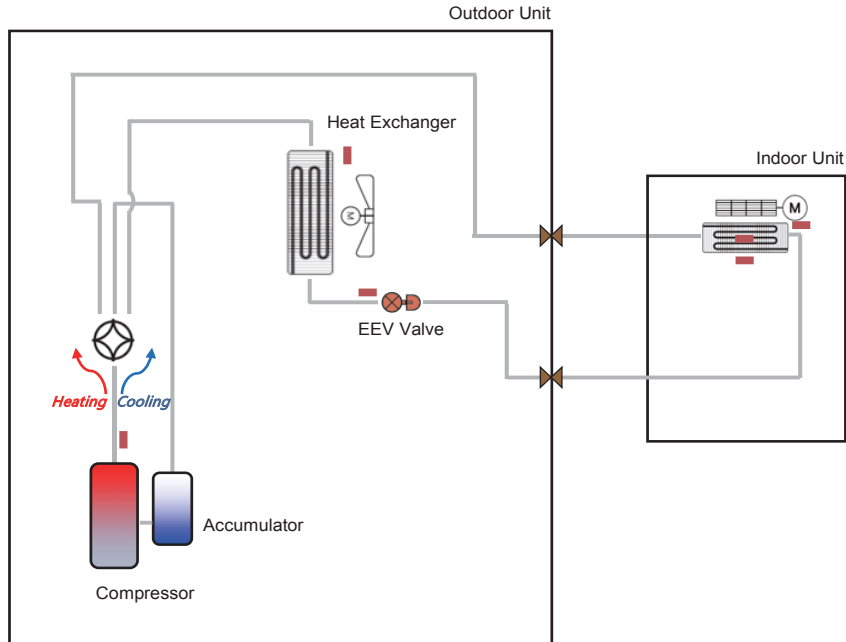
AR09KSWDHWKXCV, AR12KSWDHWKXCV











Cycle diagram

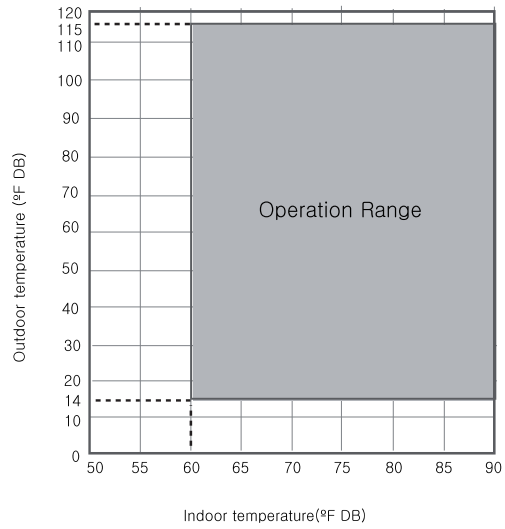
Outdoor

AR09KSWDHWKXCV, AR12KSWDHWKXCV

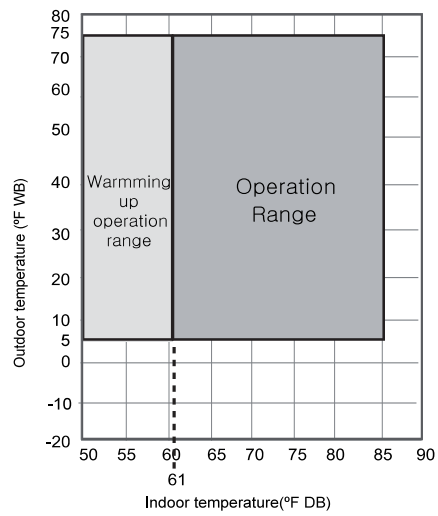


Category	Symbol	Description
Compressor		Rotary Compressor
Accumulator		Accumulator
Heat Exchanger		Condensing/Evaporating unit
Blower		Cross Fan/Propeller Fan
Expansion		EEV Valve
Valve		Service valve
		4-way valve
Sensor	Temperature	 Pipe/Air Temperature sensor

Cooling



Heating




8 Capacity correction

Outdoor


AR09KSWDHWKNCV + AR09KSWDHWKXCV

Cooling



Level Difference (ft)		Pipe Length (ft)			
		16.4	32.8	41.0	49.2
26.2	-	0.96	0.94	0.91	
16.4	0.99	0.97	0.95	0.92	
0	1.00	0.98	0.96	0.93	
-16.4	0.99	0.97	0.95	0.92	
-26.4	-	0.96	0.94	0.91	


Heating



Level Difference (ft)		Pipe Length (ft)			
		16.4	32.8	41.0	49.2
26.2	-	0.96	0.94	0.91	
16.4	0.99	0.97	0.95	0.92	
0	1.00	0.98	0.96	0.93	
-16.2	0.99	0.97	0.95	0.92	
-26.4	-	0.96	0.94	0.91	


AR12KSWDHWKNCV + AR12KSWDHWKXCV

Cooling



Level Difference (ft)		Pipe Length (ft)			
		16.4	32.8	41.0	49.2
26.2	-	0.96	0.94	0.91	
16.4	0.99	0.97	0.95	0.92	
0	1.00	0.98	0.96	0.93	
-16.4	0.99	0.97	0.95	0.92	
-26.4	-	0.96	0.94	0.91	

Heating



Level Difference (ft)		Pipe Length (ft)			
		16.4	32.8	41.0	49.2
26.2	-	0.96	0.94	0.91	
16.4	0.99	0.97	0.95	0.92	
0	1.00	0.98	0.96	0.93	
-16.2	0.99	0.97	0.95	0.92	
-26.4	-	0.96	0.94	0.91	

SAMSUNG

2016.08
Ver. 1.1

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B2B PM / SE

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