TECHNICAL CATALOGUE

HITACHI

Cooling & Heating

RAK-VJ50PHAT   RAK-VJ60PHAT   RAK-VJ70PHAT

RAC-VJ50PHAT

RAC-VJ60PHAT

RAC-VJ70PHAT

HITACHI

Specifications in this catalogue are subject to change without prior notice in order for HITACHI to bring in the latest innovations to their customers

CONTENTS

1   SPECIFICATIONS

1.1.   WALL TYPE (RAK-VJ50PHAT, RAK-VJ60PHAT & RAK-VJ70PHAT)

INDOOR	Unit	RAK-VJ50PHAT	RAK-VJ60PHAT	RAK-VJ70PHAT
Nominal capacity adjustable		no	no	no
Nominal Cooling capacity (min - max)	kW	5.00 (1.50 -6.40)	6.00 (1.70 -7.00)	7.00 (2.50-8.30)
Nominal Heating capacity (min - max)	kW	6.00 (1.70 -7.50)	7.00 (1.80 -7.80)	8.00 (1.80 -8.80)
Noise level cooling (sound pressure) (SL / L / M / H / SHi)	dB(A)	47 / 44 / 40 / 35 / 32	47 / 45 / 42 / 36 / 32	48 / 45 / 42 / 36 / 32
Noise level heating (sound pressure) (SL / L / M / H / SHi)	dB(A)	47 / 44 / 41 / 35 / 31	47 / 45 / 42 / 36 / 32	48 / 45 / 42 / 36 / 32
Noise level (sound power)	dB(A)	64	64	65
Air flow cooling mode (SL / L / M / H / SHi)	m³/h	285/241/210/163/138	292/257/223/170/138	316/281/235/171/138
Air flow heating mode (SL / L / M / H / SHi)	m³/h	290/258/221/169/140	298/262/227/175/140	318/285/240/180/140
Fan Motor	W	38	38	38
Dehumidification	l/h	2.8	2.8	4.5
Dimensions (H x W x D)	mm	294 x 1050 x 255	294 x 1050 x 255	294 x 1050 x 255
Weight	kg	13	13	13
Colour		Star White	Star White	Star White
Condensate Drain	mm	φ16	φ16	φ16
Running current (C/H)	A	5.45 / 6.75	7.50 / 7.95	9.58 / 9.23
Power supply	V	From OUTDOOR	From OUTDOOR	From OUTDOOR
Cable section (Interconnection)	mm²	1.50x3 + EARTH/-	1.50x3 + EARTH/-	1.50x3 + EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 1/2"	1/4" / 1/2"	1/4" / 5/8"
Drain diameter (ext)	mm	φ16	φ16	φ16
Remote control (Standard/Optional)		RC-AGS1EA0E / SPX-RCDB1 /SPX-WKT4	RC-AGS1EA0E / SPX-RCDB1 /SPX-WKT4	RC-AGS1EA0E / SPX-RCDB1 /SPX-WKT4
Filter				
ACL Filter		Virosense Z1 Filter	Virosense Z1 Filter	Virosense Z1 Filter
ACL part name		SPX-VSZ1	SPX-VSZ1	SPX-VSZ1
Pre-filter (Standard / Optional)		Stainless	Stainless	Stainless

NOTE:

1. Capacity and seasonal performance data (SEER /SCOP) are based on EN14511 and EN14825. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	*dB*	27.0 °C	20.0 °C
	WB	19.0 °C	
Outdoor Air Inlet Temperature	*dB*	35.0 °C	7.0 °C
	WB		6.0 °C
Piping Length: 5.0 meters; **Piping Lift**: 0 meter **dB**: Dry Bulb; **WB**: Wet Bulb			

2. The Sound Pressure Level is based on the following conditions:
   - 0.8 meter beneath indoor height center
   - 1 meter from Discharge grille

   The above data was measured in an anechoic chamber. Please take into consideration reflected sound of your specific site

1.2.   OUTDOOR (RAC-VJ50PHAT, RAC-VJ60PHAT & RAK-VJ70PHAT)

OUTDOOR		UNIT	RAC-VJ50PHAT	RAC-VJ60PHAT	RAC-VJ70PHAT
Nominal Cooling capacity (min - max)		kW	5.00 (1.50 -6.40)	6.00 (1.70 -7.00)	7.00 (2.50-8.30)
Nominal Heating capacity (min - max)		kW	6.00 (1.70 -7.50)	7.00 (1.80 -7.80)	8.00 (1.80 -8.80)
Nominal cooling power input (min - max)		kW	1,235 (500 ~ 3,050)	1,700 (500 ~ 3,050)	2,140 (500 ~ 3,500)
Nominal heating power input (min - max)		kW	1,530 (500 ~ 3,050)	1,800 (500 ~ 3,050)	2,090 (500 ~ 3,500)
EER / COP			4.05 / 3.92	3.53 / 3.89	3.27 / 3.83
TCSPF/HSPF(HOT/MIXED/COLD)			Cooling (6.87/6.866/6.805) Heating (4.125/4.096/3.508)	Cooling (5.97/5.630/6.050) Heating (5.280/4.400/3.700)	Cooling (5.55/5.355/5.678) Heating (4.879/4.345/3.606)
STARS(HOT/MIXED/COLD)			Cooling (4.5/ 4.5/ 4.5) Heating (3.5/ 2.5/ 2.0)	Cooling (4.0/ 4.0/ 4.5) Heating (3.5/ 2.5/ 2.0)	Cooling (4.0/ 3.5/ 4.0) Heating (3.5/ 2.5/ 2.0)
Noise level cooling (sound pressure)		dB(A)	52	52	54
Noise level (sound power)		dB(A)	64	64	65
Air flow (Cooling / Heating)		m³/h	2160 / 2100	2160 / 2100	2300 / 2100
Dimensions (H x W x D)		mm	750×850×298	750×850×298	800×850×298
Weight		kg	47	47	49
Colour			Beige (5Y7/2)	Beige (5Y7/2)	Beige (5Y7/2)
Power supply			220 - 240V / 1Ph / 50Hz	220 - 240V / 1Ph / 50Hz	220 - 240V / 1Ph / 50Hz
Recommended fuse size		A	20	20	20
Cable section (Power)		mm²	2.50x2 + EARTH	2.50x2 + EARTH	2.50x2 + EARTH
Cable section (Interconnection)		mm²	1.50x3 + EARTH	1.50x3 + EARTH	1.50x3 + EARTH
Piping diameter (Liq / Gas)		Inch	1/4" / 1/2"	1/4" / 1/2"	1/4" / 5/8"
Minimum piping length		m	3	3	3
Maximum piping length / height difference		m	30 / 20	30 / 20	30 / 20
Current quantity of refrigerant		kg / TeqCO²	1.50 / 1.012	1.50 / 1.012	1.50 / 1.012
Chargeless / Additional refrigerant charge		m / g/m	30/-	30/-	30/-
Working range (cooling / heating)		℃	-10℃ - 46℃ / -15℃ ~24℃	-10℃ - 46℃ / -15℃ ~24℃	-10℃ - 46℃ / -15℃ ~24℃
Refrigerant / GWP			R32 / 675	R32 / 675	R32 / 675
Condenser Fan			Propeller Fan	Propeller Fan	Propeller Fan
Compressor	Type		Rotary	Rotary	Rotary
	Oil Type		ACS68R	ACS68R	ACS68R
	Oil Charge	ml	440±20	440±20	440±20
	Coil Resistance	Ω	1.982 at 20℃	1.982 at 20℃	1.982 at 20℃
	Quantity		1	1	1

NOTE:

1. 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. Please take into consideration reflected sound of your specific site
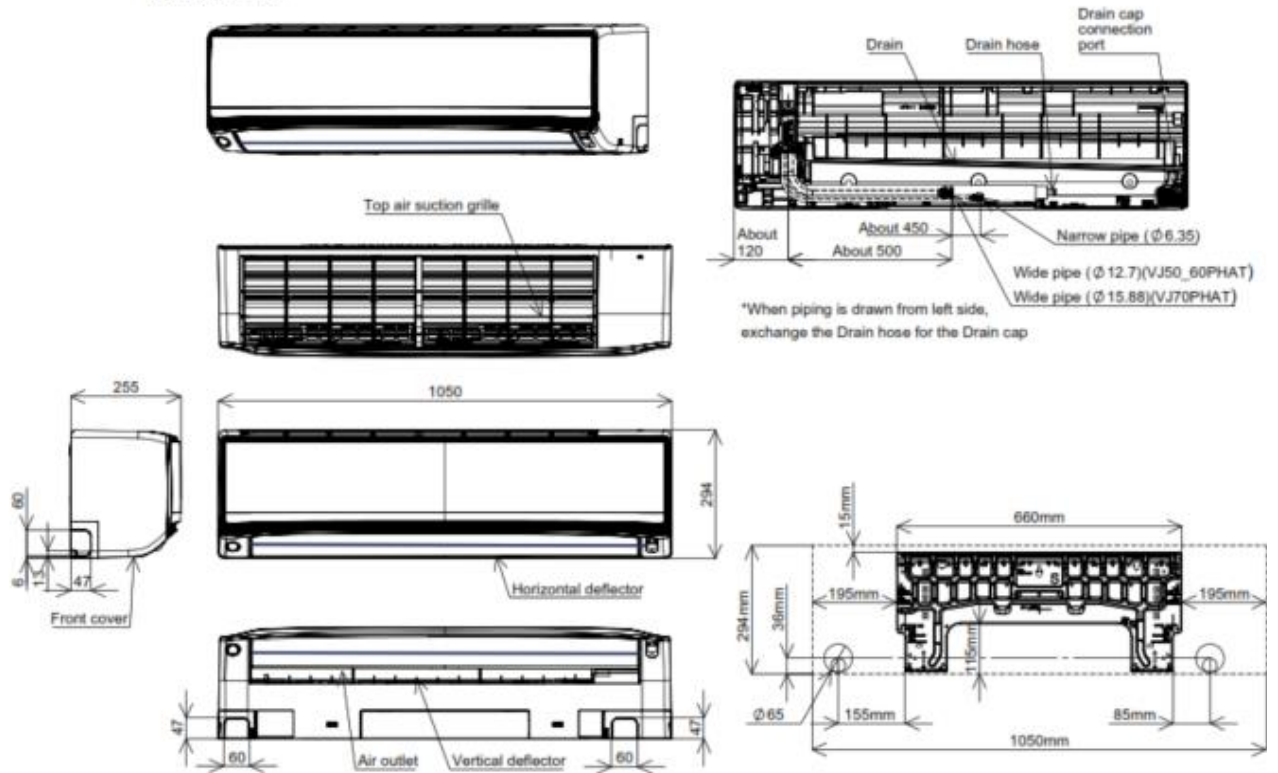
2 DIMENSIONAL DATA

2.1. INDOOR WALL TYPE: RAK-VJ50PHAT, RAK-VJ60PHAT, RAK-VJ70PHAT

MODEL RAK-VJ50PHAT, RAK-VJ60PHAT, RAK-VJ70PHAT

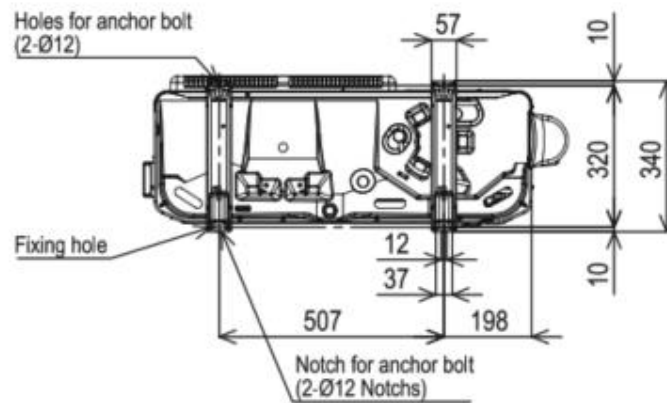CONSTRUCTION AND DIMENSIONAL DIAGRAM
MODEL: RAK-VJ50PHAT
RAK-VJ60PHAT
RAK-VJ70PHAT

Drain cap connection port

Drain   Drain hose

Top air suction grille

About 120   About 450
About 500   Narrow pipe (Ø6.35)

Wide pipe (Ø12.7)(VJ50_60PHAT)
Wide pipe (Ø15.88)(VJ70PHAT)

*When piping is drawn from left side, exchange the Drain hose for the Drain cap

255   1050

294

Horizontal deflector

Front cover

47

60   Air outlet   Vertical deflector   60

47   47

15mm   660mm
195mm   195mm
294mm   36mm
115mm
Ø65   155mm   85mm
1050mm

2.2.   OUTDOOR: RAC-VJ50PHAT, RAC-VJ60PHAT

RAC-VJ50PHAT, RAC-VJ60PHAT
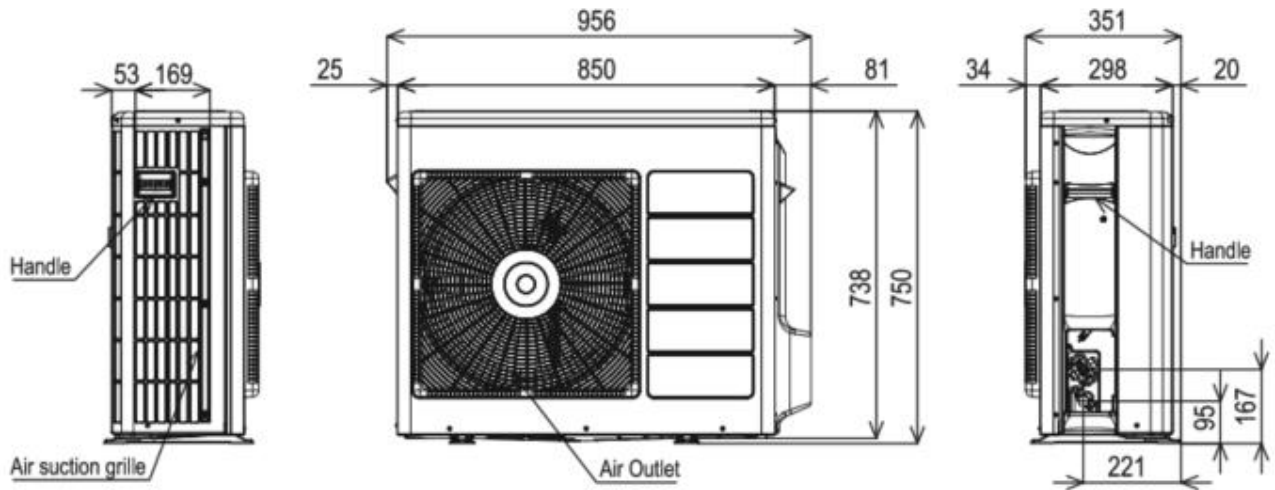
2.3. OUTDOOR: RAC-VJ70PHAT

RAC-VJ70PHAT

3   CAPACITIES TABLE
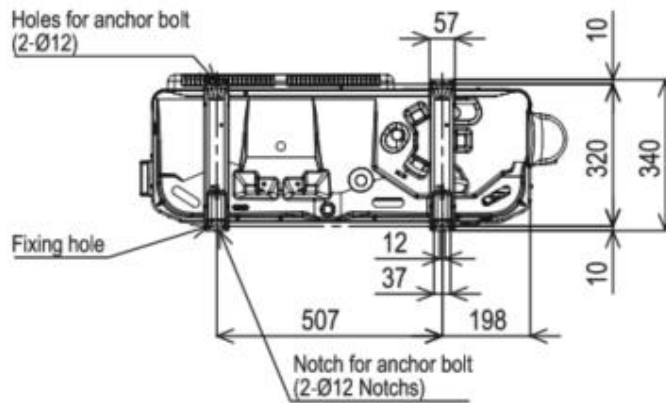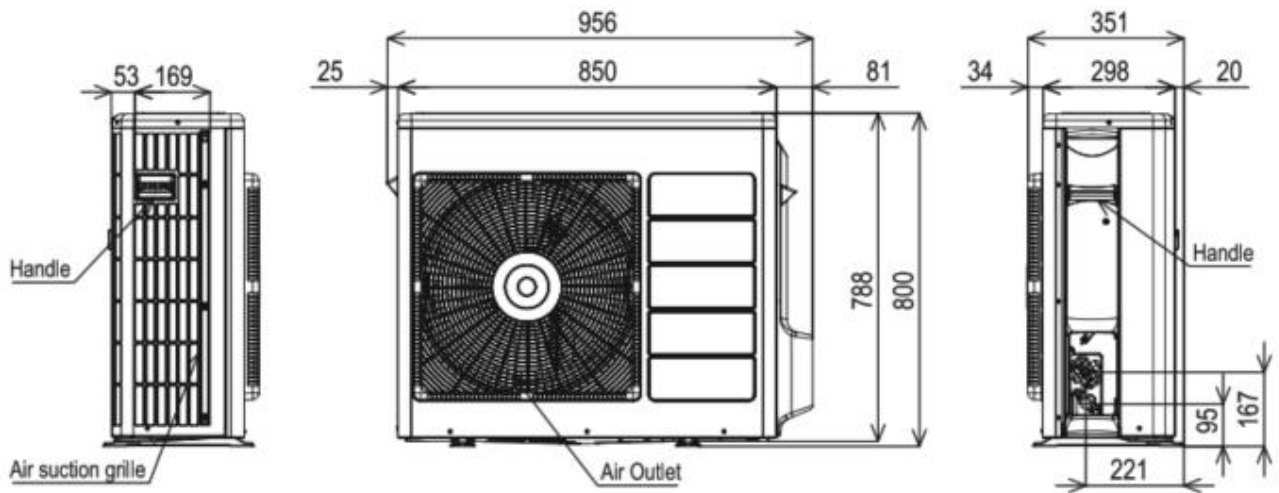
3.1.   CAPACITY CHARACTERISTIC CURVES

The following charts show the characteristics of outdoor unit capacity, which corresponds with the operating ambient temperature of outdoor unit.

Conditions:
①Pipe length / height difference: 5m / 0m   ③Capacity loss due to white frost and defrost operation is not included.
②Indoor fan speed at High mode

3.1.1.   RAK-VJ50PHAT, RAK-VJ60PHAT /RAC-VJ50PHAT, RAK-VJ60PHAT

COOLING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																								
EWB	EDB	-10			21			27			32			35			40			43			44			46		
°C	°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	TC	SHC	PI
12.0	18	2,999	2,082	614	3,781	3,090	812	3,500	2,852	957	4,920	4,032	1,577	4,740	3,855	1,645	4,440	3,633	1,765	4,260	3,456	1,834	4182	3399	1856	4020	3279	1903
14.0	20	2,999	2,082	614	4,063	3,090	812	3,781	2,882	969	5,280	4,032	1,594	5,100	3,899	1,663	4,740	3,633	1,783	4,560	3,500	1,868	4482	3456	1891	4320	3368	1937
16.0	22	2,999	2,215	624	4,345	3,090	823	4,023	2,882	980	5,640	4,032	1,611	5,460	3,899	1,697	5,100	3,633	1,817	4,920	3,500	1,885	4830	3469	1908	4644	3412	1954
18.0	25	3,216	2,375	634	4,626	3,357	834	4,264	3,119	991	6,000	4,387	1,628	5,760	4,209	1,697	5,400	3,944	1,834	5,160	3,766	1,903	5058	3709	1925	4860	3589	1971
19.0	27	3,325	2,455	643	4,787	3,535	844	4,425	3,268	1,002	6,240	4,608	1,645	6,000	4,431	1,714	5,640	4,165	1,834	5,400	3,988	1,903	5298	3930	1925	5100	3811	2108
22.0	30	3,686	2,428	643	5,310	3,506	844	4,908	3,238	1,002	6,900	4,564	1,663	6,660	4,387	1,731	6,000	4,254	1,903	5,580	4,165	2,005	5430	4134	2040	5136	4077	2194
24.0	32	3,939	2,428	653	5,672	3,506	855	5,230	3,238	1,014	7,380	4,564	1,663	7,080	4,387	1,748	6,240	4,342	1,954	5,700	4,298	2,074	5520	4285	2113	5160	4254	2194

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	TC	SHC	PI
	16	4304		2093	4783		2018	5088		1952	5387		1913	6112		1848	7081		1697	7364		1644	7896		1833
	18	4269		2112	4748		2037	5044		1981	5336		1950	6056		1887	7040		1770	7326		1721	7831		1919
	20	4234		2130	4713		2055	5000		2010	5286		1986	6000		1926	7000		1842	7287		1797	7766		2008
	22	4199		2148	4678		2073	4956		2039	5235		2022	5944		1965	6960		1914	7249		1873	7701		2091
	24	4164		2167	4643		2092	4912		2068	5184		2059	5888		2004	6920		1987	7210		1950	7637		2175

EWB: Evaporator Wet Bulb temperature (°C)   TC: Total Capacity (W)
EDB: Evaporator Dry Bulb temperature (°C)   SHC: Sensible Heating Capacity (W)
(°CDB): Outdoor Unit Inlet Air Dry Temperature (°C)   PI: Power Input

3.1.2. RAK-VJ70PHAT/RAC-VJ70PHAT

COOLING [50Hz, 230V]

INDOOR		OUTDOOR TEMPERATURE (°CDB)																										
EWB	EDB	-10			21			27			32			35			40			43			44			46		
°C	°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	TC	SHC	PI
12.0	18	3,697	2,483	818	4,653	3,678	1,079	4,306	3,395	1,272	5,740	4,551	1,987	5,530	4,351	2,074	5,180	4,101	2,225	4,970	3,901	2,311	4879	3836	2339	4690	3701	2398
14.0	20	3,697	2,483	818	4,999	3,678	1,079	4,653	3,430	1,287	6,160	4,551	2,009	5,950	4,401	2,095	5,530	4,101	2,246	5,320	3,951	2,354	5229	3901	2382	5040	3801	2441
16.0	22	3,697	2,642	831	5,345	3,678	1,094	4,949	3,430	1,302	6,580	4,551	2,030	6,370	4,401	2,138	5,950	4,101	2,290	5,740	3,951	2,376	5635	3916	2404	5418	3851	2462
18.0	25	3,965	2,833	844	5,692	3,996	1,108	5,246	3,713	1,317	7,000	4,951	2,052	6,720	4,751	2,138	6,300	4,451	2,311	6,020	4,251	2,398	5901	4186	2426	5670	4051	2484
19.0	27	4,098	2,928	856	5,890	4,208	1,122	5,444	3,890	1,332	7,280	5,201	2,074	7,000	5,001	2,160	6,580	4,701	2,311	6,300	4,501	2,398	6181	4436	2426	5950	4301	2657
22.0	30	4,544	2,896	856	6,533	4,173	1,122	6,038	3,855	1,332	8,050	5,151	2,095	7,770	4,951	2,182	7,000	4,801	2,398	6,510	4,701	2,527	6335	4666	2570	5992	4601	2765
24.0	32	4,855	2,896	869	6,979	4,173	1,136	6,434	3,855	1,347	8,610	5,151	2,095	8,260	4,951	2,203	7,280	4,901	2,462	6,650	4,851	2,614	6440	4836	2663	6020	4801	2765

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	TC	SHC	PI
16	4776		2087	5716		2245	6301		2314	6573		2264	7228		2175	8092		1981	8652		2066	9652		2139
18	4736		2109	5676		2266	6251		2348	6515		2306	7164		2220	8046		2066	8608		2155	9578		2240
20	4696		2130	5636		2288	6200		2382	6457		2349	7100		2266	8000		2150	8564		2245	9504		2344
22	4656		2152	5596		2309	6150		2416	6399		2391	7036		2312	7954		2234	8520		2334	9430		2440
24	4616		2173	5556		2331	6099		2450	6341		2434	6972		2357	7908		2319	8476		2423	9356		2539

EWB: Evaporator Wet Bulb temperature (°C)
EDB: Evaporator Dry Bulb temperature (°C)
(°CDB): Outdoor Unit Inlet Air Dry Temperature (°C)

TC: Total Capacity (W)
SHC: Sensible Heating Capacity (W)
PI: Power Input

3.2. CORRECTION FACTORS 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 x 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

The correction factors are shown in the following figure.

Equivalent Piping Length for:

– One 90º Elbow is 0.5m.

– One 180º Curve is 1.5m.

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

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

HCA=   HC x 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
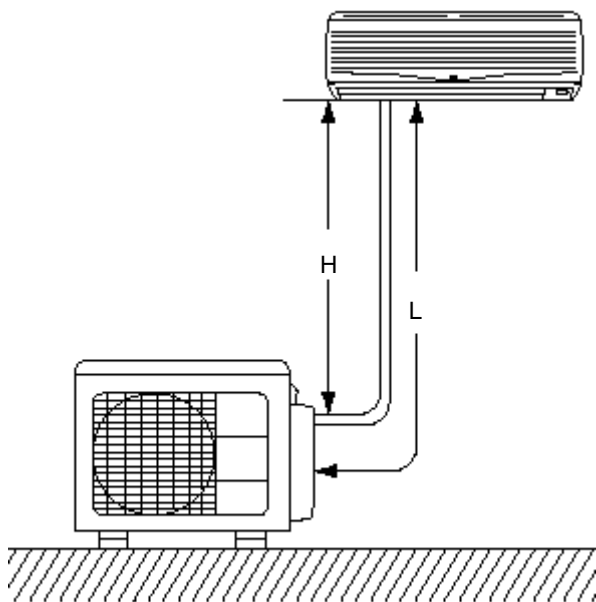
H: Vertical Distance Between Indoor Unit and Outdoor Units in Meters

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)

Models : RAC-VJ50PHAT, RAC-VJ60PHAT

Cooling Change Ratio vs Pipe length (m)

```
1.00
0.95
0.90
0.85
0.80
    0   5   10  15  20  25  30
```
Pipe length (m)

Heating Change Ratio vs Pipe length (m)

```
1.00
0.95
0.90
0.85
0.80
    0   5   10  15  20  25  30
```
Pipe length (m)

Models : RAC-VJ70PHAT

Cooling Change Ratio vs Pipe length (m)

```
1.00
0.95
0.90
0.85
0.80
    0   5   10  15  20  25  30
```
Pipe length (m)

Heating Change Ratio vs Pipe length (m)

```
1.00
0.95
0.90
0.85
0.80
    0   5   10  15  20  25  30
```
Pipe length (m)
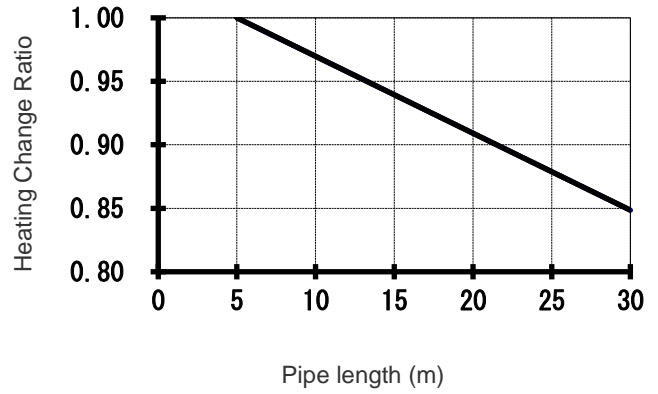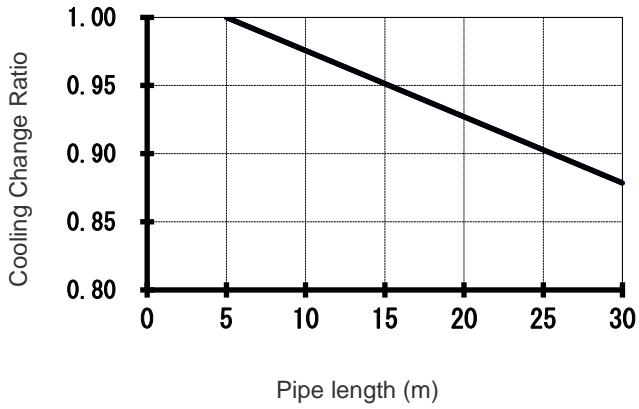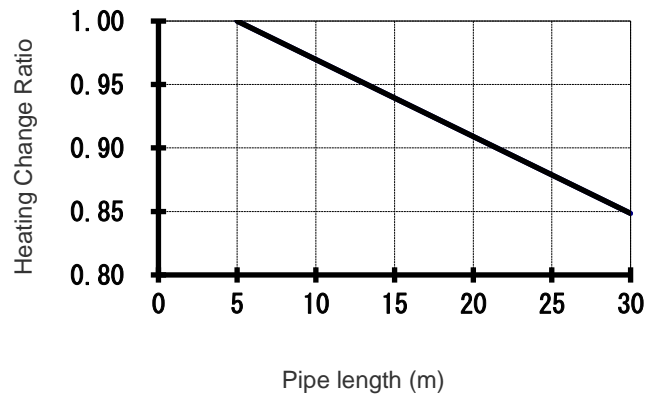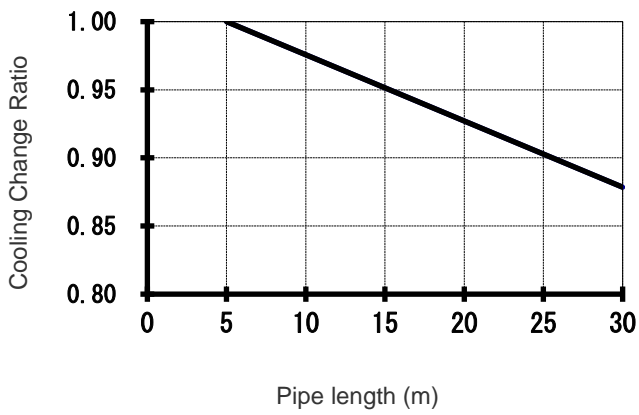
3.3.   CORRECTION FACTORS ACCORDING TO DEFROSTING OPERATION

The heating capacity in the preceding paragraph, excludes the condition of the frost or the defrosting operation period. In consideration of the frost or the defrosting operation, the heating capacity is corrected by the equation below.

Corrected heating capacity = Defrost Correction factor   x   unit capacity

OUTDOOR TEMPERATURE (°CDB)	-15	-10	-7	-5	0	7	10	15
Correction factor (humidity rate85% RH)	0.95	0.95	0.89	0.85	0.81	1.0	1.0	1.0

Correction Factor
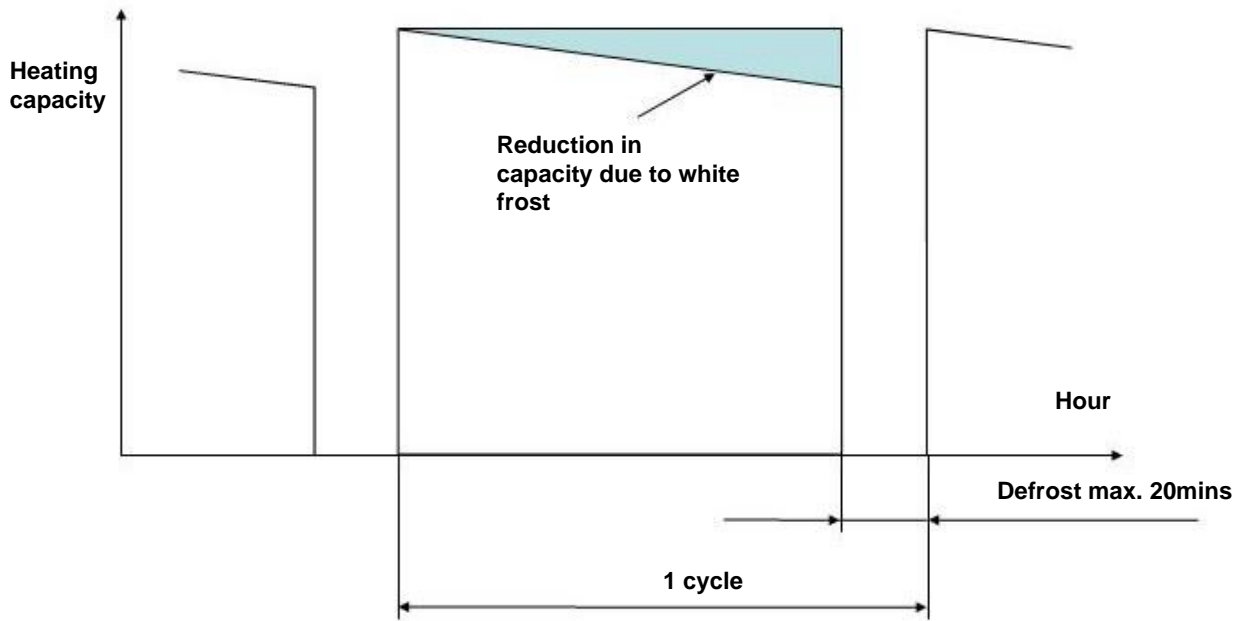
NOTE:
The correction factor is not valid for special conditions such as snowfall or operation in a transitional period.

4   SOUND DATA

4.1.   RAK-VJ50PHAT, RAK-VJ60PHAT
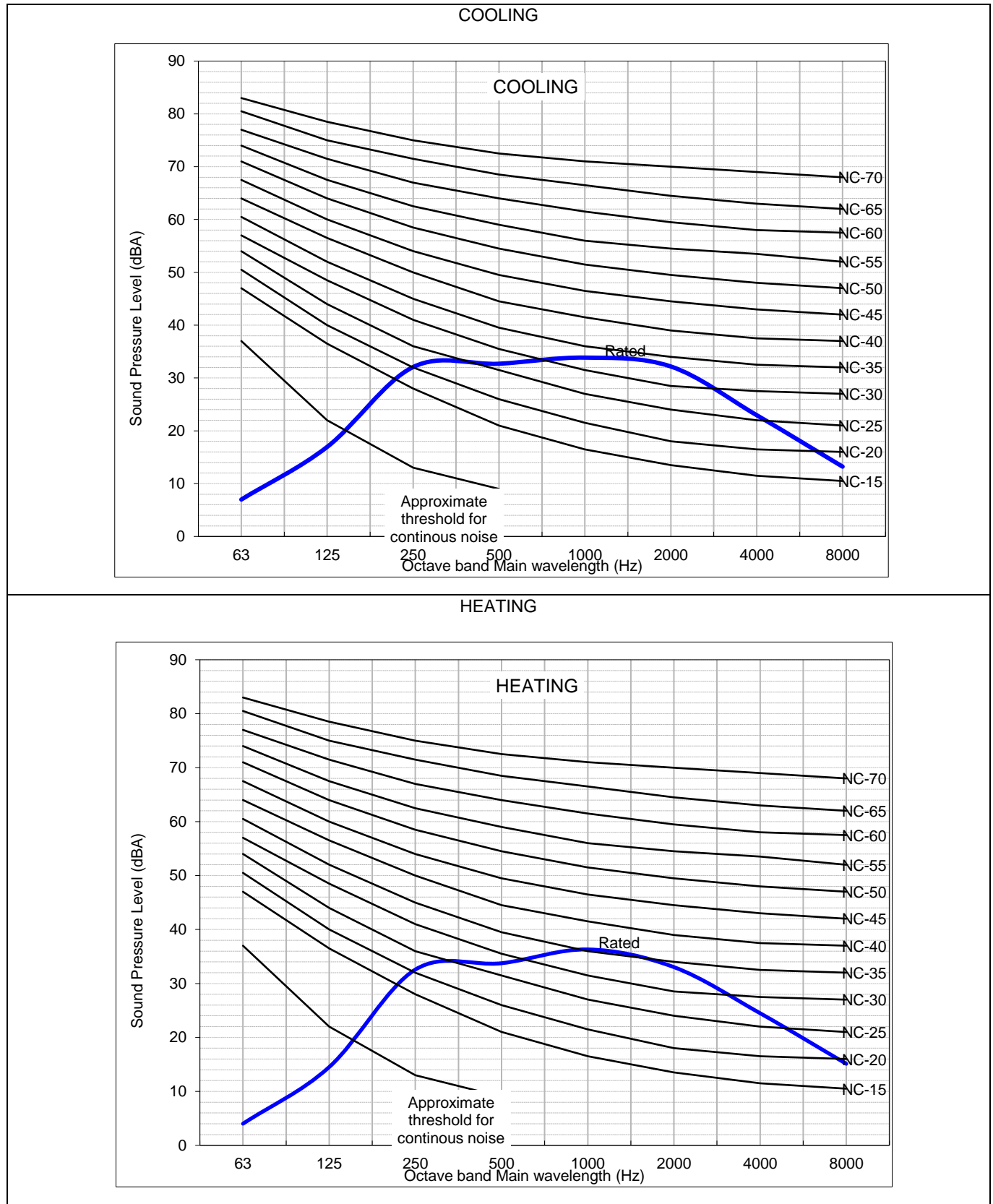
COOLING

HEATING

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. Please take into consideration reflected sound of your specific site

4.2. RAC-VJ50PHAT, RAK-VJ60PHAT
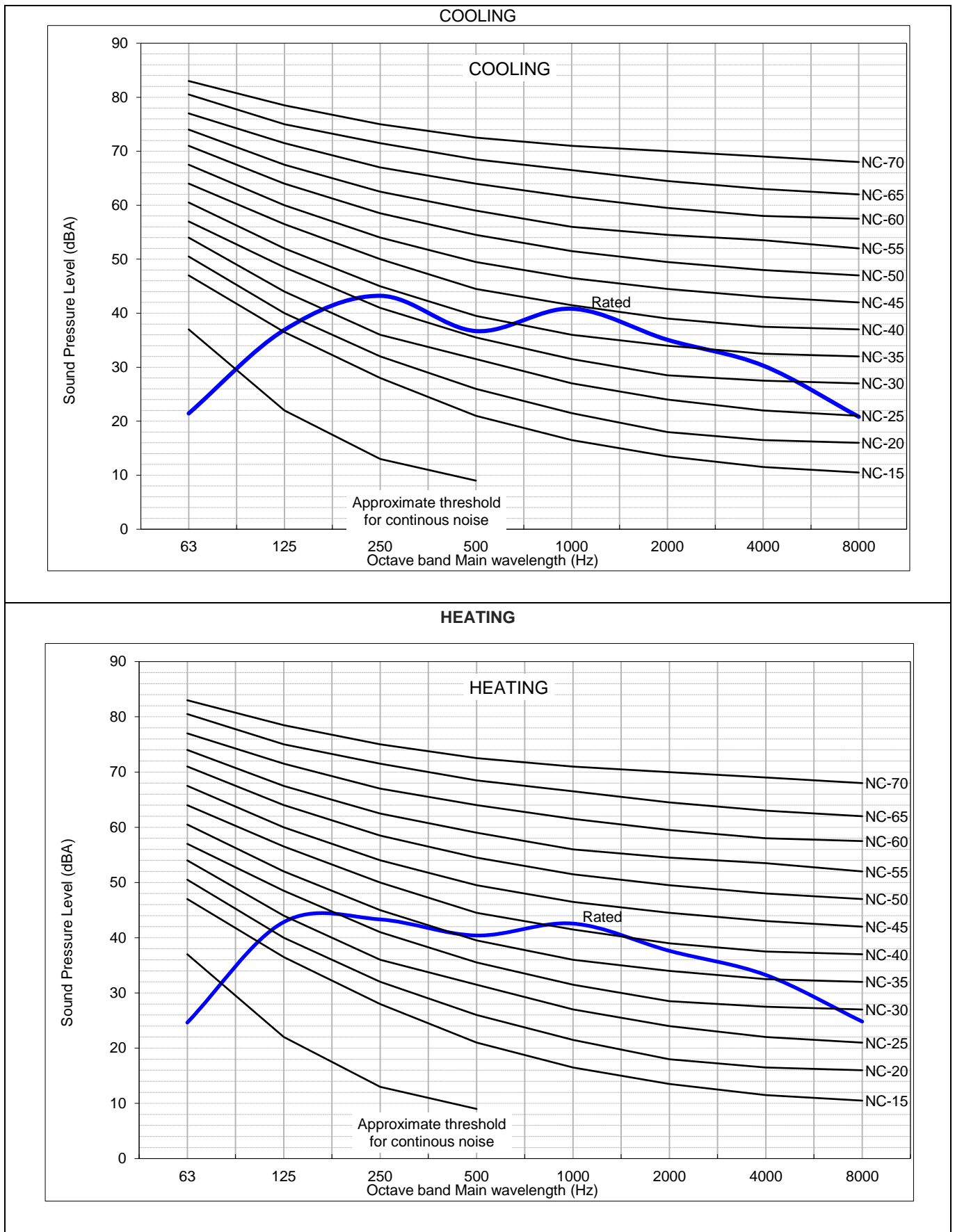
COOLING

HEATING

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. Please take into consideration reflected sound of your specific site

4.3.   RAK-VJ70PHAT
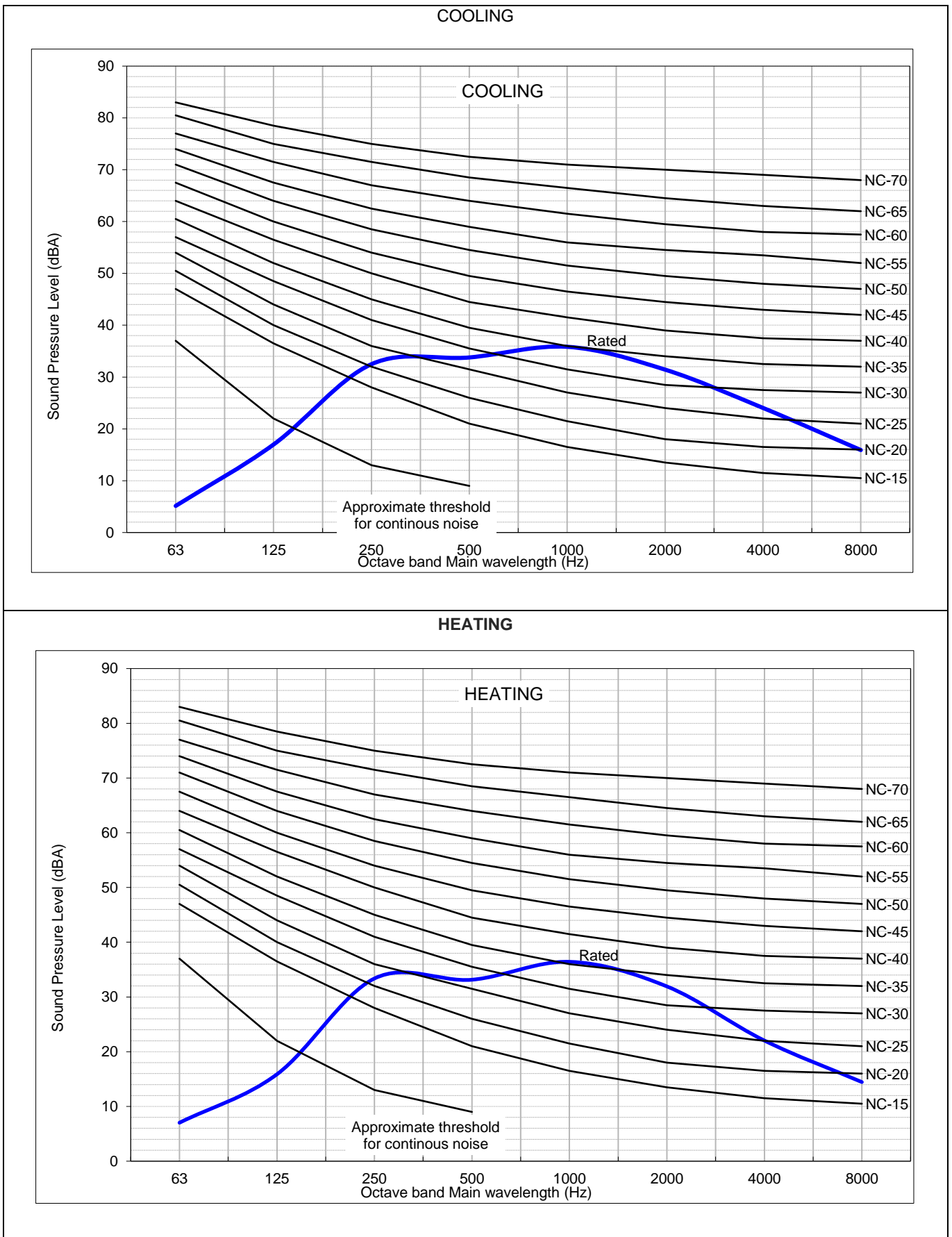
COOLING

HEATING

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. Please take into consideration reflected sound of your specific site

4.4.   RAC-VJ70PHAT
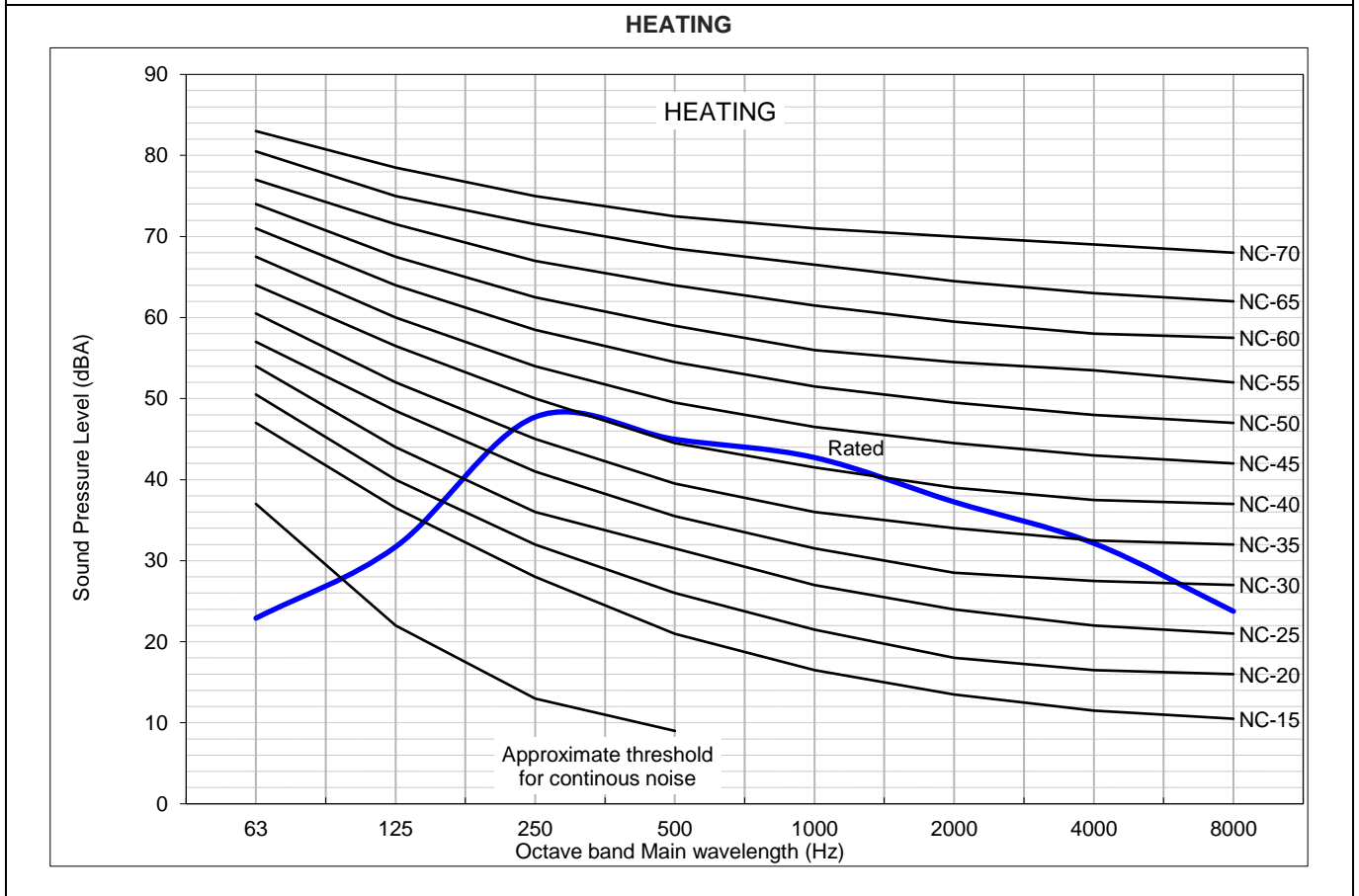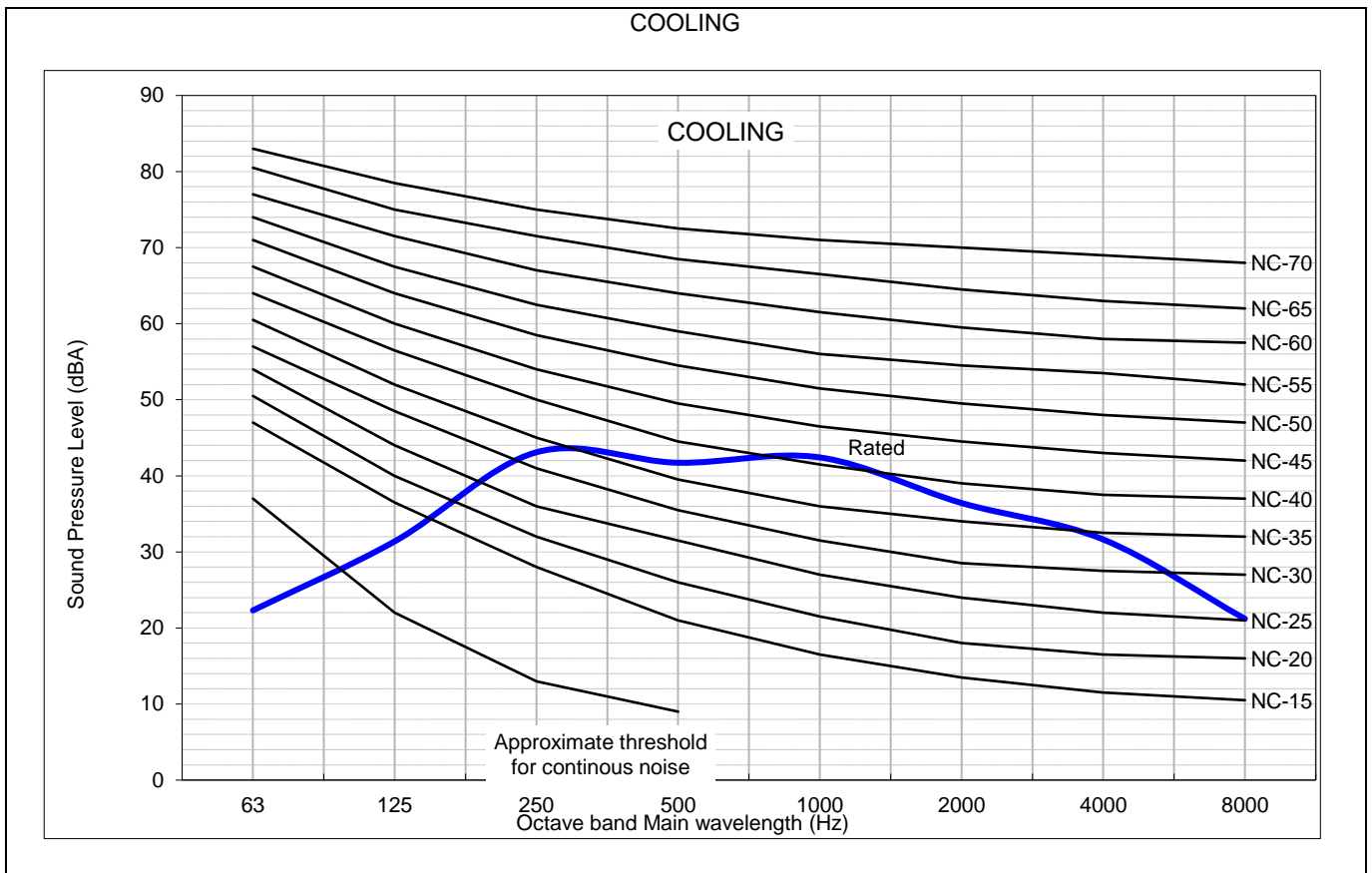
COOLING

HEATING

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. Please take into consideration reflected sound of your specific site

5   WORKING RANGE

5.1.   POWER SUPPLY

Working Voltage	220V ~ 240V
Voltage Imbalance	Within a 3% Deviation from Each Voltage at the Main Terminal of Outdoor Unit
Starting Voltage	Higher than 85% of the Rated Voltage

5.2.   WORKING RANGE

Applicable models:

RAC-VJ50PHAT, RAC-VJ60PHAT
RAC-VJ70PHAT

The temperature range is indicated in the following table.

Cooling

working range	min (ºC)	max (ºC)	rated (ºC)
outdoor	-15	46	35
indoor	21	32	27
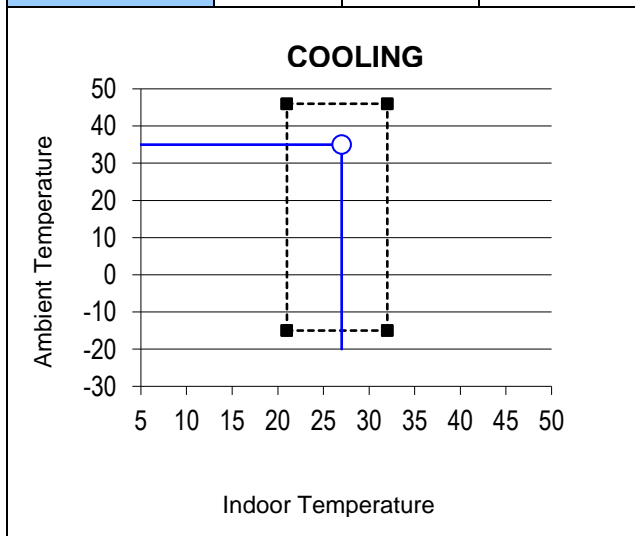
Heating

working range	min (ºC)	max (ºC)	rated (ºC)
outdoor	-15	21	7
indoor	20	27	20
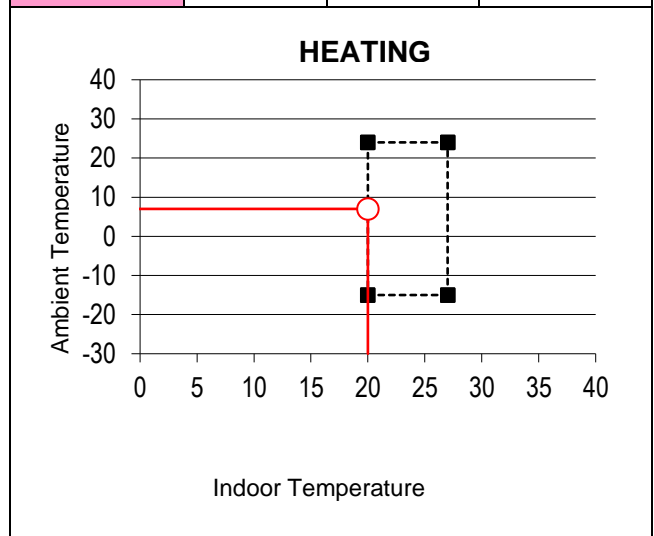
6   ELECTRICAL DATA

6.1.   INDOOR UNIT

MODEL	UNIT MAIN POWER		Applicable current			Indoor Fan Motor	
				Cooling	Heating	RNC	IPT
	VOL/Ph/Hz	Fuse Rating(A)	STC	RNC	RNC		
RAK-VJ50PHAT	220-240, 1, 50 (from ODU)	3.15	7.06	5.46	6.76	0.13	30
RAK-VJ60PHAT	220-240, 1, 50 (from ODU)	3.15	8.31	7.51	7.96	0.13	30
RAK-VJ70PHAT	220-240, 1, 50 (from ODU)	3.15	9.64	9.46	9.24	0.13	30

VOL: Rated Unit Power Supply Voltage (V)   RNC: Running Current (A)
Hz: Frequency (Hz)   PH: Phase (ϕ)
IPT: Input (W)

6.2.   OUTDOOR UNIT

MODEL	UNIT MAIN POWER		Applicable current					Outdoor Fan Motor	
			Cooling Operation			Heating Operation		RNC	IPT
	VOL/Ph/Hz	Fuse Rating(A)	STC	RNC	IPT	RNC	IPT		
RAC-VJ50PHAT	220-240, 1, 50	20 (CB)	7.06	5.46	1235	6.76	1530	0.31	47
RAC-VJ60PHAT	220-240, 1, 50	20 (CB)	8.31	7.51	1700	7.96	1800	0.31	47
RAC-VJ70PHAT	220-240, 1, 50	20 (CB)	9.64	9.46	2140	9.24	2090	0.31	47

VOL: Rated Unit Power Supply Voltage (V)   RNC: Running Current (A)   CB: circuit Breaker
HZ: Frequency (Hz)   PH: Phase (ϕ)
STC: Starting Current (A)   IPT: Input (W)

NOTE:
1. The above compressor data is based on 100% capacity combination of indoor units at the rated operating frequency
2. This data is based on the same conditions as the nominal heating and cooling capacities.
3. The compressor started by an inverter, resulting in extremely low starting current.

7   WIRING DIAGRAM

7.1.   RAK-VJ50PHAT, RAK-VJ60PHAT, RAK-VJ70PHAT

BLK:BLACK YEL:YELLOW
BLU:BLUE   GRN:GREEN
RED:RED   WHT:WHITE
GRY:GRAY   BRN:BROWN
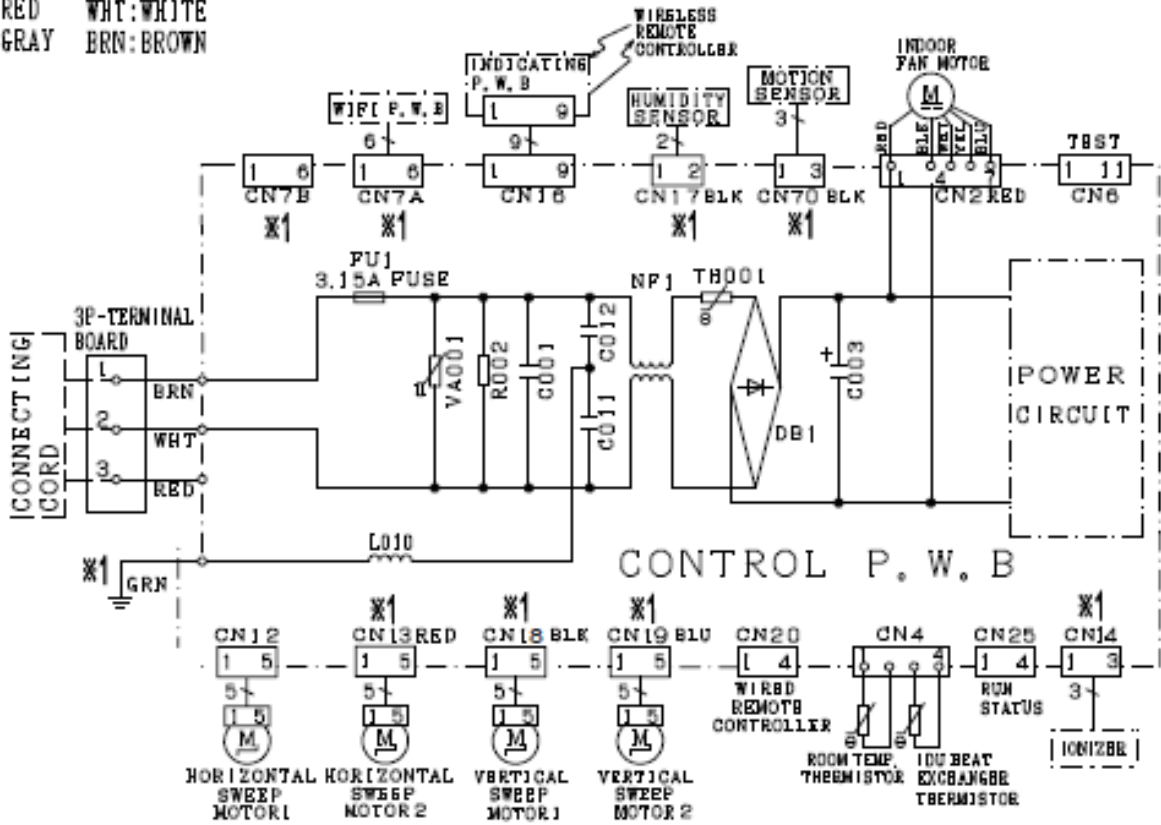
※1: SOME MODEL DO NOT HAVE THIS FUNCTION

CAUTION! HIGH VOLTAGE | TURN OFF THE POWER SOURCE DURING THE SERVICE WORK.
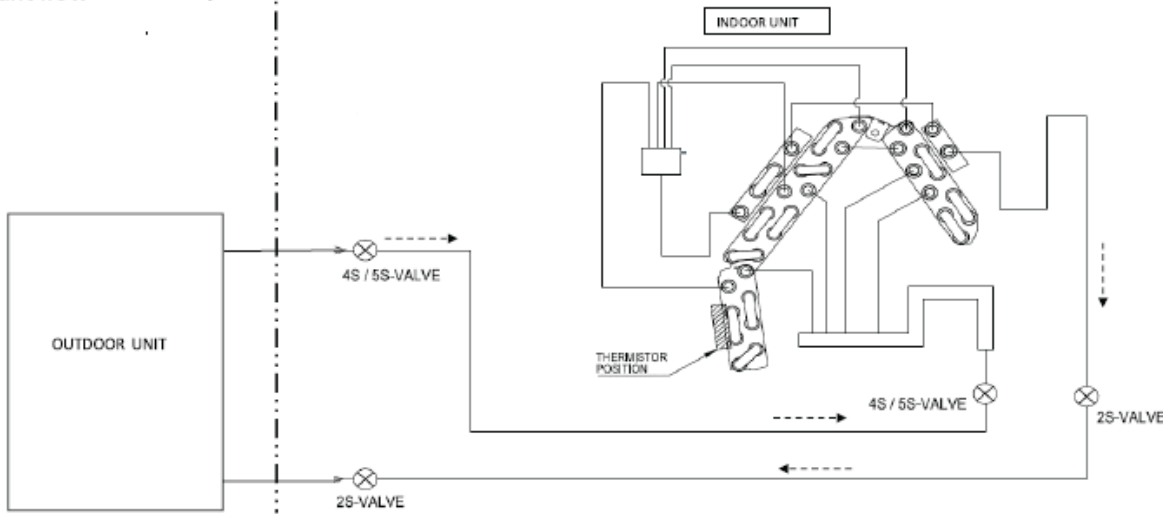
7.2. RAC-VJ50PHAT, RAC-VJ60PHAT, RAC-VJ70PHAT
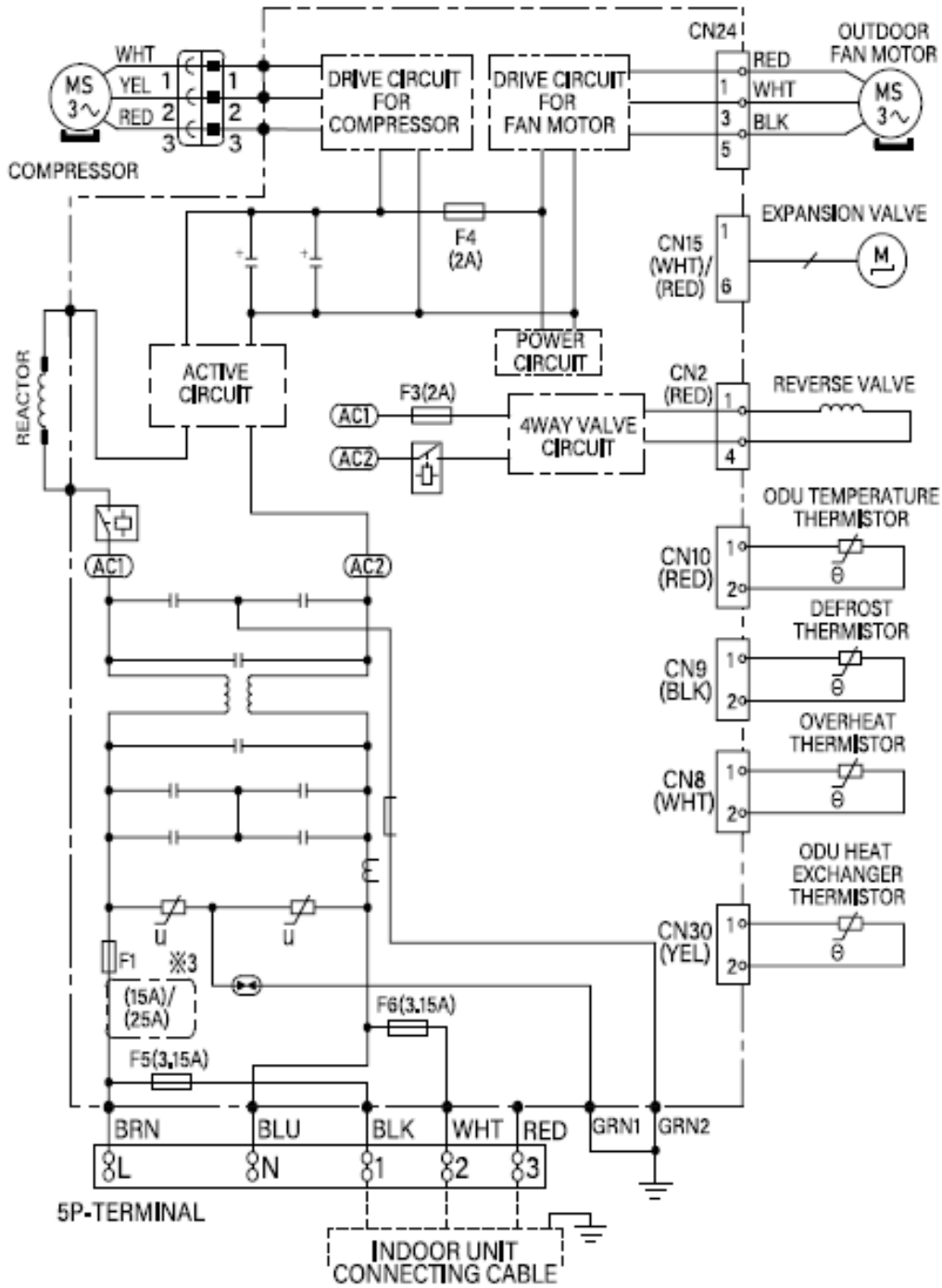
8 REFRIGERANT CYCLE

8.1. RAK-VJ50PHAT, RAK-VJ60PHAT, RAK-VJ70PHAT
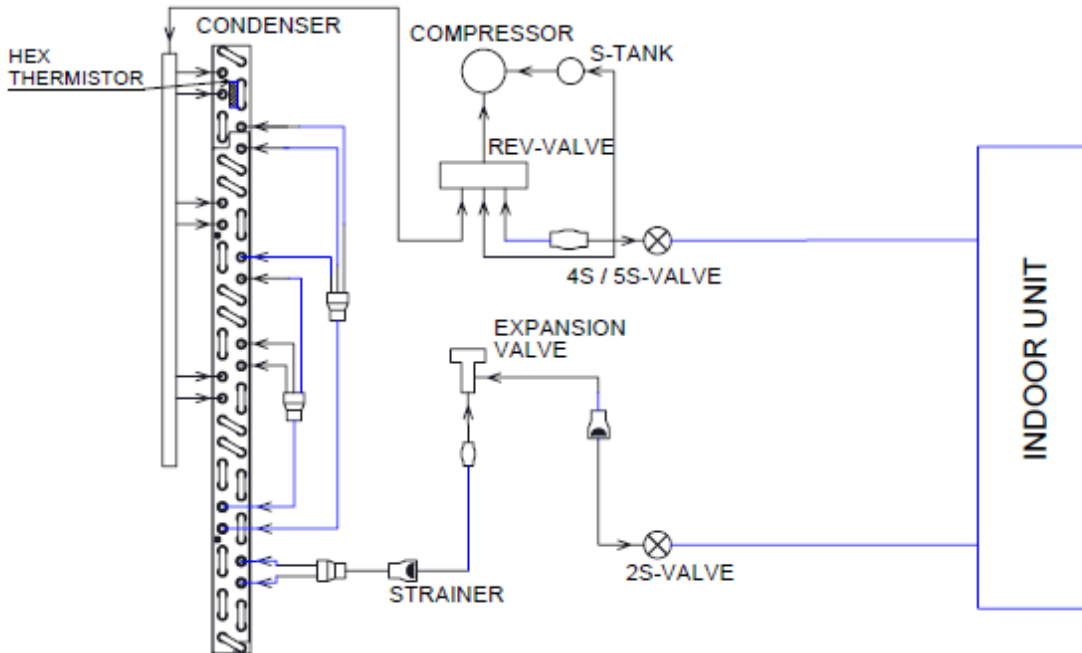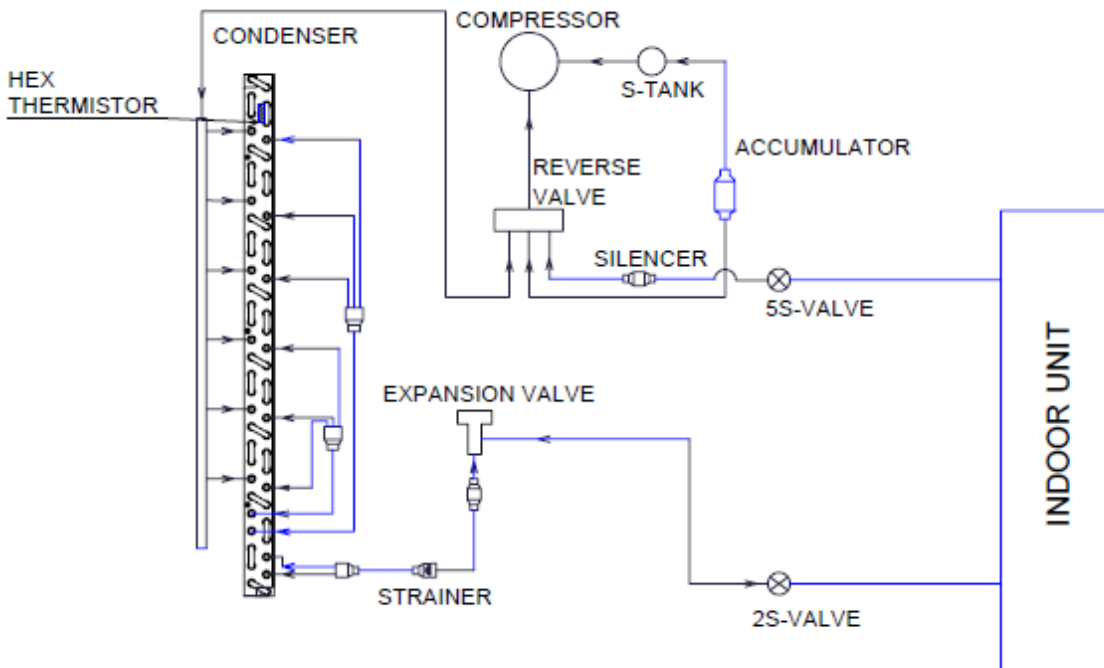
COOLING, DEHUMIDIFYING, DEFROSTING
Refrigerant flow

INDOOR UNIT

OUTDOOR UNIT

4S / 5S-VALVE

THERMISTOR POSITION

4S / 5S-VALVE

2S-VALVE

2S-VALVE

HEATING
Refrigerant flow

INDOOR UNIT

OUTDOOR UNIT

4S / 5S-VALVE

THERMISTOR POSITION

4S / 5S-VALVE

2S-VALVE

2S-VALVE
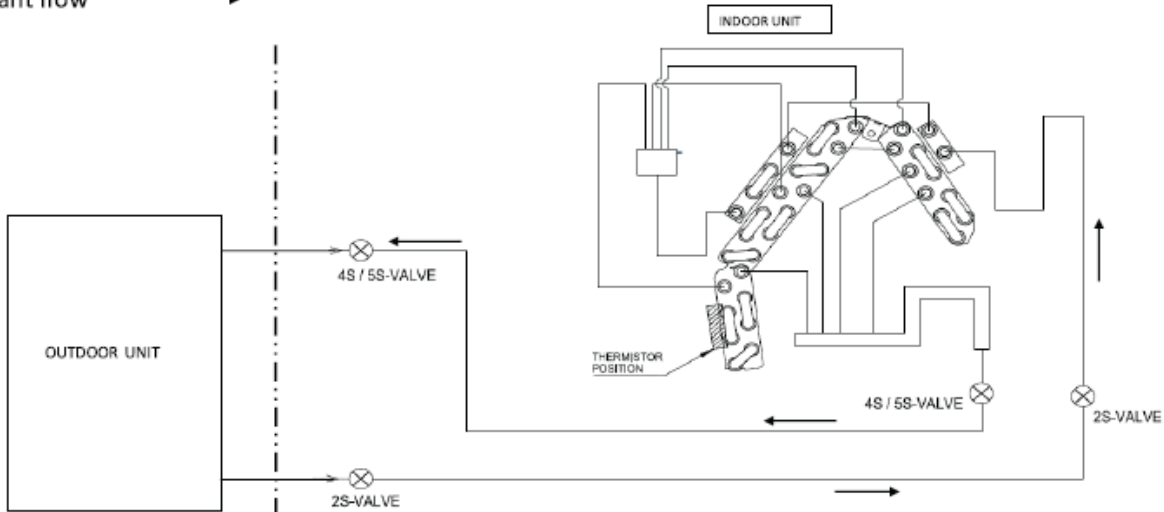
8.2. RAC-VJ50PHAT, RAC-VJ60PHAT, RAC-VJ70PHAT

RAC-VJ50PHAT, RAC-VJ60PHAT

RAC-VJ70PHAT

9   CONTROL AND FUNCTION

9.1.   WIRELESS REMOTE CONTROL AND FUNCTION

RC-AGS1EA0E

RAK-VJ50PHAT
RAK-VJ60PHAT
RAK-VJ70PHAT

| BUTTONS	FUNCTION
❄ O Mode	**MODE Selector Button** Use this button to select the operationg mode. Every time you press this button, the mode will change from (Heat) > (Auto) > (Cool) > (Dry) > (Fan) cyclically.
GoodSleep	**GoodSleep Button** The unit shifts the room temperature and reduces the fan speed.
Temp	**Temperature Button** Room temperature setting. Value will change quicker when keep pressing.
FrostWash	**FROST WASH / CLEAN Button** The dust and dirt adhering to indoor heat exchanger which is the cause of the smell. They are washed away by freezing and thawing of the heat exchanger.
Fan Speed	**FAN SPEED Selector Button** Select the fan speed.
⏻	**START/STOP Button** Press this button to start operation. Press it again to stop operation.
Powerful	**POWERFUL Button** The air conditioner performs at maximum power.
Silent	**SILENT Button** The fan speed chnages to the silent fan speed.
On Timer	**On Timer Button** Select the turn ON time.
Off Timer	**Off Timer Button** Select the turn OFF time.

	ECO Button Use this button to set the ECO mode.
	LEAVE HOME Button Prevent the room temperature from falling too much by setting temperature 10°C~16°C when no one is at home.
	Up/Down Button Control the angle of the horizontal air deflector.
	My Mode Button Use this mode for personalized comfortable settings. The My Mode can be set by using the remote controller. Up to 3 programs can be set.

For more information, please refer to the operation manual.

9.2. HOW TO SET UP FROM SERVICE SETTING MODE

The Service function, which was set by DIP-SW setting or double pressing of the HHRC in the current model. it will be done by HHRC in GRAC as shown as below.

「On timer」 + 「Fan speed」 + 「Reset」
(Press three Key for 5 seconds to avoid access by User)
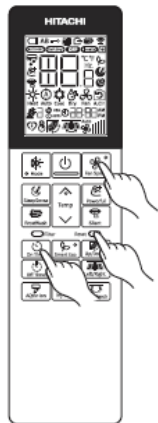
Standard

All icon ON for 2 Seconds

Layer1
(Category selection):
Installation
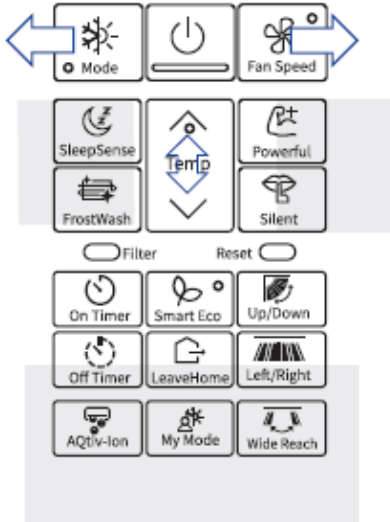
Layer2
(Function selection):
Card key

Layer3
(Setting select):
Disable

Fan speed : Current Layer

※ If you don't do anything for 30 seconds, you will be out of the service setting mode.

9.3. HOW TO OPERATE THE HHRC METHOD
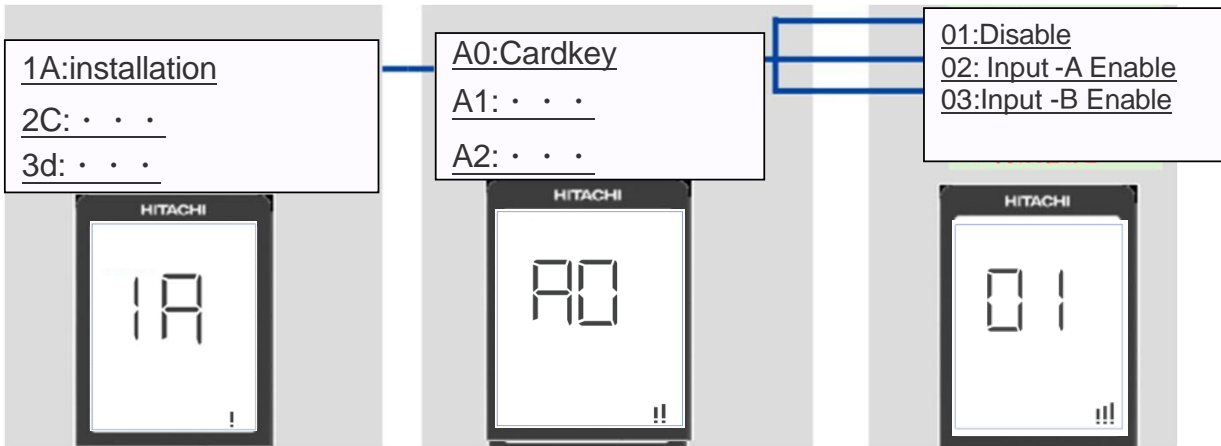
Temp△▽: Selection (in the same layer)

Mode: move to previous layer

Fan Speed: Move to next layer

ON/OFF : Decision/Send (at layer 3)

           : Current setting check (at layer 2)

Filter: category initialization (at layer 1)

Filter + ON/OFF: all category initialization (at layer 1)

※ To exit from this setting mode, you need to either not operate the HHRC panel for 30 seconds or press and hold the UP/Down key for 5 seconds.

Layer 1 (Category selection)	Layer 2 (Function selection)	Layer 3 (Setting select)

1A:installation

2C: ・・・

3d: ・・・

A0:Cardkey

A1: ・・・

A2: ・・・

01:Disable

02: Input -A Enable

03:Input -B Enable

HITACHI

1A

!

HITACHI

A0

!!

HITACHI

01

!!!

9.4. SERVICE SETTING ITEM USED FOR GRAC ENTRY

Category	Function Name	Value	Layer1 Category	Layer2 Function	Layer3 Value
Installation	Card Key	Disable	1A	A0	01
		Card Key Input -A Enable			02
		Card Key Input -B Enable			03
		reserve			04-99
	Mode Lock	Normal Mode	1A	A1	01
		Cooling Lock (Cool, Dry, Fan mode available)			02
		Heating Lock (Heat and Fan mode available)			03
		reserve			04-99
	Auto restart	auto restart changeover disable	1A	A2	01
		auto restart by previous mode			02
		reserve			03-99
Cycle operation	Defrost selection Function	average area setting	3d	E0	01
		cold area setting			02
		reserve			03-99
Cycle operation	Shift value adjustment of setting temperature (Cool Mode, Heat Mode)	(-5°C / -10°F)	3d	E1(Cool) / E2(Heat)	01
		(-4°C / -8°F)			02
		(-3°C / -6°F)			03
		(-2°C /-4°F)			04
		(-1°C / -2°F)			05
		(±0°C / ±0°F)			06
		(+1°C / 2°F)			07
		(+2°C / 4°F)			08
		(+3°C / 6°F)			09
		(+4°C / 8°F)			10
		(+5°C / 10°F)			11
		reserve			12-99
Cycle operation	IDU fan control at cooling thermo-off	ultra low	3d	E3	01
		set fan speed			02
		reserve			03-99
HHRC	Temperature Resolution change - 0.5 --> 1	0.5°C	6H	P0	01
		1°C			02
	Fan Speed key sequence	Auto-Silent - Low-Med-Hi-Super Hi		P1	01
		Super Hi-Hi-Med-Lo-Silent -Auto			02
	Operation Mode: Auto	Disable Selection on HHRC		P2	01
		Enable Selection on HHRC			02
	Operation Mode: Cool	Disable Selection on HHRC		P3	01
		Enable Selection on HHRC			02
	Operation Mode: Dry	Disable Selection on HHRC		P4	01
		Enable Selection on HHRC			02
	Operation Mode: Fan	Disable Selection on HHRC		P5	01
		Enable Selection on HHRC			02

HHRC LCD display — L1 (Category) legend:

L1 (Category)
1A Installation
2C Clean
3d cycle operation adjustment
4E Fan control
5F supporting service
6H HHRC
7J Diagnosis
8L Future

9.4.   SERVICE SETTING ITEM USED FOR GRAC ENTRY (CONTINUE)

Category	Function Name	Value	HHRC LCD display			L1 (Category)
			Layer1 Category	Layer2 Function	Layer3 Value	
HHRC	Operation Mode: Heat	Disable Selection on HHRC	6H	P6	01	1A Installation
		Enable Selection on HHRC			02	2C Clean
	Auto Fan speed: Enable / Disable	Disable Selection on HHRC		P8	01	3d cycle operation adjustment
		Enable Selection on HHRC			02	4E Fan control
	Super hi Fan speed: Enable / Disable	Enable Selection on HHRC		P9	01	5F supporting service
		Disable Selection on HHRC			02	6H HHRC / 7J Diagnosis / 8L Future
HHRC	Cooling Lower limit setting	16°C	6H	PC	01	L1 (Category)
		17°C			02	1A Installation
		18°C			03	
		19°C			04	2C Clean
		20°C			05	
		21°C			06	3d cycle operation adjustment
		22°C			07	
		23°C			08	4E Fan control
		24°C			09	
		25°C			10	5F supporting service
		26°C			11	
		27°C			12	6H HHRC
		28°C			13	
		29°C			14	7J Diagnosis
		30°C			15	
		31°C			16	8L Future
		32°C			17	
HHRC	Heating Upper limit setting	32°C	6H	Pd	01	L1 (Category)
		31°C			02	1A Installation
		30°C			03	
		29°C			04	2C Clean
		28°C			05	
		27°C			06	3d cycle operation adjustment
		26°C			07	
		25°C			08	4E Fan control
		24°C			09	
		23°C			10	5F supporting service
		22°C			11	
		21°C			12	6H HHRC
		20°C			13	
		19°C			14	7J Diagnosis
		18°C			15	
		17°C			16	8L Future
		16°C			17	
Diagnosis	Display self-diagnosis memory (※)	Display History 1 (Latest(newest) of last Five)	7J	t0	01	L1 (Category)
		Display History 2			02	1A Installation
		Display History 3			03	2C Clean
		Display History 4			04	3d cycle operation adjustment
		Display History 5			05	
		reserve			06-99	4E Fan control
	Display ODU self-check result	request		t1	01	5F supporting service
		reserve			02-99	
	Erase self-diagnosis memory (※)	request		t2	01	6H HHRC
		reserve			02-99	7J Diagnosis
	Humidity sensor failure diagnosis	request		t3	01	8L Future
		reserve			02-99	

## 9.5.   BUZZER SOUNDING FOR SHOWING ERROR CONTENTS

【Purpose】

Reduction of "mis-communication about error contents" at contacting the service call center.

【Function】

Add buzzer sounding for showing error contents during error, in addition to IDU LED action.

【How to use】

When IDU or ODU has failed, and the Timer lamp is blinking. Service engineer can know error contents from the buzzer through phone.

「Up/Down」
(Press this key for 5 seconds
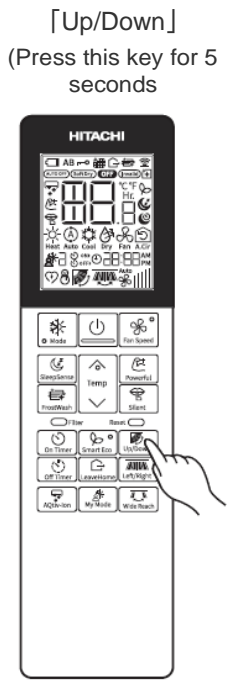
In case of IDU failure

LED action

Timer lamp is blinking

Buzzer action

Sounding by same rhythm with LED

In case of ODU failure

LED action

Operation lamp is blinking

Buzzer action

Sounding by same rhythm with LED

【note】
For stopping the buzzer, stop by On/Off button, or press Up/Down button for 5 seconds.

<IDU error example: timer LED will blink 3 times (interface defective (IDU)>

Short beep 2times x 1

Beep 3times

After "Short 2times x 1 beep", "3 times beep" will be repeated.

<ODU error example: operation LED will blink 2 times (peak current cut) >

Short beep 2times x 2

Beep 2times

After "Short 2times x 2 beep", "2 times beep" will be repeated.
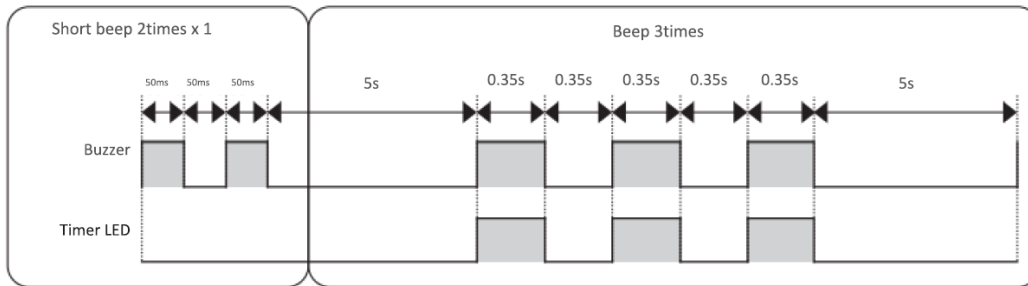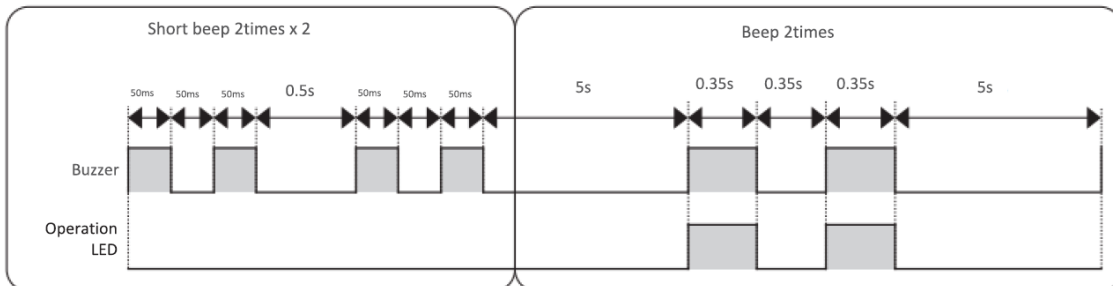
9.6.   OTHER SETTING

- **ID SELECTION**

1.   Press "Up/Down swing button" and "set. Temp. up button" and "reset button", and release "reset button".

2.   Select from A or B by pressing "set.temp. button".

3.   Press "On/Off button" toward IDU.

(EEPROM in HHRC will keep the A or B information.)
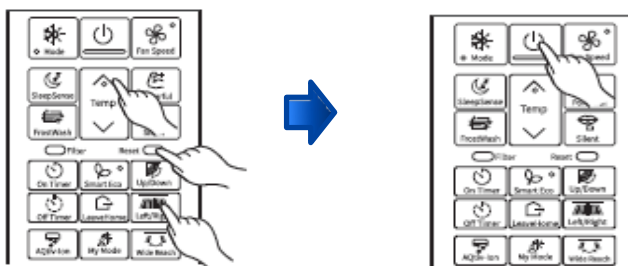
- **DISPLAY MODE**

1.   Press "On Timer button" and "On/Off button" and "reset button", and release "reset button".

2.   Fan speed icon(❄) on LCD will blink.

3.   Press "On/Off button" toward IDU.
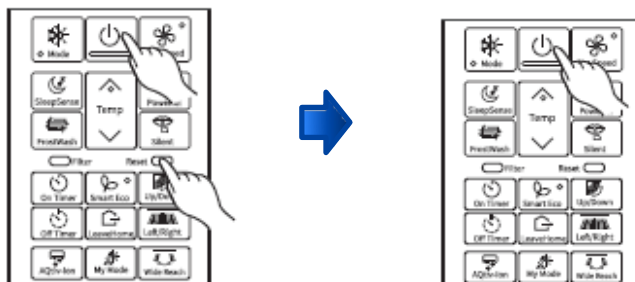
9.7.   ERROR CODE INFORMATION

9.7.1.   HOW TO DISPLAY ERROR CODE

1. Press three key ([On Timer] + [Fan Speed] + [Reset]) button on the remote control for 5 seconds to avoid access by User.

2. Press " Temp " (Temperature) button of the remote control and select the "7J" option.

3. Press " Fan Speed " (Fan Speed) button of the remote control, then Press " Temp " (Temperature) button select the "t0" option.

4. Press " Fan Speed " (Fan Speed) button of the remote control, then Press " Temp " (Temperature) button select the "01" option.

5. Press " ⏻ " (On/Off) button of the remote

Function Name	Value	Layer1	Layer2	Layer3
		Category	Function	Value
Display self-diagnosis memory(※)	Display History 1 (Latest(newest) of last Five)	7J	t0	01
	Display History 2			02
	Display History 3			03
	Display History 4			04
	Display History 5			05

The specific information of error code is shown in the table below:

	TIMER LAMP BLINKING	LD301 BLINKING	CODE	MEANING
INDOOR	–	–	000 00	Normal
	1 time	–	001 00	Refrigerant cycle fault
	2 times	–	–	Outdoor unit is under forced operation
	3 times	9 times	003 00	Communication error (indoor)
	9 times	–	009 00	Indoor thermistor defective
	10 times	–	003 00	Abnormal rotating numbers of DC fan motor
	12 times	9 times	012 00	Communication error (outdoor)
	13 times	–	013 00	EEPROM data reading error
	20 times	–	020 00	Human sensor defective
	21 times	–	021 00	Interface defective (other machine cause)
	25 times	–	025 00	CN7A/B connection defective

	OPERATION LAMP BLINKING	CODE	MEANING
INDOOR	2 times	002 01	Peak current cut
	3 times	003 01	Compressor abnormal low speed rotation
	4 times	004 01	Compressor switching failure
	5 times	005 01	Overload lower limit cut
	6 times	006 01	OH thermistor temperature rise
	7 times	007 01	Abnormal outdoor thermistor
	9 times	009 01	Communication error
	10 times	010 01	Abnormal power source
	11 times	011 01	Fan stop for strong wind
	12 times	012 01	Fan motor fault
	13 times	013 01	EEPROM reading error
	14 times	014 01	DC Voltage abnormal
	15 times	015 01	Abnormal PWB circuit
	16 times	016 01	High load stop

9.7.2. HOW TO REMOVE ERROR CODE

6. Press three key ([On Timer] + [Fan Speed] + [Reset]) button on the remote control for 5 seconds to avoid access by User.

7. Press "⌃⌄ Temp" (Temperature) button of the remote control and select the "7J" option.

8. Press "✿ Fan Speed" (Fan Speed) button of the remote control, then Press "⌃⌄ Temp" (Temperature) button select the "t2" option.

9. Press "✿ Fan Speed" (Fan Speed) button of the remote control, then Press "⌃⌄ Temp" (Temperature) button select the "01" option.

10. Press "⏻" (On/Off) button of the remote

10 OPTION LIST

10.1. WIRED REMOTE CONTROL SPX-RCDB1

This controls the operation function and timer setting of the room air conditioner.
* Maximum length cable can be up to 49.21ft (15m). Use extension cable SPX-WKT5MB 16.4ft (5m)

(SPX-RCDB1)

RAK-VJ50PHAT
RAK-VJ60PHAT
RAK-VJ70PHAT

BUTTONS	FUNCTION
⊛	**MODE Selector** Use this button to select the operationg mode. Every time you press this button, the mode will change from ⓐ (AUTO) → ☼ (HEAT) → ○ (DEHUMIDIFY) → ☼(COOL) and → ✿ (FAN) cyclically.
✿ FAN	**FAN SPEED Selector Button** This determines the fan speed. Every time you press this button, the airflow rate will change from ⬡ (AUTO) → ▤ (HIGH) → ▤ (MED) → ▤ (LOW) → ▭ (SILENT) (This button allows selection of optimal or preferred fan speed for each operation mode).
⓪	**ON/OFF button** Press this button to start operation. Press it again to stop operation.
▤	**SLEEP button** Use this button to set the SLEEP timer.
◯ SET	**SET button** Timer setting reservation.
◷ OFF	**OFF button** Select the turn OFF timer.
◷ ON	**ON button** Select the turn ON timer.
◯ CANCEL	**CANCEL button** Cancel timer reservation.
⬘	**AUTO SWING (Vertical) button** Controls the angle of the horizontal air deflector.
⌃ Temp ⌄	**ROOM TEMPERATURE setting button** Value will change quicke when keep pressing.

10.1.1. SHIFT VALUE

1. Press and hold ⏻ (ON/OFF) button and ⏲ (ON TIMER) button at the same time while giving a single press on the RESET button until remote controller now enter 'Shift value change mode'.
2. Press ⏻(ON/OFF) button so that the display indicates 🌀 (FAN) speed.
3. Select 🌀 (FAN SPEED) button to choose Heating Shift or Cooling Shift Mode.

    By setting fan speed to HIGH 🌀 or MED 🌀 , it will go to Cooling Shift mode.
    By setting fan speed to LOW 🌀 or SILENT 🌀, it will go to Heating Shift mode.

4. Press ◇ (ROOM TEMPERATURE) button to change the shift value (23°F ~ 0 ~ 41°F).

5. Press ⏻ (ON/OFF) button to end 'Shift value setting mode'.
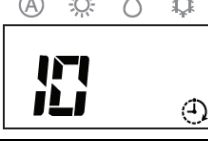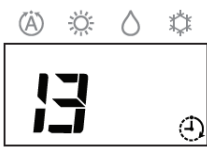
NOTE:
1. There are total of 11 shift values.
2. The changed shift value will remain unchanged after turned off the power.

10.1.2. ERROR CODE INFORMATION

1. In case failure occurs to the air conditioner, the error code will constantly appear on the wired remote controller display.

	TIMER LAMP BLINKING	LD301 BLINKING	CODE	MEANING
INDOOR	-	-	-	Normal
	1 time	-	01	Refrigerant cycle fault
	2 times	-	-	Outdoor unit is under forced operation
	3 times	9 times	03	Communication error between indoor and outdoor units
	9 times	-	09	Indoor thermistor
	10 times	-	10	Abnormal rotating numbers
	12 times	-	12	Outdoor interface error
	13 times	-	13	IC401 data reading error

OUTDOOR	4 times	2 times	02	Peak current cut
	4 times	3 times	03	Compressor abnormal low speed rotation
	4 times	4 times	04	Compressor switching failure
	4 times	5 times	05	Overload lower limit cut
	4 times	6 times	06	OH thermistor temperature rise
	4 times	7 times	07	Abnormal outdoor thermistor
	4 times	8 times	08	Accelaration defective
	4 times	9 times	09	Communication error
	4 times	10 times	10	Abnormal power source
	4 times	11 times	11	Fan stop for strong wind
	4 times	12 times	12	Fan motor fault

	4 times	13 times	☽ ☼ ◊ ☼ 13 ⏱	EEPROM reading error
	4 times	14 times	☽ ☼ ◊ ☼ 14 ⏱	Active converter defective
	4 times	15 times	☽ ☼ ◊ ☼ 15 ⏱	Abnormal PWB circuit

10.2. WIRED FULL DOT REMOTE – SPX-WKT4

10.2.1. NAMES AND FUNCTIONS OF REMOTE CONTROLLER

*Maximum length cable can be up to 49.21ft (15m). Use extension cable SPX-WKT5M 16.4ft (5m)

Display part

Fan Speed Indicator

Auto Swing Indicator

Eco Auto Off Indicator
It is indicated when the eco auto off function is set.

Sleep Timer Indicator
It is indicated when the sleep timer is set.

Room Temperature Indicator
(Around Remote Controller)

Operation Mode Indicator

Eco Mode and Forced Cooling setting, and External device operation indicator

Operation Guide Indicator

Operation Indicator Lamp
Lit in normal operation and flashes during fault conditions.

Timer Indicator
It is indicated when the timer function is set.

Operation Lock Indicator
It is indicated when the operation lock function is set.

Filter Sign Indicator
It is indicated at the set period for filter cleaning.

Setting Temperature Indicator

Menu Button
To display Menu.

Eco Button
By pressing this button during operation, the unit performs the eco operation.

START/STOP Button
(Operation indicator lamp)
Press this button to start operation.
Press it again to stop operation.

Cross Button
▲ : Up button
▼ : Down button
◀ : Left button
▶ : Right button

Enter Button

Return/Help Button
To return to the previous screen. When pressed at the normal mode screen, will display Help Menu.

Operation part

10.2.2. SERVICE MENU

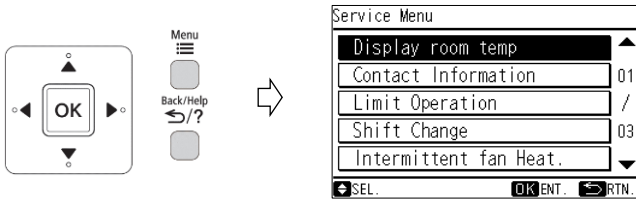Various setting functions are displayed in the service menu. This procedure shall be implemented strictly by service personnel only. Refer to the following sections for each function.
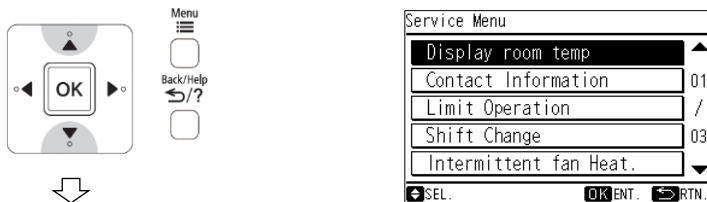
NOTE

⊠ : Unable to set

If the function with " ⊠ " is selected from the menu, "Setting Disabled" will be displayed on the lower screen.
The image in case of Celsius setting of setting temperature is shown in this manual as an example.

1 Press and hold ☰ (Menu) and ↩/? (Back/Help) simultaneously for at least 3 seconds during the normal mode.
   The service menu will be displayed.

```
Service Menu
 Display room temp        ▲
 Contact Information      01
 Limit Operation          /
 Shift Change             03
 Intermittent fan Heat.   ▼
⊕SEL.          OK ENT.  ↩RTN.
```

2 Select the "Service Menu" function by pressing " ▲ " or " ▼ " and press "OK".

(" ⊠ " will be displayed if the function is not available.)

```
Service Menu
 Display room temp        ▲
 Contact Information      01
 Limit Operation          /
 Shift Change             03
 Intermittent fan Heat.   ▼
⊕SEL.          OK ENT.  ↩RTN.
```

Page 1/3

```
Service Menu
 Thermo off fan Cool.     ▲
 Lock                     02
 Display malfunction      /
 Display alarm history    03
 Defrost                  ▼
⊕SEL.          OK ENT.  ↩RTN.
```

Page 2/3

```
Service Menu
 ECO AUTO OFF             ▲
                          03
                          /
                          03
                          ▼
⊕SEL.          OK ENT.  ↩RTN.
```
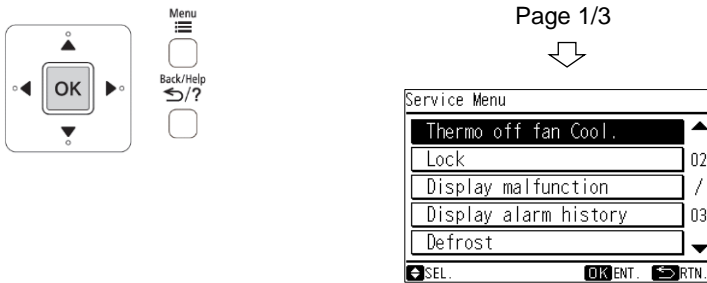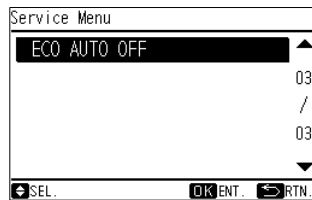
Page 3/3

3 Press " ↩/? "(return/help) to return to the normal mode.

```
MODE : SPEED :      TEMP

AUTO   🌀 AUTO      25 °C

◀SPEED   ⊕ADJ
```
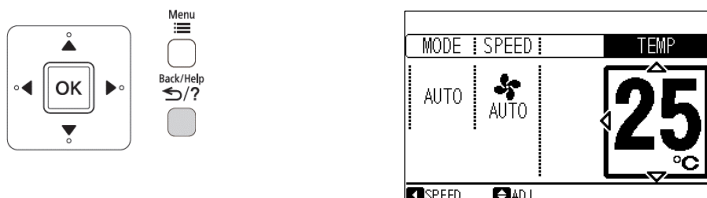
10.2.3. SHIFT VALUE CHANGE

The shift value setting temperature for cooling and heating mode operation can be changed.

1 Select "Shift Change" from the service menu and press "OK". The shift change setting will be displayed.

```
Service Menu
 Display room temp        ▲
 Contact Information      01
 Limit Operation         /
 Shift Change            03
 Intermittent fan Heat.   ▼
⊕SEL.            OK ENT.  ⤺RTN.
```
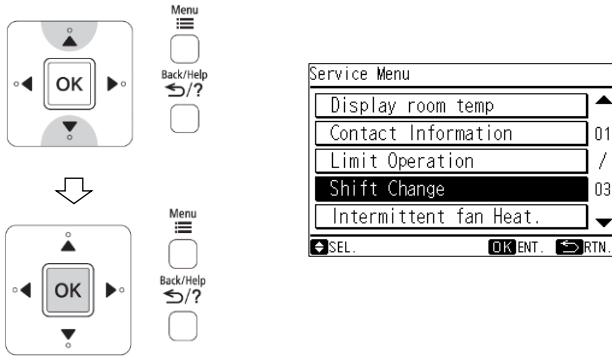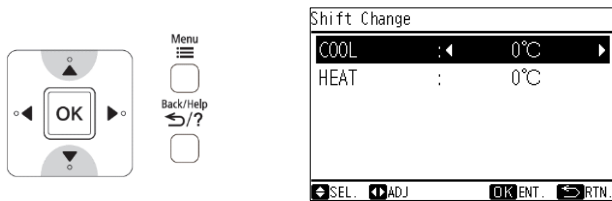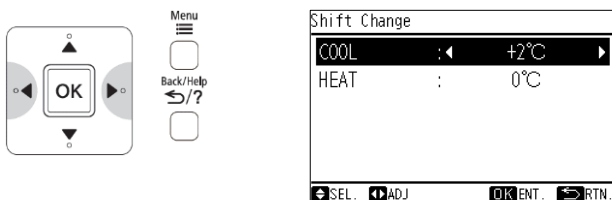
2 Press "▲" or "▼" to select the operation mode.
   ("COOL" or "HEAT")

```
Shift Change
COOL       :◀    0℃    ▶
HEAT       :     0℃

⊕SEL. ◀▶ADJ     OK ENT.  ⤺RTN.
```

3 By pressing "◀" or "▶", the shift value will be changed as below.
   "....+5ºC ↔ -5ºC ↔ -4ºC ↔ -3ºC ↔ -2ºC ↔ -1ºC ↔ 0ºC ↔ +1ºC ↔ +2ºC ↔ +3ºC ↔ +4ºC ↔ +5ºC..." ("....+10ºF ↔ -10ºF ↔ -8ºF ↔ -6ºF ↔ -4ºF ↔ -2ºF ↔ 0ºC ↔ +2ºF ↔ +4ºF ↔ +6ºF ↔ +8ºF ↔ +10ºF...")

```
Shift Change
COOL       :◀   +2℃    ▶
HEAT       :     0℃

⊕SEL. ◀▶ADJ     OK ENT.  ⤺RTN.
```

4 Press "OK" to finish the shift value setting. The confirmation screen will be displayed.
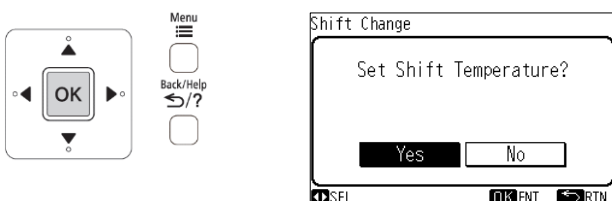
```
Shift Change
     Set Shift Temperature?


         Yes       No
◀▶SEL.          OK ENT.  ⤺RTN.
```

5 Select "Yes" by pressing "◀" or "▶" and press "OK". The setting will be confirmed and the screen will return to the service menu.

```
Service Menu
 Display room temp        ▲
 Contact Information      01
 Limit Operation         /
 Shift Change            03
 Intermittent fan Heat.   ▼
⊕SEL.            OK ENT.  ⤺RTN.
```

6 Press " ⤺/? "(return/help) to return to the normal mode.

```
MODE ┆ SPEED ┆        TEMP
AUTO ┆ ✿     ┆       △
     ┆ AUTO  ┆    25
     ┆       ┆   ◁    °C
                   ▽
◀SPEED  ⊕ADJ
```
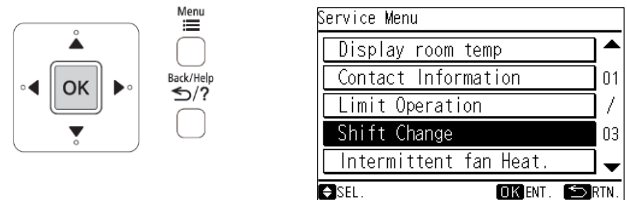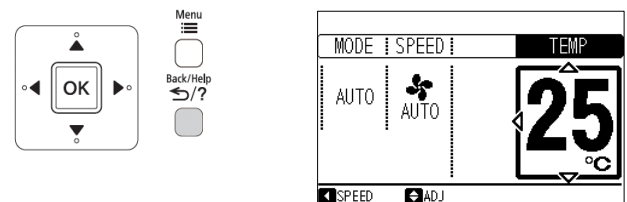
NOTE

- When the setting is done, fan speed will be changed to "silent".
- This setting cannot use during operation.
- The "shift value change" setting will remain unchanged after the unit is turned off.
- Some indoor units are available from -3°C (-6° F) to +3°C (+6° F) only of shift change. In case of that, shift change setting of -5°C (-10° F), -4°C (-8° F), +4°C (+8° F) or +5°C (+10° F)will not be reflected to indoor unit.

OPERATION LOCK

This function is used to lock the operation mode from the remote controller.
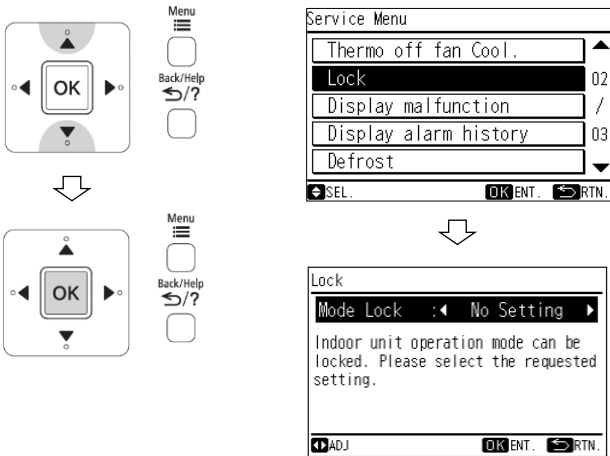The remote controller can be set to fix the "Heating" mode (including "Fan"), "Cooling" mode and "Dehumidifying" mode (including "Fan") operations.
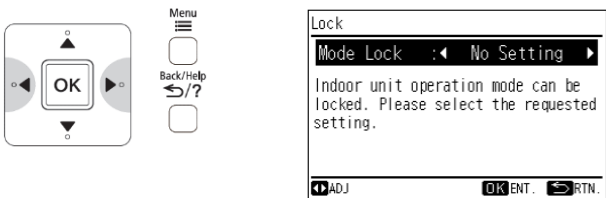
1 When unit is OFF, select "Lock" from the service menu and press "OK".
    The screen of "Mode Lock" selection will be displayed.

```
Service Menu
  Thermo off fan Cool.        ▲
  Lock                        02
  Display malfunction         /
  Display alarm history       03
  Defrost                     ▼
 SEL.              OK ENT.  RTN.
```

```
Lock
Mode Lock   :◀  No Setting  ▶

Indoor unit operation mode can be
locked. Please select the requested
setting.

 ADJ              OK ENT.  RTN.
```
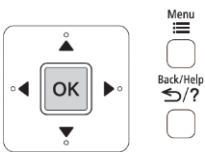
2 By repeatedly pressing "◀" or "▶", the indication is changed in order of "No Setting" <---> "COOL" <---> "HEAT"
Select the function target and press "OK".
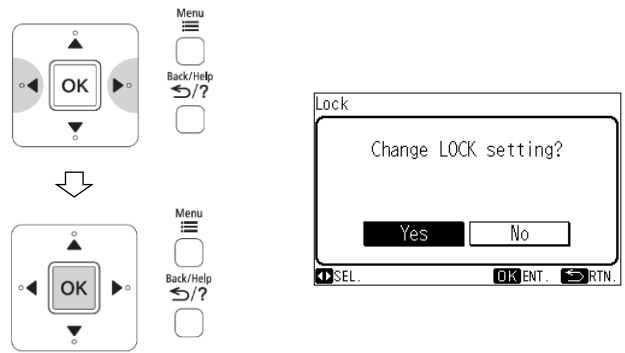The confirmation screen will be displayed.

```
Lock
Mode Lock   :◀  No Setting  ▶

Indoor unit operation mode can be
locked. Please select the requested
setting.

 ADJ              OK ENT.  RTN.
```
When this function is not used

```
Lock
Mode Lock   :◀     COOL     ▶

Indoor unit operation mode can be
locked. Please select the requested
setting.

 ADJ              OK ENT.  RTN.
```
When "Cooling" mode lock is selected
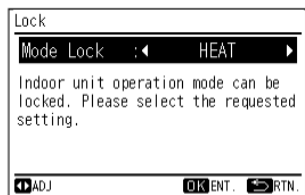
```
Lock
Mode Lock   :◀     HEAT     ▶

Indoor unit operation mode can be
locked. Please select the requested
setting.

 ADJ              OK ENT.  RTN.
```
When "Heating" mode lock is selected

3 Select "Yes" by pressing "◀" or "▶" and press "OK".
The setting will be confirmed and the screen will return to the service menu.

```
Lock
      Change LOCK setting?

        Yes        No

 SEL.             OK ENT.  RTN.
```

4 Press "⤺/? " to return to the normal mode.

```
MODE   SPEED          TEMP

COOL    ❋
       AUTO         27
                      °C
 SPEED   ADJ
```

Example: Select "Cooling" mode lock

NOTE:
The operation lock setting will remain unchanged after the unit is turned off.

10.2.4. INTERMITTENT FAN CONTROL

The intermittent fan control during thermo off in Heating mode can be changed

1 Select "Intermittent fan Heat." from the service menu and press "OK".
The intermittent fan control setting will be displayed.

5 Press " ↩/? " to return to the normal mode.

NOTE
- This setting cannot use during operation.
- The intermittent fan control setting will remain unchanged after the unit is turned off.

2 By pressing " ◀ " or " ▶ ", the "Control Type" will be changed as below.
".... No.1 <---> No.2 <---> No.3 <---> No.1 ..."

	Single model	Multi model
No 1	Continuous	30 sec ON / 210 sec OFF repeatedly
No 2	30 sec ON / 210 sec OFF repeatedly	50 sec ON / 190 sec OFF repeatedly
No 3	50 sec ON / 190 sec OFF repeatedly	Continuous

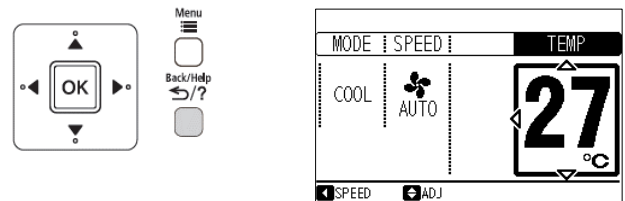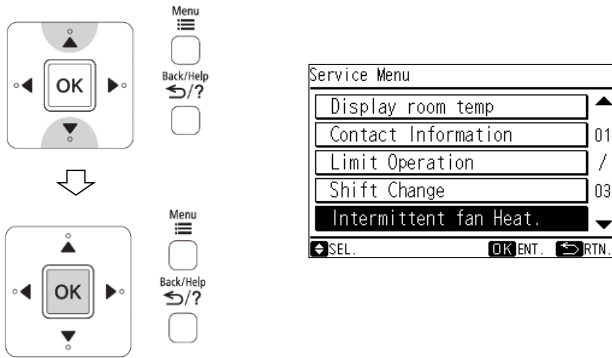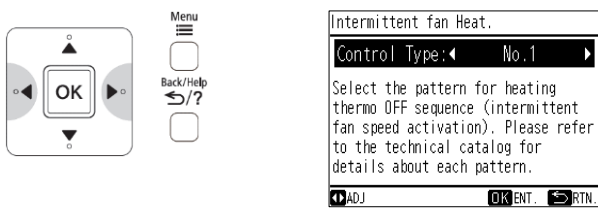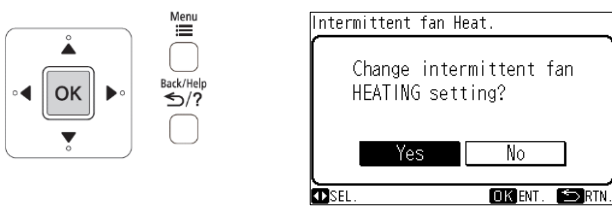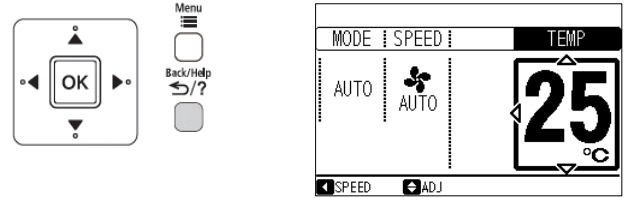3 Press "OK" to finish the intermittent fan control setting.
The confirmation screen will be displayed.

4 Select "Yes" by pressing " ◀ " or " ▶ " and press "OK".
The setting will be confirmed and the screen will return to the service menu.

10.2.5. FAN SPEED DURING THERMO OFF

The fan speed during thermo off in Cooling mode can be changed.

1 Select "Thermo off fan Cool." from the service menu and press "OK".
The fan speed during themo off setting will be displayed.


```
Service Menu
┌─────────────────────────────┐
│ Thermo off fan Cool.        │ ▲
│ Lock                      02│
│ Display malfunction        /│
│ Display alarm history     03│
│ Defrost                     │ ▼
├─────────────────────────────┤
│⊕SEL.           OK ENT.  ⤺RTN.│
└─────────────────────────────┘
```

2 By pressing "◂" or "▸", the "Control Type" will be changed as below.

"Default" <---> "Changed"


```
Thermo off fan Cool.
┌─────────────────────────────┐
│Control Type:     Default   ▶│
│                             │
│ Fan speed control:          │
│   Default: Ultra-Low        │
│   Changed: Setting fan speed│
│                             │
├─────────────────────────────┤
│◀▶ADJ           OK ENT.  ⤺RTN.│
└─────────────────────────────┘
```

	Fan speed during thermo off
Default	Ultra low
Changed	Set fan speed (When auto fan is set, the fan speed is low)

3. Press "OK" to finish the thermo off fan control setting. The confirmation screen will be displayed.


```
Thermo off fan Cool.
┌─────────────────────────────┐
│                             │
│    Change Thermo off fan    │
│    COOLING setting?         │
│                             │
│      ┌──────┐  ┌──────┐     │
│      │ Yes  │  │  No  │     │
│      └──────┘  └──────┘     │
├─────────────────────────────┤
│◀▶SEL.          OK ENT.  ⤺RTN.│
└─────────────────────────────┘
```

4 Select "Yes" by pressing "◂" or "▸" and press "OK".
The setting will be confirmed and the screen will return to the service menu.


```
Service Menu
┌─────────────────────────────┐
│ Thermo off fan Cool.        │ ▲
│ Lock                      02│
│ Display malfunction        /│
│ Display alarm history     03│
│ Defrost                     │ ▼
├─────────────────────────────┤
│⊕SEL.           OK ENT.  ⤺RTN.│
└─────────────────────────────┘
```

5 Press " ⤺/? " to return to the normal mode.


```
┌─────────────────────────────┐
│ MODE ┊ SPEED ┊      TEMP    │
│                          △  │
│ AUTO ┊  ❀   ┊     ┌───────┐ │
│      ┊ AUTO ┊   ◁ │  25   │ │
│      ┊      ┊     └───────┘ │
│                        °C   │
│                          ▽  │
├─────────────────────────────┤
│◀▶SPEED    ⊕ADJ              │
└─────────────────────────────┘
```
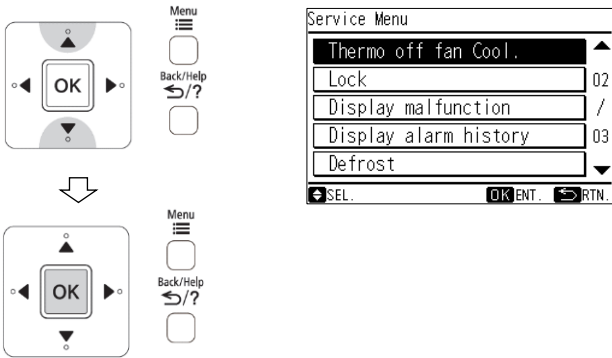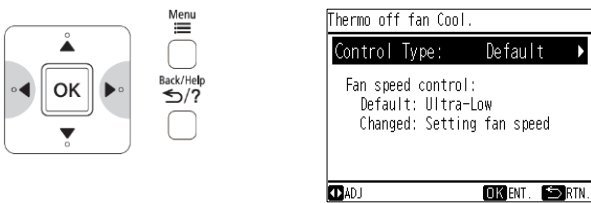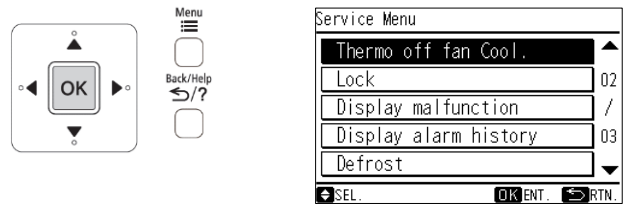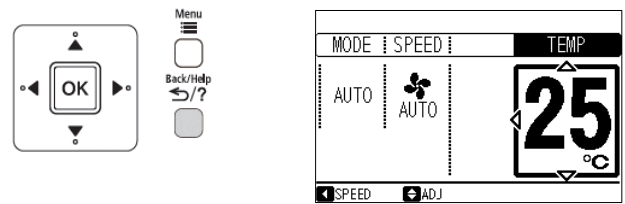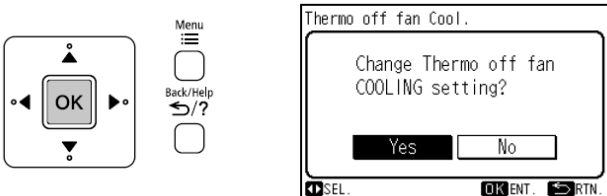
NOTE:
- This setting cannot use during operation.
- The fan speed during thermo off setting will remain unchanged after the unit is turned off.

10.3. H-LINK ADAPTOR – PSC 6RAD

10.3.1. SAFETY SUMMARY

DANGER:
– DO NOT pour water into the remote control switch *(hereafter called "controller"). This product is equipped* with electrical parts. This will cause serious electrical shock.

WARNING:
– DO NOT perform installation work and electrical wiring connection by yourself. Contact your distributor or dealer of HITACHI and ask then for installation work and electrical wiring by service person. The specified cable should be used to connect (i) room air conditioner and adaptor, and (ii) controller and adaptor.

CAUTION:
– DO NOT install the indoor unit, outdoor unit, controller and cable as such places as:
  – where there is oil vapor and dispersion of oil
  – where there is sulfuric environment (near the hot springs)
  – where there is a flammable gas
  – where there is salty environment (near the sea)
– DO NOT install the indoor unit, outdoor unit, controller and cable within approximately 3 meters from strong electromagnetic wave radiators, such as medical equipment. In case that the controller is installed in a place where there is electromagnetic wave direct-radiation, shield the controller and cables by covering with the steel box and running the cable through the metal conduit tube.
– In case that there is electric noise at the power source for the indoor unit, provide a noise filter.

### 10.3.2. INSTALLATION WORK

■ Before installation

Check the contents and the number of the accessories in the packing.

Adaptor	**With two 1.8m cables**
	HITACHI PSC 6RAD
1 piece of cover for hiding the covering	**Attached 2 sided tapes**
Two-sided tape for attaching to Adaptor	**110x40x3mm**

| 2 connectors for H-Link connection	
2 tapping screws for attaching to wall	**φ3.0 x 10mm**
2 screws for attaching to wooden wall	**φ3.1 x 16mm**

1) RAC adaptor can be installed to the wall as well as on the air conditioner itself
2) Install RAC adaptor in the vertical surface as shown below.

Upper side

Mark "⇧ UP"

⇧ UP

HITACHI PSC 6RAD

Wiring outlet
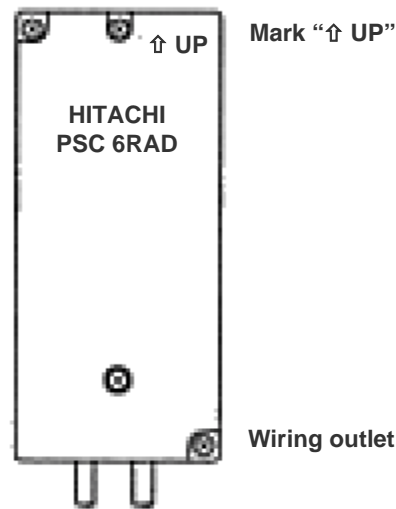
Bottom side
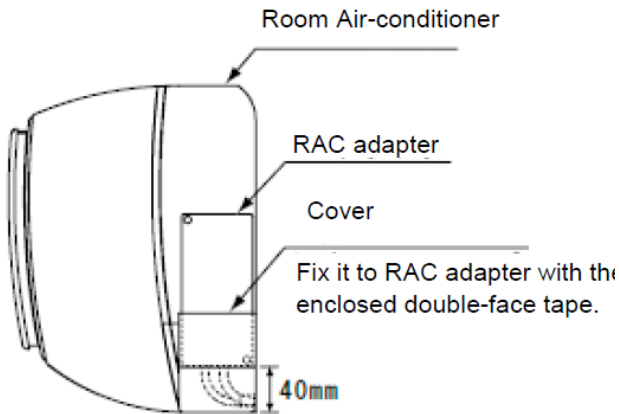
3) Installation procedure
   a) When installing to the wall.
      i) Fix the adaptor with 2 screws. Tapping screw is for metal surface, and other screw is for wooden surface.
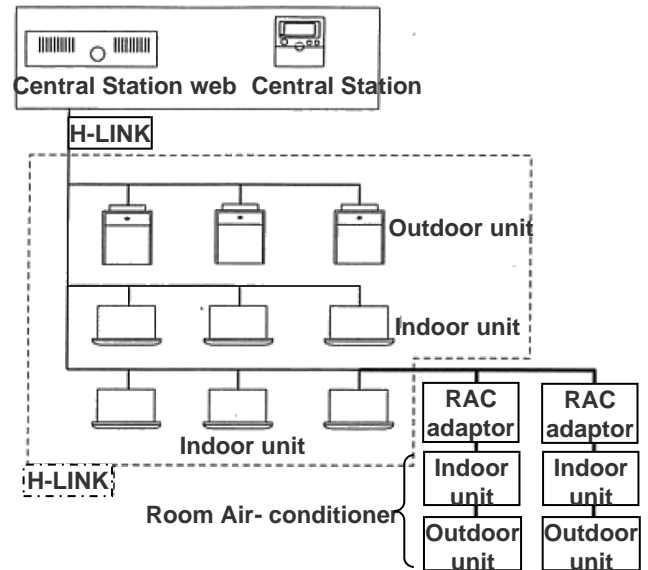

Screw

⇧ UP

HITACHI PSC 6RAD

50

120
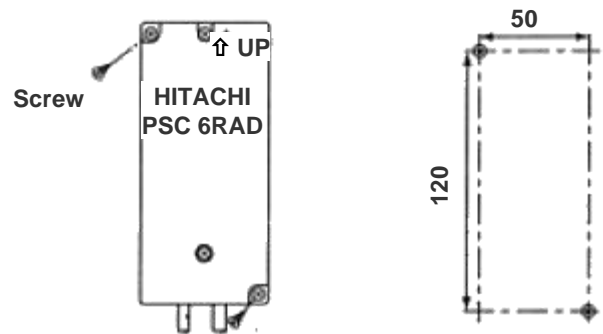
   ii) When using the cover
       It can be installed at the right and left side of room air conditioner. Fix the cover and RAC adaptor with the two-sided tape (accessory).

An example of installation at the right side

RAC adaptor

Cover

40mm

Keep distance of 10mm
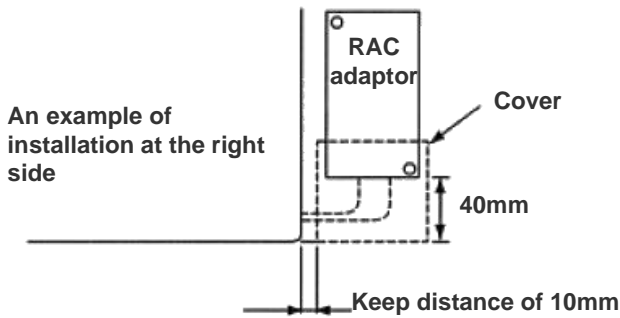
b) When installing on the room air-conditioner
In case that it cannot be installed to the wall due to the space or material problem, install the RAC adaptor with the two-sided tape (accessory) on the room air-conditioner.
   i) Confirm if the piping cover of the unit can be removed when performing the service maintenance, and then fix the RAC adaptor in the side of room air-conditioner with two-sided tape. (Available at the right as well as left side)
   ii) Clean the surface to be installed with a dry cloth.

Room Air-conditioner

RAC adapter

Cover

Fix it to RAC adapter with the enclosed double-face tape.

40mm

NOTE:
– Consider the following points since the adhesiveness changes according to the environmental conditions (temperature, humidity etc)
– The adhesiveness is decreased when there is humidity or oil.
– Warm the adhesive part and installation place of the two-sided tape to avoid the decrease of the adhesiveness in case the ambient temperature is low.
– DO NOT touch the adhesive part by fingers nor re-attach it many times. The adhesiveness has decreased and the RAC adaptor may fall off.
– DO NOT apply any force within 24 hours after installation.

10.3.3. ELECTRICAL WIRING

■ **System configuration**

Central Station web Central Station

H-LINK

Outdoor unit

Indoor unit

RAC adaptor

RAC adaptor

Indoor unit

Indoor unit

Indoor unit

H-LINK

Outdoor unit

Outdoor unit

Room Air- conditioner

CAUTION:
– Turn OFF the power supply of the room air-conditioner of the central control device when performing the wiring work
– DO NOT run all the H-LINK cable or power supply cable along the other signal cable, or malfunction may occur due to the noise, etc. If it is required to run along the other transmission cable, separate the cable more than 30cm, or run the cable through the metal tube and earth the tube.
– Follow local codes and regulations when performing electrical wiring and earth wiring.
– Transmissions cable used in H-LINK shall be 2 cores cable ($0.7mm^2$ to $1.25mm^2$ for model: VCTF, VCT, CVV, MVVX, CVVX, VVR, VVF) or 2 cores twisted pair cable (model: KPEV, KPEV-Spec). Total length of cable shall be below 1000mm.
– DO NOT use wire with more than 3 cores.

■ **Internal components and Wiring connections**

Check the contents and the number of the accessories in the packing.
   • Access
     Open the cover by removing the ① and ② screws.

HITACHI
PSC 6RAD

   • Wiring Connection
     Connection with Room Air-Conditioner
       i) Remove the front cover of the room air-conditioner and the cover of electrical box.
       ii) The cable attached with the connector of the RAC adaptor shall be connected with the connector of indoor PCB

iii) Install the electrical box cover paying attention not to clamp the cable. Read the installation manual of each room air-conditioner for confirming how to connect and how to assemble the cable of the RAC adaptor.

CAUTION:
– Disconnect the power plug before performing this work
– Turn OFF the break power source in case the power is supplied from the outdoor unit.

• Connection of Transmission Cable

H-LINK transmission cable connecting to RAC adaptor shall be connected to H-LINK.
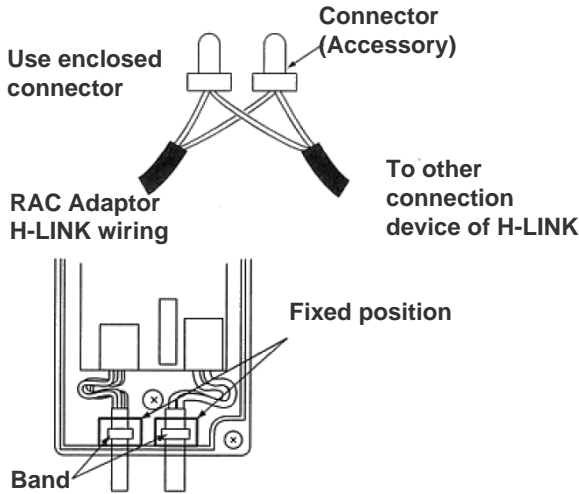
CAUTION:
– DO NOT connect incorrect wiring. It may cause the failure of the RAC Adaptor. Especially pay attention not to apply high voltage e.g. AC400/230V.
– DO NOT perform the wiring work while power to the central station or the RAC Adaptor is still being supplied. It may cause malfunction. Turn OFF devices when performing the wiring work.
– The RAC Adaptor side cable should not overload to the connector.
– DO NOT clamp the cable when attaching the RAC adaptor cover.
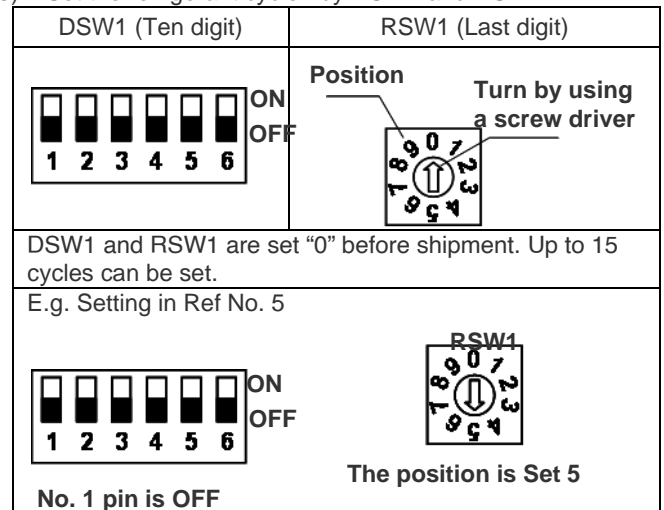– Band should not be loose and in fixed position.

10.3.4. DIP SWITCH SETTING

1) Switch OFF the power of room air conditioner before setting the DIP switch. If the power is ON, the settings are INVALID.
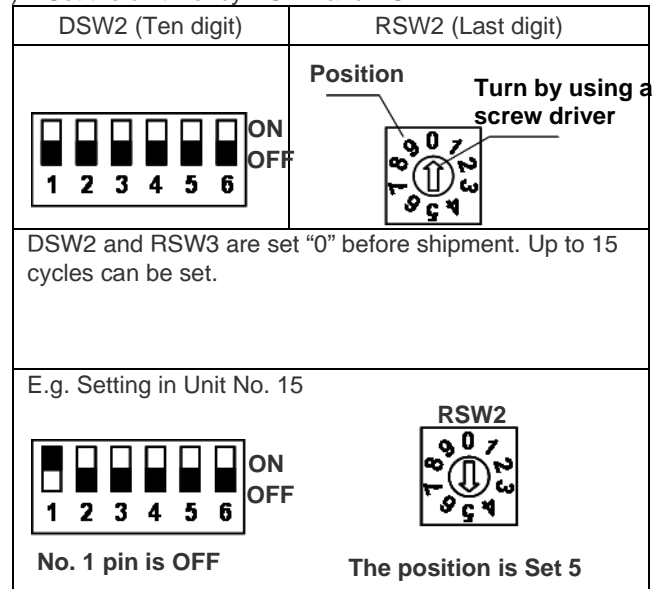2) The position of the DIP switch is shown below.
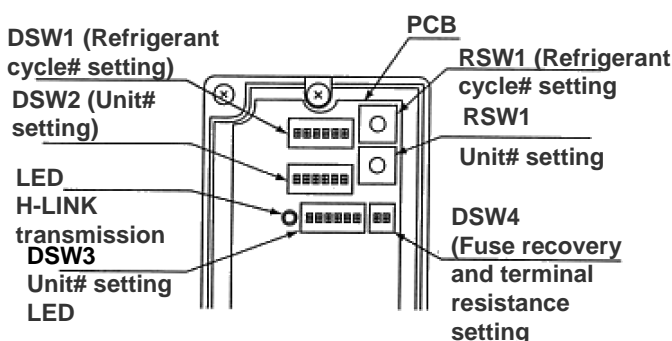
CAUTION:
– DO NOT turn ON various pins of DSW1 and DSW2

3) Set the refrigerant cycle# by RSW1 and DSW1

DSW1 (Ten digit)	RSW1 (Last digit)
DSW1 and RSW1 are set "0" before shipment. Up to 15 cycles can be set.	
E.g. Setting in Ref No. 5	
No. 1 pin is OFF	The position is Set 5

4) Set the unit No. by RSW2 and DSW2

DSW2 (Ten digit)	RSW2 (Last digit)
DSW2 and RSW3 are set "0" before shipment. Up to 15 cycles can be set.	
E.g. Setting in Unit No. 15	
No. 1 pin is OFF	The position is Set 5

5) Slave unit.

In case of setting various RAC adaptors in the same refrigerant cycle, set the RAC adaptor with smallest Unit# as a master unit. In case of setting only one RAC adaptor in a refrigerant system, this adaptor should be a master unit. Set this procedure by DSW3.
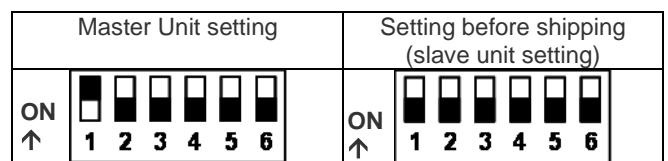
| Master Unit setting	Setting before shipping (slave unit setting)

●: Master Unit setting

○: Setting before Shipping (Slave Unit setting)

Indoor Unit#

|	0	1	2	3	4	5	6	7		
0	●	○	○	○	○					
1			●	○	○					
2				●	○	○	○	○		
3		●								
4										

Refrigerant Unit#

CAUTION:
– DO NOT set various main adaptors in the same refrigerant cycle.

6) Procedure when applying 200V voltage to H-LINK wiring incorrectly.

In case of applying 200V voltage to H-LINK wiring incorrectly, the fuse installed in a transmission circuit on PCB will blow out. In this case, reconnect the wiring correctly and turn ON No. 2 pin of DSW4 on PCB. The transmission circuit can be recovered. (If applying this error again, the transmission circuit can not be recovered)

PCB

DSW4

ON
↑ | | |
  1   2

Turn ON No.2 pin of DSW4
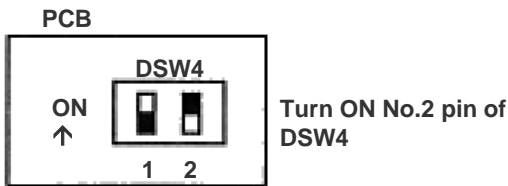
7) Terminating resistance is set in whole H-LINK system.
   a) If H-LINK connecting devices like package air-conditioner are connected besides the RAC Adaptor, set the terminating resistance by those connecting devices. The terminating resistance should be set ON in only one position in whole H-LINK system.
   b) In case that H-LINK is connected only by the RAC adaptor, set the terminating resistance by the RAC adaptor. The terminating resistance should be set ON in only one position in whole H-LINK system.

PCB

DSW4

ON | | |
↑
  1   2

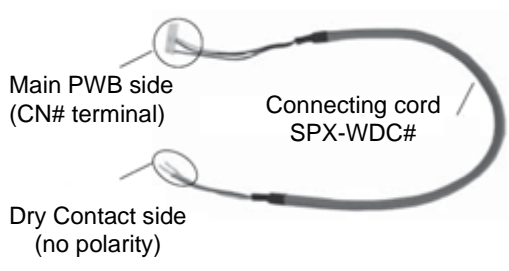**Turn ON No.1 pin of DSW4**
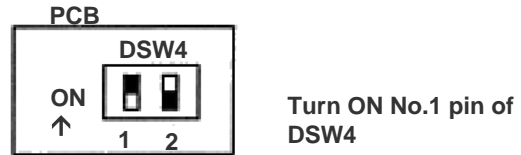
10.3.5. TEST RUN

Test run should be performed in the following after finishing the installation, wiring and setting. Refer to the installation manuals enclosed with the control system equipment.
1) Confirmation of RAC Adaptor Connection
   Confirm if the RAC adaptor connection is recognized in the control system equipments. In case that it is not confirmed, check the transmission cable, refrigerant cycle #, indoor unit #, terminal resistance setting etc.
2) Registration
   Confirm if the RAC adaptor connection is recognized.
3) Confirmation of RUN/STOP Operation.
   Confirm if the room air-conditioner operate correctly by RUN/STOP from the central control system equipments. Check also if the room air-conditioner operation changes correctly by each setting.

10.4. DRY CONTACT (SPX-WDC3) APPLICATION (USING DIP SWITCH)

The dry contact system enables the operation of the air conditioner indoor unit to be controlled by using external dry contacts (with non voltage) such as card-key controller or window for facilities such as hotels.
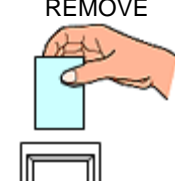
Table 1 (Applicable models and related information)

Optional Connecting cord Accessory SPX-WDC#		Model	DIP SW Label	CN#
Main PWB side (CN# terminal) Connecting cord SPX-WDC# Dry Contact side (no polarity)	SPX-WDC3	RAK-DJ60PHAE RAK-DJ70PHAE	-	CN6

- Please decide A or B type of dry contact, you can use HHRC method and more details you can refer to page 24.

Function name	Value	Layer 1 Category	Layer 2 Function	Layer 3 Value
CardKey	Disable	1A	A0	01
	Card Key Input – A Enable			02
	Card Key Input – B Enable			03
	Reserve			04 ~ 99

[1] CHECK DRY CONTACT OF CARD KEY UNIT

	AIR CONDITIONER Standby	AIR CONDITIONER Operating
CARD KEY (Door Switch)	REMOVE	INSERT
Contact type A	OPEN	CLOSE
Contact type B	CLOSE	OPEN

After all connection has been done as below diagram, ON the breaker and push ON button of wireless remote controller or wired remote controller to operate the air conditioner unit.
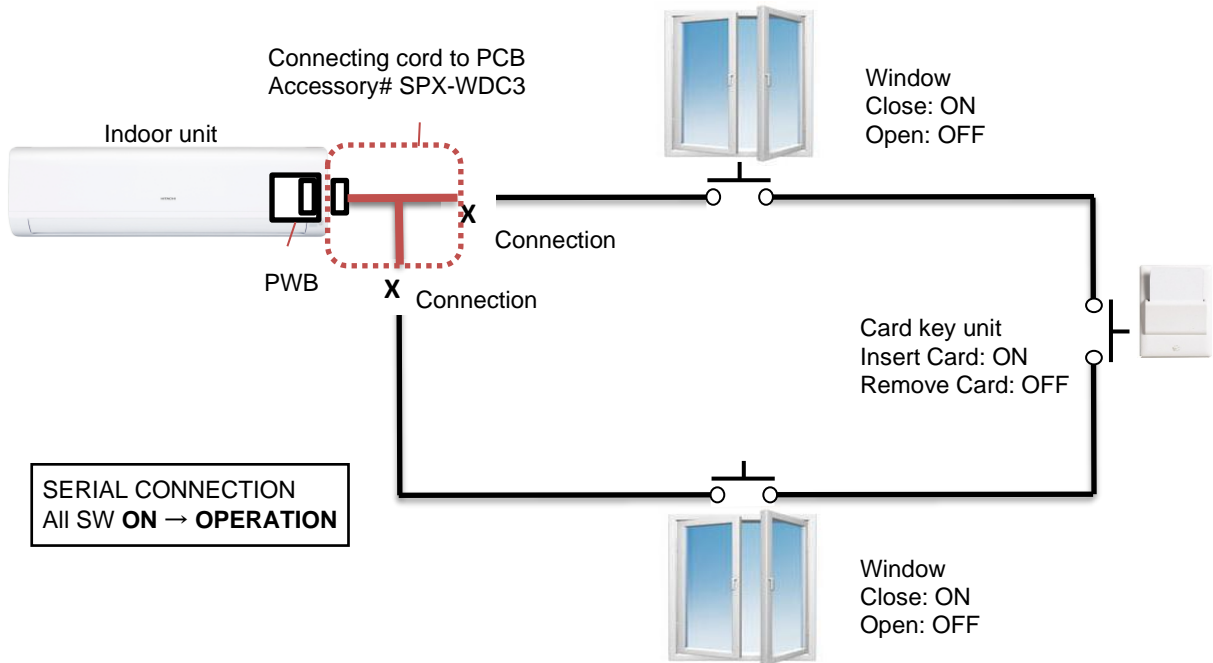
- When the CARD KEY is in insert condition, the air conditioner operation is allowable by remote controller.
- When the dry contact switch on the Card Key Unit is open (refer to diagram below for contact type a), the unit stops to operate (it takes 10 seconds to stop the unit operation after the dry contact switch on the card key turns off) and vice versa.
- When the card key is removed from the Card Key Unit, the wireless remote controller cannot be used.
- When the card key is removed from the Card Key Unit, the wired remote controller LCD display is activated; however it has no control over the unit.
- The suitable accessory Connecting Cord (accessory code#: SPX-WDC3) need to be used to connect the Card Key Unit's dry contact switch to the connector on the control board of the indoor unit. Please refer to Table 1 to select suitable accessory code# for the concerning indoor model.

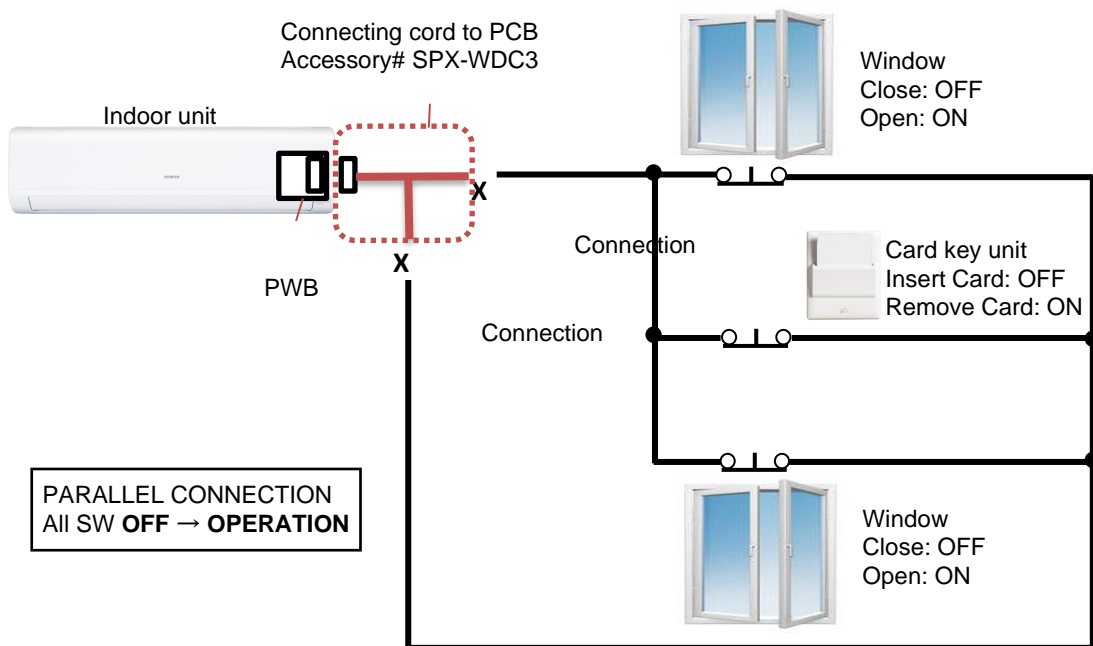Example of wiring connection to Card Key Unit will be as below (reference only)

CARD KEY UNIT (Prepared by INSTALLER)

② Contact with sleeve

AIR CONDITIONER INDOOR PCB

CN6

Card sensor indicator

Dry contact

AC POWER SUPPLY

① Connecting Cord to PCB: SPX-WDC3
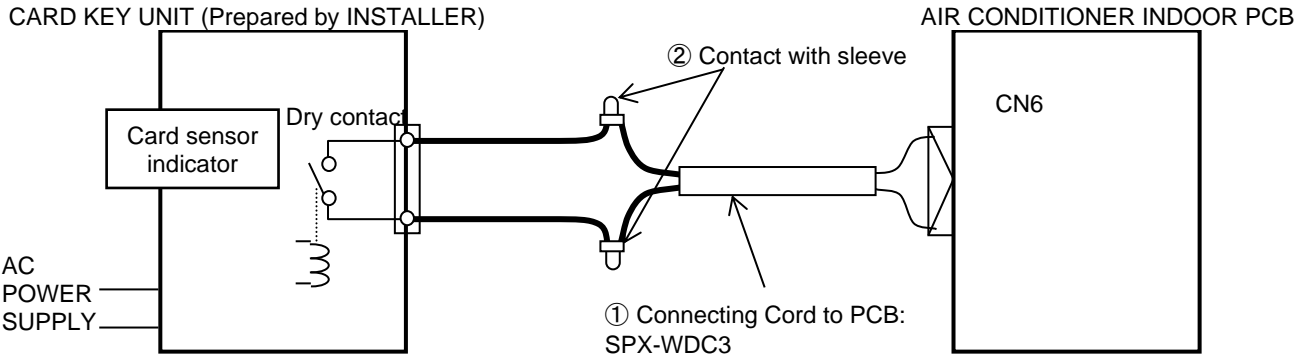
- CONNECTION EXAMPLE

i. HHRC for Dry Contact Type A

Connecting cord to PCB Accessory# SPX-WDC3

Indoor unit

Window
Close: ON
Open: OFF

X

Connection

PWB

X Connection

Card key unit
Insert Card: ON
Remove Card: OFF

SERIAL CONNECTION
All SW **ON → OPERATION**

Window
Close: ON
Open: OFF

ii. HHRC for Dry Contact Type B

Connecting cord to PCB Accessory# SPX-WDC3

Indoor unit

Window
Close: OFF
Open: ON

X

Connection

Card key unit
Insert Card: OFF
Remove Card: ON

PWB

X

Connection

PARALLEL CONNECTION
All SW **OFF → OPERATION**

Window
Close: OFF
Open: ON

Please refer to the actual manual supplied with the optional connecting cords SPX-WDC3 for more details.

10.5. DISTRIBUTOR – SPX-DST1

The optional distributor is to be used together with the wired remote controller when there is a need to centralize the control of multiple indoor units using only a single wired remote controller.

A single distributor could be connected further to 3 separate distributors so that up to 13 units of indoor could be controlled by a single wired remote controller.
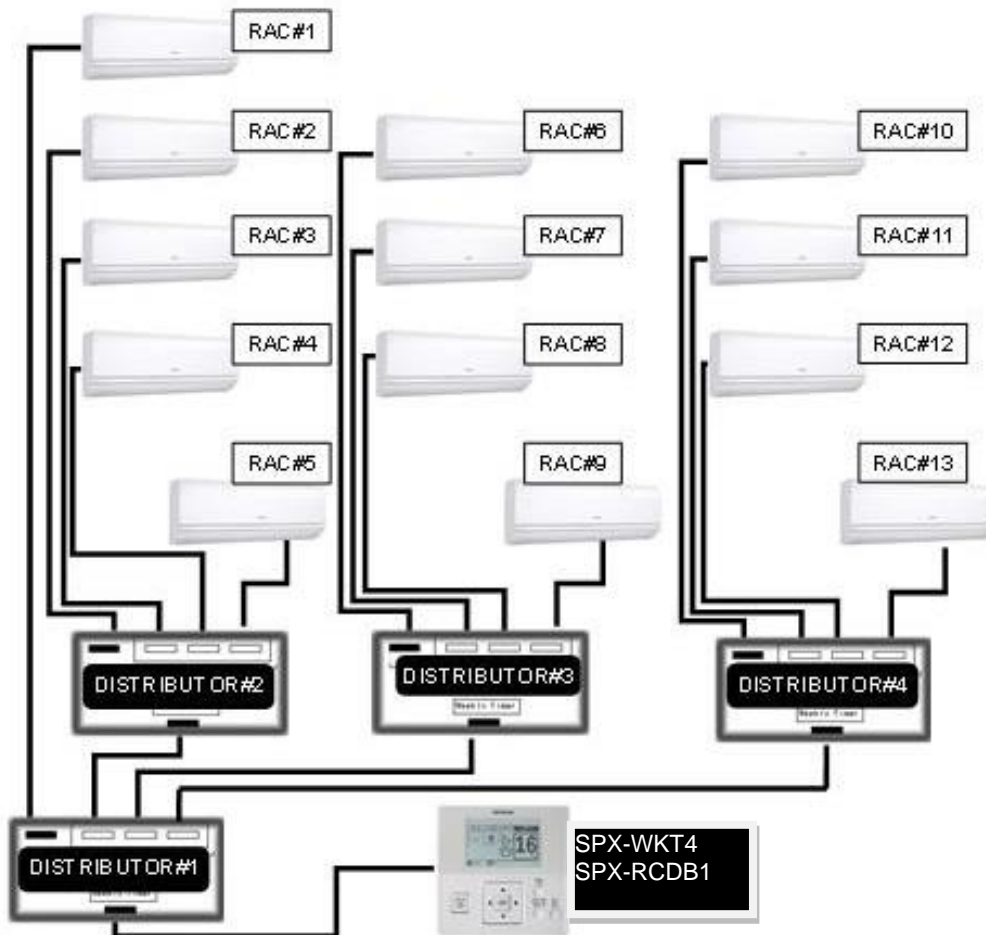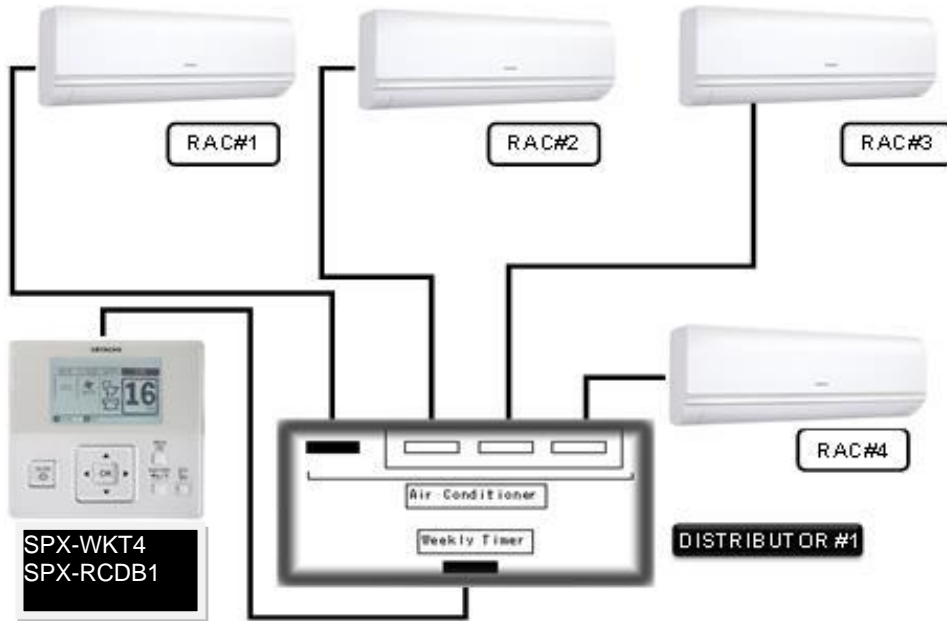
Johnson Controls Hitachi Air Conditioning Malaysia Sdn. Bhd.

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