

TECHNICAL CATALOGUE

MONO SPLIT

Cooling & Heating



MULTIZONE

OUTDOOR UNIT
RAM-S42U5HLAE

INDOOR
RAS-EH07QHLAE
RAS-EH(09-24)RHLAE
RAS-SH07QHLAE
RAS-SH(09-24)RHLAE
RAD-SH(07-24)QHLAE
RAI-SH(07-18)QHLAE
RAF-SH(07-18)QHLAE

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1 SPECIFICATIONS

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1.1. MULTIZONE INDOOR

1.1.1. WALL TYPE (RAS-EH07QHLAE / EH09RHLAE / EH12RHLAE)

INDOOR	Unit	RAS-EH07QHLAE	RAS-EH09RHLAE	RAS-EH12RHLAE
Nominal capacity adjustable		no	no	no
Nominal Cooling capacity (min - max)	BTU	7000(3050-9000)	9000(5450~10500)	12000(5500~13200)
Cooling sensible capacity	BTU	-	-	-
Nominal Heating capacity (min - max)	BTU	9000(3050-10900)	10500(4200~11500)	13000(4400~14500)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	29/36/40/42	29/36/40/42	29/36/40/44
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	29/36/40/42	29/36/40/42	29/36/40/44
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	56	56	58
Air flow cooling mode (SL / L / M / H)	cfm (m ³ /h)	170/218/250/290	170/218/250/290	170/218/250/320
Air flow heating mode (SL / L / M / H)	cfm (m ³ /h)	170/218/250/290	170/218/250/290	170/218/250/320
Fan Motor	W	38	38	38
Dehumidification	l/h	1.0	1.4	1.6
Included drain pump *for RAI/RAD	yes/no	no	no	no
Max. height available for drain pump (RAD/RAI only)	in. (mm)	no	no	no
Drain pump pressure lift *for RAI/RAD	in. (mm)	no	no	no
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no	no
Dimensions (H x W x D)	in. (mm)	11.07x30.70x9.05 (280x780x230)	11.07x30.70x9.05 (280x780x230)	11.07x30.70x9.05 (280x780x230)
Weight *must match with Packing data information	lbs. (kg)	20.9 (9.5)	20.9 (9.5)	20.9 (9.5)
Panel weight *for RAI	lbs. (kg)	-	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-	-
Colour (Munsell Code)				
Condensate Drain	in. (mm)	-	-	-
Panel reference		-	-	-
Color of the panel (RAL)		-	-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm ²	0.8x 3+EARTH/-	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 3/8"	1/4" / 3/8"	1/4" / 3/8"
Drain diameter (ext)	in. (mm)	0.63(16)	0.63(16)	0.63(16)
Remote control (standard/optional) *	Standard	RAR-MOB5	RAR-MOB5	RAR-MOB5
	Optional	SPX-RCDB1/SPX-WKT4	SPX-RCDB1/SPX-WKT4	SPX-RCDB1/SPX-WKT4
Filter				
ACL Filter Standard (Material & Accessory code)		Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	(48x243x5)	(48x243x5)	(48x243x5)
ACL Filter Optional (Material - Accessory code)		-	-	-
Pre-filter Standard Material		STAINLESS	STAINLESS	STAINLESS
Pre-filter Optional (Material & Accessory code)		-	-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. 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	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F

Piping Length: 7.5 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 so that reflected sound should be taken into consideration when installing the unit.

1.1.2. WALL TYPE (RAS-EH18RHLAE / EH24RHLAE)

INDOOR	Unit	RAS-EH18RHLAE	RAS-EH24RHLAE
Nominal capacity adjustable		no	no
Nominal Cooling capacity (min - max)	BTU	17600(5700~18600)	24000(8200~25200)
Cooling sensible capacity	BTU	-	-
Nominal Heating capacity (min - max)	BTU	19000(6700~20500)	25000(8300~26500)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	35/38/42/48	35/40/45/51
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	35/38/42/48	35/40/45/51
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	62	65
Air flow cooling mode (SL / L / M / H)	cfm (m ³ /h)	200/240/280/400	280/350/430/620
Air flow heating mode (SL / L / M / H)	cfm (m ³ /h)	200/240/280/400	280/350/430/620
Fan Motor	W	38	38
Dehumidification	l/h	2.9	3.4
Included drain pump *for RAI/RAD	yes/no	no	no
Max. height available for drain pump (RAD/RAI only)	in. (mm)	no	no
Drain pump pressure lift *for RAI/RAD	in. (mm)	no	no
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no
Dimensions (H x W x D)	in. (mm)	11.07x30.70x9.05 (280x780x230)	11.81x43.3x10.23 (300x1100x260)
Weight *must match with Packing data information	lbs. (kg)	20.9 (9.5)	37.5 (17)
Panel weight *for RAI	lbs. (kg)	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-
Colour (Munsell Code)			
Condensate Drain	in. (mm)	-	-
Panel reference		-	-
Color of the panel (RAL)		-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm ²	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 1/2"	1/4" / 5/8"
Drain diameter (ext)	in. (mm)	0.63(16)	0.63(16)
Remote control (standard/optional) *	Standard	RAR-MOB05	RAR-MOB05
	Optional	SPX-RCDB1/SPX-WKT4	SPX-RCDB1/SPX-WKT4
Filter			
ACL Filter Standard (Material & Accessory code)		Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	(48x243x5)	(48x243x5)
ACL Filter Optional (Material - Accessory code)		-	-
Pre-filter Standard Material		STAINLESS	STAINLESS
Pre-filter Optional (Material & Accessory code)		-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

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 so that reflected sound should be taken into consideration when installing the unit.

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter dB: Dry Bulb; WB: Wet Bulb			

1.1.3. WALL TYPE (RAS-SH07QHLAE / SH09RHLAE / SH12RHLAE)

INDOOR	Unit	RAS-SH07QHLAE	RAS-SH09RHLAE	RAS-SH12RHLAE
Nominal capacity adjustable		no	no	no
Nominal Cooling capacity (min - max)	BTU	7000(3050-9000)	9000(5100~10500)	12000(5150~14000)
Cooling sensible capacity	BTU	-	-	-
Nominal Heating capacity (min - max)	BTU	9000(3050-10900)	11000(5450~15000)	14000(5500~18000)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	27/35/40/43	27/35/40/43	27/35/40/46
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	27/35/40/43	27/35/40/43	27/35/40/46
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	57	57	60
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	150/200/280/320	150/200/280/320	150/200/280/400
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	180/230/310/330	180/230/310/330	180/230/310/400
Fan Motor	W	30	30	30
Dehumidification	l/h	1.0	1.0	1.5
Included drain pump *for RAI/RAD	yes/no	no	no	no
Max. height available for drain pump (RAD/RAI only)	in. (mm)	no	no	no
Drain pump pressure lift *for RAI/RAD	in. (mm)	no	no	no
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no	no
Dimensions (H x W x D)	in. (mm)	11.81x35.43x9.05 (300x900x230)	11.81x35.43x9.05 (300x900x230)	11.81x35.43x9.05 (300x900x230)
Weight *must match with Packing data information	lbs. (kg)	28.7 (13)	28.7 (13)	28.7 (13)
Panel weight *for RAI	lbs. (kg)	-	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-	-
Colour (Munsell Code)				
Condensate Drain	in. (mm)	-	-	-
Panel reference		-	-	-
Color of the panel (RAL)		-	-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 3/8"	1/4" / 3/8"	1/4" / 3/8"
Drain diameter (ext)	in. (mm)	0.63(16)	0.63(16)	0.63(16)
Remote control (standard/optional) *	Standard	RAR-MOB6	RAR-MOB6	RAR-MOB6
	Optional	SPX-WKT4	SPX-WKT4	SPX-WKT4
Filter				
ACL Filter Standard (Material & Accessory code)		Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	(48x243x5)	(48x243x5)	(48x243x5)
ACL Filter Optional (Material - Accessory code)		-	-	-
Pre-filter Standard Material		STAINLESS	STAINLESS	STAINLESS
Pre-filter Optional (Material & Accessory code)		-	-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. 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	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F

Piping Length: 7.5 meters; Piping Lift: 0 meter
dB: Dry Bulb; WB: Wet Bulb

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

1.1.4. WALL TYPE (RAS-SH18RHLAE / SH24RHLAE)

INDOOR	Unit	RAS-SH18RHLAE	RAS-SH24RHLAE
Nominal capacity adjustable		no	no
Nominal Cooling capacity (min - max)	BTU	18000(6600~20500)	22000(9700~25000)
Cooling sensible capacity	BTU	-	-
Nominal Heating capacity (min - max)	BTU	21500(7100~26000)	25000(8500~29500)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	35/42/45/49	35/40/45/51
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	35/42/45/49	35/40/45/51
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	63	65
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	260/320/410/540	299/405/500/650
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	270/330/420/570	310/435/500/650
Fan Motor	W	38	38
Dehumidification	l/h	1.8	2.5
Included drain pump *for RAI/RAD	yes/no	no	no
Max. height available for drain pump (RAD/RAI only)	in. (mm)	no	no
Drain pump pressure lift *for RAI/RAD	in. (mm)	no	no
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no
Dimensions (H x W x D)	in. (mm)	11.81x43.3x10.23 (300x1100x260)	11.81x43.3x10.23 (300x1100x260)
Weight *must match with Packing data information	lbs. (kg)	37.5 (17)	37.5 (17)
Panel weight *for RAI	lbs. (kg)	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-
Colour (Munsell Code)			
Condensate Drain	in. (mm)	-	-
Panel reference		-	-
Color of the panel (RAL)		-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 1/2"	1/4" / 5/8"
Drain diameter (ext)	in. (mm)	0.63(16)	0.63(16)
Remote control (standard/optional) *	Standard	RAR-MOB6	RAR-MOB6
	Optional	SPX-WKT4	SPX-WKT4
Filter			
ACL Filter Standard (Material & Accessory code)		Active Carbon / SPX-CFH22AC25	Active Carbon / SPX-CFH22AC25
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	(48x243x5)	(48x243x5)
ACL Filter Optional (Material - Accessory code)		-	-
Pre-filter Standard Material		STAINLESS	STAINLESS
Pre-filter Optional (Material & Accessory code)		-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F

Piping Length: 7.5 meters; **Piping Lift:** 0 meter
dB: Dry Bulb; **WB:** Wet Bulb

1.1.5. FLOOR TYPE (RAF-SH07QLAE / SH09QLAE / SH12QLAE / SH18QLAE)

INDOOR	Unit	RAF-SH07QLAE	RAF-SH09QLAE	RAF-SH12QLAE	RAF-SH18QLAE
Nominal capacity adjustable		no	no	no	no
Nominal Cooling capacity (min - max)	BTU	7000(3050-9000)	9000(3050-10600)	12000(3050-13650)	18000(3050-17750)
Cooling sensible capacity	BTU	-	-	-	-
Nominal Heating capacity (min - max)	BTU	9000(3050-10900)	11600(3050-15000)	15350(3050-18000)	20500(3050-27600)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	20/26/31/38	20/26/31/38	20/26/31/39	22/29/36/43
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	20/26/31/38	20/26/31/38	20/26/31/39	22/29/36/44
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	52	52	53	57
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	159/230/300/371 (270/390/510/630)	159/230/300/371 (270/390/510/630)	159/230/300/371 (270/390/510/630)	177265/318/412 (300/450/540/700)
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	177/247/318/388 (300/420/540/660)	177/247/318/388 (300/420/540/660)	177/247/318/388 (300/420/540/660)	194/283/335/430 (330/480/570/730)
Fan Motor	W	38	38	38	38
Dehumidification	l/h	1.2	1.4	1.9	2
Included drain pump *for RAI/RAD	yes/no	no	no	no	no
Max. height available for drain pump (RAD/RAI only)	in. (mm)	no	no	no	no
Drain pump pressure lift *for RAI/RAD	in. (mm)	no	no	no	no
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no	no	no
Dimensions (H x W x D)	in. (mm)	23 x 30 x 8 (590 x 750 x 215)	23 x 30 x 8 (590 x 750 x 215)	23 x 30 x 8 (590 x 750 x 215)	23 x 30 x 8 (590 x 750 x 215)
Weight *must match with Packing data information	lbs. (kg)	33 (15)	33 (15)	33 (15)	33 (15)
Panel weight *for RAI	lbs. (kg)	-	-	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-	-	-
Colour (Munsell Code)		ShadowWhite (5PB8.7/0.5)	ShadowWhite (5PB8.7/0.5)	ShadowWhite (5PB8.7/0.5)	ShadowWhite (5PB8.7/0.5)
Condensate Drain	in. (mm)	0.63(16)	0.63(16)	0.63(16)	0.63(16)
Panel reference		-	-	-	-
Color of the panel (RAL)		-	-	-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 3/8"	1/4" / 3/8"	1/4" / 3/8"	1/4" / 1/2"
Drain diameter (ext)	in. (mm)	0.63(16)	0.63(16)	0.63(16)	0.63(16)
Remote control (standard/optional) *	Standard	RAR-MOB3	RAR-MOB3	RAR-MOB3	RAR-MOB3
	Optional	SPX-RCDB1/ SPX-WKT4	SPX-RCDB1/ SPX-WKT4	SPX-RCDB1/ SPX-WKT4	SPX-RCDB1/ SPX-WKT4
Filter					
ACL Filter Standard (Material & Accessory code)		activated carbon / SPX-CFH22AC25	activated carbon / SPX-CFH22AC25	activated carbon / SPX-CFH22AC25	activated carbon / SPX-CFH22AC25
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	48x243x5	48x243x5	48x243x5	48x243x5
ACL Filter Optional (Material - Accessory code)		-	-	-	-
Pre-filter Standard Material		STAINLESS	STAINLESS	STAINLESS	STAINLESS
Pre-filter Optional (Material & Accessory code)		-	-	-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter			
dB: Dry Bulb; WB: Wet Bulb			

1.1.6. CEILING CASSETTE (RAI-SH07QHLAE / SH09QHLAE)

INDOOR	Unit	RAI-SH07QHLAE	RAI-SH09QHLAE
Nominal capacity adjustable		no	no
Nominal Cooling capacity (min - max)	BTU	7000(3050-8500)	9000(3050-10200)
Cooling sensible capacity	BTU	-	-
Nominal Heating capacity (min - max)	BTU	9000(3050-10900)	12000(3050-18000)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	27/31/35/38	27/31/35/38
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	28/32/36/39	28/32/36/39
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	54	54
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	212/297/347/388 (360/505/590/660)	212/297/347/388 (360/505/590/660)
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	261/318/371/424 444/540/630/720	261/318/371/424 444/540/630/720
Fan Motor	W	57	57
Dehumidification	l/h	1.2	1.4
Included drain pump *for RAI/RAD	yes/no	Yes	Yes
Max. height available for drain pump (RAD/RAI only)	in. (mm)	33(850)	33(850)
Drain pump pressure lift *for RAI/RAD	in. (mm)	4.5(115)	4.5(115)
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no
Dimensions (H x W x D)	in. (mm)	11 x 22 x 22 (285 x 570 x 570)	11 x 22 x 22 (285 x 570 x 570)
Weight *must match with Packing data information	lbs. (kg)	37 (17)	37 (17)
Panel weight *for RAI	lbs. (kg)	6.17 (2.8)	6.17 (2.8)
Panel dimensions (H x W x D) *for RAI	in. (mm)	1.2 x 24.4 x 24.4 (30 x 620 x 620)	1.2 x 24.4 x 24.4 (30 x 620 x 620)
Colour (Munsell Code)		-	-
Condensate Drain	in. (mm)	1.26 (32)	1.26 (32)
Panel reference		-	-
Color of the panel (RAL)		-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection**if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 3/8"	1/4" / 3/8"
Drain diameter (ext)	in. (mm)	1.26 (32)	1.26 (32)
Remote control (standard/optional) *	Standard	RAR-MOB3	RAR-MOB3
	Optional	SPX-RCDB1/SPX-WKT4	SPX-RCDB1/SPX-WKT4
Filter			
ACL Filter Standard (Material & Accessory code)		-	-
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	-	-
ACL Filter Optional (Material - Accessory code)		-	-
Pre-filter Standard Material		NORMAL	NORMAL
Pre-filter Optional (Material & Accessory code)		-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter			
dB: Dry Bulb; WB: Wet Bulb			

1.1.7. CEILING CASSETTE (RAI-SH12QHLAE / SH18QHLAE)

INDOOR	Unit	RAI-SH12QHLAE	RAI-SH18QHLAE
Nominal capacity adjustable		no	no
Nominal Cooling capacity (min - max)	BTU	12000(3050-13650)	18000(4100-19800)
Cooling sensible capacity	BTU	-	-
Nominal Heating capacity (min - max)	BTU	16400(3050-22500)	20500(4100-23200)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	29/35/39/43	29/35/39/43
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	30/36/40/44	30/36/40/44
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	56	56
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	212/297/347/388 (360/505/590/660)	230/318/371/424 390/540/630/720
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	261/318/371/424 444/540/630/720	265/353/406/459 450/600/690/780
Fan Motor	W	57	57
Dehumidification	l/h	1.4	2.8
Included drain pump *for RAI/RAD	yes/no	Yes	Yes
Max. height available for drain pump (RAD/RAI only)	in. (mm)	33(850)	33(850)
Drain pump pressure lift *for RAI/RAD	in. (mm)	4.5(115)	4.5(115)
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	no	no
Dimensions (H x W x D)	in. (mm)	11 x 22 x 22 (285 x 570 x 570)	11 x 22 x 22 (285 x 570 x 570)
Weight *must match with Packing data information	lbs. (kg)	37 (17)	37 (17)
Panel weight *for RAI	lbs. (kg)	6.17 (2.8)	6.17 (2.8)
Panel dimensions (H x W x D) *for RAI	in. (mm)	1.2 x 24.4 x 24.4 (30 x 620 x 620)	1.2 x 24.4 x 24.4 (30 x 620 x 620)
Colour (Munsell Code)		-	-
Condensate Drain	in. (mm)	1.26 (32)	1.26 (32)
Panel reference		-	-
Color of the panel (RAL)		-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4" / 3/8"	1/4" / 1/2"
Drain diameter (ext)	in. (mm)	1.26 (32)	1.26 (32)
Remote control (standard/optional) *	Standard	RAR-MOB3	RAR-MOB3
	Optional	SPX-RCDB1/SPX-WKT4	SPX-RCDB1/SPX-WKT4
Filter			
ACL Filter Standard (Material & Accessory code)		-	-
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	-	-
ACL Filter Optional (Material - Accessory code)		-	-
Pre-filter Standard Material		NORMAL	NORMAL
Pre-filter Optional (Material & Accessory code)		-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter dB: Dry Bulb; WB: Wet Bulb			

1.1.8. DUCT TYPE (RAD-SH07QHLAE / SH09QHLAE / SH12QHLAE)

INDOOR	Unit	RAD-SH07QHLAE	RAD-SH09QHLAE	RAD-SH12QHLAE
Nominal capacity adjustable		no	no	no
Nominal Cooling capacity (min - max)	BTU	7000(3050-8500)	9000(3050-10200)	12000(3050-13650)
Cooling sensible capacity	BTU	-	-	-
Nominal Heating capacity (min - max)	BTU	9000(3050-10900)	12000(3050-18000)	16400(3050-22500)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	30/33/37/41	30/33/37/41	30/33/37/41
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	30/34/38/42	30/34/38/42	30/34/38/42
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	57	57	57
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	194/229/264/300 (330/390/450/510)	194/229/264/300 (330/390/450/510)	194/229/264/300 (330/390/450/510)
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	194/229/264/300 (330/390/450/510)	194/229/264/300 (330/390/450/510)	194/229/264/300 (330/390/450/510)
Fan Motor	W	20	20	20
Dehumidification	l/h	1.4	1.4	1.6
Included drain pump *for RAI/RAD	yes/no	yes	yes	yes
Max. height available for drain pump (RAD/RAI only)	in. (mm)	33(850)	33(850)	33(850)
Drain pump pressure lift *for RAI/RAD	in. (mm)	4.5(115)	4.5(115)	4.5(115)
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	70	70	70
Dimensions (H x W x D)	in. (mm)	9x29x15 (235x750x400)	9x29x15 (235x750x400)	9x29x15 (235x750x400)
Weight *must match with Packing data information	lbs. (kg)	35 (16)	35 (16)	35 (16)
Panel weight *for RAI	lbs. (kg)	-	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-	-
Colour (Munsell Code)		-	-	-
Condensate Drain	in. (mm)	0.63(16)	0.63(16)	0.63(16)
Panel reference		-	-	-
Color of the panel (RAL)		-	-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4", 3/8"	1/4", 3/8"	1/4", 3/8"
Drain diameter (ext)	in. (mm)	0.63 (16)	0.63 (16)	0.63 (16)
Remote control (standard/optional) *	Standard	RAR-MOB4	RAR-MOB4	RAR-MOB4
	Optional	SPX-RCDA1/SPX-WKT4	SPX-RCDA1/SPX-WKT4	SPX-RCDA1/SPX-WKT4
Filter				
ACL Filter Standard (Material & Accessory code)		-	-	-
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	-	-	-
ACL Filter Optional (Material - Accessory code)		-	-	-
Pre-filter Standard Material		NORMAL	NORMAL	NORMAL
Pre-filter Optional (Material & Accessory code)		-	-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter dB: Dry Bulb; WB: Wet Bulb			

1.1.9. DUCT TYPE (RAD-SH18QHLAE / SH24QHLAE)

INDOOR	Unit	RAD-SH18QHLAE	RAD-SH24QHLAE
Nominal capacity adjustable		no	no
Nominal Cooling capacity (min - max)	BTU	18000(4100-19800)	24000(4100-25600)
Cooling sensible capacity	BTU	-	-
Nominal Heating capacity (min - max)	BTU	20500(4100-23200)	27300(4100-30690)
Noise level cooling (sound pressure) (SL / L / M / H)	dB(A)	29/32/35/39	29/32/35/39
Noise level heating (sound pressure) (SL / L / M / H)	dB(A)	29/32/35/40	29/32/35/40
Noise level (sound power) *match with Fiche/ Eurovent/Product Info	dB(A)	53	53
Air flow cooling mode (SL / L / M / H)	cfm (m³/h)	206/317/470/671 (350/540/800/1140)	206/317/470/671 (350/540/800/1140)
Air flow heating mode (SL / L / M / H)	cfm (m³/h)	206/317/470/671 (350/540/800/1140)	206/317/470/671 (350/540/800/1140)
Fan Motor	W	180	180
Dehumidification	l/h	2.8	2.8
Included drain pump *for RAI/RAD	yes/no	yes	yes
Max. height available for drain pump (RAD/RAI only)	in. (mm)	33(850)	33(850)
Drain pump pressure lift *for RAI/RAD	in. (mm)	4.5(115)	4.5(115)
Static pressure switch at High(L / M / H) *for RAD	Pa (m3/h)	50/100150	50/100150
Dimensions (H x W x D)	in. (mm)	10x35x28 (270x900x700)	10x35x28 (270x900x700)
Weight *must match with Packing data information	lbs. (kg)	77 (35)	77 (35)
Panel weight *for RAI	lbs. (kg)	-	-
Panel dimensions (H x W x D) *for RAI	in. (mm)	-	-
Colour (Munsell Code)		-	-
Condensate Drain	in. (mm)	1.26 (32)	1.26 (32)
Panel reference		-	-
Color of the panel (RAL)		-	-
Running current (C/H) *for single split indoor&outdoor must be matched	A	-	-
Power supply	V	FROM OUTDOOR	FROM OUTDOOR
Cable section (interconnection/*if power supply is connected to indoor)	mm²	0.8x 3+EARTH/-	0.8x 3+EARTH/-
Piping diameter (Liq / Gas)	Inch	1/4", 1/2"	1/4", 1/2"
Drain diameter (ext)	in. (mm)	1.26 (32)	1.26 (32)
Remote control (standard/optional) *	Standard	RAR-MOB4	RAR-MOB4
	Optional	SPX-RCDA1/SPX-WKT4	SPX-RCDA1/SPX-WKT4
Filter			
ACL Filter Standard (Material & Accessory code)		-	-
ACL Filter Standard Dimensions (H x W x D)	in. (mm)	-	-
ACL Filter Optional (Material - Accessory code)		-	-
Pre-filter Standard Material		NORMAL	NORMAL
Pre-filter Optional (Material & Accessory code)		-	-

NOTE:

1. Capacity and seasonal performance data (SEER /HSPF) are based on AHRI 210-240. The nominal heating and cooling capacity is the combined capacity of the HITACHI Split system (Indoor + Outdoor Unit).

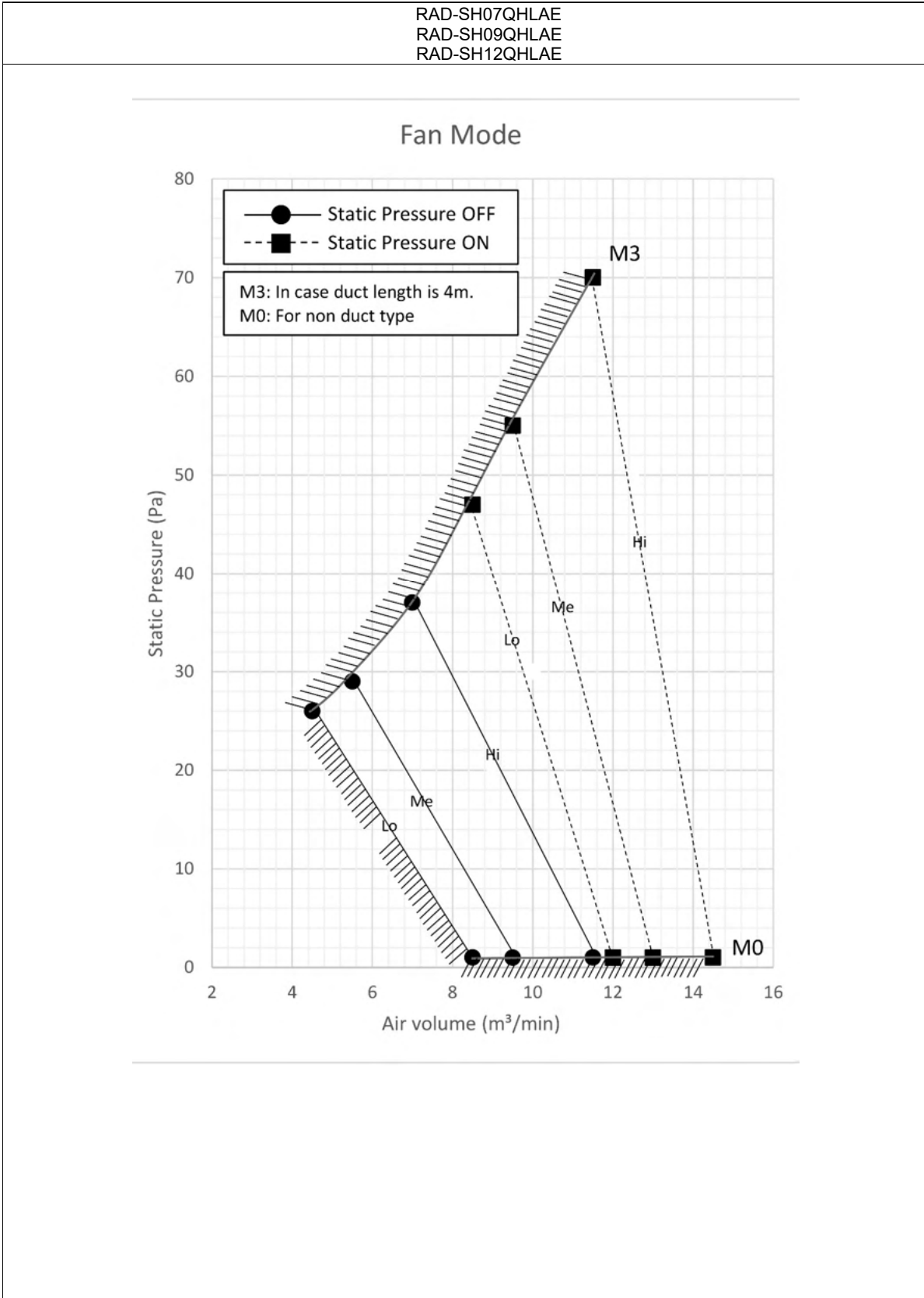
2. The Sound Pressure Level is based on the following conditions:

- 1.5 meter beneath the unit

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

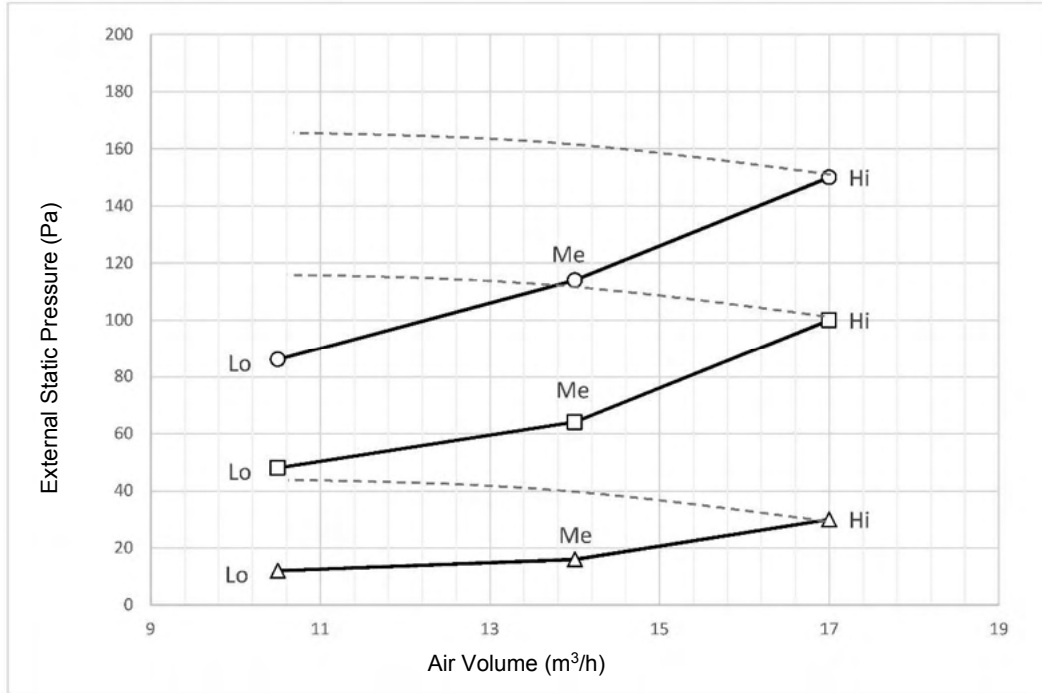
Operation Conditions		Cooling	Heating
Indoor Air Inlet Temperature	dB	80 °F	70 °F
	WB	67 °F	
Outdoor Air Inlet Temperature	dB	95 °F	47 °F
	WB		43 °F
Piping Length: 7.5 meters; Piping Lift: 0 meter dB: Dry Bulb; WB: Wet Bulb			

1.1.10. DUCT STATIC PRESSURE AND AIR FLOW (RAD-SH07/09/12QHLAE)



1.1.11. DUCT STATIC PRESSURE AND AIR FLOW (RAD-SH18/24QHLAE)

RAD-SH18QHLAE
RAD-SH24QHLAE



- High Static Pressure Mode
- Medium Static Pressure Mode
- △— Normal Mode

1.2. RAM-S42U5HLAE

OUTDOOR	UNIT	RAM-S42U5HLAE
Minimum / Maximum indoor units connectable (for MULTI only)		2/5
Minimum / Maximum connected indoor capacity (for MULTI only)	kBTU	14/60
Nominal Cooling capacity (min - max) *for single split indoor&outdoor must be matched	BTU	42000(7000~46000)
Nominal Heating capacity (min - max) *for single split indoor&outdoor must be matched	BTU	48000(9000~51000)
Nominal cooling power input (min - max)	kW	3.36(0.46 - 5.3)
Nominal heating power input (min - max)	kW	4.25(0.46 - 5.4)
EER(T1condition)	Btu/W	12.5
COP (H1 condition)	Btu/W	11.3
SEER / SCOP *average climate		23.0/10.8
Noise level cooling (sound pressure)	dB(A)	56
Noise level heating (sound pressure)	dB(A)	58
Noise level - ODU (sound power)	dB(A)	70
Air flow (Cooling / Heating)	cfm (m ³ /h)	2471(4200)/2471(4200)
Dimensions (H x W x D)	in. (mm)	37x37x15(945x950x370)
Net weight	lbs. (kg)	209(95)
Colour (Munsell Code)		Beige (5Y7/2)
Power supply	V/Ph/Hz	208- 230V / 1Ph / 60Hz
Recommended fuse size	A	40
Starting current(rated current of COOL/HEAT whichever higher for inverter)	A	16.32 / 20.62
Running current (C/H) *for single split indoor&outdoor must be matched	A	14.76 / 18.65
Cable section (power)	mm ²	4.00x 2+EARTH
Interconnection between indoor unit and outdoor unit	mm ²	0.80x 3+EARTH
Piping diameter (Liq / Gas) *for single split indoor&outdoor must be matched	Inch	(1/4,3/8)X3+(1/4,1/2)X2
Minimum piping length	ft. (m)	16(5)
Maximum piping length / height difference	ft. (m)	246(75)/66(20)
Current quantity of refrigerant / Chargeless	lbs. (kg)	9.04(4.1)
Chargeless length / Additional refrigerant charge	m / g/m	35 / 18
Working range (cooling / heating)	°F(°C)	14 to 115 (-10 to +46)
	°F(°C)	-4 to 75 (-20 to +24)
Refrigerant		R410A
Condenser Fan		Propeller Fan
Compressor	Type	2 Cylinder Rotary
	Oil Type	a68HES-H or equivalent
	Oil Charge l	1650±20 ml
	Coil resistance	0.502Ω at 20°C
	Quantity	1

NOTE:

- The Sound Pressure Level is based on the following conditions:
 - Half height of the unit
 - 1 meter from Discharge grille

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

2 DIMENSIONAL DATA

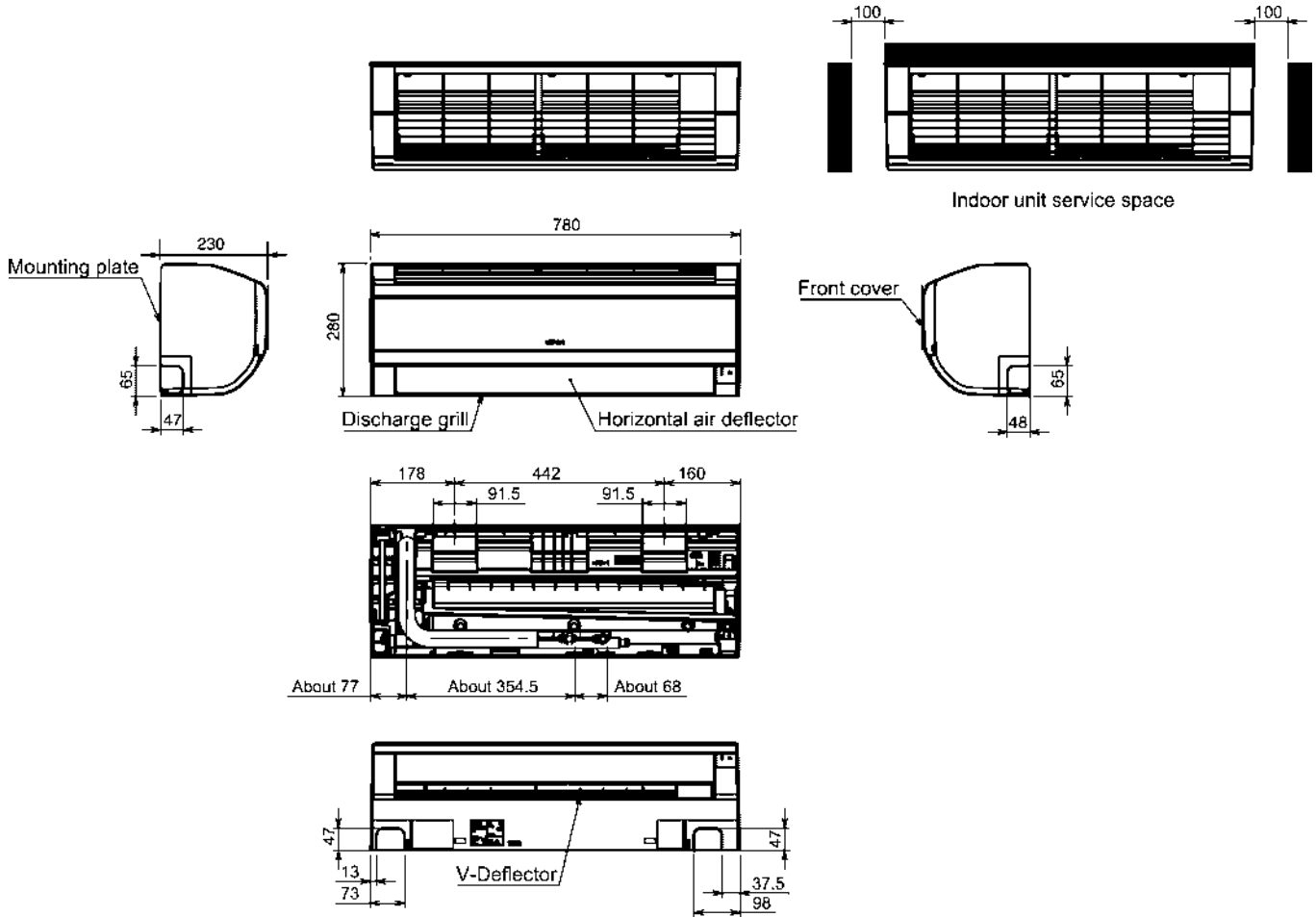
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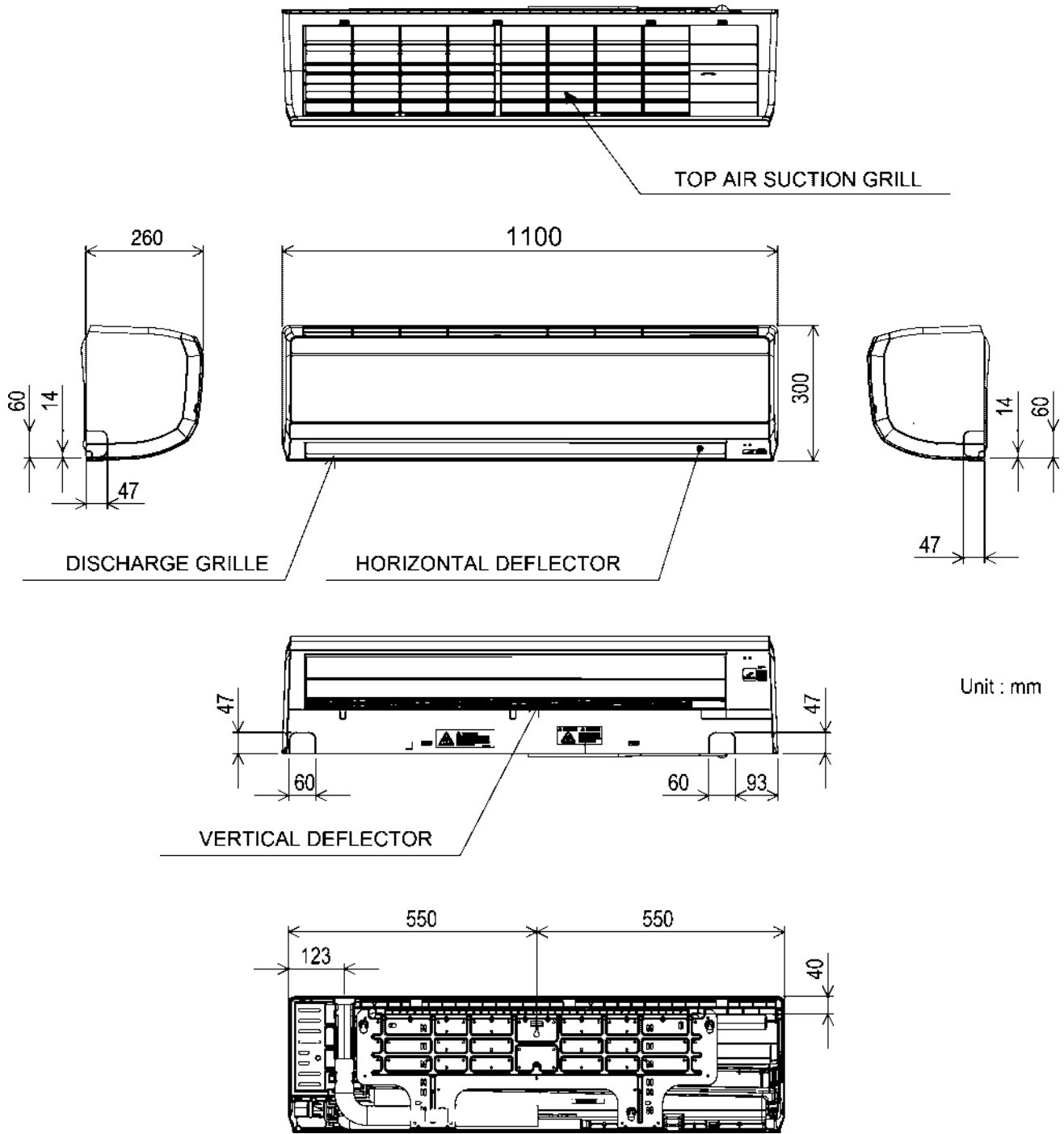
2.1. MULTIZONE INDOOR UNITS

2.1.1. WALL TYPE: RAS-EH07QHLAE / EH09RHLAE / EH12RHLAE / EH18RHLAE

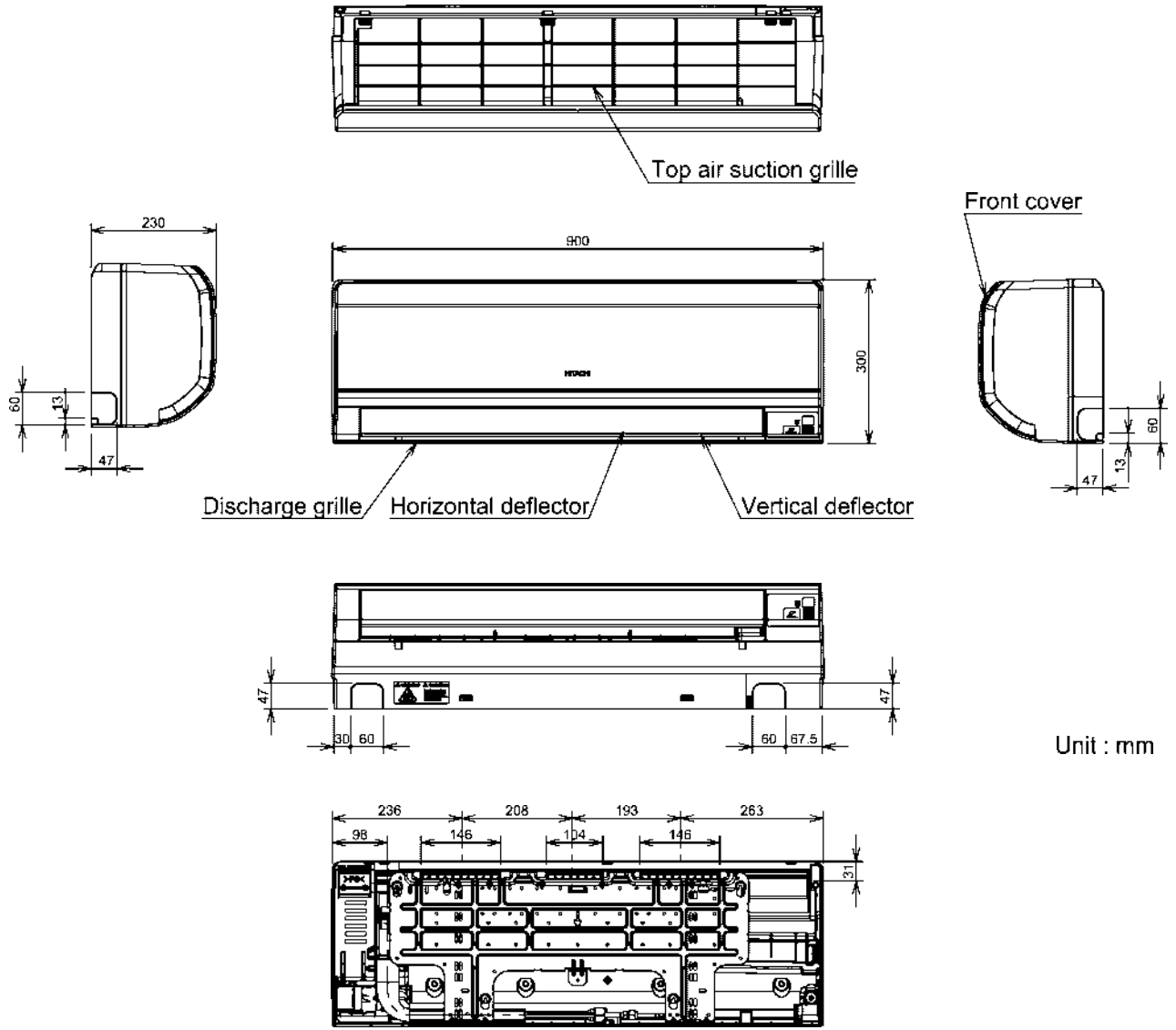
Unit: mm



2.1.2. WALL TYPE: RAS-EH24RHLAE / RAS-SH18RHLAE / RAS-SH24RHLAE

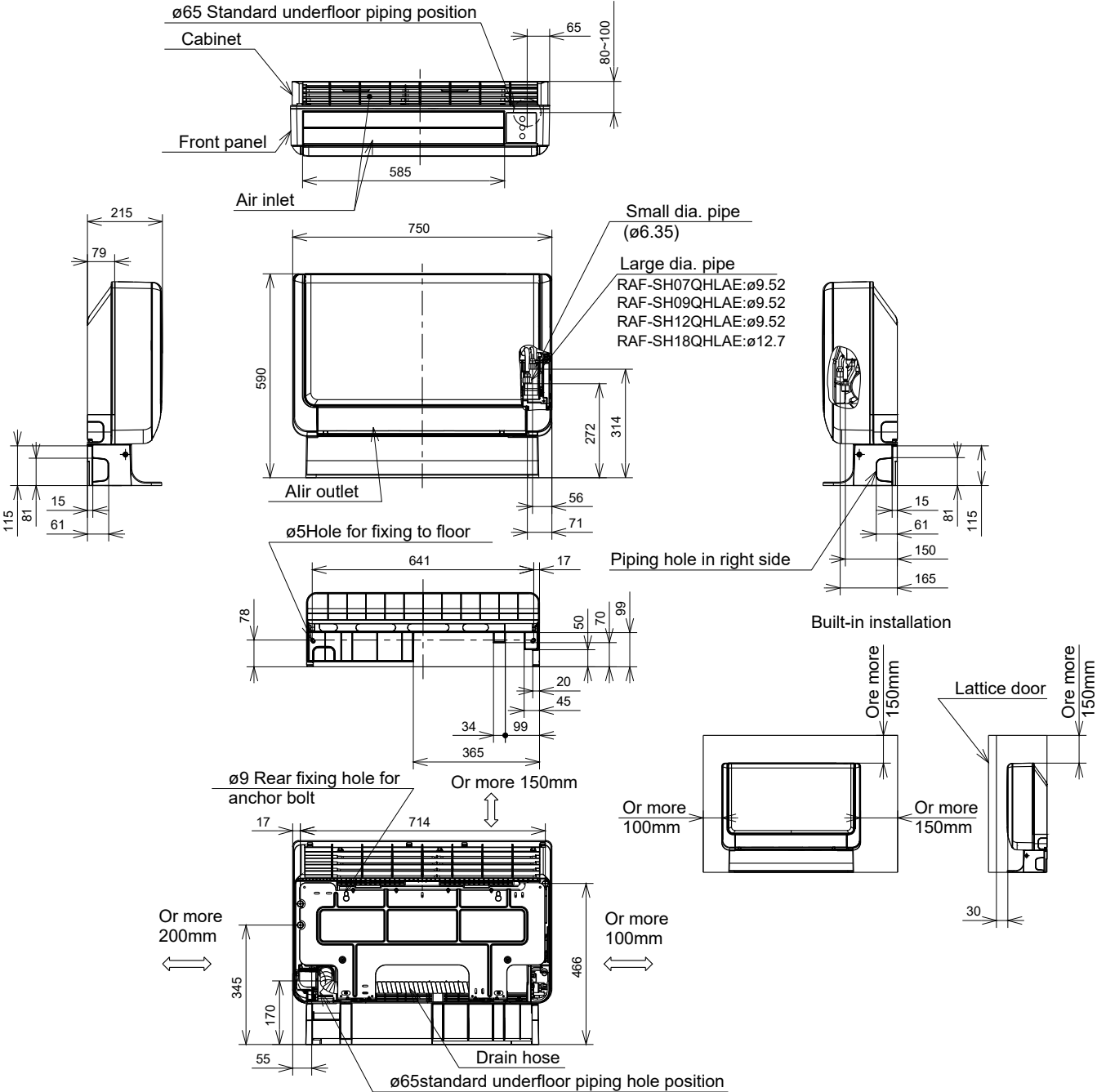


2.1.3. WALL TYPE: RAS-SH07QHLAE / SH09RHLAE / SH12RHLAE

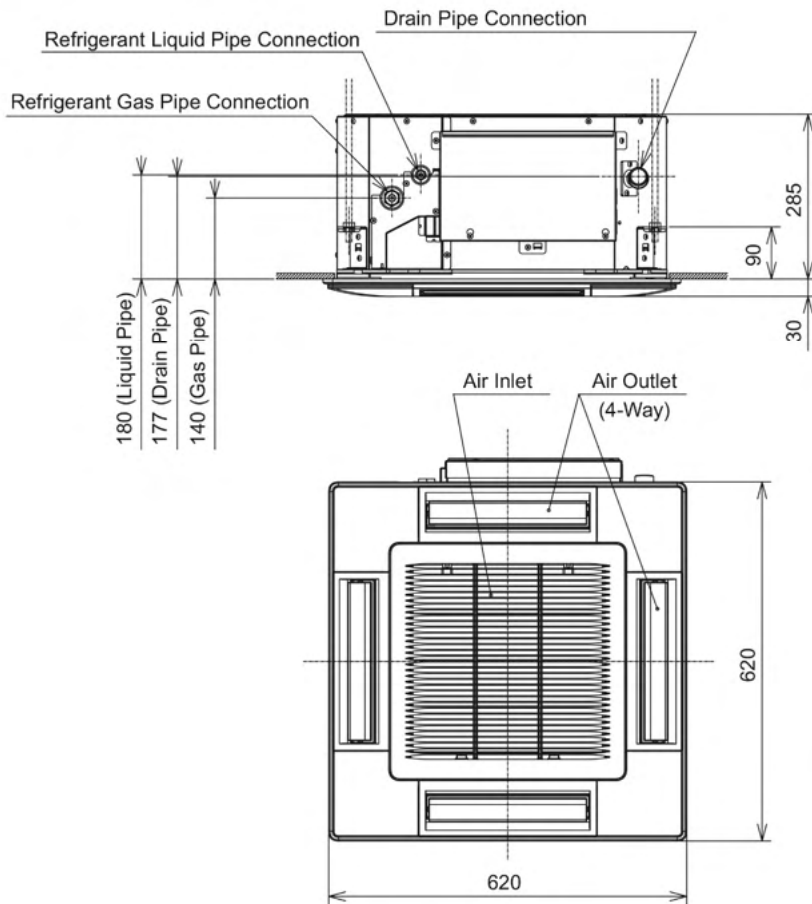
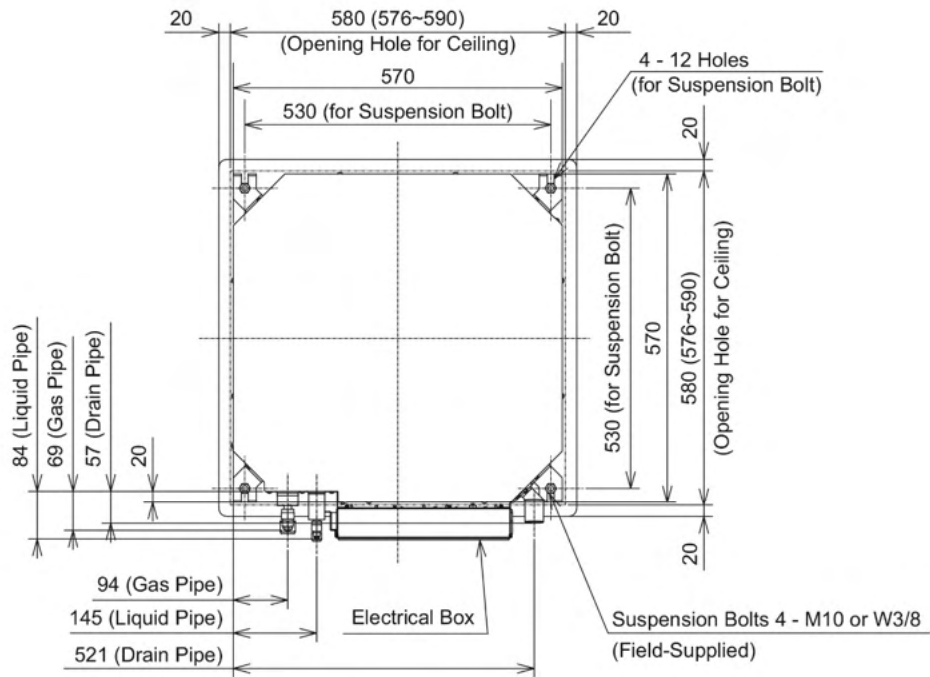


2.1.4. FLOOR TYPE: RAF-SH07QHLAE / SH09QHLAE / SH12QHLAE / SH18QHLAE

Unit : mm

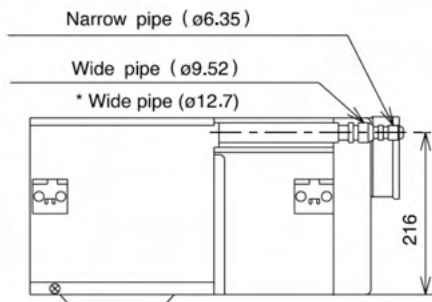
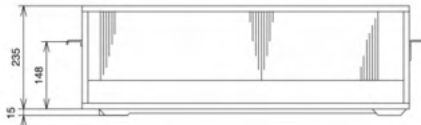
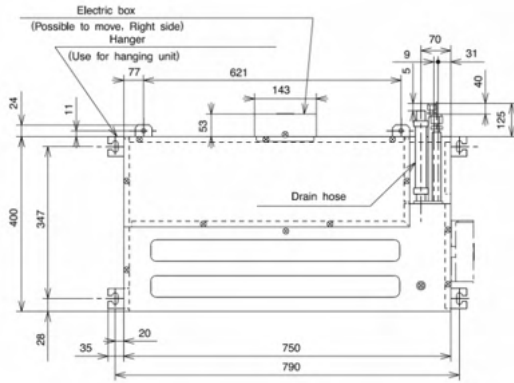


2.1.5. CEILING CASSETTE TYPE: RAI-SH07QHLAE / SH09QHLAE / SH12QHLAE / SH18QHLAE

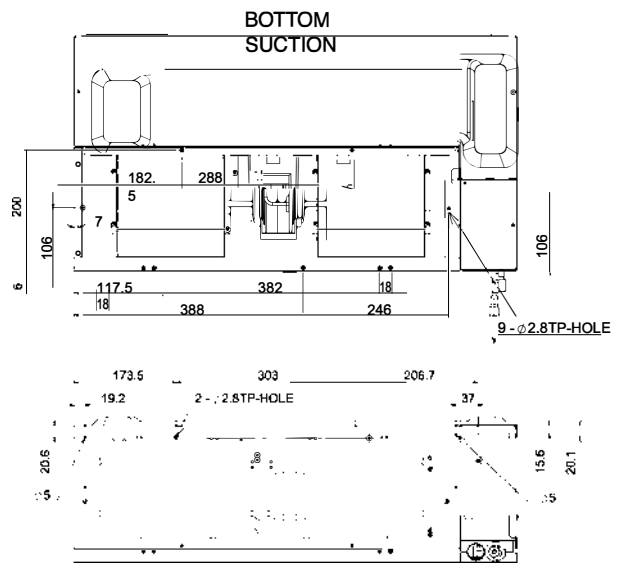
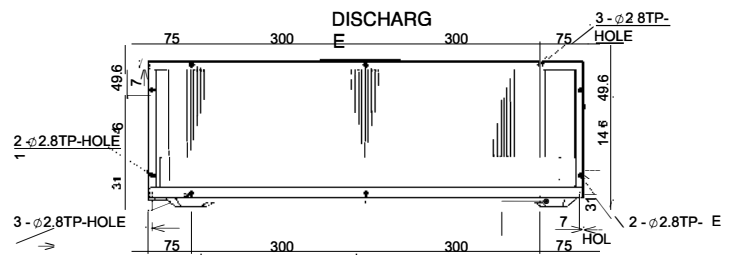
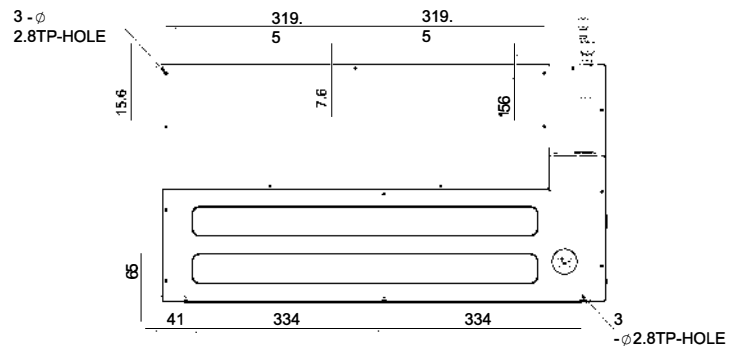
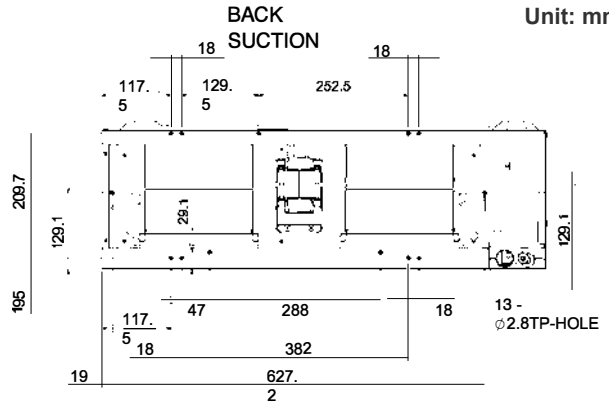


Unit: mm

2.1.6. DUCT TYPE: RAD-SH07QHLAE / SH09QHLAE / SH12QHLAE

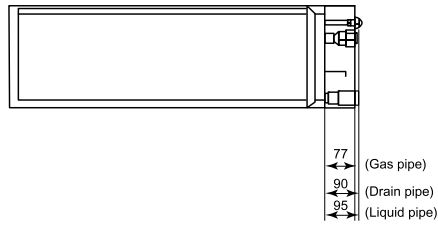
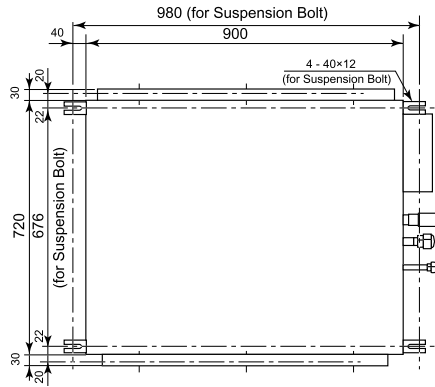


Unit: mm

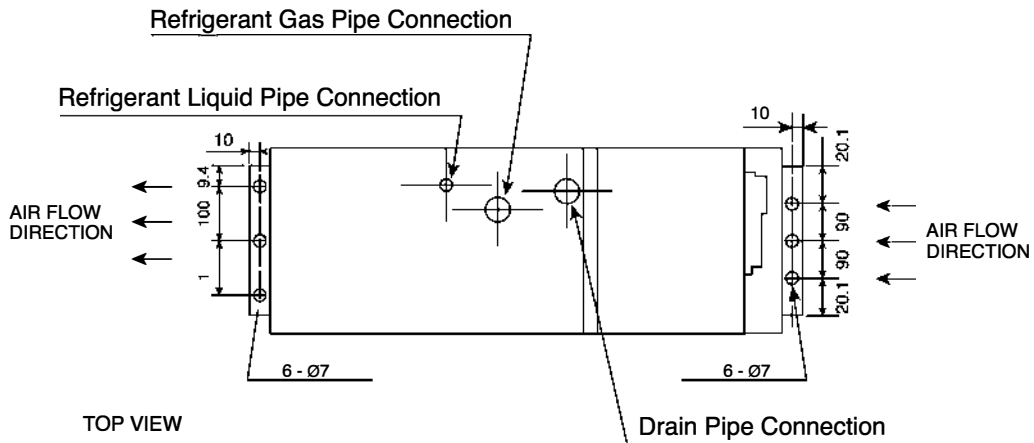
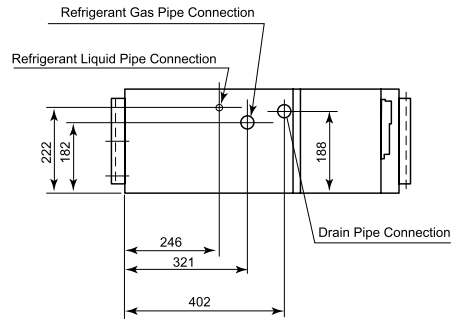


2.1.7. DUCT TYPE: RAD-SH18QHLAE / SH24QHLAE

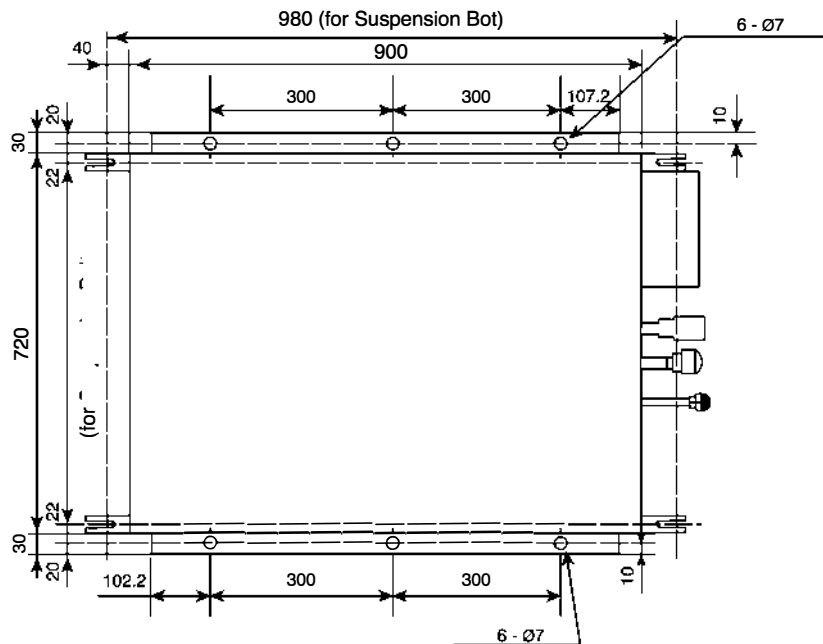
Unit: mm



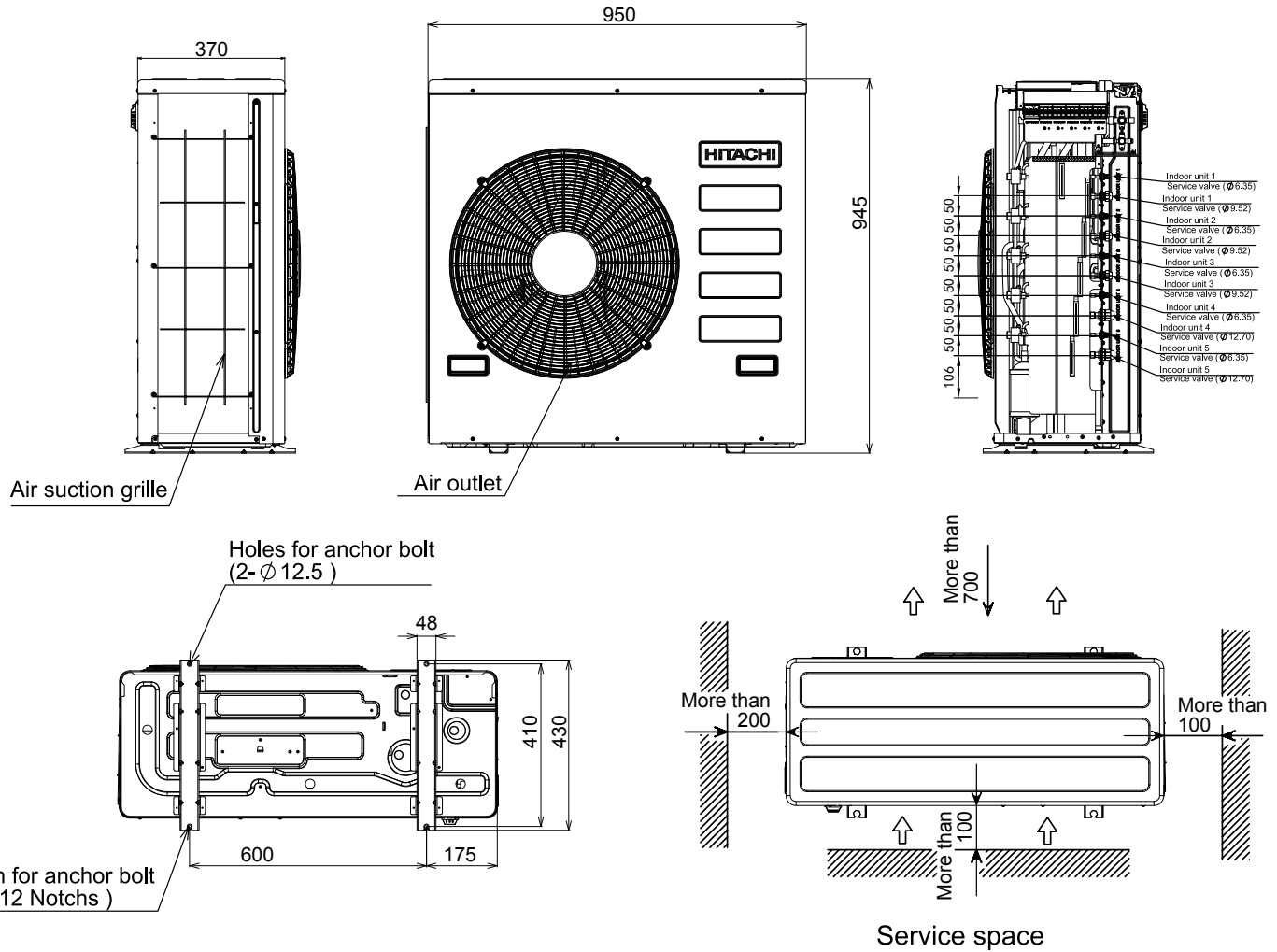
SIDE VIEW



TOP VIEW



2.2.1. 5 ROOMS MULTIZONE: RAM-S42U5HLAE



3 CAPACITIES AND SELECTION DATA

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3.1. SYSTEM SELECTION PROCEDURE

The following system procedure is giving a sample regarding unit selection system, indicating how to use all parameters showed in this chapter.

3.1.1. SELECTION UNIT FEATURES

Considering the building distribution, the possible indoor unit position and the available air flow distribution, select the unit features that are giving the best efficiency and comfort to each room.

Decide the Outdoor Unit position getting easy service maintenance and easy refrigerant pipe installation.

Therefore, the maximum indoor unit capacity combined with outdoor unit should be carefully considered for correct indoor unit distribution at each building

3.1.2. SELECTION GUIDE

The following guide giving the method for indoor and outdoor unit selection.

*** Step 1: Determine the system requirements**

Calculate the cooling capacity and heating capacity of each indoor unit according to the following conditions:

Total Load for each room

Item		Room					1+2+3+4+5
		1	2	3	4	5	
Estimated Cooling Load	kW	2.46	2.50	2.51	2.53	2.59	12.59
Estimated Heating Load	kW	2.94	2.94	3.17	3.08	2.98	15.11

*Example

Temperature Condition

Cooling	Heating
Outdoor Air Inlet • Dry Bulb: 95°F	Outdoor Air Inlet • Dry Bulb: 47°F • Wet Bulb: 43°F
Indoor Air Inlet • Dry Bulb: 80°F • Wet Bulb: 67°F	Indoor Air Inlet • Dry Bulb: 70°F

*Example

*** Step 2: Select Unit Capacity Performance**

The unit kW is selected following the Cooling capacity and Heating capacity showed in the combination table.

*** Step 3: Read Selected Capacity Performance**

The unit performance should be calculated considering the following correction factors:

1. Cooling and Heating piping length
2. Outdoor unit performance capacity
3. Indoor unit performance capacity for each room cooling load

Kindly refer to the unit selection combination table for correct capacity performance.

3.2. CAPACITY CHARACTERISTIC CURVES FOR MULTIZONE

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

Conditions:

① Pipe length / height difference : 7.5m / 0m

③ Capacity loss due to white frost and defrost operation is not included.

② Indoor fan speed at High mode

RAM-S42U5HLAE

COOLING [60Hz, 230V]

	INDOOR				OUTDOOR TEMPERATURE (°FDW)																		
	*F	°F	44			70			81			90			95			104			110		
			TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
7K	54	64	5810	5324	268	6580	7098	318	6090	6552	375	5740	6211	414	5530	5938	432	5180	5597	464	4970	5324	482
	57	68	5810	5324	268	7070	7098	318	6580	6620	379	6160	6211	414	5580	6006	437	5530	5597	468	5320	5324	491
	61	72	5810	5665	272	7580	7398	322	7000	6620	384	6580	6211	423	6370	6006	446	5950	5597	477	5740	5392	495
	64	84	6230	6074	276	8360	7712	326	7420	7165	388	7030	6757	428	6720	6494	446	6300	6074	482	6020	5801	500
	68	81	6440	6279	280	8330	8122	331	7700	7598	382	7280	7298	432	7000	6825	459	6380	6416	482	6300	6143	500
	72	86	7140	6211	280	9240	8054	331	8540	7439	392	8050	7030	437	7770	6757	455	7000	6552	500	6510	6416	527
	75	90	7630	6211	285	9870	8054	335	9100	7439	397	8610	7030	437	8260	6757	459	7280	6689	513	6950	6620	545
	78	96	8140	6845	387	8460	9126	459	7830	8424	541	7380	7985	598	7110	7634	624	6660	7196	670	6390	6845	696
9K	57	68	7470	6845	387	9090	9126	459	8460	8512	548	7920	7985	605	7650	7722	631	7110	7196	676	6840	6932	700
	61	72	7470	7283	393	9720	9126	465	9000	8512	554	8460	7985	611	8190	7722	644	7650	7196	689	7380	6932	715
	64	77	8010	7810	399	10350	9916	472	9540	9214	561	9000	8687	618	8640	8336	644	8100	7740	696	7740	7459	727
	66	81	8280	8073	405	10710	10442	478	9900	9653	567	9360	9126	624	9000	8775	650	8460	8249	696	8100	7898	722
	72	86	9180	7985	405	11880	10355	478	10980	9565	567	10350	9038	631	9990	8687	657	9000	8424	722	8370	8249	761
	75	90	9810	7985	411	12680	10355	484	11700	9565	573	11070	9038	631	10620	8687	663	9360	8800	741	8550	8512	787
	78	96	10680	8274	411	13280	12168	484	12480	11232	578	12480	11232	638	12480	10179	689	8890	9594	801	9230	9126	1002
	81	72	9960	9711	623	12660	12168	484	11280	11349	888	11280	10647	968	10920	10296	999	10296	999	9480	9594	1071	9243
12K	64	77	10680	10413	623	13800	13221	727	12720	12285	878	12000	11583	979	11520	11115	1020	10800	10413	1092	10230	9945	1143
	66	81	11040	10764	642	14280	13923	757	13200	12870	898	12480	12168	989	12000	11700	1030	11280	10998	1102	10800	10530	1143
	72	86	12240	10647	642	15840	13806	757	14640	12753	898	13800	12051	999	13320	11583	1040	12000	11232	1143	11160	10998	1205
	75	90	13080	10647	651	16920	13806	766	15600	12753	908	14760	12051	999	14160	11583	1051	12480	11466	1174	11400	11349	1246
	54	64	14940	13889	952	16920	18252	1131	15600	16848	1333	14760	15971	1472	14220	15269	1536	13320	14391	1648	14780	13889	1712
	57	68	14940	13889	952	18180	18252	1131	16920	17024	1348	15840	15971	1488	15300	15444	1582	14220	14391	1664	13680	13865	1744
	61	72	14940	14567	967	19440	18252	1146	18000	17024	1364	16920	15971	1504	16380	15444	1584	14760	14391	1696	14760	13865	1744
	64	77	16020	15620	982	20700	18832	1161	19800	18428	1380	18000	17375	1520	17280	16673	1584	16200	15620	1712	15480	14918	1776
14K	66	81	16560	16146	997	21420	20885	1176	19800	19305	1396	18720	18252	1536	18000	17550	1600	16920	16497	1712	16200	15795	1776
	75	90	18360	15971	997	23760	20709	1176	21960	19130	1396	20700	18077	1552	19980	17375	1616	18000	16848	1776	16740	16497	1872
	78	96	19620	15971	1012	25380	20709	1188	23400	19130	1411	22140	18077	1552	21240	17375	1632	18000	17168	1824	17020	17024	1936
	54	64	19920	18252	1250	22350	24336	1484	24336	24664	1749	19680	21294	1932	18960	20358	2016	17760	19188	2016	17180	1824	2247
	57	68	19920	18252	1250	24240	24336	1484	25560	22968	1770	21120	21294	1963	20400	20992	2037	19860	19188	2184	18240	18486	2389
	61	72	19920	19422	1269	25920	24336	1504	24000	22698	1790	22560	21294	1974	21840	20592	2079	20400	19188	22920	19680	1846	2289
	64	77	21360	20826	1289	27600	26442	1523	25440	24570	1811	24000	23166	1995	23040	22320	2079	21600	20826	2247	20640	19890	2331
	66	81	22080	21528	1309	28560	27846	1543	26400	25400	1832	24960	24336	2016	24000	23400	2109	22560	21996	2247	21600	21000	2331
16K	72	86	24480	21294	1309	31680	27612	1543	29280	25506	1832	27600	24102	2037	26640	23166	2121	24000	22664	2331	22320	21996	2457
	75	90	26160	21294	1328	33840	27612	1562	31200	25506	1852	29520	24102	2037	28320	23166	2142	24960	22932	2324	23200	22698	2541
	54	64	11620	10647	744	13160	14196	884	12180	13104	1041	11480	12422	1160	11060	11876	1210	10360	11193	1288	9940	10647	1338
	57	68	11620	10647	744	14140	14196	884	13160	13241	1054	12320	12422	1163	11900	12012	1213	11060	11193	1300	10640	10784	1363
	61	72	11620	11330	756	15120	14196	895	14400	13241	1066	13160	12422	1175	12740	12012	1238	11900	11193	1325	11480	10784	1375
	64	77	12480	12149	767	16100	15425	907	14840	14333	1078	14000	13414	1188	13440	12968	1238	12600	11248	1338	12040	11603	1388
	66	81	12880	12558	779	16860	16244	918	15400	15015	1090	14560	14196	1200	14000	13650	1250	13160	12831	1338	12800	12285	1388
	72	86	14280	12422	779	18480	16107	918	17080	14879	1090	16200	14060	1213	15540	13514	1263	14800	13514	1368	13800	12831	1463
18K	75	90	15920	13422	791	19740	16107	930	18080	14879	1103	17220	14060	1213	16560	13514	1276	15660	13377	1425	13300	13251	1513
	54	64	13280	12168	863	18040	18224	1025	13920	14976	1208	13120	14196	1334	12640	13572	1392	11840	12792	1494	11360	12168	1582
	57	68	13280	12168	863	18160	18224	1025	15040	15132	1222	14080	14196	1349	13600	13728	1407	12840	12792	1508	12160	12324	1582
	61	72	13280	12948	877	17280	18224	1038	16000	15132	1236	15040	14196	1363	14560	13728	1436	13900	12792	1537	13120	12324	1595
	64	77	14240	13884	890	18400	17628	1052	16960	16390	1250	16000	15444	1378	15360	14820	1436	14400	13884	1552	13760	13260	1610
	66	81	14720	14352	903	19040	18564	1065	17600	17160	1265	16840	16224	1392	16000	15600	1450	15040	14664	1562	14480	14040	1610
	72	86	16320	14196	903	21120	18408	1065	19520	17704	1265	18640	16068	1407	17760	15444	1465	16000	14976	1610	14880	14664	1697
	75	90	17440	14196	917	22560	18408	1079	20800	17704	1279	19680	16068	1407	18880	15444	1479	16					

Table with columns for Indoor (EWB, EDB) and Outdoor Temperature (°FDB) ranging from 14 to 110. Rows are categorized by load types: 12K+12K, 12K+18K, 12K+24K, 18K+18K, 18K+24K, 24K+24K, 7K+7K+7K, 7K+7K+9K, 7K+7K+12K, 7K+7K+18K, 7K+7K+24K, 7K+9K+9K, 7K+9K+12K, 7K+9K+18K, 7K+12K+12K, and 7K+12K+18K. Each row contains a grid of numerical values.

	INDOOR						OUTDOOR TEMPERATURE ("FDB)																																																																																																																																																																																																																																																																																																																												
	EWB		EDB		SHC		70			81			90			95			104			110																																																																																																																																																																																																																																																																																																													
	F	C	F	C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI																																																																																																																																																																																																																																																																																																										
7K+9K+9K+12K	54	64	30710	28139	1667	34780	37518	1979	32190	34632	2332	30340	33228	2576	29230	31385	2688	27380	29582	2884	26270	28139	2996	57	68	30710	28139	1667	34780	37518	1979	32190	34632	2332	30340	33228	2576	29230	31385	2688	27380	29582	2884	26270	28139	2996	61	72	30710	29942	1693	39960	37518	2005	37000	34993	2387	34780	32828	2632	33670	31746	2772	31450	29682	2968	30240	28499	3080	64	77	32930	31077	1719	42550	40765	2031	39220	37679	2415	37000	35714	2660	35520	34271	2772	33300	32107	2996	31820	30664	3108	66	81	34040	33189	1745	44030	42929	2057	40700	39883	2442	38480	37518	2688	37000	36075	2860	34780	33911	2996	33200	32468	3108	72	86	37140	32828	1745	48940	42969	2057	45140	39222	2442	42560	37157	2716	41070	38714	2828	37000	34632	3108	34410	34410	3311	3276	75	90	40330	32828	1771	52170	42869	2083	48100	39322	2470	45510	37157	2716	41260	38714	2856	39480	36354	3192	35150	34993	3388	54	64	34860	31941	2000	39480	42588	2375	36540	39312	2799	34440	37265	3091	33180	35627	3226	31080	33579	3461	29820	31941	3595	57	68	34860	31941	2000	42420	42588	2375	39480	39722	2832	36960	37265	3125	35700	36036	3259	33180	33579	3494	31920	32351	3696	61	72	34860	33989	2031	45360	42588	2406	42000	39722	2865	39480	37265	3158	38220	36036	3326	35700	33579	3562	34440	32351	3696	64	77	37380	36446	2062	48300	46274	2437	44520	42998	2898	42000	40541	3192	40320	38903	3326	37800	36446	3595	36120	34808	3730	66	81	38640	37674	2094	49980	48731	2469	46200	45945	2931	43680	42588	3226	42000	40950	3360	39480	38493	3595	37800	36855	3730	72	86	42840	37265	2094	55440	48321	2469	51240	44636	2931	48300	42579	3259	46620	40541	3394	42000	39312	3730	39600	38493	3931	75	90	45780	37265	2125	59220	48321	2500	54600	44636	2964	51660	42179	3259	49560	40541	3427	43680	40131	3830	39900	39722	4066
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		INDOOR				OUTDOOR TEMPERATURE ("FDW)																											
		EWB		EDB		14				70				81				90				95				104				110			
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	INDOOR		OUTDOOR TEMPERATURE (°FDB)																																											
	EWB	EDB	14						70						81						90						95						104						110							
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	57	68	34860	31941	2000	42420	42588	2375	39480	39722	2832	36960	37265	3125	35700	36036	3259	33180	33579	3494	31920	32351	3662	61	72	34860	33989	2031	45360	42588	2406	42000	39722	2865	39480	37265	3158	38220	36036	3326	35700	33579	3562	34440	32351	3696
	61	72	34860	33989	2031	45360	42588	2406	42000	39722	2865	39480	37265	3158	38220	36036	3326	35700	33579	3562	34440	32351	3696	64	77	37380	36446	2062	48300	46274	2437	44520	42998	2898	42000	40541	3192	40320	38903	3326	37800	36446	3595	36120	34808	3730
	66	81	38640	37674	2094	49980	48731	2469	46200	45045	2931	43680	42588	3226	42000	40950	3360	39480	38493	3595	37800	36855	3730	72	86	42840	37265	2094	55440	48321	2469	51240	44636	2931	48300	42179	3259	46620	40541	3394	42000	39312	3730	39060	38493	3931
	75	90	45780	37265	2125	59220	48321	2500	54600	44636	2964	51660	42179	3259	49560	40541	3427	43680	40131	3830	39900	39722	4066	75	90	45780	37265	2125	59220	48321	2500	54600	44636	2964	51660	42179	3259	49560	40541	3427	43680	40131	3830	39900	39722	4066
12K+12K+12K+12K+12K	54	64	34860	31941	2000	39480	42588	2375	36540	39312	2799	34440	37265	3091	33180	35627	3226	31080	33579	3461	29820	31941	3595	54	64	34860	31941	2000	39480	42588	2375	36540	39312	2799	34440	37265	3091	33180	35627	3226	31080	33579	3461	29820	31941	3595
	57	68	34860	31941	2000	42420	42588	2375	39480	39722	2832	36960	37265	3125	35700	36036	3259	33180	33579	3494	31920	32351	3662	61	72	34860	33989	2031	45360	42588	2406	42000	39722	2865	39480	37265	3158	38220	36036	3326	35700	33579	3562	34440	32351	3696
	61	72	34860	33989	2031	45360	42588	2406	42000	39722	2865	39480	37265	3158	38220	36036	3326	35700	33579	3562	34440	32351	3696	64	77	37380	36446	2062	48300	46274	2437	44520	42998	2898	42000	40541	3192	40320	38903	3326	37800	36446	3595	36120	34808	3730
	66	81	38640	37674	2094	49980	48731	2469	46200	45045	2931	43680	42588	3226	42000	40950	3360	39480	38493	3595	37800	36855	3730	72	86	42840	37265	2094	55440	48321	2469	51240	44636	2931	48300	42179	3259	46620	40541	3394	42000	39312	3730	39060	38493	3931
	75	90	45780	37265	2125	59220	48321	2500	54600	44636	2964	51660	42179	3259	49560	40541	3427	43680	40131	3830	39900	39722	4066	75	90	45780	37265	2125	59220	48321	2500	54600	44636	2964	51660	42179	3259	49560	40541	3427	43680	40131	3830	39900	39722	4066

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

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

HEATING [60Hz, 230V]

	INDOOR	OUTDOOR TEMPERATURE (°FDW)																							
		5			14			17			23			32			47			50			59		
		°F	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC
7K	61	8226	575	6407	597	6589	581	7037	570	8066	584	9322	525	9416	527	9807	524								
	64	6086	600	6267	622	6412	620	6834	619	7842	637	9161	623	9262	630	9548	640								
	68	5946	625	6127	646	6236	660	6631	668	7618	690	9000	720	9108	733	9289	755								
	72	5806	649	5987	671	6059	699	6428	717	7394	742	8839	817	8954	836	9030	870								
	75	5666	674	5847	696	5882	738	6225	766	7170	795	8678	915	8800	939	8771	985								
9K	61	7944	801	8177	830	8391	819	8952	812	10267	834	11922	785	12048	792	12491	797								
	64	7804	825	8037	855	8214	858	8749	861	10043	886	11761	883	11894	895	12232	912								
	68	7664	850	7897	880	8037	898	8546	909	9819	939	11600	980	11740	998	11973	1027								
	72	7524	875	7757	905	7860	937	8343	958	9595	992	11439	1077	11586	1101	11714	1143								
	75	7384	900	7617	930	7684	976	8140	1007	9371	1044	11278	1175	11432	1203	11455	1258								
12K	61	10422	948	10730	983	10989	975	11715	969	13441	996	15672	955	15843	965	16361	975								
	64	10282	973	10590	1008	10812	1014	11512	1018	13217	1049	15511	1053	15689	1068	16102	1090								
	68	10142	998	10450	1033	10635	1053	11309	1067	12993	1102	15350	1150	15535	1171	15843	1206								
	72	10002	1023	10310	1057	10459	1093	11106	1116	12769	1154	15189	1247	15381	1274	15684	1321								
	75	9862	1047	10170	1082	10282	1132	10903	1165	12545	1207	15028	1345	15227	1377	15525	1436								
18K	61	13825	1642	14236	1701	14557	1712	17800	1712	17800	1763	20822	1745	21055	1780	21677	1814								
	64	13685	1667	14096	1726	14380	1747	17506	1761	17576	1816	20661	1853	20901	1883	21418	1929								
	68	13545	1692	13956	1751	14204	1786	15103	1810	17352	1868	20500	1950	20747	1985	21159	2044								
	72	13405	1717	13816	1776	14027	1826	14900	1859	17128	1921	20339	2047	20593	2088	20900	2160								
	75	13265	1741	13676	1800	13850	1865	14697	1908	16904	1973	20178	2145	20439	2191	20641	2275								
24K	61	18317	2033	18866	2105	19268	2120	20519	2129	23555	2194	27622	2205	27937	2238	28696	2286								
	64	18177	2058	18726	2130	19092	2159	20316	2178	23331	2247	27461	2303	27783	2341	28437	2401								
	68	18037	2082	18586	2155	18915	2199	20113	2227	23107	2299	27300	2400	27629	2444	28178	2516								
	72	17897	2107	18446	2180	18738	2238	19910	2276	22883	2352	27139	2497	27475	2546	27919	2631								
	75	17757	2132	18306	2205	18561	2277	19707	2325	22659	2405	26978	2595	27321	2649	27660	2747								
7K+7K	61	12173	1252	12534	1297	12825	1296	13667	1294	15684	1332	18322	1303	18525	1322	19097	1342								
	64	12033	1277	12394	1322	12648	1335	13464	1343	15460	1384	18161	1405	18371	1434	18838	1457								
	68	11893	1301	12254	1347	12471	1374	13261	1392	15236	1437	18000	1500	18217	1527	18579	1573								
	72	11753	1326	12114	1372	12295	1413	13058	1441	15012	1490	17839	1597	18063	1630	18320	1688								
	75	11613	1351	11974	1396	12118	1453	12855	1490	14788	1542	17678	1695	17909	1733	18061	1803								
7K+9K	61	13891	1469	14305	1522	14626	1525	15583	1526	17884	1571	20922	1655	21156	1676	21780	1604								
	64	13751	1494	14165	1547	14450	1564	15380	1575	17660	1624	20761	1653	21002	1679	21521	1720								
	68	13611	1518	14025	1571	14273	1603	15177	1624	17436	1677	20600	1750	20848	1782	21282	1835								
	72	13471	1543	13885	1596	14096	1642	14974	1673	17212	1729	20439	1847	20694	1885	21003	1950								
	75	13331	1568	13745	1621	13919	1682	14771	1722	16988	1782	20278	1945	20540	1987	20744	2065								
7K+12K	61	16368	1642	16858	1701	17225	1708	18345	1712	21059	1763	24672	1755	24952	1780	25651	1814								
	64	16228	1667	16718	1726	17048	1747	18142	1761	20835	1816	24511	1853	24798	1883	25392	1929								
	68	16088	1692	16578	1751	16871	1786	17939	1810	20611	1868	24350	1950	24644	1985	25133	2044								
	72	15948	1717	16438	1776	16694	1826	17736	1859	20387	1921	24189	2047	24490	2088	24874	2160								
	75	15808	1741	16298	1800	16518	1865	17533	1908	20163	1973	24028	2145	24336	2191	24615	2275								
7K+18K	61	19771	2033	20364	2105	20793	2120	22140	2129	25418	2194	29822	2205	30164	2238	30966	2286								
	64	19631	2058	20224	2130	20616	2159	21937	2178	25194	2247	29661	2303	30010	2341	30707	2401								
	68	19491	2082	20084	2155	20439	2199	21734	2227	24970	2299	29500	2400	29856	2444	30448	2516								
	72	19351	2107	19944	2180	20263	2238	21531	2276	24746	2352	29339	2497	29702	2546	30189	2631								
	75	19211	2132	19804	2205	20086	2277	21328	2325	24522	2405	29178	2595	29648	2649	29930	2747								
7K+24K	61	24264	2380	24993	2465	25504	2486	27149	2501	31173	2577	36622	2605	37046	2645	37985	2705								
	64	24124	2405	24853	2489	25327	2526	26946	2550	30949	2630	36461	2703	36892	2748	37726	2820								
	68	23984	2429	24713	2514	25151	2565	26743	2599	30725	2682	36300	2800	36738	2851	37467	2936								
	72	23844	2454	24573	2539	24974	2604	26540	2647	30501	2735	36139	2897	36584	2954	37208	3051								
	75	23704	2479	24433	2564	24377	2644	26337	2696	30277	2788	35978	2995	36430	3057	36949	3166								
9K+9K	61	15609	1642	16075	1701	16428	1708	17498	1712	20085	1763	23522	1755	23788	1780	24464	1814								
	64	15469	1667	15935	1726	16251	1747	17295	1761	19861	1816	23361	1853	23634	1883	24205	1929								
	68	15329	1692	15795	1751	16074	1786	17092	1810	19637	1868	23200	1950	23480	1985	23946	2044								
	72	15189	1717	15655	1776	15898	1826	16889	1859	19413	1921	23039	2047	23326	2088	23687	2160								
	75	15049	1741	15515	1800	15721	1865	16686	1908	19189	1973	22878	2145	23172	2191	23428	2275								
9K+12K	61	18086	1859	18628	1926	19026	1937	20261	1944	23259	2002	27272	2005	27583	2034	28334	2076								
	64	17946	1884	18488	1951	18849	1976	20058	1993	23035	2055	27111	2103	27429	2137	28075	2191								
	68	17806	1909	18348	1975	18672	2015	19855	2042	22811	2108	26950	2200	27275	2240	27816	2307								
	72	17666	1934	18208	2000	18496	2055	19652	2091	22587	2160	26789	2297	27121	2343	27557	2422								
	75	17526	1958	18068	2025	18319	2094	19449	2140	22363	2213	26628	2395	26967	2446	27298	2537								
9K+18K	61	21489	2206	22134	2285	22594	2303	24055	2315	27618	2386	32422	2405	32795	2442	33650	2495								
	64	21349	2231	21994	2310	22417	2342	23852	2364	27394	2438	32261	2503	32641	2544	33391	2611								
	68	21209	2256	21854	2335	22241	2382	23649	2413	27170	2491	32100	2600	32487	2647	33132	2726								
	72	21069	2281	21714	2359	22064	2421	23446	2462	26946	2544	31939	2697	32333	2750	32873	2841								
	75	20929	2305	21574	2384	21887	2460	23243	2511	26722	2596	31778	2795	32179	2853	32614	2956								
9K+24K	61	25982	2900	26763	3003	29065	3036	29065	3057	33374	3152	39222	3205	39677	3256	40668	3334								
	64	25842	2925	26623	3028	27129	3075	28862	3106	33150	3205	39061	3303	39523	3359	40409	3449								
	68	25702	2950	26483	30																				

	INDOOR		OUTDOOR TEMPERATURE (°FDW)																															
	EDB		5				14				17				23				32				47				50				59			
	°F	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						
9K+12K+12K	61	28228		3074	29078		3183	29661		3219	31570		3243	36252		3344	42622		3405	43118		3460	44178		3544									
	64	28088		3099	28938		3208	29485		3259	31367		3292	36028		3396	42461		3503	42964		3563	43919		3659									
	68	27948		3123	28798		3232	29308		3298	31164		3341	35804		3449	42300		3600	42810		3653	43660		3774									
	72	27808		3148	28658		3257	29131		3337	30961		3390	35580		3502	42139		3697	42656		3768	43401		3890									
	75	27668		3173	28518		3282	28954		3376	30758		3439	35356		3554	41978		3795	42502		3871	43142		4005									
9K+12K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
9K+12K+24K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
12K+12K+12K	61	30706		3334	31631		3452	32260		3494	34333		3522	39426		3631	46372		3705	46913		3765	48048		3858									
	64	30566		3359	31491		3477	32083		3533	34130		3570	39202		3684	46211		3803	46759		3868	47789		3974									
	68	30426		3384	31351		3502	31906		3573	33927		3619	39978		3736	46050		3900	46605		3971	47530		4089									
	72	30286		3409	31211		3527	31729		3612	33724		3668	38754		3789	45889		3997	46451		4074	47271		4204									
	75	30146		3433	31071		3551	31553		3651	33521		3717	38530		3842	45728		4095	46297		4177	47012		4319									
12K+12K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
12K+12K+24K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
12K+18K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
12K+18K+24K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
12K+24K+24K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
18K+18K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331		4402	48000		4247	50111		4388	53630		4622									
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
18K+18K+24K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032		4182	34551		4416	36662		4557	38282		4513	42331																				

	INDOOR	OUTDOOR TEMPERATURE (°FDW)																									
	EDB	5			14			17			23			32			47			50			59				
		*F	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	
7K+7K+12K+12K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+7K+12K+18K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+7K+12K+24K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+7K+18K+18K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+9K+9K+9K	61	29219	3334	30099	3452	30701	3494	32675	3522	37522	3631	44122	3765	44636	3868	45676	3658										
	64	29079	3359	29859	3477	30524	3533	32472	3570	37298	3684	43961	3803	44482	3868	45467	3974										
	68	28939	3384	29819	3502	30347	3573	32269	3619	37074	3736	43800	3900	44328	3971	45208	4089										
	72	28799	3409	29679	3527	30170	3612	32066	3668	36850	3789	43639	3997	44174	4074	44949	4204										
	75	28659	3433	29539	3551	29994	3651	31863	3717	36626	3842	43478	4095	44020	4177	44690	4319										
7K+9K+9K+12K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+9K+9K+18K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+9K+12K+12K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+9K+12K+18K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+9K+12K+24K	61	31512	4097	35031	4331	37268	4422	38978	4345	43099	4222	48552	3914	50639	4035	54518	4227										
	64	31272	4139	34791	4374	36965	4490	38630	4429	42715	4312	48276	4080	50375	4212	54074	4425										
	68	31032	4182	34551	4416	36662	4557	38282	4513	42331	4402	48000	4247	50111	4388	53630	4622										
	72	30792	4224	34311	4459	36359	4624	37934	4597	41947	4492	47724	4414	49847	4564	53186	4820										
	75	30552	4267	34071	4501	36056	4692	37586	4680	41563	4582	47448	4580	49583	4740	52742	5017										
7K+12K+12K+12K	61	31512	4097	35031	4331	37268	4422	38978	4345	4309																	

	INDOOR		OUTDOOR TEMPERATURE (°FDW)																															
	EDB		5				14				17				23				32				47				50				59			
	*F	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						
7K+7K+7K+9K+9K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+7K+9K+12K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+7K+9K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+7K+12K+12K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+7K+12K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+7K+18K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+9K+9K+12K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+9K+9K+18K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+9K+12K+12K	61	31512		4097	35031		4331	37268		4422	38978		4345	43099		4222	48552		3914	50639		4035	54518		4227									
	64	31272		4139	34791		4374	36965		4490	38630		4429	42715		4312	48276		4080	50375		4212	54074		4425									
	68	31032	4182	34551		4416	36662	4557	38282		4513	42331		4402	48000	4247	50111		4388	53630		4622												
	72	30792		4224	34311		4459	36359		4624	37934		4597	41947		4492	47724		4414	49847		4564	53186		4820									
	75	30552		4267	34071		4501	36056		4692	37586		4680	41563		4582	47448		4580	49583		4740	52742		5017									
7K+7K+9K+12K+18K	61	31512		4097	35031		4331	37268																										

3.3. 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:

$$CCA = CC \times F$$

- 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:

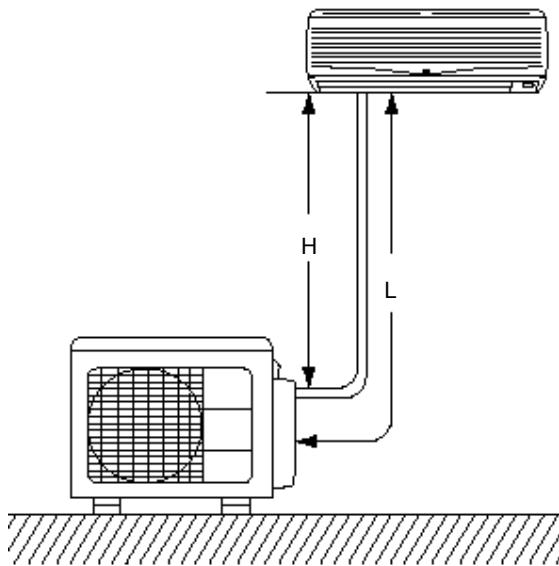
$$HCA = HC \times F$$

- 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:

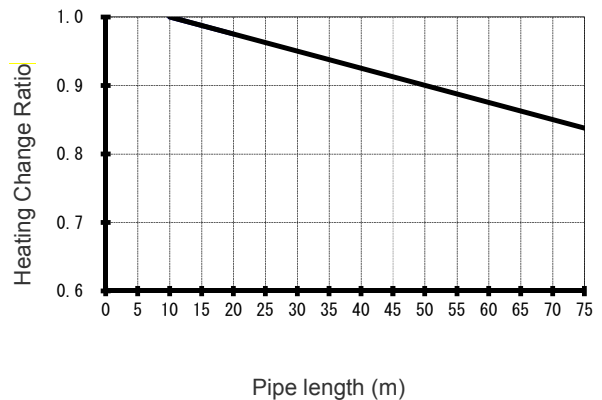
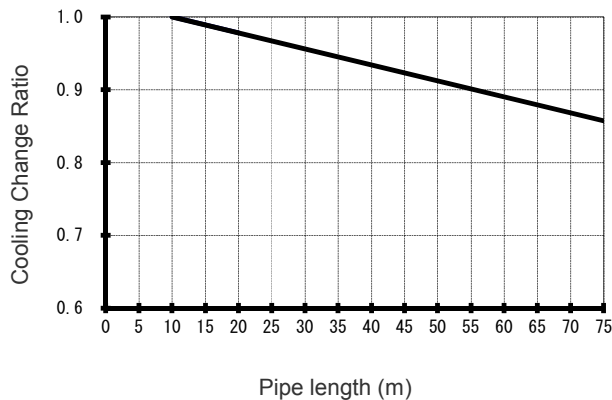
- One 90° Elbow is 0.5m.
- One 180° Curve is 1.5m.



- 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)

Model Multi Outdoor 42000 BTU/h

RAM-S42U5HLAE



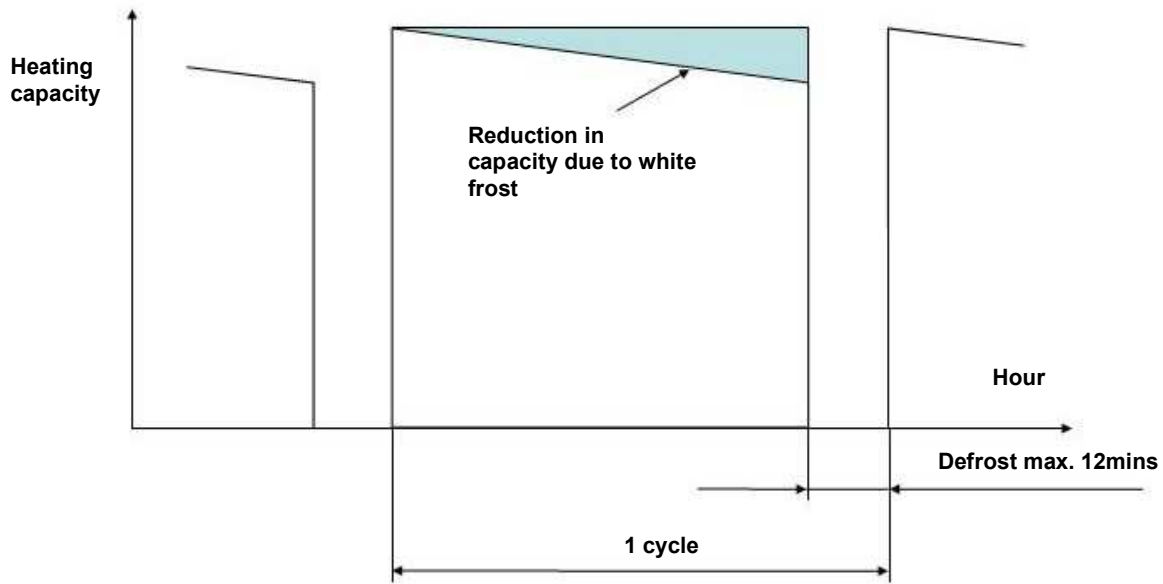
3.4. CORRECTION FACTORS ACCORDING TO DEFROSTING OPERATION

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.

3.5. COMBINATION TABLE FOR MULTIZONE OUTDOOR

Whichever indoor units are installed, cooling and heating capacity depends on how many and which indoor units are operating at that time.

5 ROOM MULTI-SPLIT INVERTER TYPE RAC : RAM-S42U5HLAE POSSIBLE COMBINATION TO OPERATE (SAME TIME OPERATION)

(Reference value)

POSSIBLE COMBINATIONS TO OPERATE			COOLING				HEATING					
			CAPACITY RATING(Btu) (RANGE)	OUTDOOR UNIT			EER	CAPACITY RATING(Btu) (RANGE)	OUTDOOR UNIT			EER
				TOTAL	CONSUMPTION (W)	AMPERE(A)at 208 - 230			TOTAL	CONSUMPTION (W)	AMPERE(A)at 208 - 230	
ONE UNIT	7K	7K	7000 (3050-8500)	450 (280-500)	2.16 - 1.96	15.6	9000 (3050-10900)	720 (320-1130)	3.46 - 3.13	12.5		
	9K	9K	9000 (3050-10200)	650 (280-720)	3.13 - 2.83	13.8	11600 (3050-15000)	980 (320-1480)	4.71 - 4.26	11.8		
	12K	12K	12000 (3050-13650)	1030 (280-1130)	4.95 - 4.48	11.7	15350 (3050-18000)	1150 (320-1950)	5.53 - 5.00	13.3		
	18K	18K	18000 (3050-17750)	1600 (280-2200)	7.69 - 6.96	11.3	20500 (3050-23200)	1950 (460-2100)	9.38 - 8.48	10.5		
	24K	24K	24000 (4100-25600)	2100 (280-2500)	10.10 - 9.13	11.4	27300 (4100-30600)	2400 (460-2800)	11.54 - 10.43	11.4		
TWO UNIT	14K	7K+7K	7000+7000 (7000-17000)	460+460 (460-1800)	6.01 - 5.43	11.2	9000+9000 (9000-21800)	1750 (390-1900)	7.21 - 6.52	12.0		
	16K	7K+9K	7000+9000 (7000-18700)	1450 (460-2000)	6.97 - 6.30	11.0	9000+11600 (9000-25900)	1500 (390-2000)	8.41 - 7.61	11.8		
	19K	7K+12K	7000+12000 (7000-22150)	1600 (460-2200)	7.69 - 6.96	11.9	9000+15350 (9000-28900)	1950 (460-2100)	9.38 - 8.48	12.5		
	25K	7K+18K	7000+18000 (7000-26250)	1920 (460-3050)	9.23 - 8.35	13.0	9000+20500 (9000-34100)	2400 (460-3200)	11.54 - 10.43	12.3		
	31K	7K+24K	7000+24000 (7000-34100)	2500 (460-3800)	10.02 - 10.87	12.4	9000+27300 (9000-41500)	2800 (460-3600)	13.46 - 12.17	13.0		
	18K	9K+9K	9000+9000 (7000-20400)	1600 (460-2200)	7.69 - 6.96	11.3	11600+11600 (9000-30000)	1950 (460-2100)	9.38 - 8.48	11.9		
	21K	9K+12K	9000+12000 (7000-23850)	1700 (460-2400)	8.17 - 7.39	12.4	11600+15350 (9000-33000)	2200 (460-3000)	10.58 - 9.57	12.3		
	27K	9K+18K	9000+18000 (7000-27950)	2400 (460-3800)	11.54 - 10.43	11.3	11600+20500 (9000-38200)	2600 (460-3400)	12.50 - 11.30	12.3		
	33K	9K+24K	9000+24000 (7000-35800)	2800 (460-4000)	12.50 - 11.30	12.7	11600+27300 (9000-45600)	3400 (460-4500)	16.35 - 14.78	11.4		
	24K	12K+12K	12000+12000 (7000-27300)	1920 (460-3050)	9.23 - 8.35	12.5	15350+15350 (9000-36000)	2400 (460-3200)	11.54 - 10.43	12.8		
	30K	12K+18K	12000+18000 (7000-31400)	2500 (460-3800)	12.02 - 10.87	12.0	15350+20500 (9000-41200)	2800 (460-3600)	13.46 - 12.17	12.8		
	36K	12K+24K	12000+24000 (7000-39250)	2800 (460-4200)	13.46 - 12.17	12.9	15350+27300 (9000-48600)	3600 (460-4700)	17.31 - 15.65	11.8		
	36K	18K+18K	18000+18000 (7000-35500)	2800 (460-4200)	13.46 - 12.17	12.9	20500+20500 (9000-46400)	3600 (460-4700)	17.31 - 15.65	11.4		
	42K	18K+24K	18000+24000 (7000-43350)	3360 (460-5410)	16.15 - 14.61	12.5	20500+27300 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
	48K	24K+24K	21000+21000 (7000-48000)	3360 (460-5410)	16.15 - 14.61	12.5	24000+24000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
	THREE UNIT	21K	7K+7K+7K	7000+7000+7000 (7000-25500)	1700 (460-2400)	8.17 - 7.39	12.4	9000+9000+9000 (9000-32700)	2200 (460-3000)	10.58 - 9.57	12.3	
		23K	7K+7K+9K	7000+7000+9000 (7000-27200)	1920 (460-3050)	9.23 - 8.35	12.0	9000+9000+11600 (9000-38800)	2400 (460-3200)	11.54 - 10.43	12.3	
		26K	7K+7K+12K	7000+7000+12000 (7000-30650)	2400 (460-3800)	11.54 - 10.53	10.8	9000+9000+15350 (9000-39800)	2600 (460-3400)	12.50 - 11.30	12.8	
		32K	7K+7K+18K	7000+7000+18000 (7000-34750)	2800 (460-4000)	12.50 - 11.30	12.3	9000+9000+20500 (9000-45000)	3400 (460-4500)	16.35 - 14.78	11.3	
		38K	7K+7K+24K	7000+7000+24000 (7000-42600)	3360 (460-4400)	13.94 - 12.61	13.1	9000+9000+27300 (9000-51000)	3900 (460-5000)	18.75 - 16.96	11.6	
		25K	7K+9K+9K	7000+9000+9000 (7000-28900)	1920 (460-3050)	9.23 - 8.35	13.0	9000+11600+11600 (9000-40900)	2500 (460-3400)	12.50 - 11.30	12.4	
		28K	7K+9K+12K	7000+9000+12000 (7000-32350)	2400 (460-3800)	11.54 - 10.43	11.7	9000+11600+15350 (9000-43900)	2800 (460-3600)	13.46 - 12.17	12.8	
		34K	7K+9K+18K	7000+9000+18000 (7000-36450)	2600 (460-4000)	12.50 - 11.30	13.1	9000+11600+20500 (9000-49100)	3600 (460-4700)	17.31 - 15.65	11.4	
		40K	7K+9K+24K	7000+9000+24000 (7000-44300)	2900 (460-4400)	13.94 - 12.61	13.8	9000+11600+27300 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3	
31K		7K+12K+12K	7000+12000+12000 (7000-35800)	2500 (460-3800)	12.02 - 10.87	12.4	9000+15350+15350 (9000-46900)	3400 (460-4500)	16.35 - 14.78	11.7		
37K		7K+12K+18K	7000+12000+18000 (7000-39900)	2800 (460-4200)	13.46 - 12.17	13.2	9000+15350+20500 (9000-51000)	3900 (460-5000)	18.75 - 16.96	11.5		
43K		7K+12K+24K	7000+11500+23500 (7000-48000)	3360 (460-5410)	16.15 - 14.61	12.8	8500+14000+25500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
43K		7K+18K+18K	7000+17500+17500 (7000-44000)	3360 (460-5410)	16.15 - 14.61	12.8	8500+19750+19750 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
49K		7K+18K+24K	7000+15000+20000 (7000-48000)	3360 (460-5410)	16.15 - 14.61	14.6	8000+17000+23000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
55K		7K+24K+24K	7000+17500+17500 (7000-48000)	3360 (460-5410)	16.15 - 14.61	16.4	7000+20500+20500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
27K		9K+9K+9K	9000+9000+9000 (7000-30600)	2400 (460-3600)	11.54 - 10.43	11.3	11600+11600+11600 (9000-45000)	2500 (460-3600)	13.46 - 12.17	12.4		
30K		9K+9K+12K	9000+9000+12000 (7000-34050)	2500 (460-3800)	12.02 - 10.87	12.0	11600+11600+15350 (9000-48000)	3400 (460-4500)	16.35 - 14.78	11.3		
36K		9K+9K+18K	9000+9000+18000 (7000-38150)	2800 (460-4200)	13.46 - 12.17	12.9	11600+11600+20500 (9000-51000)	3900 (460-5000)	18.75 - 16.96	11.2		
42K		9K+9K+24K	9000+9000+24000 (7000-46000)	3360 (460-5410)	16.15 - 14.61	12.5	11000+11000+26000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
33K		9K+12K+12K	9000+12000+12000 (7000-37500)	2600 (460-4000)	12.50 - 11.30	12.7	11600+15350+15350 (9000-51000)	3600 (460-4700)	17.31 - 15.65	11.8		
39K		9K+12K+18K	9000+12000+18000 (7000-41600)	2900 (460-4400)	13.94 - 12.61	13.4	11600+15350+20500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.2		
45K		9K+12K+24K	8500+11000+22500 (7000-48000)	3360 (460-5410)	16.15 - 14.61	13.4	11000+13500+23500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
36K		12K+12K+12K	12000+12000+12000 (7000-40950)	2800 (460-4200)	13.46 - 12.17	12.9	15350+15350+15350 (9000-51000)	3900 (460-5000)	18.75 - 16.96	11.8		
42K		12K+12K+18K	12000+12000+18000 (7000-45050)	3360 (460-5410)	16.15 - 14.61	12.5	14500+14500+19000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
48K		12K+12K+24K	10500+10500+21000 (7000-48000)	3360 (460-5410)	16.15 - 14.61	14.3	13000+13000+22000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
48K		12K+18K+18K	11000+15500+15500 (7000-46000)	3360 (460-5410)	16.15 - 14.61	14.3	13000+17500+17500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
54K		12K+18K+24K	10000+14000+18000 (7000-46000)	3360 (460-5410)	16.15 - 14.61	16.1	13000+15000+20000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3		
60K	12K+24K+24K	8000+17000+17000 (7000-46000)	3360 (460-5410)	16.15 - 14.61	17.9	11000+18500+18500 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3			
54K	18K+18K+18K	14000+14000+14000 (7000-46000)	3360 (460-5410)	16.15 - 14.61	16.1	16000+16000+16000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3			
60K	18K+18K+24K	13000+13000+16000 (7000-46000)	3360 (460-5410)	16.15 - 14.61	17.9	15000+15000+18000 (9000-51000)	4247 (460-5480)	20.42 - 18.47	11.3			

FOUR UNIT	28K	7K+7K+7K+7K	7000+7000+7000+7000 (7000-34000)	28000	2400 (460-3600)	11.54 - 10.43	11.7	9000+9000+9000+9000 (9000-43600)	36000	2800 (460-3600)	13.46 - 12.17	12.9	
	30K	7K+7K+7K+9K	7000+7000+7000+9000 (7000-35700)	30000	2500 (460-3800)	12.02 - 10.87	12.0	9000+9000+9000+11600 (9000-47700)	38600	3400 (460-4500)	16.35 - 14.78	11.4	
	33K	7K+7K+7K+12K	7000+7000+7000+12000 (7000-39150)	33000	2600 (460-4000)	12.50 - 11.30	12.7	9000+9000+9000+15350 (9000-50700)	42350	3600 (460-4700)	17.31 - 15.65	11.8	
	39K	7K+7K+7K+18K	7000+7000+7000+18000 (7000-43250)	39000	2900 (460-4400)	13.94 - 12.61	13.4	9000+9000+9000+20500 (9000-51000)	47500	4247 (460-5480)	20.42 - 18.47	11.2	
	45K	7K+7K+7K+24K	6500+6500+6500+22500 (7000-44950)	42000	3360 (460-5410)	16.15 - 14.61	13.4	8000+8000+8000+24000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	32K	7K+7K+9K+9K	7000+7000+9000+9000 (7000-37400)	32000	2600 (460-4000)	12.50 - 11.30	12.3	9000+9000+11600+11600 (9000-51000)	41200	3600 (460-4700)	17.31 - 15.65	11.4	
	35K	7K+7K+9K+12K	7000+7000+9000+12000 (7000-40850)	35000	2800 (460-4200)	13.46 - 12.17	12.5	9000+9000+11600+15350 (9000-51000)	44950	3900 (460-5000)	18.75 - 16.96	11.5	
	41K	7K+7K+9K+18K	7000+7000+9000+18000 (7000-46000)	41000	3360 (460-5410)	16.15 - 14.61	12.2	8750+8750+11000+19500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	47K	7K+7K+9K+24K	6500+6500+8000+21000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.0	8000+8000+10000+22000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	38K	7K+7K+12K+12K	7000+7000+12000+12000 (7000-44300)	38000	2900 (460-4400)	13.94 - 12.61	13.1	9000+9000+15000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	44K	7K+7K+12K+18K	7000+7000+11500+16500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.1	8000+8000+14000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	50K	7K+7K+12K+24K	6500+6500+10000+19000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.9	7000+7000+12000+22000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	50K	7K+7K+18K+18K	6500+6500+15000+14500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.9	7000+7000+17000+17000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	56K	7K+7K+18K+24K	6500+6500+13000+16000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.7	7000+7000+17000+17000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	34K	7K+9K+9K+9K	7000+9000+9000+9000 (7000-39100)	34000	2600 (460-4000)	12.50 - 11.30	13.1	9000+11600+11600+11600 (9000-51000)	43800	3900 (460-5000)	18.75 - 16.96	11.2	
	37K	7K+9K+9K+12K	7000+9000+9000+12000 (7000-42550)	37000	2800 (460-4200)	13.46 - 12.17	13.2	9000+11600+11600+15350 (9000-51000)	47550	4247 (460-5480)	20.42 - 18.47	11.2	
	43K	7K+9K+9K+18K	7000+8800+8800+17400 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	12.8	8500+11000+11000+17500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	49K	7K+9K+9K+24K	7000+8000+8000+19000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.6	7500+10000+10000+20500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	40K	7K+9K+12K+12K	7000+9000+12000+12000 (7000-46000)	40000	2900 (460-4400)	13.94 - 12.61	13.8	8500+10900+14300+14300 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	46K	7K+9K+12K+18K	7000+8500+11000+15500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.7	8000+10000+13000+17000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	52K	7K+9K+12K+24K	6500+7500+10000+18000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.5	7000+9000+12000+20000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	52K	7K+9K+18K+18K	6500+7500+14000+14000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.5	7000+9000+16000+16000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	58K	7K+9K+18K+24K	6500+7500+15000+19000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.3	7000+9000+17000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	43K	7K+12K+12K+12K	6900+11700+11700+11700 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	12.8	7800+13400+13400+13400 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	49K	7K+12K+12K+18K	8500+11000+11000+13500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.6	7000+12500+12500+16000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	55K	7K+12K+12K+24K	6500+9000+9000+17500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.4	6000+11500+11500+19000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	55K	7K+12K+18K+18K	6500+9500+13000+13000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.4	6000+12000+15000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	36K	9K+9K+9K+9K	9000+9000+9000+9000 (7000-40800)	36000	2800 (460-4200)	13.46 - 12.17	12.9	11600+11600+11600+11600 (9000-51000)	46400	3900 (460-5000)	18.75 - 16.96	11.9	
	39K	9K+9K+9K+12K	9000+9000+9000+12000 (7000-44250)	39000	2900 (460-4400)	13.94 - 12.61	13.4	11400+11400+11400+13800 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	45K	9K+9K+9K+18K	8500+8500+8500+16500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.4	10500+10500+10500+16500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	51K	9K+9K+9K+24K	8000+8000+8000+18000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.2	9000+9000+9000+21000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	42K	9K+9K+12K+12K	9000+9000+12000+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	12.5	10500+10500+13500+13500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	48K	9K+9K+12K+18K	8000+8000+10500+15500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.3	10000+10000+12500+15500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	54K	9K+9K+12K+24K	7500+11500+9000+18000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.1	9000+9000+11000+19000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	54K	9K+9K+18K+18K	7500+7500+13500+13500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.1	9000+9000+15000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	60K	9K+9K+18K+24K	7000+7000+12000+16000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.9	8000+8000+14000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	45K	9K+12K+12K+12K	8700+11100+11100+11100 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.4	9900+12700+12700+12700 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	51K	9K+12K+12K+18K	8000+10000+10000+14000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.2	9000+12000+12000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	57K	9K+12K+12K+24K	7000+9000+9000+17000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.0	8000+11000+11000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	57K	9K+12K+18K+18K	7000+9000+13000+13000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.0	8000+11000+14500+14500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	48K	12K+12K+12K+12K	10500+10500+10500+10500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.3	12000+12000+12000+12000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	54K	12K+12K+12K+18K	10000+10000+10000+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.1	11000+11000+11000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	60K	12K+12K+12K+24K	9000+9000+9000+15000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.9	10000+10000+10000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	60K	12K+12K+18K+18K	9000+9000+12000+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.9	10000+10000+14000+14000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
	FIVE UNIT	35K	7K+7K+7K+7K+7K	7000+7000+7000+7000+7000 (7000-42500)	35000	2800 (460-4200)	13.46 - 12.17	12.5	9000+9000+9000+9000+9000 (9000-51000)	45000	3900 (460-5000)	18.75 - 16.96	11.5
		37K	7K+7K+7K+7K+9K	7000+7000+7000+7000+9000 (7000-44200)	37000	2800 (460-4200)	13.46 - 12.17	13.2	9000+9000+9000+9000+11600 (9000-51000)	47600	4247 (460-5480)	20.42 - 18.47	11.2
		40K	7K+7K+7K+7K+12K	7000+7000+7000+7000+12000 (7000-46000)	40000	2900 (460-4400)	13.94 - 12.61	13.8	8500+8500+8500+8500+14000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
		46K	7K+7K+7K+7K+18K	6500+6500+6500+6500+16000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.7	8000+8000+8000+8000+16000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
		52K	7K+7K+7K+7K+24K	6000+6000+6000+6000+18000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.5	7000+7000+7000+7000+20000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
		39K	7K+7K+7K+9K+9K	7000+7000+7000+9000+9000 (7000-45800)	39000	2900 (460-4400)	13.94 - 12.61	13.4	8800+8800+8800+10800+10800 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
42K		7K+7K+7K+9K+12K	7000+7000+7000+9000+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	12.5	8500+8500+8500+10000+12500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3	
48K		7K+7K+7K+9K+18K	6500+6500+6500+7500+15000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.3	8000+8000+8000+9000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 -		

FIVE UNIT	56K	7K+7K+9K+9K+24K	5500+5500+7000+7000+17000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.7	6000+6000+8000+8000+20000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	47K	7K+7K+9K+12K+12K	6500+6500+8000+10500+10500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.0	7000+7000+9000+12500+12500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	53K	7K+7K+9K+12K+18K	6000+6000+7500+9500+13000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.8	6000+6000+8000+12000+16000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	59K	7K+7K+9K+12K+24K	5500+5500+6500+8000+16500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.6	5500+5500+7000+11000+19000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	59K	7K+7K+9K+18K+18K	5500+5500+7000+12000+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.6	5500+5500+7000+15000+15000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	50K	7K+7K+12K+12K+12K	6000+6000+10000+10000+10000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.9	7500+7500+11000+11000+11000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	56K	7K+7K+12K+12K+18K	5500+5500+9000+9000+13000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.7	6500+6500+10500+10500+13000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	43K	7K+9K+9K+9K+9K	6800+8800+8800+8800+8800 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	12.8	8000+10000+10000+10000+10000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	46K	7K+9K+9K+9K+12K	6600+8300+8300+8300+10500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.7	7500+9500+9500+9500+12000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	52K	7K+9K+9K+9K+18K	6000+7000+7000+7000+15000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.5	7000+9000+9000+9000+14000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	58K	7K+9K+9K+9K+24K	5000+6500+6500+6500+17500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.3	6000+8000+8000+8000+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	49K	7K+9K+9K+12K+12K	6800+8000+9000+9700+9700 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.6	7000+9000+9000+11500+11500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	55K	7K+9K+9K+12K+18K	6000+7000+7500+9500+13000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.4	6500+8500+8500+11000+13500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	52K	7K+9K+12K+12K+12K	6000+7500+9500+9500+9500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.5	6500+8500+11000+11000+11000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	58K	7K+9K+12K+12K+18K	6000+7000+8500+8500+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.3	6000+8000+10500+10500+13000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	55K	7K+12K+12K+12K+12K	6000+8000+8800+8800+8000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.4	7000+10250+10250+10250+10250 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	45K	9K+9K+9K+9K+9K	8400+8400+8400+8400+8400 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	13.4	9600+9600+9600+9600+9600 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	48K	9K+9K+9K+9K+12K	8000+8000+8000+8000+10000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	14.3	9000+9000+9000+9000+12000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	54K	9K+9K+9K+9K+18K	7000+7000+7000+7000+14000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.1	8500+8500+8500+8500+14000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	60K	9K+9K+9K+9K+24K	6000+6000+6000+6000+18000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.9	7500+7500+7500+7500+18000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	51K	9K+9K+9K+12K+12K	7400+7400+7400+9900+9900 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	15.2	8500+8500+8500+11250+11250 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	57K	9K+9K+9K+12K+18K	7000+7000+7000+9000+14000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.0	8000+8000+8000+10500+13500 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	54K	9K+9K+12K+12K+12K	7500+7500+9000+9000+9000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	16.1	7500+7500+11000+11000+11000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	60K	9K+9K+12K+12K+18K	6500+6500+8500+8500+12000 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.9	7000+7000+10000+10000+14000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	57K	9K+12K+12K+12K+12K	8000+8500+8500+8500+8500 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.0	8000+10000+10000+10000+10000 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3
	60K	12K+12K+12K+12K+12K	8400+8400+8400+8400+8400 (7000-46000)	42000	3360 (460-5410)	16.15 - 14.61	17.0	9600+9600+9600+9600+9600 (9000-51000)	48000	4247 (460-5480)	20.42 - 18.47	11.3

- * TWO INDOOR UNITS SHOULD BE CONNECTED AT LEAST.
- * TOTAL NOMINAL COOLING CAPACITY SHOULD NOT BE MORE THAN 60K Btu.
- * Three RAS-SH18RHLAE and five RAS-SH12RHLAE are not allowed to be connected.

<REMARKS>

- * ONE UNIT INDICATED ARE ONLY FOR ONE UNIT OPERATION WHEN TWO OR MORE INDOOR UNITS ARE CONNECTED.
- * TWO UNITS INDICATED ARE ONLY FOR TWO UNITS OPERATION WHEN TWO OR MORE INDOOR UNITS ARE CONNECTED.
- * THREE UNITS INDICATED ARE ONLY FOR THREE UNITS OPERATION WHEN THREE OR MORE INDOOR UNITS ARE CONNECTED.
- * FOUR UNITS INDICATED ARE ONLY FOR FOUR UNITS OPERATION WHEN FOUR OR FIVE INDOOR UNITS ARE CONNECTED.

RATING CONDITON (DRY BLUB / WET BULB)

	INDOOR °F (°C)	OUTDOOR °F (°C)
COOLING	80/67 (26.67/19.44)	95/75 (35/23.89)
HEATING	70/60 (21.11/15.56)	47/43 (8.33/6.11)

NOMINAL COOLING CAPACITY (Btu)	indoor unit model	CAPACITY (Btu) at one unit operation		SUITABLE ROOM SIZE (m ²) at one unit operation	
		cooling	heating	cooling	heating
7K Btu	RAF-SH07QHLAE	3050-9000	3050-10900	8-12	9-11
	RAI-SH07QHLAE	3050-8500	3050-10900	8-12	9-11
	RAS-EH07QHLAE	3050-8500	3050-10900	8-12	9-11
	RAS-SH07QHLAE	3050-8500	3050-10900	8-12	9-11
	RAD-SH07QHLAE	3050-8500	3050-10900	8-12	9-11
9K Btu	RAF-SH09QHLAE	3050-10600	3050-15000	11-17	14-18
	RAI-SH09QHLAE	3050-10200	3050-18000	11-17	14-18
	RAS-EH09RHLAE	3050-10200	3050-18000	11-17	14-18
	RAS-SH09RHLAE	3050-10200	3050-18000	11-17	14-18
	RAD-SH09QHLAE	3050-10200	3050-18000	11-17	14-18
12K Btu	RAF-SH12QHLAE	3050-13650	3050-18000	16-24	17-22
	RAI-SH12QHLAE	3050-13650	3050-22500	16-24	17-22
	RAS-EH12RHLAE	3050-13650	3050-22500	16-24	17-22
	RAS-SH12RHLAE	3050-13650	3050-22500	16-24	17-22
	RAD-SH12QHLAE	3050-13650	3050-22500	16-24	17-22
18K Btu	RAF-SH18QHLAE	3050-17750	3050-27600	23-24	23-29
	RAI-SH18QHLAE	4100-19800	4100-23200	23-24	23-29
	RAS-EH18RHLAE	4100-19800	4100-23200	23-24	23-29
	RAS-SH18RHLAE	4100-19800	4100-23200	23-24	23-29
	RAD-SH18QHLAE	4100-19800	4100-23200	23-24	23-29
24K Btu	RAS-EH24RHLAE	4100-25600	4100-30690	23-24	23-29
	RAS-SH24RHLAE	4100-25600	4100-30690	23-24	23-29
	RAD-SH24QHLAE	4100-25600	4100-30690	23-24	23-29

*Two, three, four or five indoor units can be installed with one outdoor unit.

*One-unit values are for one unit operation with two indoors connected.

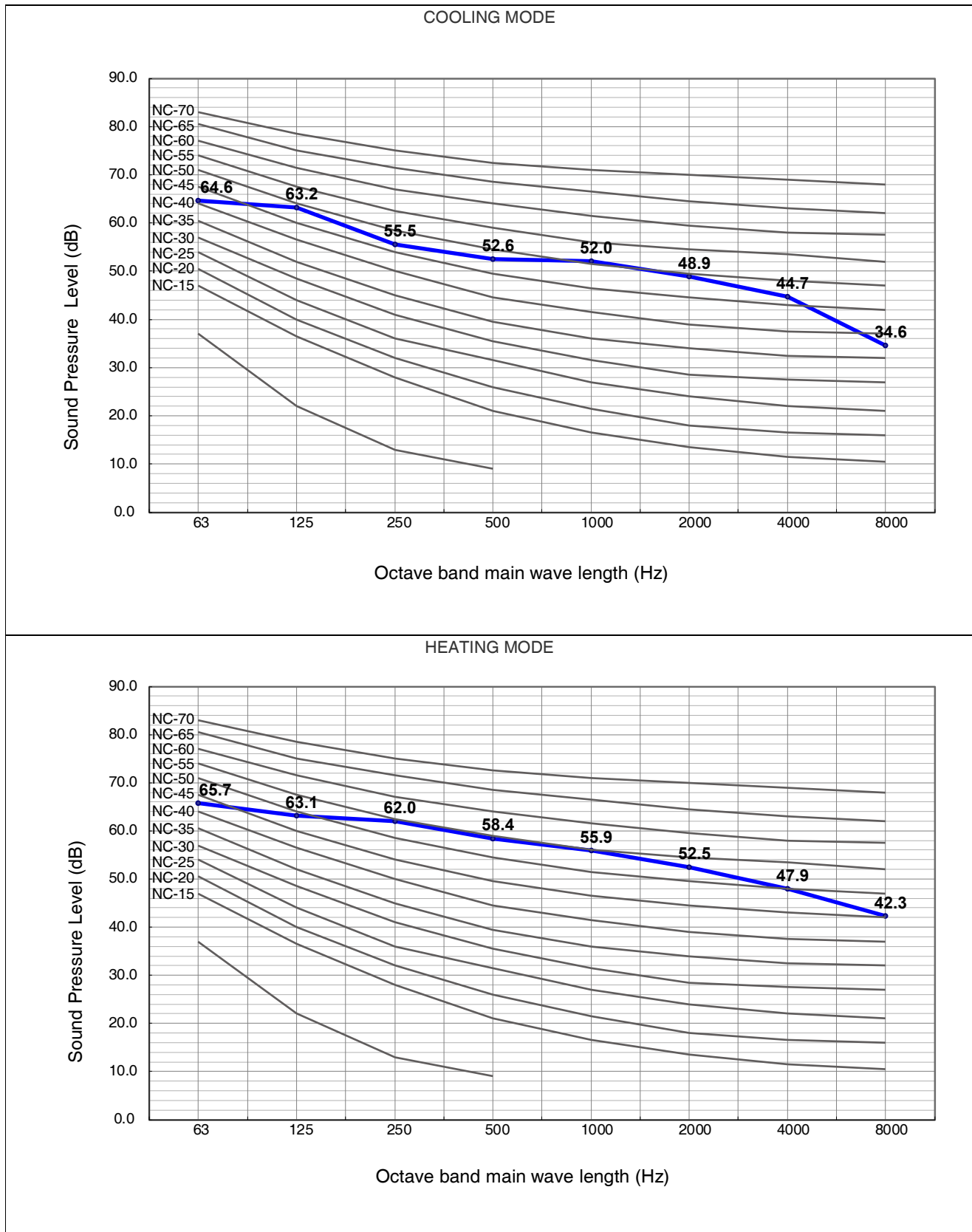
*Total nominal cooling capacity should not be more than 60K Btu.

4 SOUND DATA

CONTENTS

4	SOUND DATA _____	4-1
4.1.	SOUND DATA (RAM-S42U5HLAE) _____	4-2

4.1.1. RAM-S42U5HLAE



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

CONTENTS

5	WORKING RANGE _____	5-1
5.1.	POWER SUPPLY _____	5-2
5.2.	WORKING RANGE _____	5-2
5.2.1.	MULTIZONE _____	5-2

5.1. POWER SUPPLY

Working Voltage	198V ~ 264V
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

5.2.1. MULTIZONE

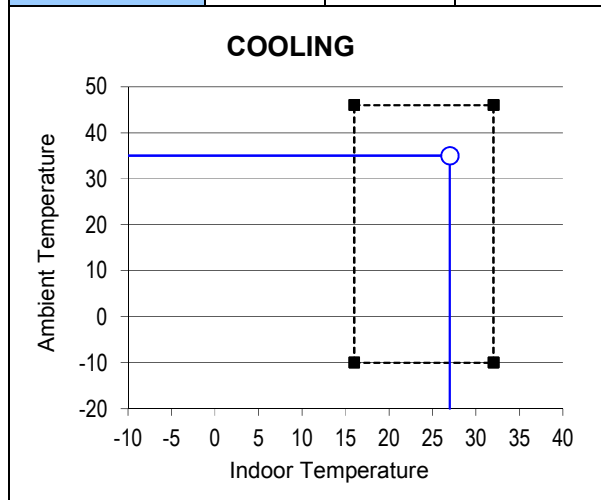
Applicable models:

MULTIZONE
RAM-S42U5HLAE

The temperature range is indicated in the following table.

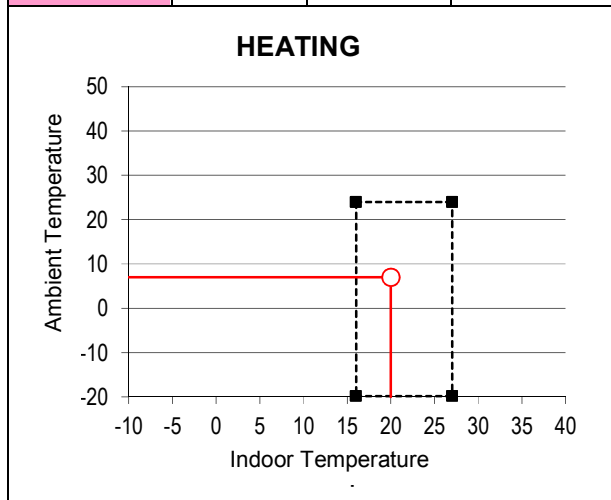
Cooling

working range	min (°C)	max (°C)	rated (°C)
outdoor	-10	46	35
indoor	16	32	26.67



Heating

working range	min (°C)	max (°C)	rated (°C)
outdoor	-20	24	8.33
indoor	16	27	21.11



6 ELECTRICAL DATA

CONTENTS

6	ELECTRICAL DATA _____	6-1
6.1.	INDOOR UNIT _____	6-2
6.2.	OUTDOOR UNIT _____	6-3

6.1. INDOOR UNIT

Model	Unit Main Power	Rated input current of power conversion equipment	Indoor Fan Motor	
	VOL, PH, Hz		RNC	IPT
RAS-EH07QHLAE	208-230, 1, 60	0.45	0.67	38
RAS-EH09RHLAE	208-230, 1, 60	0.45	0.67	38
RAS-EH12RHLAE	208-230, 1, 60	0.45	0.67	38
RAS-EH18RHLAE	208-230, 1, 60	0.45	0.67	38
RAS-EH24RHLAE	208-230, 1, 60	0.56	0.16	45
RAS-SH07QHLAE	208-230, 1, 60	0.62	0.67	30
RAS-SH09RHLAE	208-230, 1, 60	0.62	0.67	30
RAS-SH12RHLAE	208-230, 1, 60	0.62	0.67	30
RAS-SH18RHLAE	208-230, 1, 60	0.64	0.16	45
RAS-SH24RHLAE	208-230, 1, 60	0.64	0.16	45
RAF-SH07QHLAE	208-230, 1, 60	0.25	0.75	38
RAF-SH09QHLAE	208-230, 1, 60	0.25	0.75	38
RAF-SH12QHLAE	208-230, 1, 60	0.25	0.75	38
RAF-SH18QHLAE	208-230, 1, 60	0.25	0.75	38
RAI-SH07QHLAE	208-230, 1, 60	0.80	0.25	57
RAI-SH09QHLAE	208-230, 1, 60	0.80	0.25	57
RAI-SH12QHLAE	208-230, 1, 60	0.80	0.25	57
RAI-SH18QHLAE	208-230, 1, 60	0.80	0.25	57
RAD-SH07QHLAE	208-230, 1, 60	0.45	0.11	20
RAD-SH09QHLAE	208-230, 1, 60	0.45	0.11	20
RAD-SH12QHLAE	208-230, 1, 60	0.45	0.11	20
RAD-SH18QHLAE	208-230, 1, 60	1.2	0.75	180
RAD-SH24QHLAE	208-230, 1, 60	1.2	0.75	180

VOL: Rated Unit Power Supply Voltage (V)
 Hz: Frequency (Hz)

RNC: Running Current (A)
 PH: Phase (ϕ)
 IPT: Input (W)

6.2. OUTDOOR UNIT

Model	Unit Main Power		Electrical Data			
	VOL, PH, Hz	Rated input current of power conversion equipment (A)	Rated Cooling Current	Rated Heating Current	MCA	MOP
RAM-S42U5HLAE	208-230, 1, 60	22	14.76	18.65	29	50

VOL: Rated Unit Power Supply Voltage (V)

MCA: Minimum Circuit Ampacity (A)

HZ: Frequency (Hz)

MOP: Maximum Overcurrent Protection (A)

PH: Phase (ϕ)

- 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

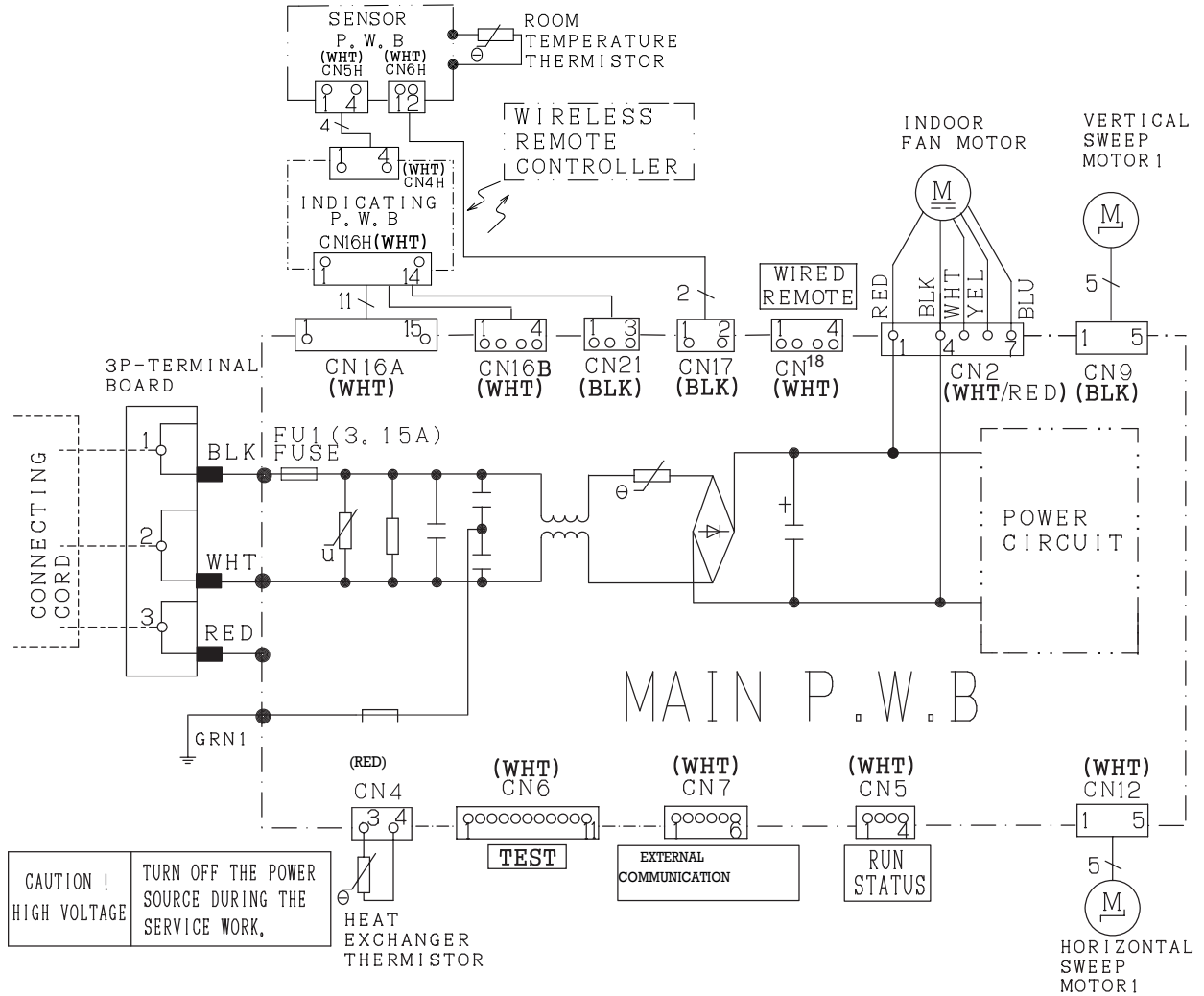
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7.1.1.	RAS-EH07QHLAE, RAS-EH09/12/18 RHLAE _____	7-2
7.1.2.	RAS-EH24RHLAE _____	7-3
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7.1.5.	RAF-SH07/09/12/18/QHLAE _____	7-6
7.1.6.	RAI- SH07/09/12/18 QHLAE _____	7-7
7.1.7.	RAD-SH07/09/12QHLAE _____	7-8
7.1.8.	RAD-SH18/24 QHLAE _____	7-9
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7.1. MULTIZONE

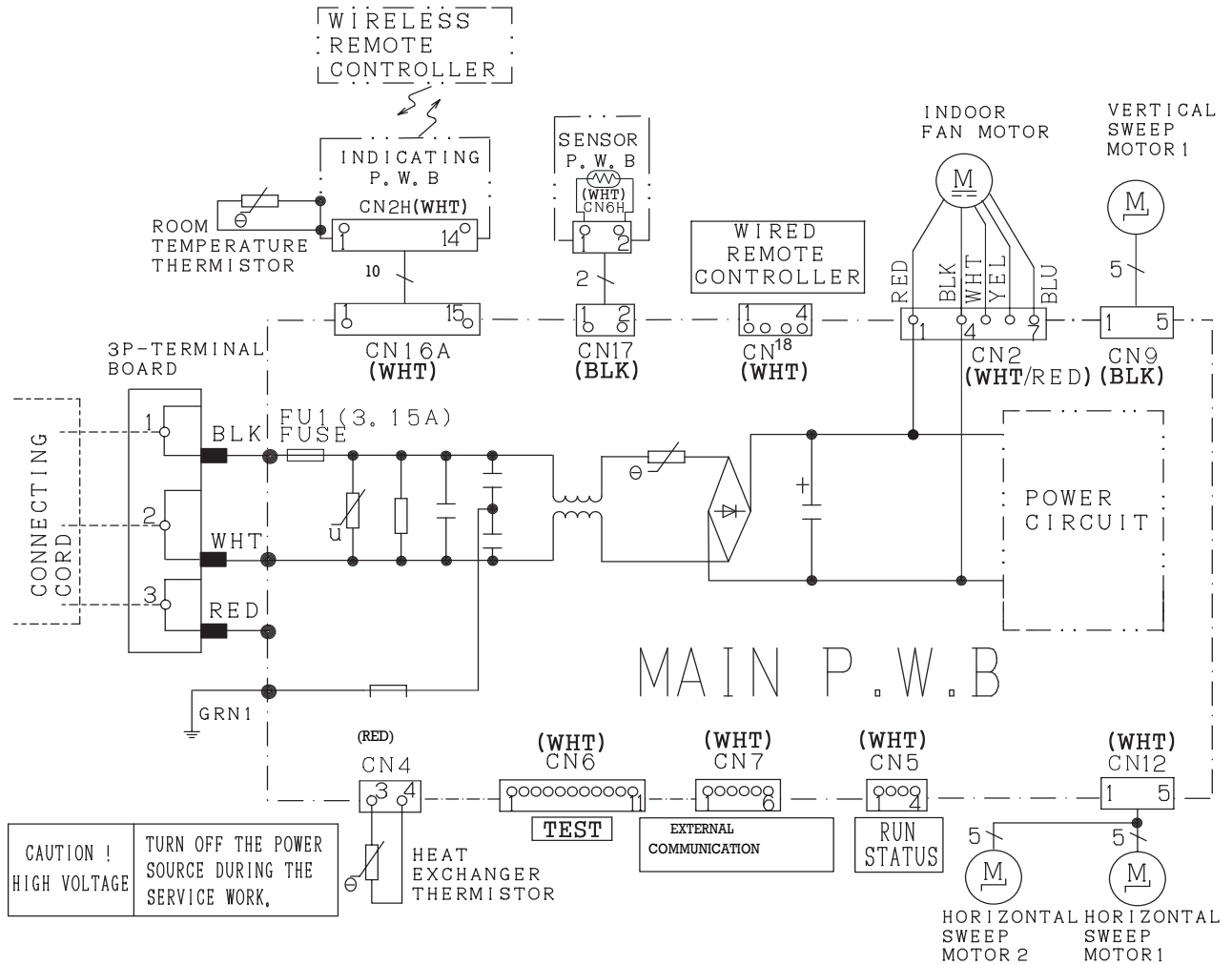
7.1.1. RAS-EH07QHLAE, RAS-EH09/12/18RHLAE

BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	IVO : IVORY



7.1.2. RAS-EH24RHLAE

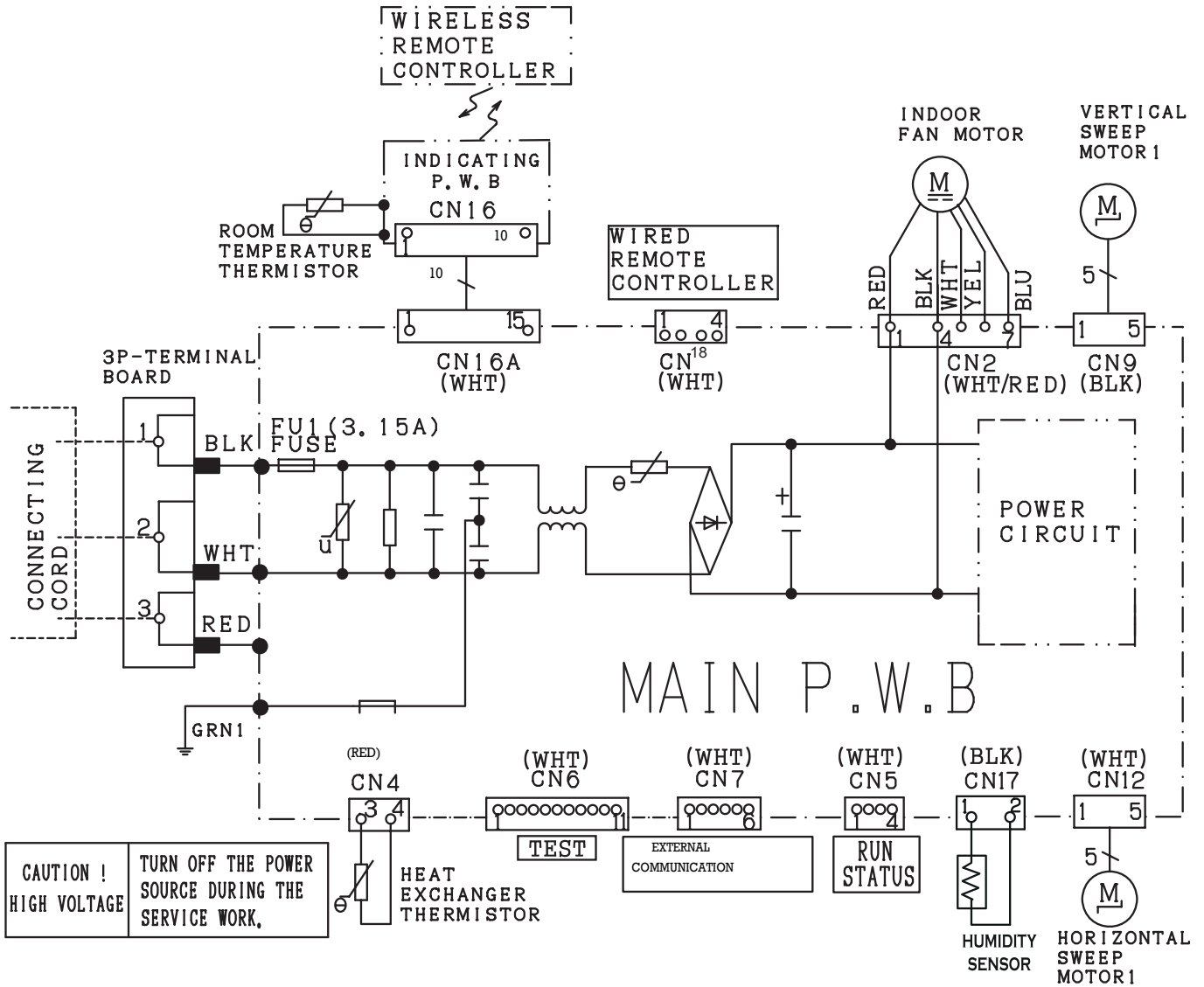
BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	IVO : IVORY



CAUTION ! HIGH VOLTAGE
TURN OFF THE POWER SOURCE DURING THE SERVICE WORK,

7.1.3. RAS-SH07QHLAE, RAS-SH09/12RHLAE

BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	IVO : IVORY



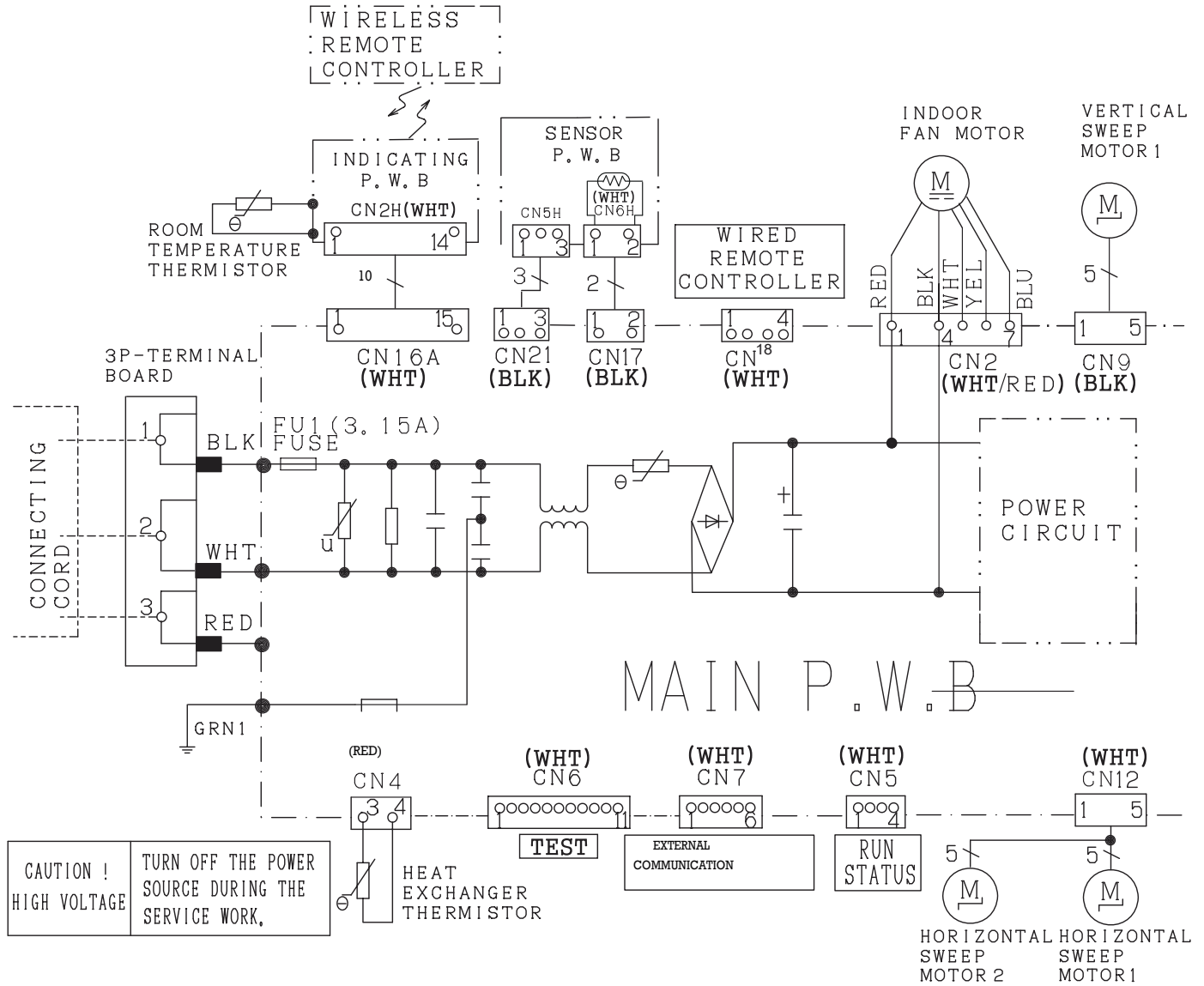
7.1.4. RAS-SH18/24RHLAE

BLU : BLUE
 GRY : GRAY
 BLK : BLACK

YEL : YELLOW
 ORN : ORANGE
 PNK : PINK

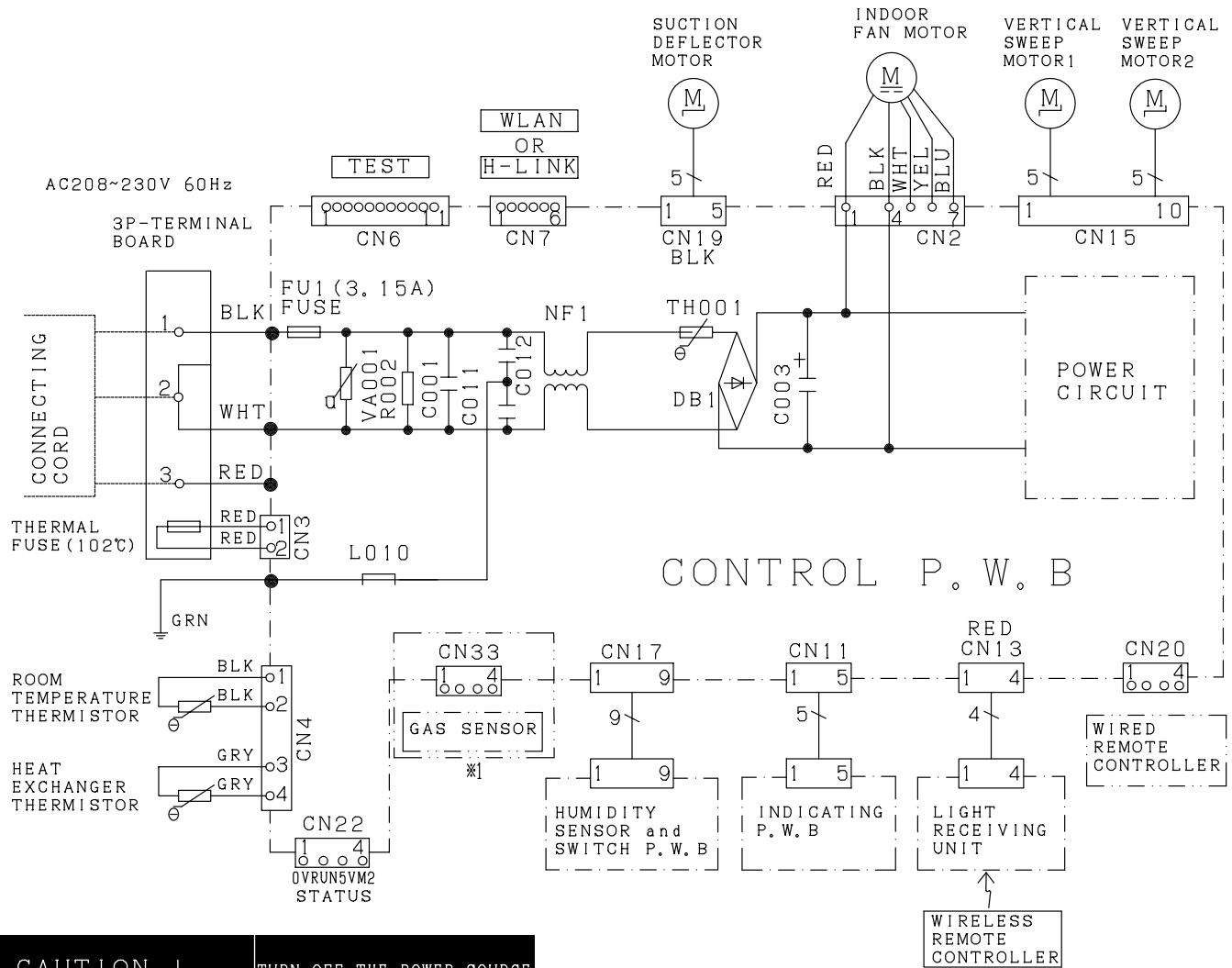
BRN : BROWN
 GRN : GREEN
 VIO : VIOLET

WHT : WHITE
 RED : RED
 IVO : IVORY



7.1.5. RAF-SH07QHLAE, RAF-SH09QHLAE, RAF-SH12QHLAE, RAF-SH18QHLAE

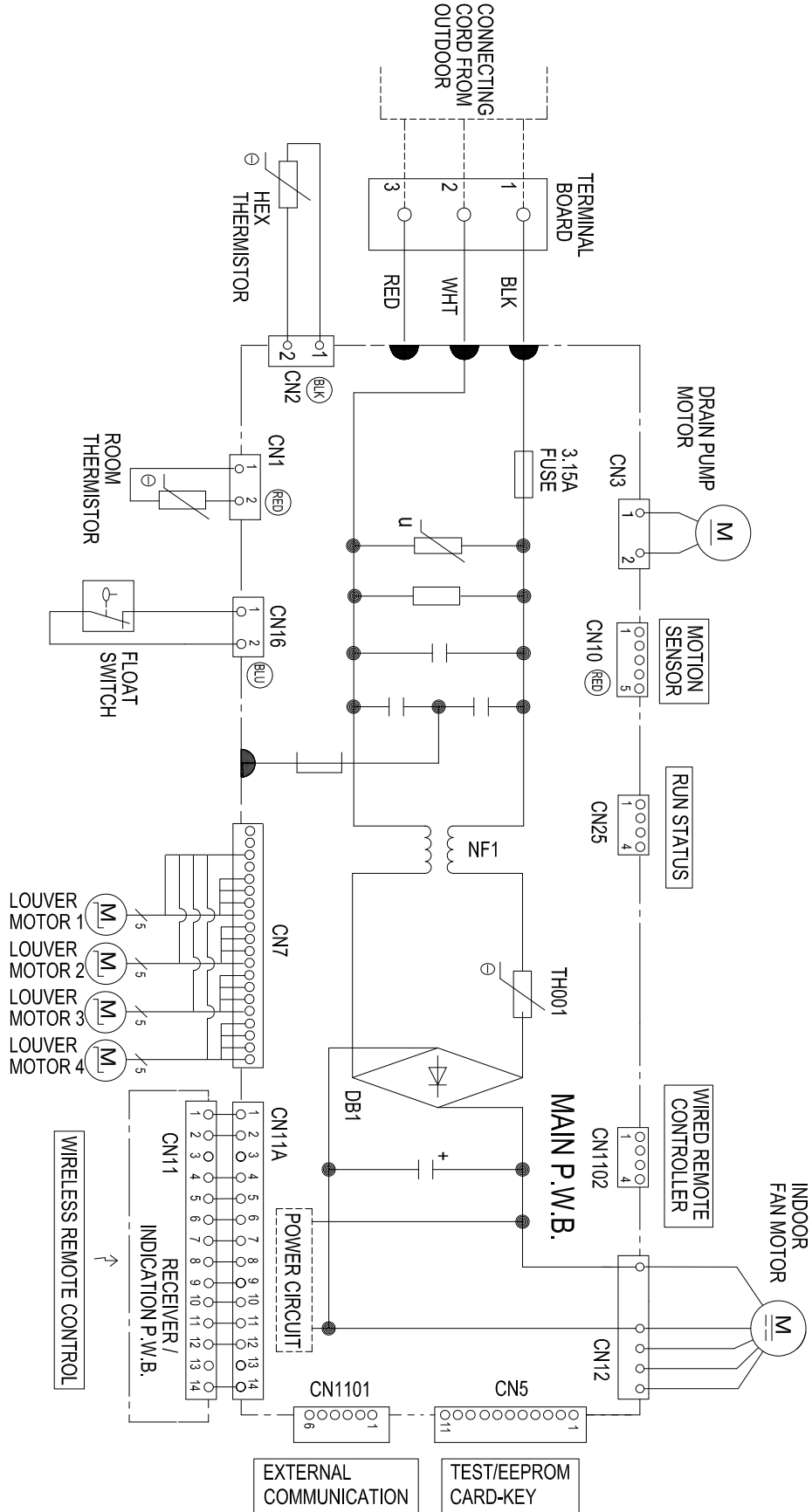
BLK:BLACK GRN:GREEN
 RED:RED WHT:WHITE
 GRY:GRAY YEL:YELLOW
 BLU:BLUE



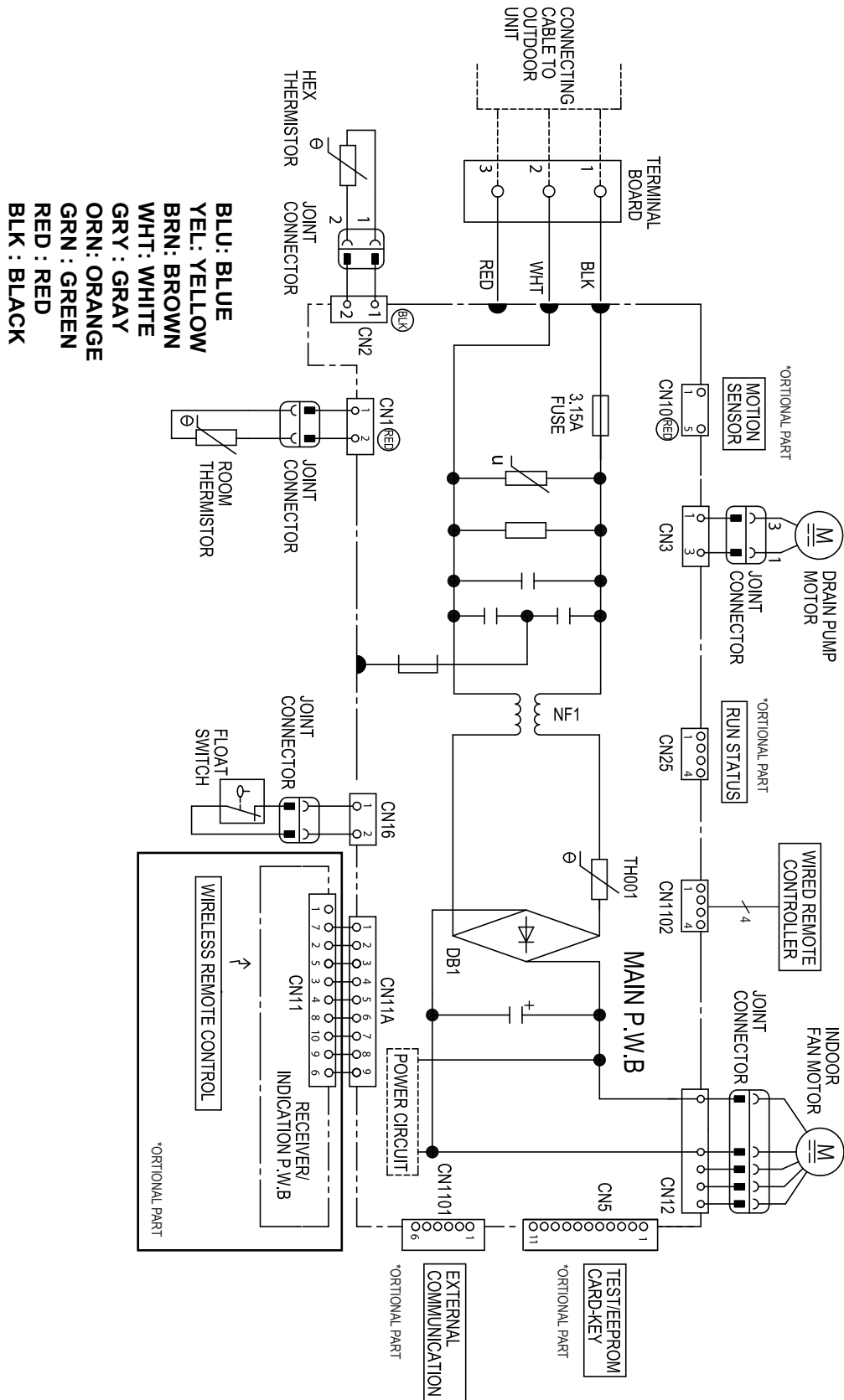
CAUTION ! TURN OFF THE POWER SOURCE
 HIGH VOLTAGE DURING THE SERVICE WORK.

※1 SOME MODELS NOT NEED TO INSTALL THE CIRCUITS IN DASH DOT.

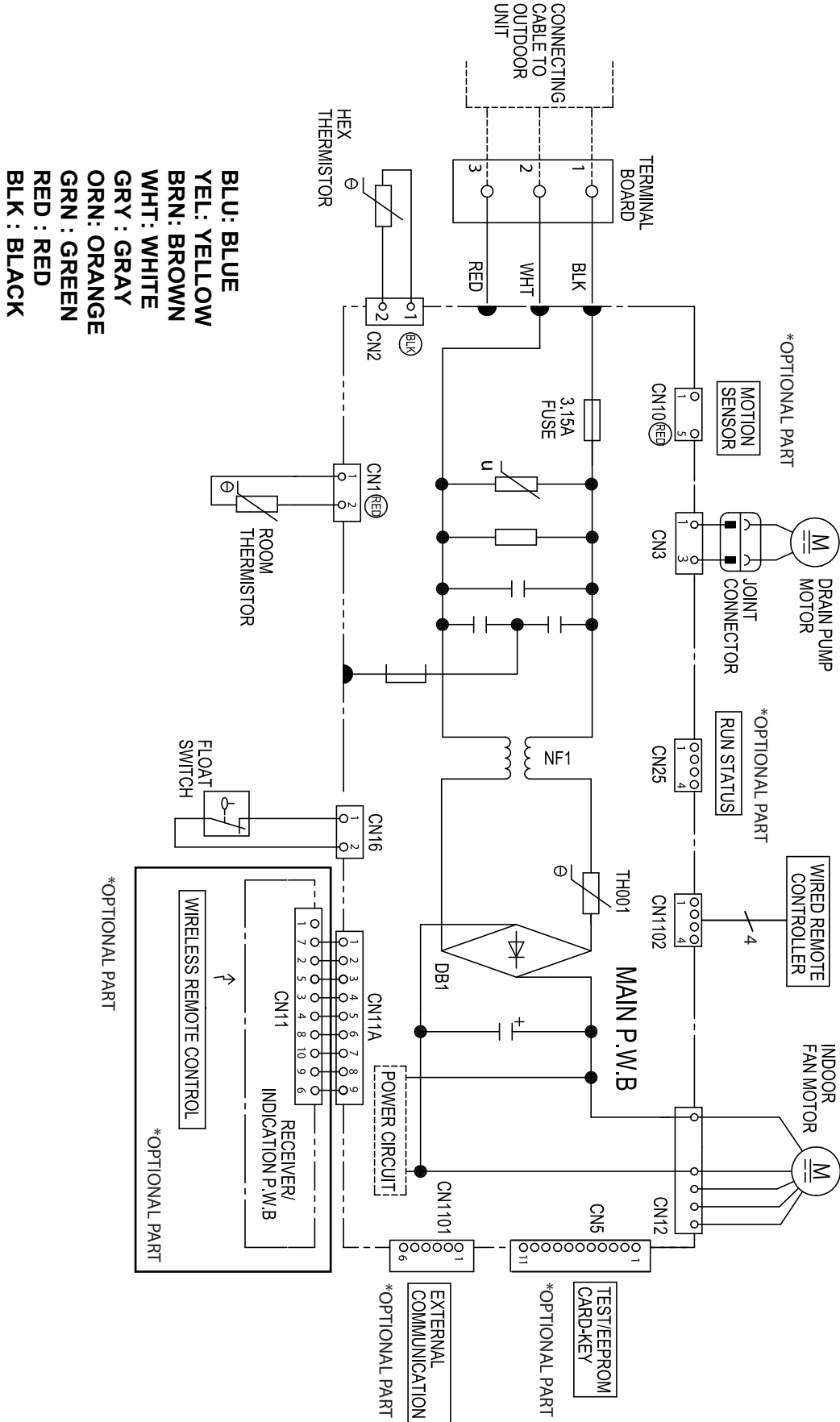
7.1.6. RAI-SH07QHLAE, RAI-SH09QHLAE, RAI-SH12QHLAE, RAI-SH18QHLAE



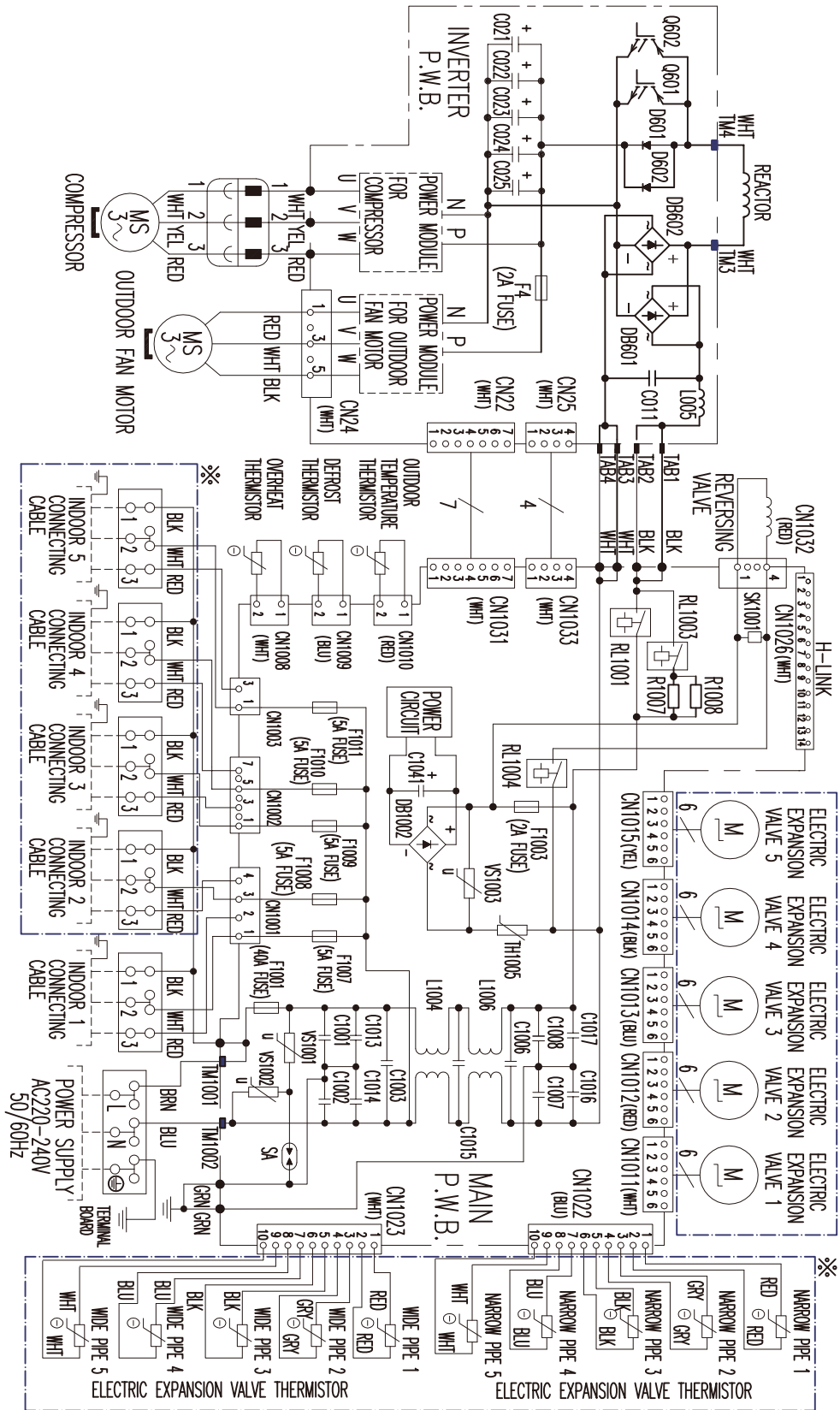
7.1.7. RAD-SH07QHLAE, RAD-SH09QHLAE, RAD-SH12QHLAE



7.1.8. RAD-SH18QHLAE, RAD-SH24QHLAE



7.2 RAM-S42U5HLAE



8 REFRIGERANT CYCLE

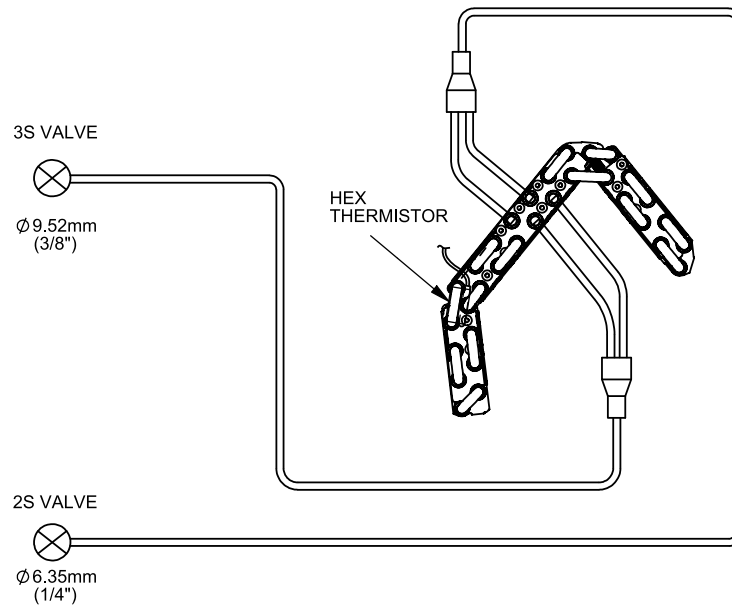
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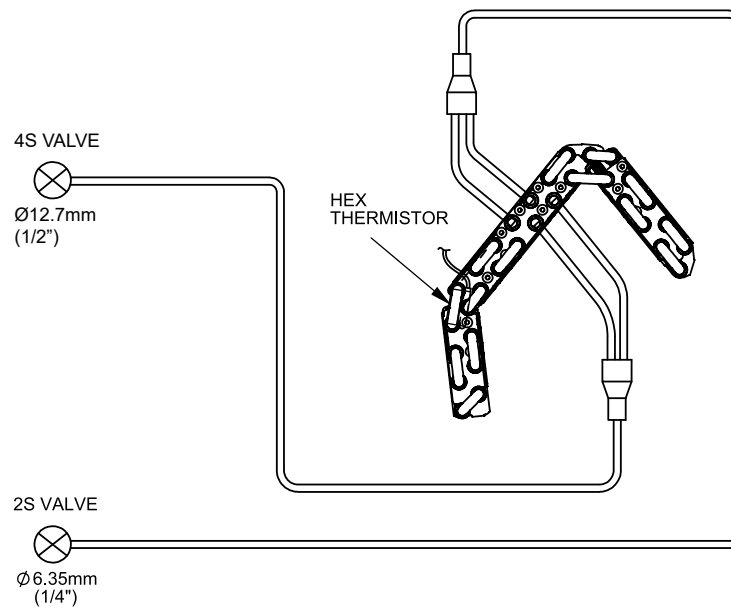
8.1. MULTIZONE INDOOR UNITS

8.1.1. WALL TYPE: RAS-EH07QHLAE, RAS-EH09/12/18RHLAE

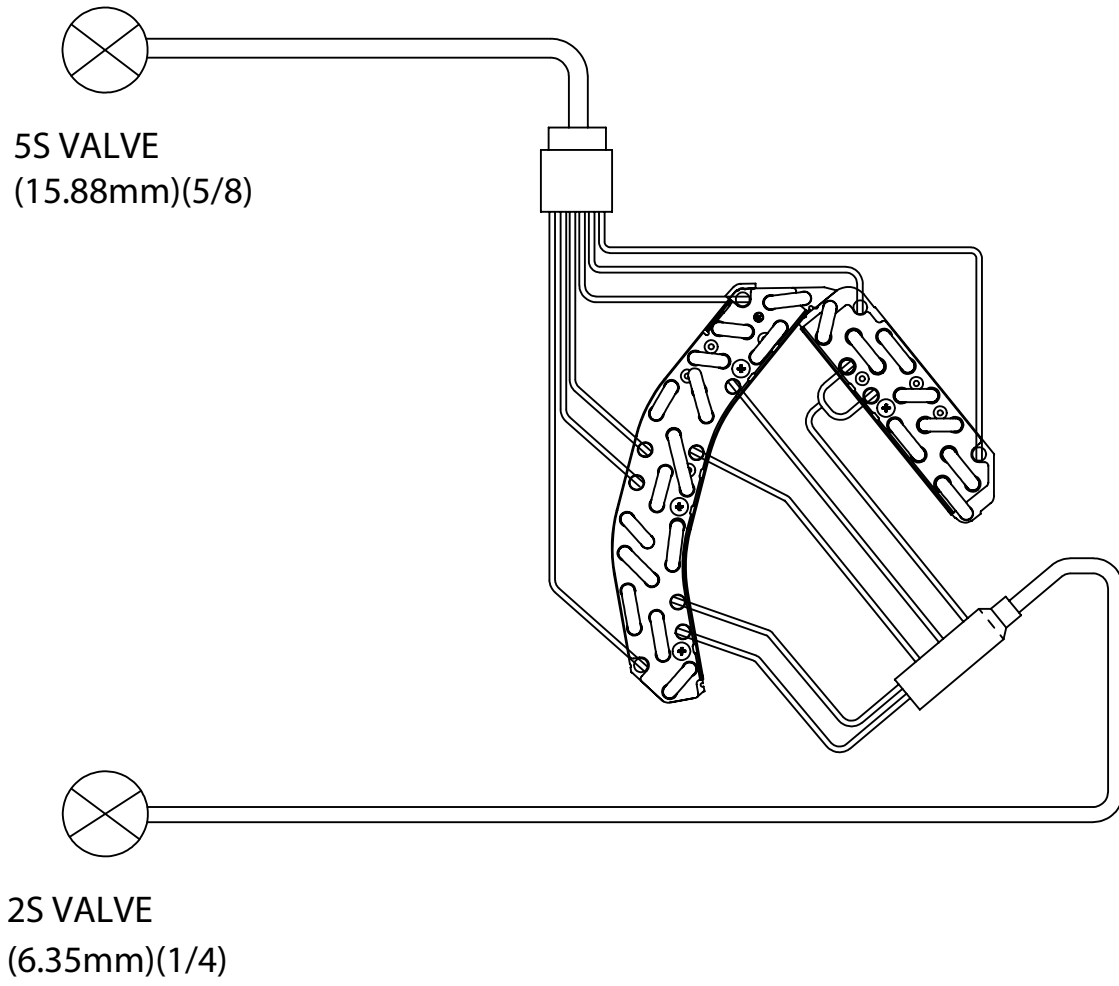
MODEL : RAS-EH07QHLAE
RAS-EH09RHLAE
RAS-EH12RHLAE



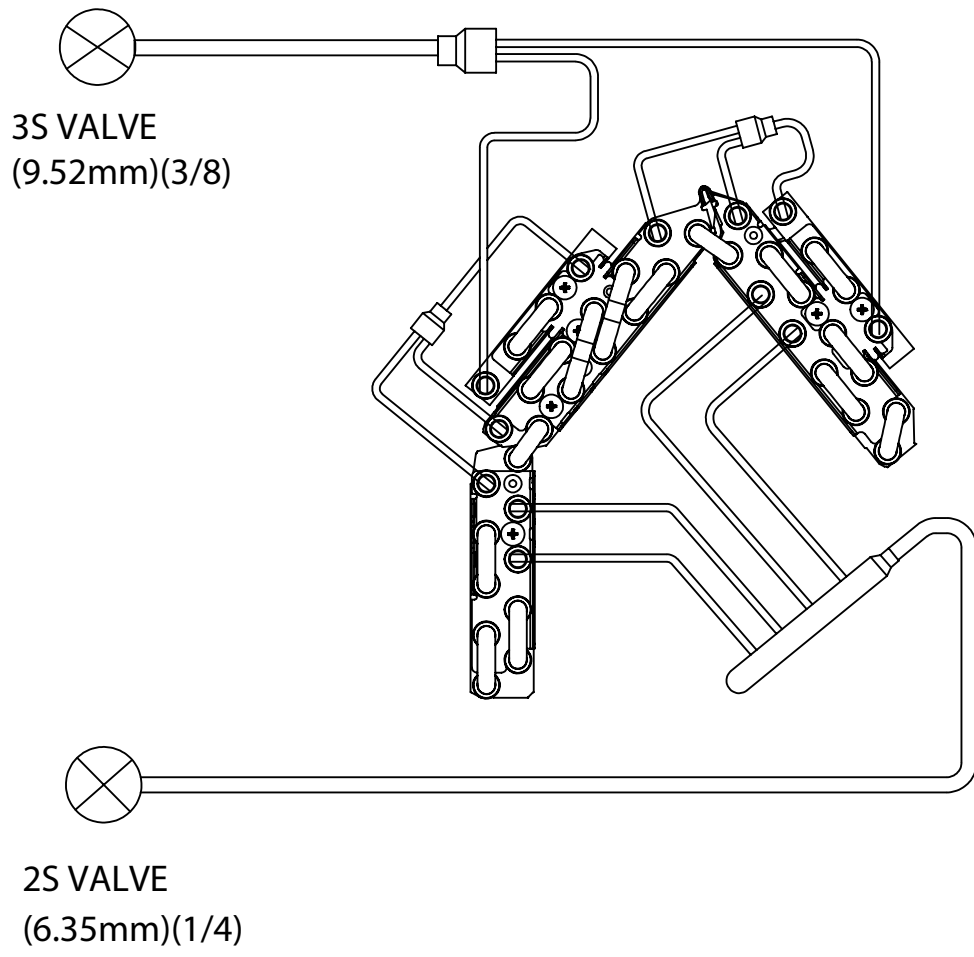
MODEL : RAS-EH18RHLAE



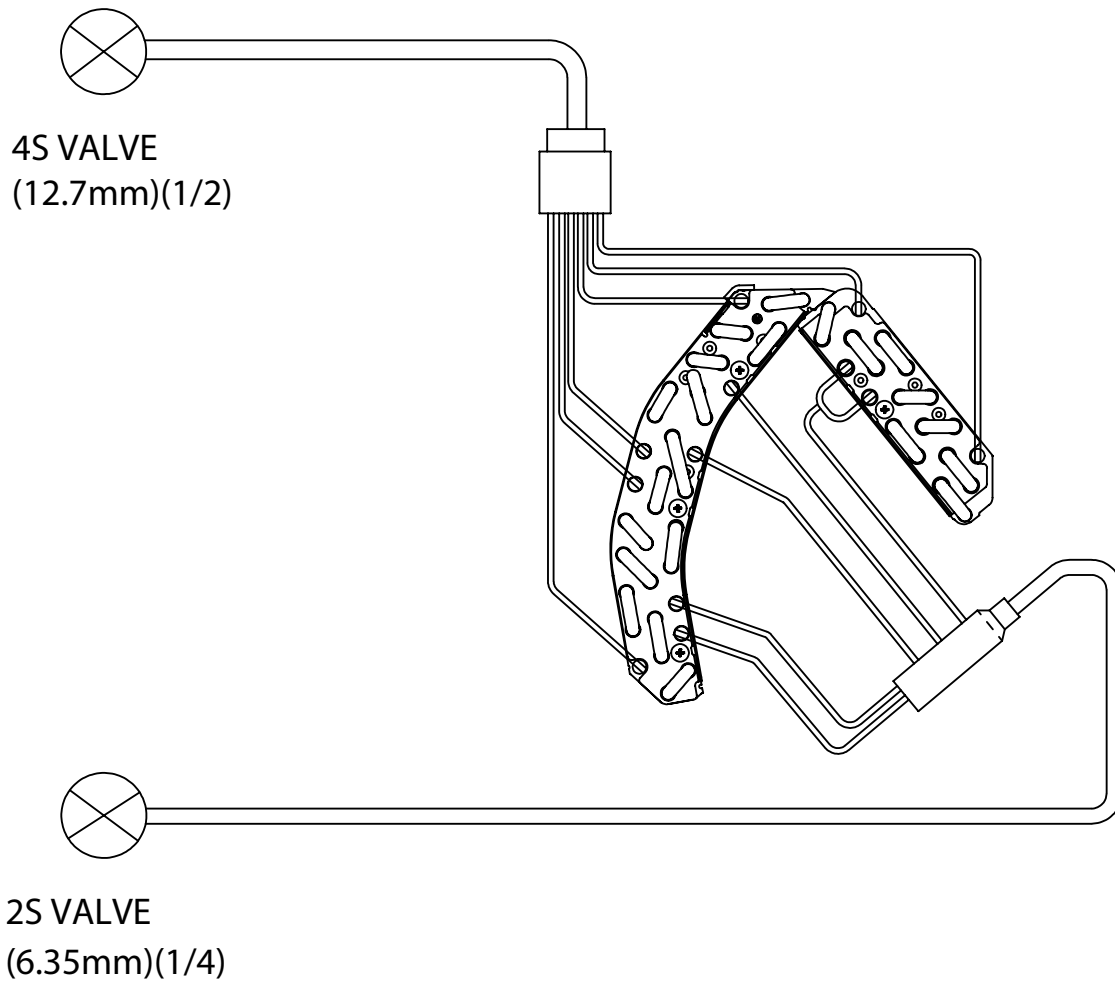
8.1.2. WALL TYPE: RAS-EH24RHLAE,RAS-SH24RHLAE



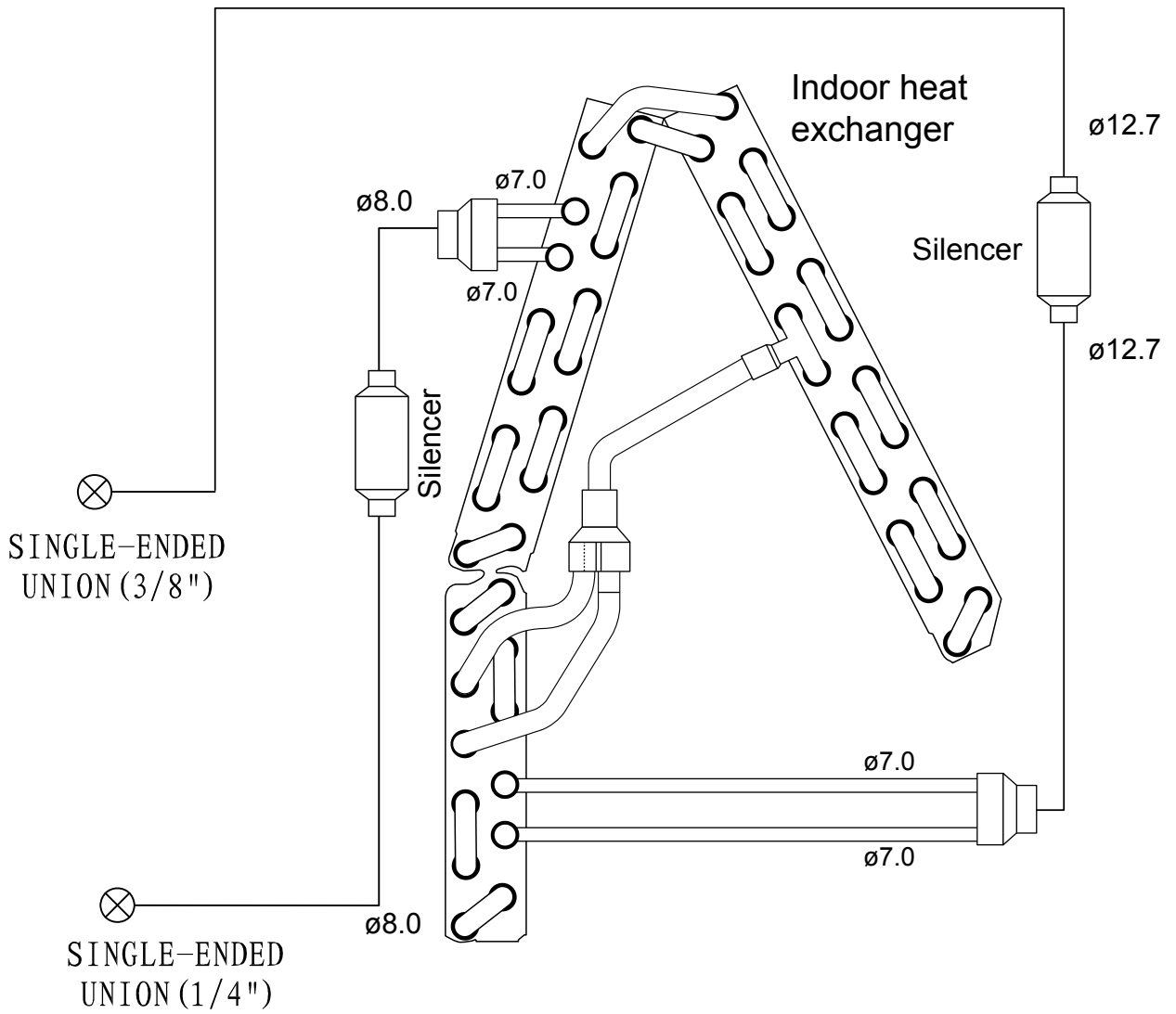
8.1.3. WALL TYPE: RAS-SH07QHLAE, RAS-SH09/12RHLAE



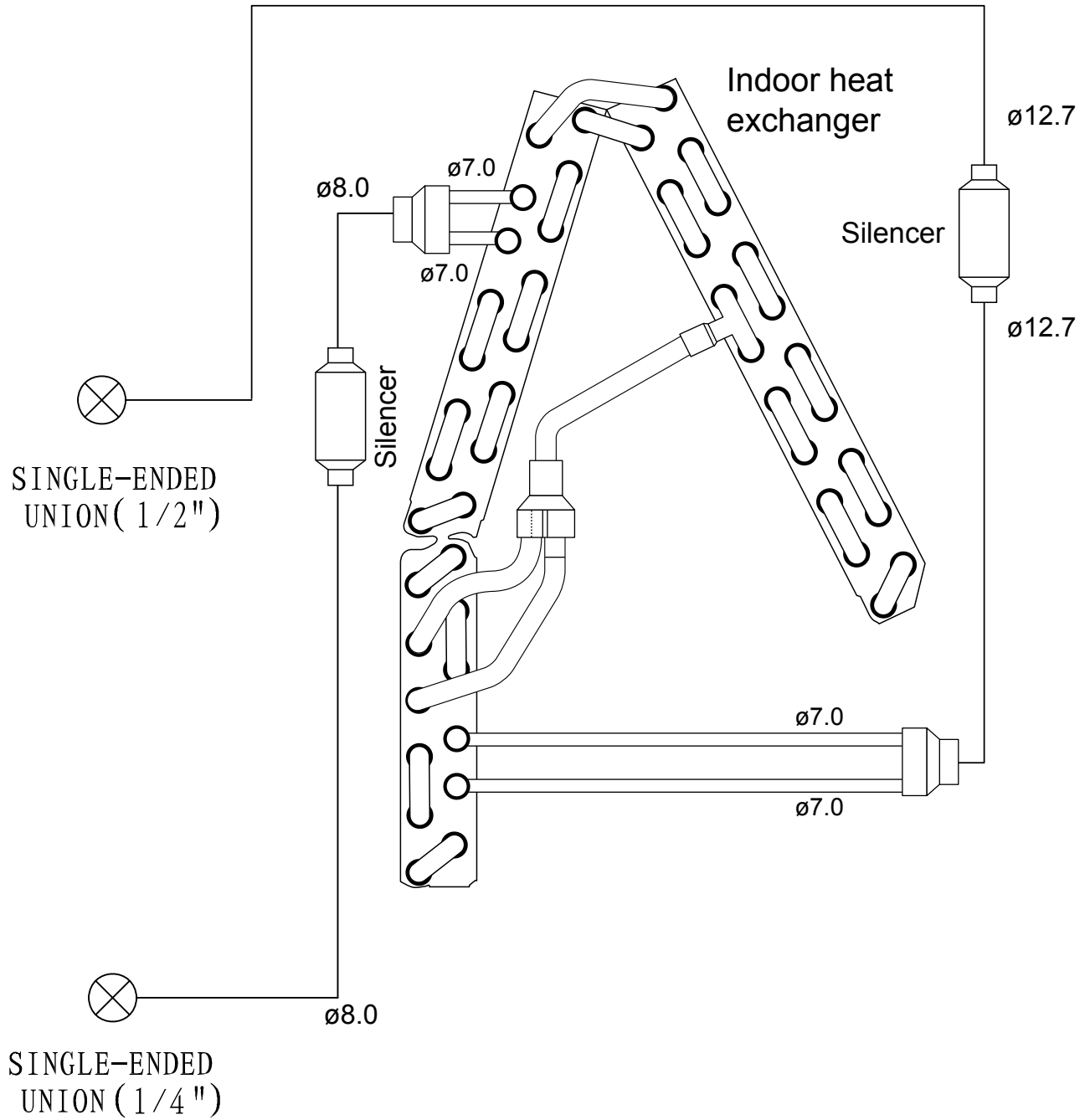
8.1.4. WALL TYPE: RAS-SH18RHLAE



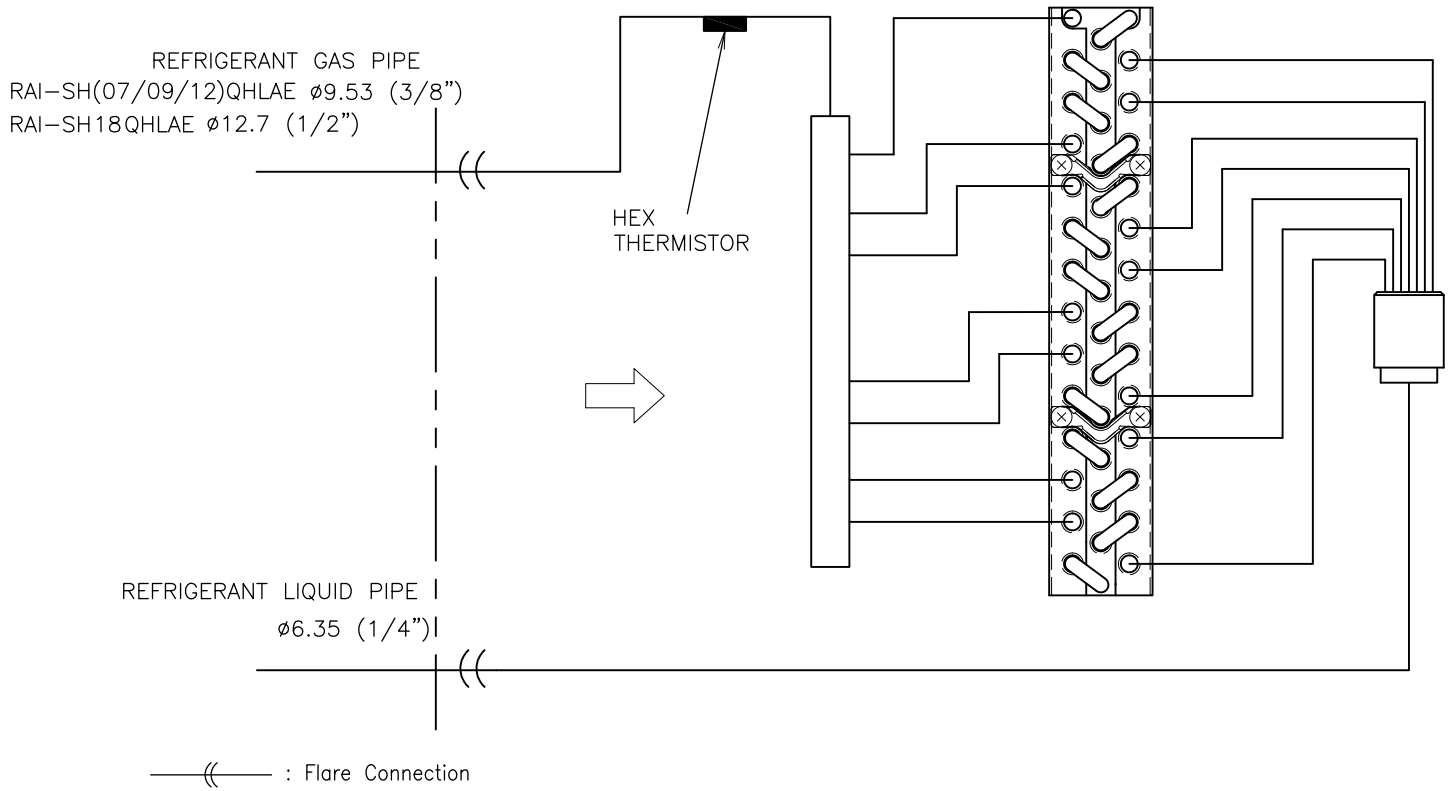
8.1.5. FLOOR TYPE: RAF-SH07QHLAE, RAF-SH09QHLAE, RAF-SH12QHLAE



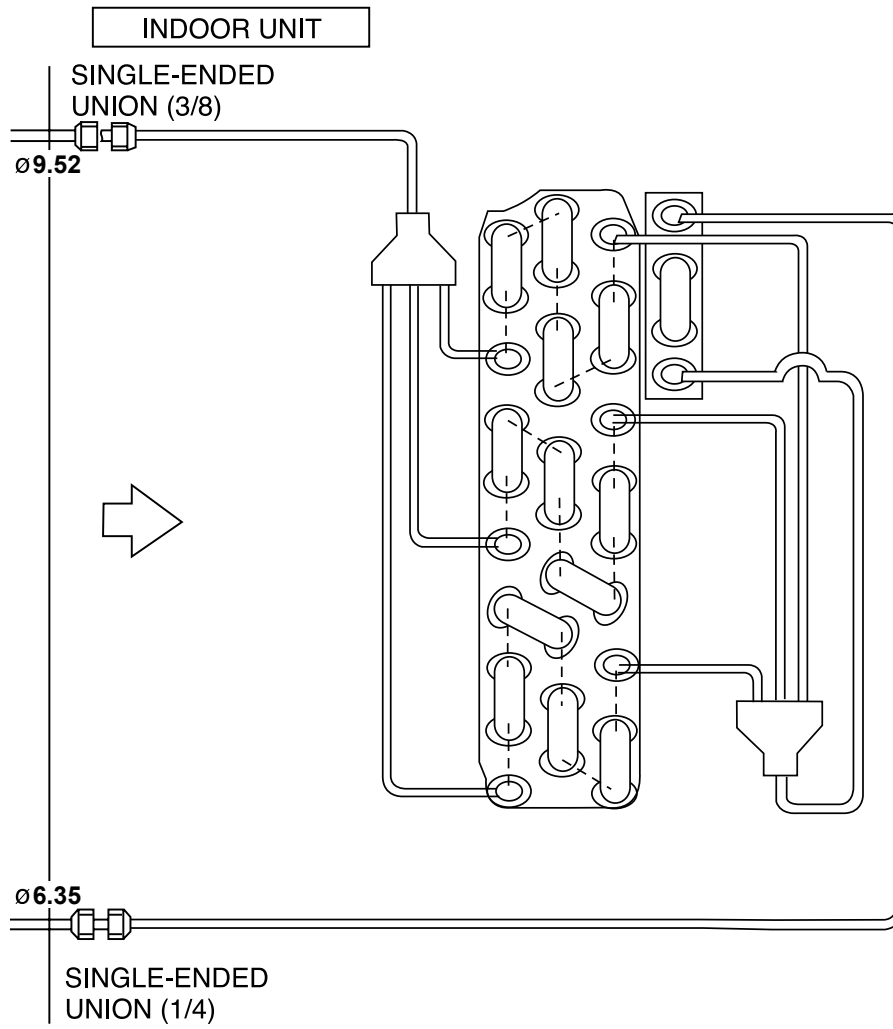
8.1.6. FLOOR TYPE: RAF-SH18QHLAE



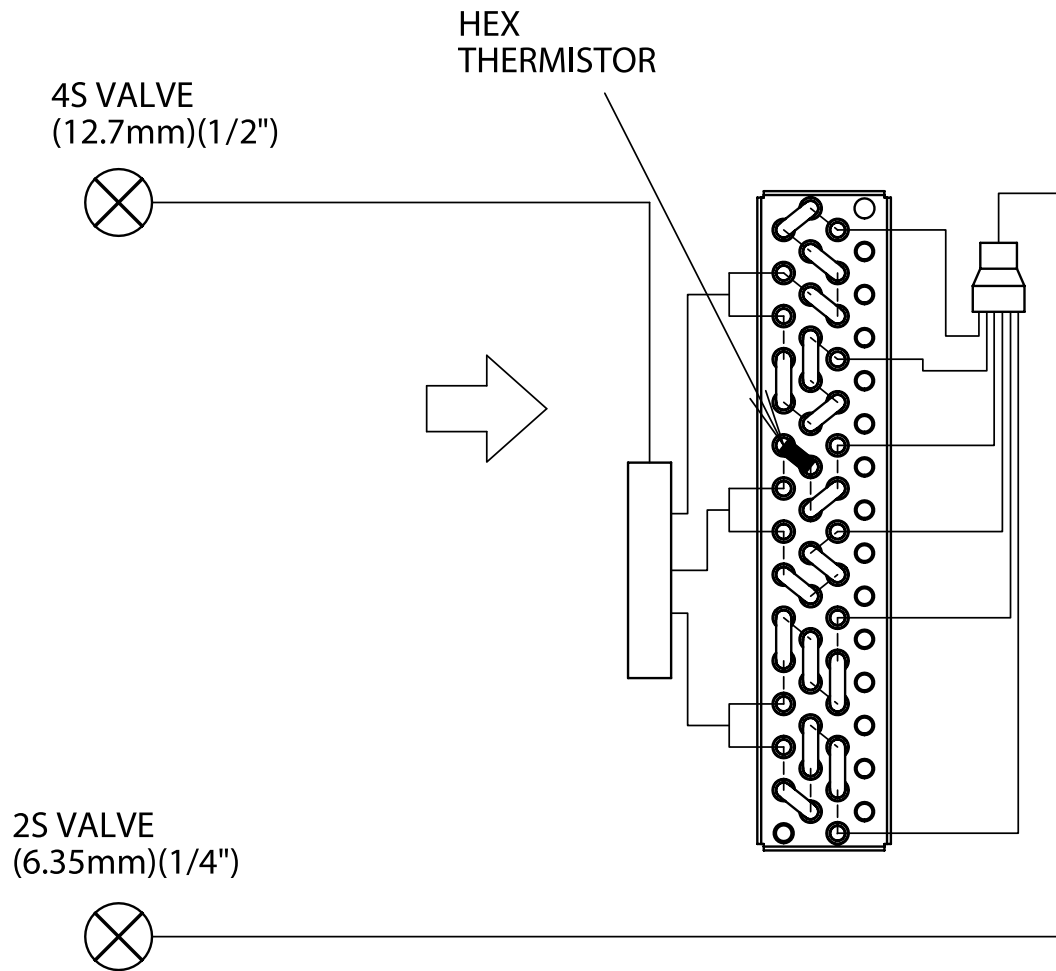
8.1.7. CEILING CASSETTE: RAI-SH07QHLAE, RAI-SH09QHLAE, RAI-SH12QHLAE, RAI-SH18QHLAE



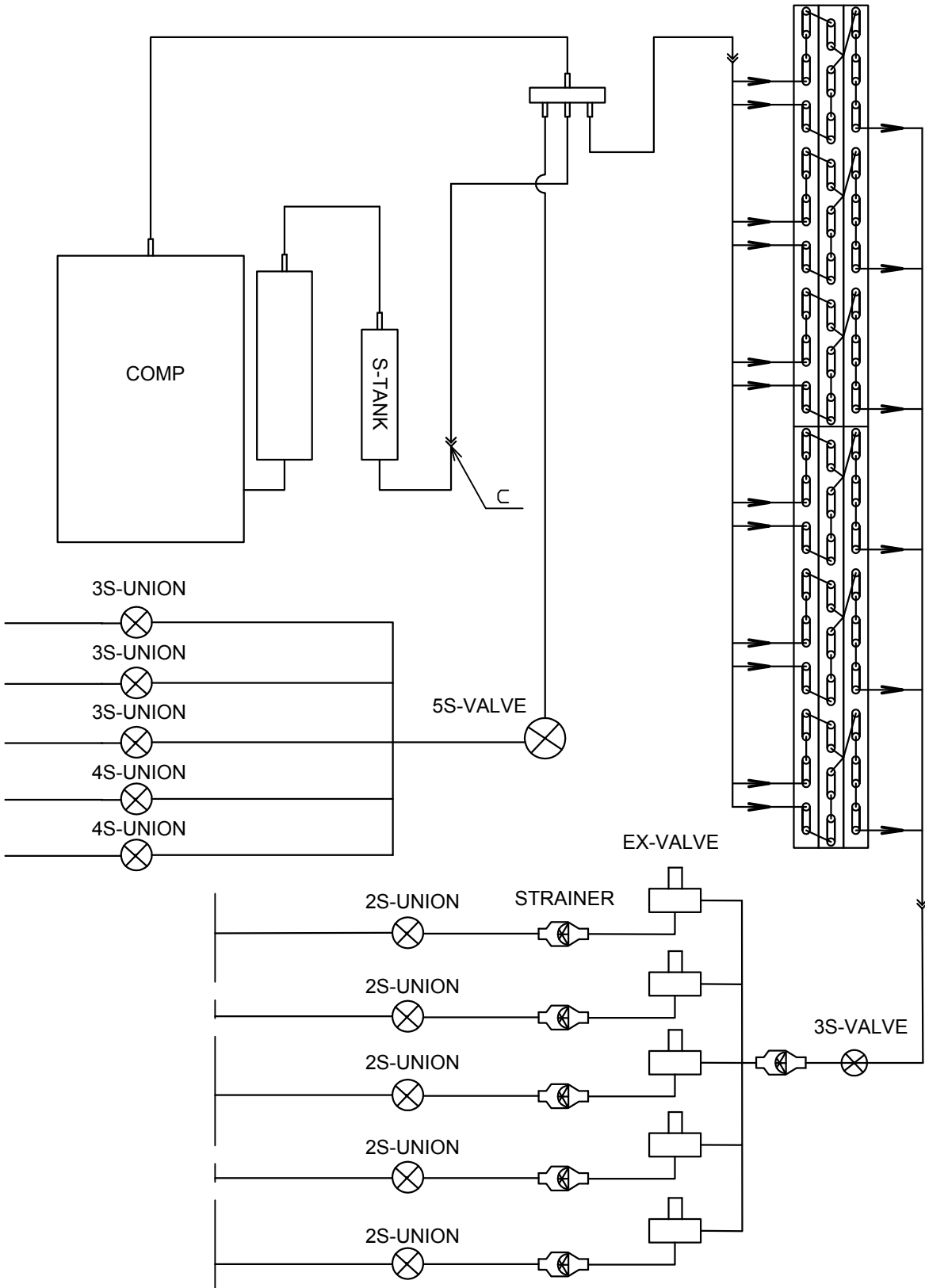
8.1.8. DUCT TYPE: RAD-SH07QHLAE, RAD-SH09QHLAE, RAD-SH12QHLAE



8.1.9. DUCT TYPE: RAD-SH18QHLAE, RAD-SH24QHLAE



8.2 5 ROOMS MULTIZONE: S42U5HLAE



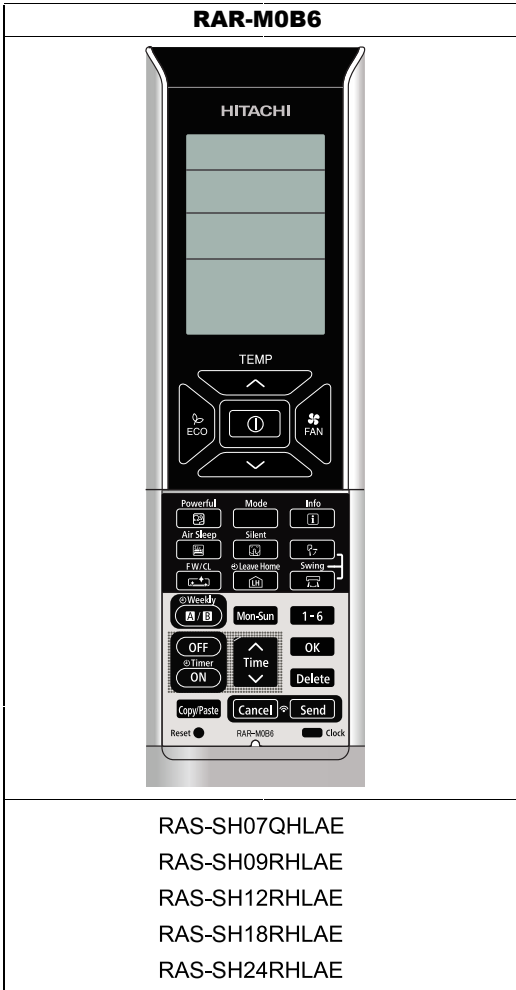
9 CONTROL AND FUNCTION

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
9.1 WIRELESS REMOTE CONTROL FUNCTION

RAR-M0B6









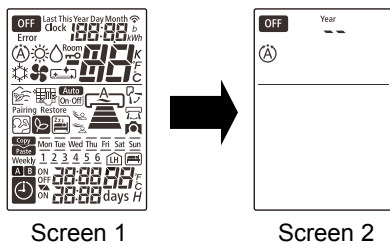
RAS-SH07QHLAE
 RAS-SH09RHLAE
 RAS-SH12RHLAE
 RAS-SH18RHLAE
 RAS-SH24RHLAE



BUTTONS	FUNCTION
	MODE Selector Use this button to select the operating mode. Every time you press this button, the mode will change from (AUTO) → (HEAT) → (DEHUMIDIFY) → (COOL) and (FAN) cyclically.
	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).
	START/STOP button Press this button to start operation. Press it again to stop operation.
	ECO button Use this button to set the ECO mode.
	POWERFUL button Use this button to set the POWERFUL mode.
	SILENT button Use this button to set the SILENT mode.
	INFO button 1) Press this button to display temperature for 10 seconds. 2) Press this button to check monthly power consumption. 3) Press this button to receive the current calendar and clock.
	ECO SLEEP TIMER button Use this button to set the ECO sleep timer.
	AUTO SWING (Vertical) button Controls the angle of the horizontal air deflector.

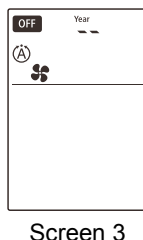
	AUTO SWING (Horizontal) button Controls the angle of the vertical air deflector.
	LEAVE HOME button Prevent the room temperature from falling too much by setting temperature 50°F~60°F when no one is at home.
	FROST WASH / CLEAN button The dust and dirt adhering to indoor heat exchanger which is the cause of the smell. They are washed away by freezing and thawing of the heat exchanger.
WEEKLY TIMER buttons	
	ON/OFF TIMER button The device will turn on (off) and off (on) at the designated time.
	TIME button Press the button to set starting time of the program
OK	OK button Press the button to save the program. The button shall be pressed everytime after finishing a program setting.
Delete	DELETE button 1) Press the button to delete the selected program. 2) Press the button for about 10 seconds by directing the remote controller towards the indoor unit while Mode A or B display blinks, programs for Mode A or B will be deleted both from the indoor unit and the remote controller after the beep sound from the indoor unit.
Mon-Sun	DAY button Select the desired day of the week.
1 - 6	PROGRAM NO. button Press this button to select a program number.
Cancel	CANCEL 1) Press the button to cancel the current setting process on the screen. 2) Press the button by directing the remote controller towards the indoor unit, then weekly timer setting will be canceled from indoor unit after the beep sound from the indoor unit. The program setting remains in the remote controller.
Send	SEND button Press the button for about 3 seconds by directing the remote controller towards the indoor unit after finishing the program setting. Timer lamp on the indoor unit will blink rapidly and after the beep sound from indoor unit, TIMER lamp will light up.
 Clock	CLOCK button Press the button to set calendar and clock.
	WEEKLY TIMER MODE button 1) Select Mode A or Mode B. 2 modes can be set and stored as a weekly timer. 2) By pressing the button longer than 3 seconds, program setting screen will appear.

9.2 SHIFT VALUE

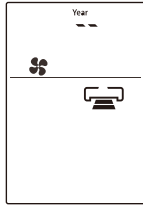
- Press and hold  (START/STOP) button and  (ON) button.
- Press  [RESET] button on the same time. Release  [RESET] button only, then release  (START/STOP) and  (ON) button once Screen 1 appears.




- Press the  (MODE) button to display  fan mode (Screen 3).



4. Press  (START/STOP) and Screen 4 appear.

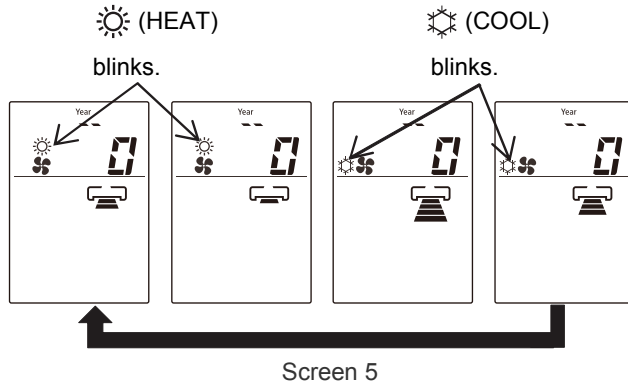




Screen 4

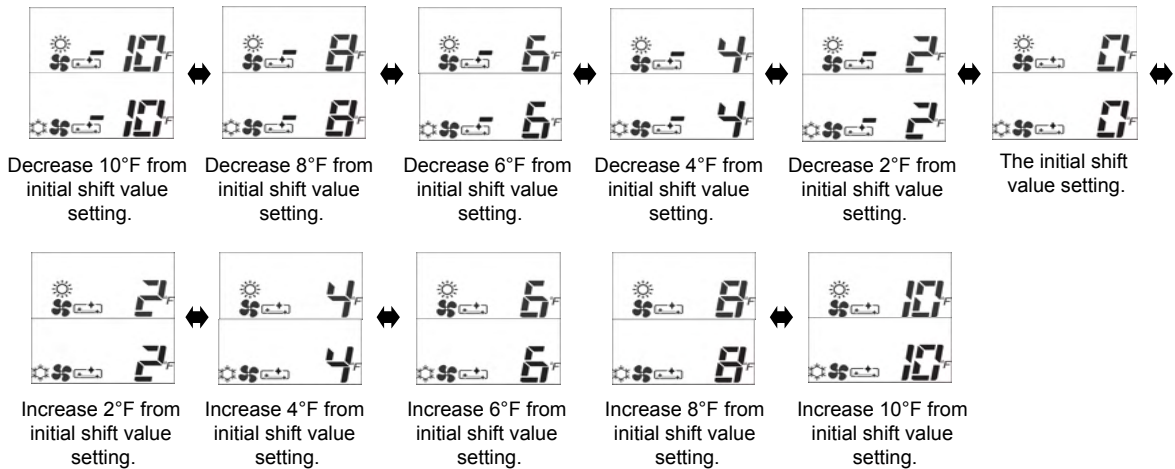
5. Select  (FAN SPEED) button to choose Heating Shift or Cooling Shift Mode (Screen 5).

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.



6. Press the Temperature button ( or ) to adjust the shift value.








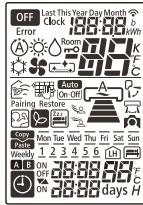
NOTE:

1. There are total of 11 shift values ranging from -10 to 10.
2. The displayed shift value,  (HEAT) and  (COOL) symbol on the remote controller display will disappear after 10 seconds
3. The changed shift value will remain unchanged after turned off the power.
4. If "0" is displayed on the remote controller display, it indicates the shift value is now at the initial setting.

9.3 OPERATION LOCK

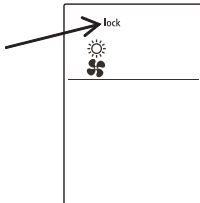
1. HEATING MODE

- a) Press and hold  (ECO) and  (POWERFUL) buttons, press  (RESET) button on the same time. Release  (RESET) button only when Screen 1 appear, then release  (ECO) button and  (POWERFUL) button.



Screen 1





- b) Wait until only Screen 2 appear.



Screen 2

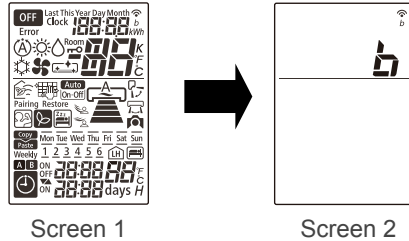
- c) The heating mode operation is locked.
 d) To unlock HEATING mode, repeat step (a). After all operations mode symbols displayed for 10 seconds, the operation mode symbol before cancellation will be display. The heating mode operation is unlocked.

2. COOLING AND DEHUMIDIFYING MODE

- a) Press and hold  (ECO) and  (SILENT) buttons for at least 5 seconds when the remote controller is OFF.
 b) Wait until only  and  displayed on the screen. The cooling and dehumidifying modes operation is locked.
 c) To unlock HEATING mode, repeat step (a). After all operations mode symbols displayed for 10 seconds, the operation mode symbol before cancellation will be display. The cooling and dehumidifying mode operation is unlocked.

9.4 SETTING THE PREVENTION OF MUTUAL INTERFERENCE

1. Please ensure the other indoor unit is OFF.
2. Press **1-6** (PROGRAM NO.) button, **ON** (ON TIMER) button and **Reset** (RESET) button simultaneously. The remote controller will display Screen 1 and followed by Screen 2. The indoor unit beeps to indicate that it has just received the signal from remote controller.



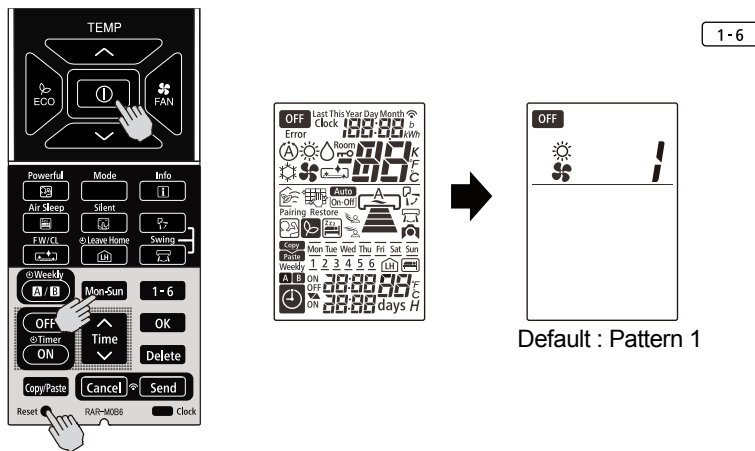
NOTE:
 If indoor unit still not receive the correct signal from the correct remote controller, setting shall be made again. By setting again for the 2nd time, the signal address will change from B to A, then repeat again for the 3rd time.

9.5 INTERMITTENT FAN SPEED SETTING

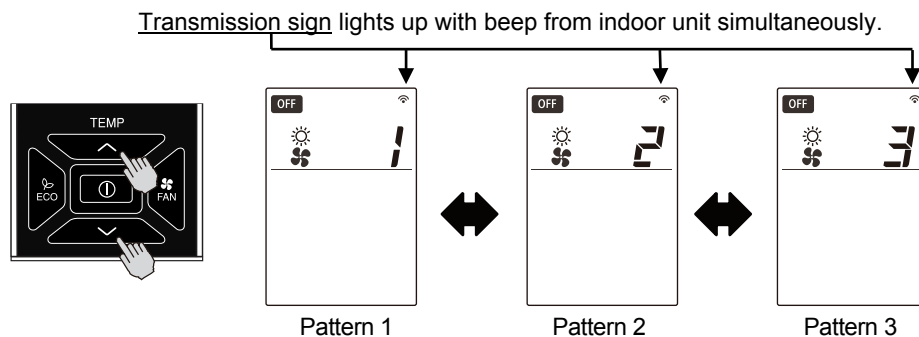
The intermittent fan control during thermo off in Heating Mode can be changed by the remote controller. (This procedure should be done only by service personnel.) It is possible to select from 3 patterns.

PROCEDURE

1. Press **START/STOP** button, **Mon-Sun** (Mon-Sun) button and press **Reset** (RESET) button simultaneously. Release **Reset** (RESET) button only and make sure that all marks on the remote controller display are indicated, then release **START/STOP** button and **Mon-Sun** (Mon-Sun) button. Remote controller now enters "Intermittent Fan Control Change Mode".



2. Press [ROOM TEMPERATURE setting] [^ (UP)]/[V(DOWN)] buttons. (The intermittent pattern changed with indoor unit beep sound.)



	Pattern 1	Pattern 2	Pattern 3
Single Model	Continuous	30sec ON / 210sec OFF repeatedly	50sec ON / 190sec OFF repeatedly
Multi Model	30sec ON / 210sec OFF repeatedly	50sec ON / 190sec OFF repeatedly	Continuous



NOTE :

- (1) The indication of the selected intermittent pattern will disappear after 10 seconds.
- (2) The selected intermittent pattern will remain unchanged after the unit is turned off.

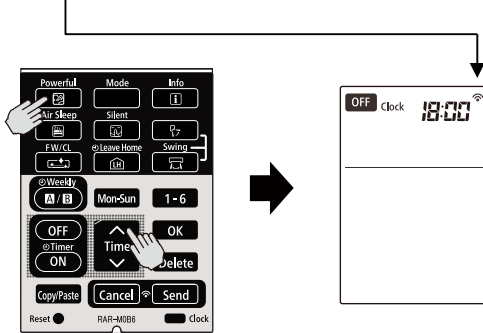
9.6 FAN SPEED SETTING IN THERMO OFF IN COOLING

The fan speed in Cooling Mode during thermo off can be changed by the remote controller.
 (This procedure shall be implemented strictly by service personnel only.)
 It is possible to return it to the default setting.

PROCEDURE

Press  [POWERFUL] button and  [TIME ^ (UP)] button simultaneously for about 5 seconds when the remote controller is OFF.

Transmission sign lights up with beep from indoor unit simultaneously.





- Beep sound pattern :
- 1) Default setting : Short beep
 - 2) Changed setting : Double beep

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

NOTE :

- (1) The selected fan speed will remain unchanged after the unit is turned off.
- (2) If Timer reservation has been set, it will be canceled.
- (3) During time setting and timer setting, this operation cannot be set.

9.7 ERROR CODE INFORMATION

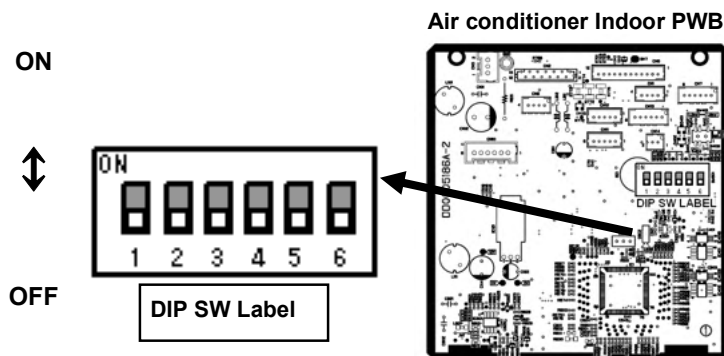
1. In case failure occurs to the air conditioner, by pressing  (INFO) button, an error code will be displayed.
2. Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press  (INFO) button.
3. Wait for 2 seconds for signal transmission and the error code will be displayed.

	TIMER LAMP BLINKING	LD1351 BLINKING	CODE	MEANING
INDOOR	-	-	000 00	Normal
	1 time		001 00	Refrigerant cycle fault
	2 times	-	-	Outdoor unit is under forced operation
	3 times	-	003 00	Communication error between indoor and outdoor units
	9 times	-	009 00	Indoor thermistor
	10 times	-	010 00	Abnormal rotating numbers
	12 times	-	012 00	Outdoor interface error
	13 times	-	013 00	IC401 data reading error
OUTDOOR	4 times	2 times	002 01	Peak current cut
	4 times	3 times	003 01	Compressor abnormal low speed rotation
	4 times	4 times	004 01	Compressor switching failure
	4 times	5 times	005 01	Overload lower limit cut
	4 times	6 times	006 01	OH thermistor temperature rise
	4 times	7 times	007 01	Abnormal outdoor thermistor
	4 times	8 times	008 01	Communication error between micon
	4 times	9 times	009 01	Indoor type mis-matched
	4 times	10 times	010 01	Abnormal power source
	4 times	11 times	011 01	Fan stop for strong wind
	4 times	12 times	012 01	Fan motor fault
	4 times	13 times	013 01	EEPROM reading error
	4 times	14 times	014 01	Active converter defective
	4 times	15 times	015 01	Abnormal PWB circuit

	TIMER LAMP BLINKING	LD1351 Lit LD1352 BLINKING	CODE	MEANING
OUTDOOR	4 times	1 times	071 01	Overheat thermostat
	4 times	2 times	072 01	Defrost thermostat
	4 times	3 times	073 01	Outdoor temperature thermostat
	4 times	4 times	074 01	Narrow pipe thermostat (indoor 1)
	4 times	5 times	075 01	Wide pipe thermostat (indoor 1)
	4 times	6 times	076 01	Narrow pipe thermostat (indoor 2)
	4 times	7 times	077 01	Wide pipe thermostat (indoor 2)
	4 times	8 times	078 01	Narrow pipe thermostat (indoor 3)
	4 times	9 times	079 01	Wide pipe thermostat (indoor 3)
	4 times	10 times	080 01	Narrow pipe thermostat (indoor 4)
	4 times	11 times	081 01	Wide pipe thermostat (indoor 4)
	4 times	12 times	082 01	Narrow pipe thermostat (indoor 5)
	4 times	13 times	083 01	Wide pipe thermostat (indoor 5)

9.8 ADDITIONAL FUNCTION VIA DIP-SWITCH SETTINGS

A new DIP Switch is available on the PWBs of the indoor unit that provide additional functions via the settings on the switches.



Pin No.	Function	Switch Position / Setting					
		OFF	Enable	ON	Disable		
1	AUTO RESTART function	OFF	Enable	ON	Disable		
2	DRY CONTACT function	OFF	Disable	ON	Enable		
3	DRY CONTACT Logic Select	OFF	HI Input Active	ON	LO Input Active		
4	HEATING / COOLING ONLY MODE SELECT	OFF	NORMAL (HEAT AND COOL)	OFF	HEATING ONLY	ON	COOLING ONLY
5		OFF		ON		OFF	
6	REMOCON ID SELECT ❖1	OFF	SELECT ID A	ON	SELECT ID B		

NOTE:

- ❖1 The setting of pin no. 6 is disabled for this model. Please refer to **9.4 SETTING THE PREVENTION OF MUTUAL INTERFERENCE**.

9.8.1 AUTO RESTART FUNCTION

The AUTO RESTART function can be enabled or disabled by setting Pin No. 1 on the DIP SWITCH above to the ON or OFF position accordingly.




9.8.2 HEATING/COOLING ONLY MODE SELECTION



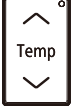





When this function is enabled, the operation mode could be locked to either Heating Only (Heating or Fan) or Cooling Only (Cooling, Fan or Dehumidifying) by setting the Pin No. 4 and 5 accordingly.







LOCKED MODE	REMARKS
HEATING ONLY	Unit will not enter into Cooling mode although cooling mode is selected using the remote controller.
COOLING ONLY	Unit will not enter into Heating mode although heating mode is selected using the remote controller.

9.9 WIRELESS REMOTE CONTROL FUNCTION

RAR-M0B3、RAR-M0B4、RAR-M0B5

RAR-M0B3	RAR-M0B4	RAR-M0B5
		
RAF-SH07QLAE RAI-SH07QLAE RAF-SH09QLAE RAI-SH09QLAE RAF-SH12QLAE RAI-SH12QLAE RAF-SH18QLAE RAI-SH18QLAE	RAD-SH07QLAE RAD-SH09QLAE RAD-SH12QLAE RAD-SH18QLAE RAD-SH24QLAE	RAS-EH07QLAE RAS-EH09RLAE RAS-EH12RLAE RAS-EH18RLAE RAS-EH24RLAE

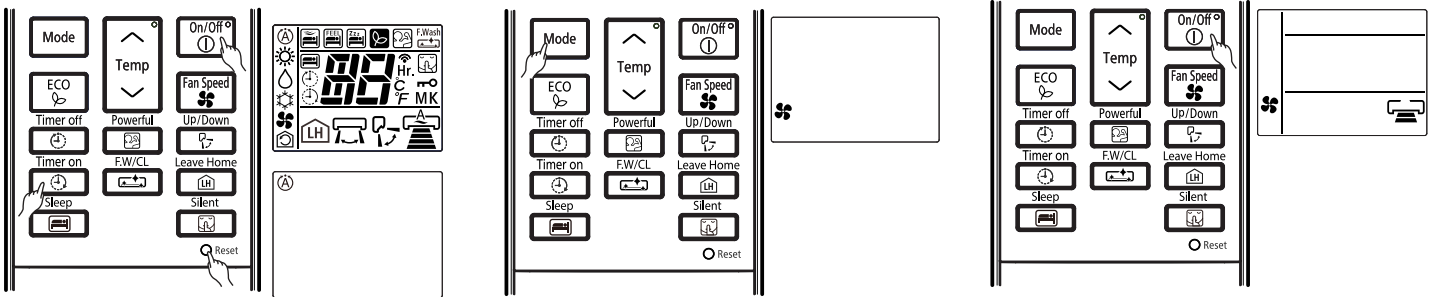
BUTTONS	FUNCTION
	MODE selector Button Use this button to select the operating mode. Every time you press this button, the mode will change from (A) (AUTO) → ☀ (HEAT) → 💧 (DEHUMIDIFY) → ❄ (COOL) and (FAN) → 🌀 cyclically.
	ECO Button Use this button to set the ECO mode.
	TEMPERATURE Button Room temperature setting. Value will change quicker when keep pressing.
	ON/OFF Button Press this button to start operation. Press it again to stop operation.
	FAN SPEED Button Select the fan speed for cooling and heating mode.
	TIMER OFF Button Select the turn OFF time.
	TIMER ON Button Select the turn ON time.
	POWERFUL Button Press this button to start powerful operation.

	<p>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.</p>
	<p>ONE TOUCH CLEAN button Drying indoor heat exchanger after cooling operation to prevent mildew.</p>
	<p>UP/DOWN Button Control the angle of the horizontal air deflector.</p>
	<p>LEAVE HOME Button Prevent the room temperature from falling too much by setting temperature 10°C~16°C when no one is at home.</p>
	<p>SILENT button Use this button to set the SILENT mode.</p>
	<p>ECO SLEEP TIMER button Use this button to set the ECO sleep timer.</p>

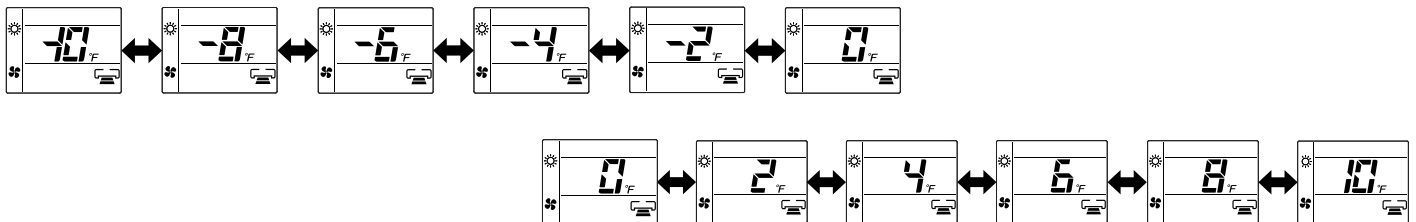
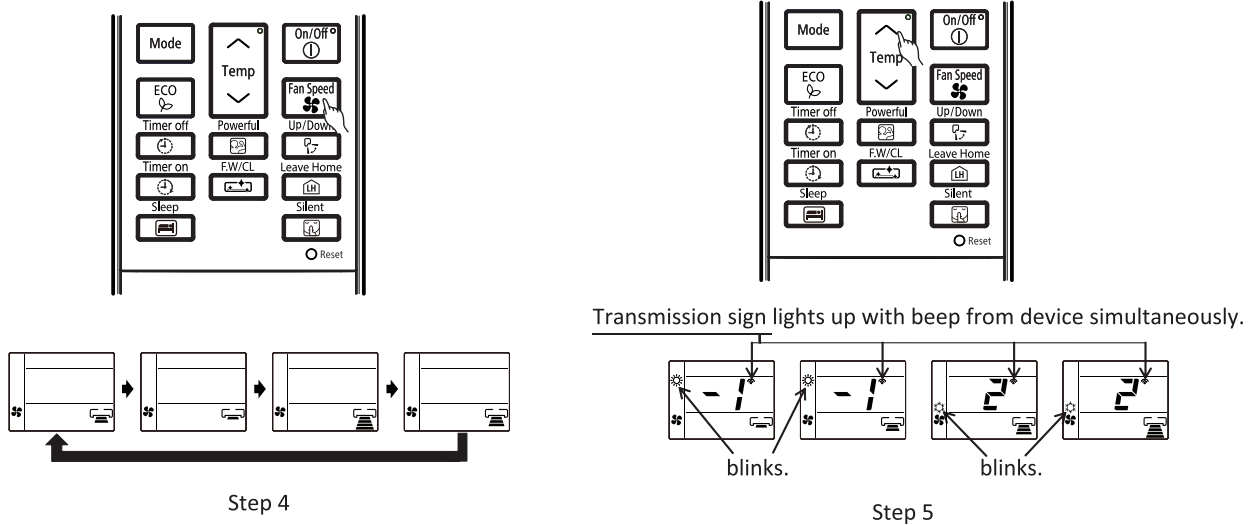
For more information, please refer to the operation manual.

9.10. SHIFT VALUE

1. While pressing and holding (ON/OFF) button and button, press [RESET] button on the same. Release [RESET] button only and make sure that all marks on the remote controller display are indicated then release the (ON/OFF) button and button. Remote controller now enters "Shift Value Change Mode".
2. Press the (MODE) selector button so that the display indicates (FAN) mode.
3. Press the (ON/OFF) button and FAN operation will be started.



4. Set the FAN SPEED with the (FAN SPEED) button according to the following FAN speed setting in order to choose the desired operation mode that is required for shift value temperature modification.
 - To change the shift value for COOLING mode operation, select either (HIGH) or (MED) FAN SPEED.
 - To change the shift value for HEATING mode operation, select either (LOW) or (SILENT) FAN SPEED.
5. Press the (TEMP \downarrow or \uparrow) button to change the shift value. (The shift value changed with device producing beep sound.)











NOTE :

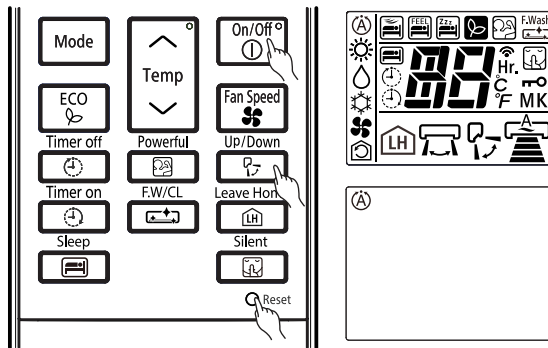
1. The displayed shift value, (HEAT) and (CO OL) symbol on the remote controller display will disappear after 10 seconds.
2. The changed shift value will remain unchanged after turned off the power.
3. If "0" is displayed on the remote controller display, it indicates the shift value is now at the initial setting .



9.11. DISPLAY OPERATION MODE SETTING

For operating indoor unit independently (without outdoor unit connection), remote controller must be set according to below procedures before send the signal to the indoor unit. New communication format between indoor and outdoor is required to communicate with outdoor unit.

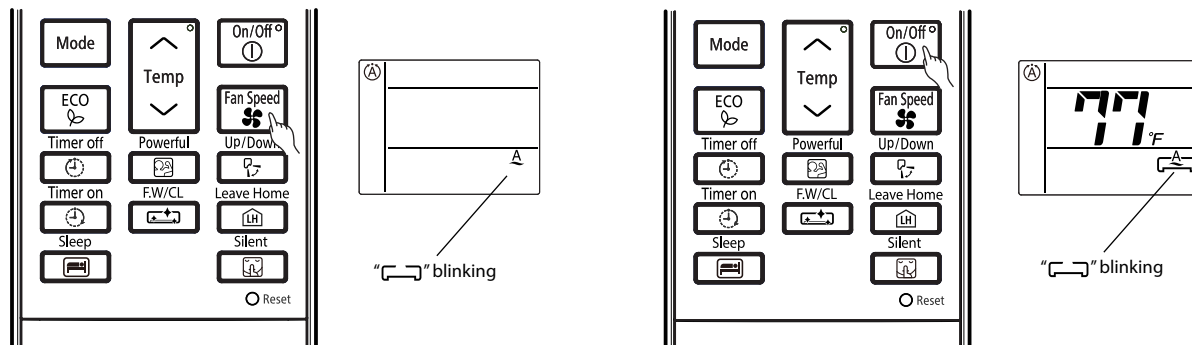
PROCEDURE

1. While pressing and holding  (ON/OFF) button and  (UP/DOWN) button, press  (RESET) button on the same time. Release  (RESET) button only and make sure that all marks on the LCD display are indicated, then release the  (ON/OFF) button and  (UP/DOWN) button. Remote controller now enters "DISPLAY OPERATION MODE" for the indoor unit to run independently. Please ensure that when pressing  (FAN SPEED) button, "" will be blinking.




2. Press the  (MODE) selector button to choose the desired operation mode.
3. Press  (ON/OFF) button.

Then , the indoor unit will starts to operate independently according the selected operation mode.



NOTE :

- (1) During "DISPLAY OPERATION MODE", "" blinks on LCD of remote controller.
- (2) When operation stops, "DISPLAY OPERATION MODE" is canceled.




9.12. HOW TO CHANGE THE INTERMITTENT FAN CONTROL SETTING


The intermittent fan control during thermo off in Heating mode can be changed by the remote controller.



(The procedure should be done only by service personnel.)

It is possible to select from 3 patterns.

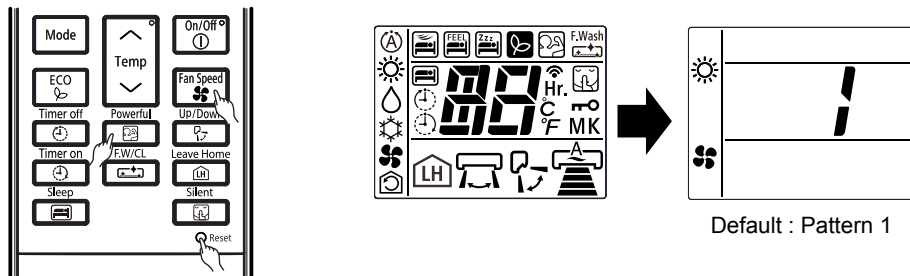
PROCEDURE

Press  (POWERFUL) button,  (FAN SPEED) button and press  [RESET] button simultaneously.

Release  [RESET] button only and make sure that all marks on the remote controller display are indicated, then release

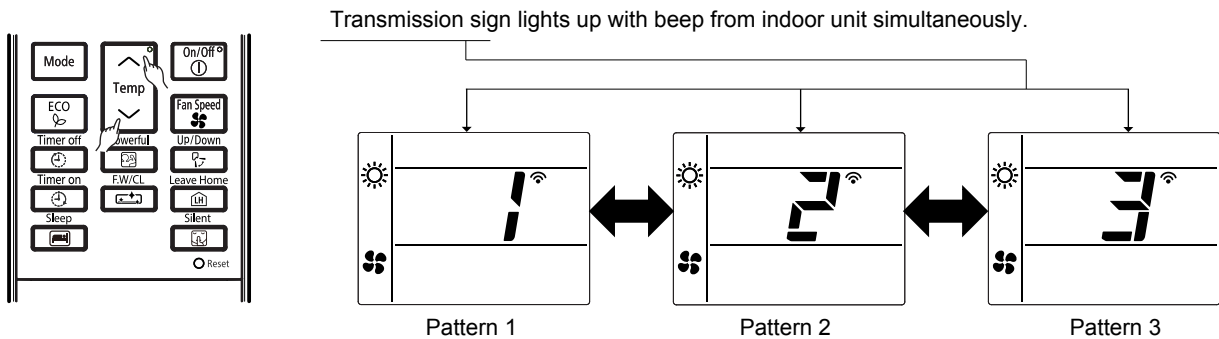
 (POWERFUL) button and  (FAN SPEED) button.

Remote controller now enters "Intermittent Fan Control Change Mode".



Press [ROOM TEMPERATURE setting] [^ (UP) / v (DOWN)] button.

(The intermittent pattern changed with indoor unit beep sound)



	Pattern 1	Pattern 2	Pattern 3
Single model	Continuous	30sec ON / 210sec OFF repeatedly	50sec ON / 190sec OFF repeatedly
Multi	30sec ON / 210sec OFF repeatedly	50sec ON / 190sec OFF repeatedly	Continuous



NOTE :

- (1) The indication of the selected intermittent pattern will disappear after 10 seconds.
- (2) The selected intermittent pattern will remain unchanged after the unit is turned off.

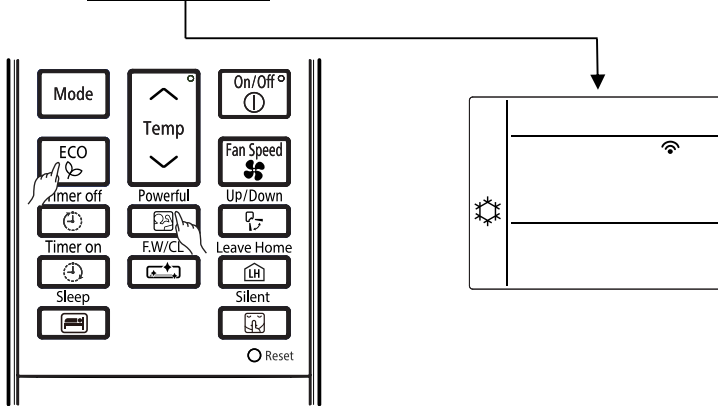
9.13. HOW TO CHANGE THE FAN SPEED IN COOLING MODE DURING THERMO OFF

The fan speed in Cooling Mode during thermo off can be changed by the remote controller.
 (This procedure shall be implemented strictly by service personnel only.)
 It is possible to return it to the default setting.

PROCEDURE

Press  [POWERFUL] button and  [ECO] button simultaneously for about 5 seconds when the remote controller is OFF.

Transmission sign lights up with beep from indoor unit simultaneously.



- Beep sound pattern :
- 1) Default setting : Short beep
 - 2) Changed setting : Double beep

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

NOTE :

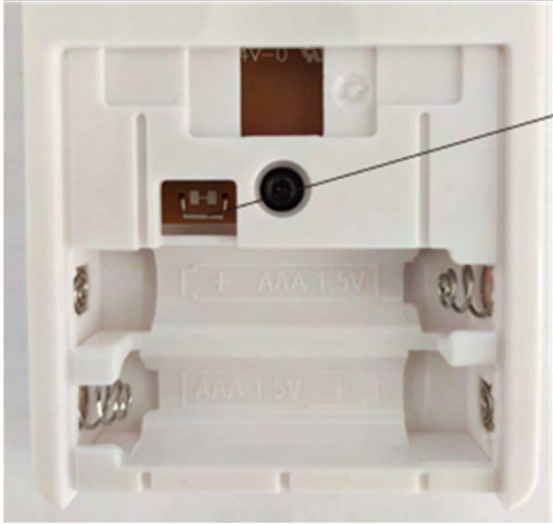
- (1) The selected fan speed will remain unchanged after the unit is turned off.
- (2) If Timer reservation has been set, it will be canceled.
- (3) During time setting and timer setting, this operation cannot be set.

9.14. SETTING THE PREVENTION OF MUTUAL INTERFERENCE


a.) Other indoor circuit breakers should be disconnected.



- b.) Remove the back cover of the remote control.
- c.) Cut the jumper as shown below.
- d.) Press "Reset" button after installing the battery.
- e.) Corresponding to the room electrical box dial code 6 to dial on.



Cut (Attention: Remove the battery before cutting. Do not cut with electricity).



ON							ON
1	2	3	4	5	6		↕
							OFF

f.) Please use the remote control to check the available models of corresponding indoor machines.



10 OPTION LIST











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10.1 WIRED REMOTE CONTROL SPX-RCDA1 AND SPX-RCDB1

This controls the operation function and timer setting of the room air conditioner.

SPX-RCDA1	SPX-RCDB1
	
<p>RAD-SH07QHLAE RAD-SH09QHLAE RAD-SH12QHLAE RAD-SH18QHLAE RAD-SH24QHLAE</p>	<p>RAS-EH07QHLAE RAF-SH07QHLAE RAS-EH09RHLAE RAF-SH09QHLAE RAS-EH12RHLAE RAF-SH12QHLAE RAS-EH18RHLAE RAF-SH18QHLAE RAS-EH24RHLAE RAS-SH07QHLAE RAI-SH07QHLAE RAS-SH09RHLAE RAI-SH09QHLAE RAS-SH12RHLAE RAI-SH12QHLAE RAS-SH18RHLAE RAI-SH18QHLAE RAS-SH24RHLAE</p>



BUTTONS	FUNCTION
	<p>MODE Selector Use this button to select the operating mode. Every time you press this button, the mode will change from ☉ (AUTO) → ☀ (HEAT) → ☁ (DEHUMIDIFY) → ❄ (COOL) cyclically.</p>
	<p>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).</p>
	<p>ON/OFF button Press this button to start operation. Press it again to stop operation.</p>
	<p>SLEEP button Use this button to set the SLEEP timer.</p>
	<p>SET button Timer setting reservation.</p>
	<p>OFF button Select the turn OFF timer.</p>
	<p>ON button Select the turn ON timer.</p>
	<p>CANCEL button Cancel timer reservation.</p>
	<p>AUTO SWING (Vertical) button Controls the angle of the horizontal air deflector.</p>
	<p>ROOM TEMPERATURE setting button</p>

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.





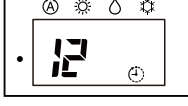





4. Press  (ROOM TEMPERATURE) button to change the shift value (-5°C ~ 0 ~ 5°C).
5. Press  (ON/OFF) button to end 'Shift value setting mode'.






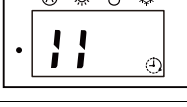
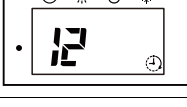
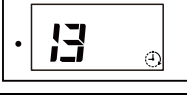

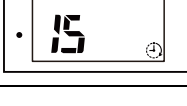

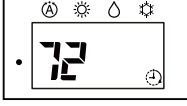
NOTE:



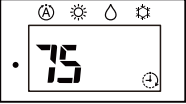








1. There are total of 11 shift values ranging from -5 to 5.
2. The changed shift value will remain unchanged after turned off the power.

10.1.2 ERROR CODE INFORMATION

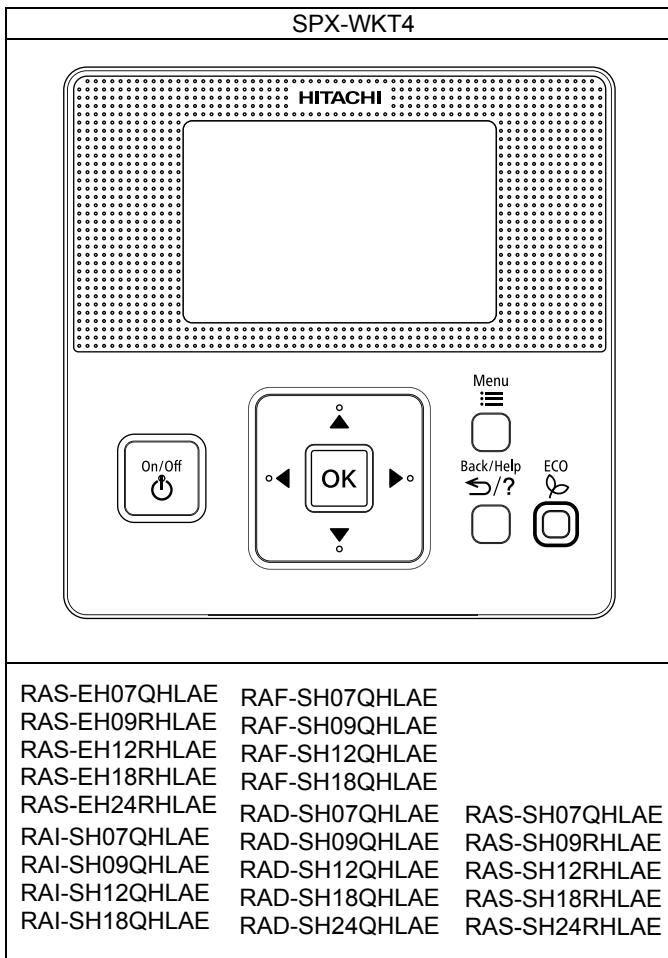
1. In case failure occurs to the air conditioner, the error code will constantly appear on the wired remote controller display.

	TIMER LAMP BLINKING	LD1351 BLINKING	CODE	MEANING
INDOOR	-	-	-	Normal
	1 time	-		Refrigerant cycle fault
	2 times	-	-	Outdoor unit is under forced operation
	3 times	-		Communication error between indoor and outdoor units
	9 times	-		Indoor thermistor
	10 times	-		Abnormal rotating numbers
	12 times	-		Outdoor interface error
	13 times	-		IC401 data reading error
OUTDOOR	4 times	2 times		Peak current cut
	4 times	3 times		Compressor abnormal low speed rotation
	4 times	4 times		Compressor switching failure
	4 times	5 times		Overload lower limit cut

	TIMER LAMP BLINKING	LD1351 BLINKING	CODE	MEANING
OUTDOOR	4 times	6 times		OH thermistor temperature rise
	4 times	7 times		Abnormal outdoor thermistor
	4 times	8 times		Communication error between micon
	4 times	9 times		Indoor type mis-matched
	4 times	10 times		Abnormal power source
	4 times	11 times		Fan stop for strong wind
	4 times	12 times		Fan motor fault
	4 times	13 times		EEPROM reading error
	4 times	14 times		Active converter defective
	4 times	15 times		Abnormal PWB circuit
		LD1351 Lit LD1352 BLINKING		
	4 times	1 times		Overheat thermostat
	4 times	2 times		Defrost thermostat

	TIMER LAMP BLINKING	LD1351 Lit LD1352 BLINKING	CODE	MEANING
OUTDOOR	4 times	3 times		Outdoor temperature thermostat
	4 times	4 times		Narrow pipe thermostat (indoor 1)
	4 times	5 times		Wide pipe thermostat (indoor 1)
	4 times	6 times		Narrow pipe thermostat (indoor 2)
	4 times	7 times		Wide pipe thermostat (indoor 2)
	4 times	8 times		Narrow pipe thermostat (indoor 3)
	4 times	9 times		Wide pipe thermostat (indoor 3)
	4 times	10 times		Narrow pipe thermostat (indoor 4)
	4 times	11 times		Wide pipe thermostat (indoor 4)
	4 times	12 times		Narrow pipe thermostat (indoor 5)
	4 times	13 times		Wide pipe thermostat (indoor 5)

10.2 WIRED REMOTE CONTROL SPX-WKT4



10.2.1 SERVICE MENU OPERATION



10.2.1.1 SERVICE MENU

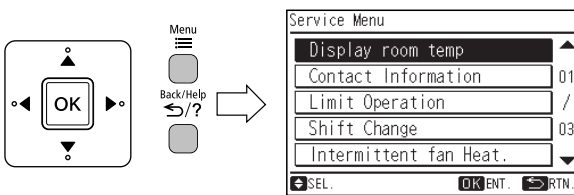
Various setting functions are displayed in the service menu. This procedure shall be implemented strictly by service personnel only. After implementing this procedure, test run must be performed to ensure that the procedure has been done as intended, without any issues. Refer to the following sections for each function.


NOTE:

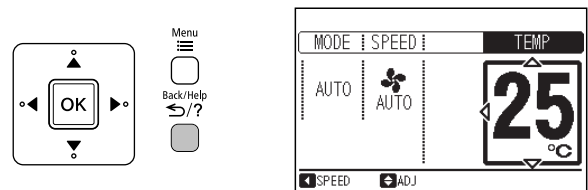
☒ : Unable to set



- 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 the example.

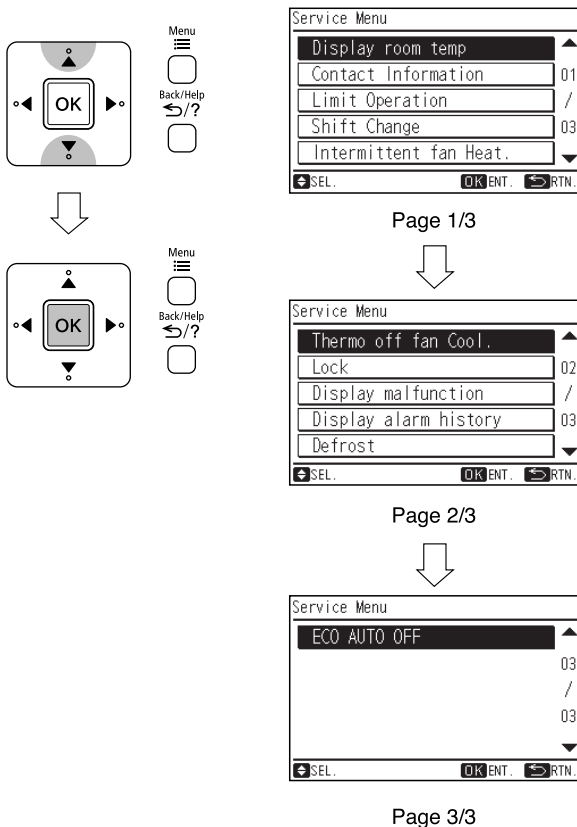
- 1 Press and hold  and  simultaneously for at least 3 seconds during the normal mode. The service menu will be displayed.



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



- 2 Select the "Service Menu" function by pressing "" or "" and press "OK". ("☒" will be displayed if the function is not available.)



NOTE:

- If the menu screen remains unchanged for approximately 2 hours, the screen will automatically return to the normal mode.

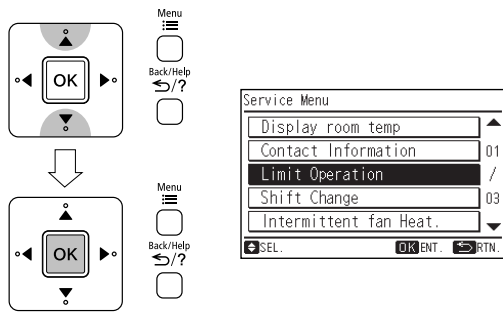
NOTE:

- The "Service Menu" functions vary depending on which is displayed in the stop and in operation, or model-wise.

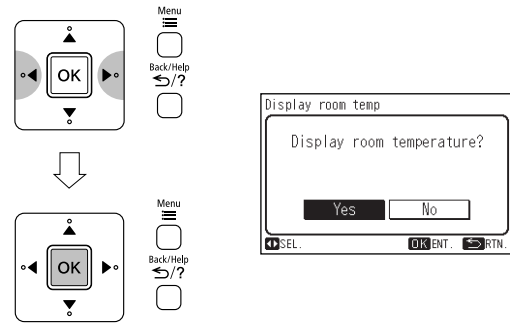
10.2.1.2 DISPLAY ROOM TEMPERATURE

Room temperature(around remote controller) can be displayed.

- 1 Select "Display room temp" from the service menu and press "OK".
The confirmation screen will be displayed.



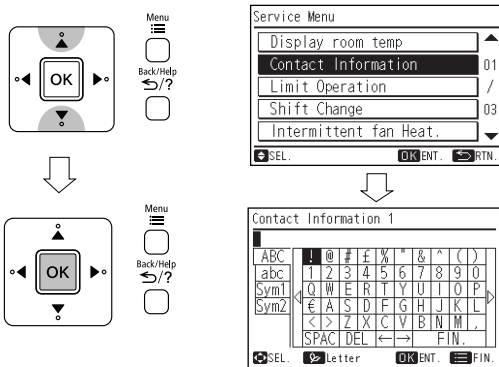
- 2 Select "Yes" by pressing "<" or ">" and press "OK". The setting will be confirmed and the screen will return to the normal mode.



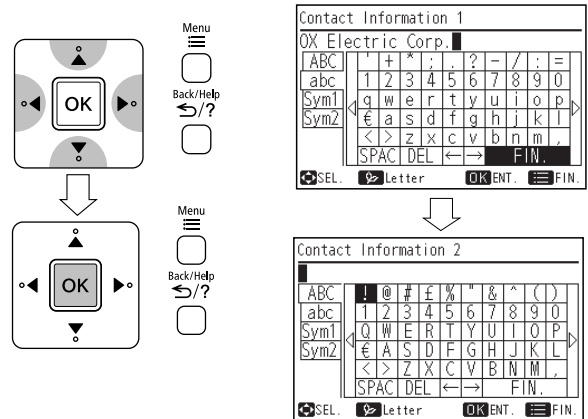
10.2.1.3 CONTACT INFORMATION REGISTRATION

Contact information can be registered from "Contact information".

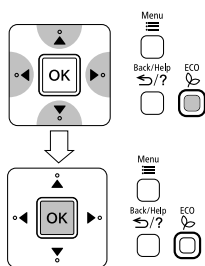
- 1 Select "Contact information" from the service menu and press "OK". The contact information 1 will be displayed.



- 5 Select "FIN." and press "OK" (or simply press Menu). "Contact information 2" will be displayed.

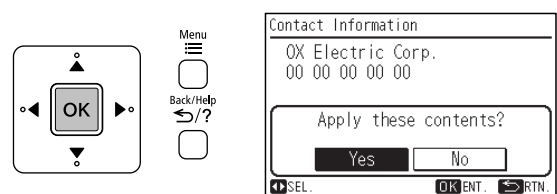
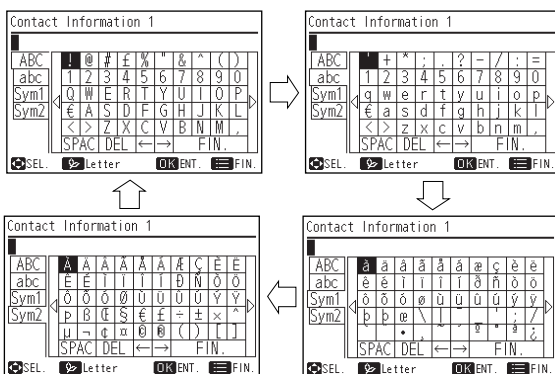


- 2 Press to change font type.
- 3 Press "< >" to select letter.
- 4 Press "OK" to confirm the letter. (Max.: 28 letters)



- 6 Repeat (3)-(5) to register the contact information 2.
Select "FIN." and press "OK", the confirmation screen will be displayed.
(Also press Menu and the confirmation screen will be displayed.)

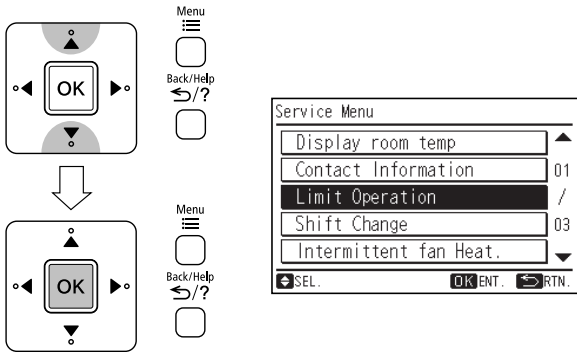
- 7 Select "Yes" and press "OK". The service menu will be displayed after setting is confirmed.
If "No" is pressed, the screen will return to (3).



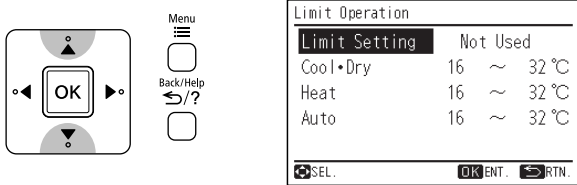
10.2.1.4 LIMIT OPERATION

Setting temperature range can be changed.

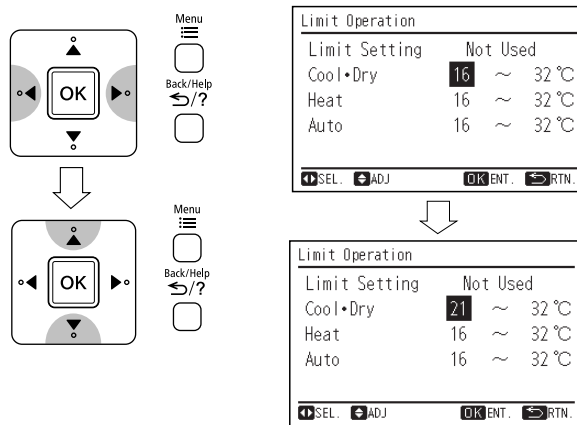
- 1 Select "Limit Operation" from the service menu and press "OK".
The limit operation setting will be displayed.



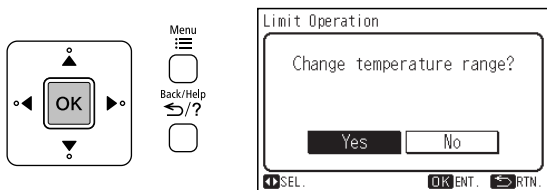
- 2 Press "△" or "▽" to select the setting items. The setting items are displayed "Limit Setting", "Cool-Dry", "Heat" and "Auto".



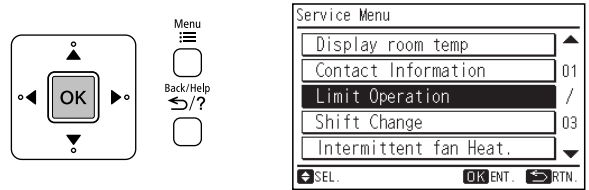
- 3 Press "◀" or "▶" to set each setting content for the selected item. When "Limit Setting" is selected, the setting contents are switched in order of "Not Used" ↔ "Used" by pressing "△" or "▽". When "Cool-Dry" or "Heat" or "Auto" is selected, the setting temperature (lower limit or upper limit) can be set every 1°C (1°F) by pressing "△" or "▽".



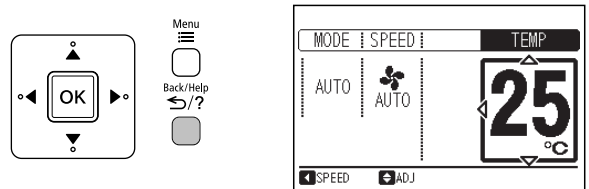
- 4 Press "OK" to finish the limit operation setting. The confirmation screen will be displayed.



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



- 6 Press "Back/Help" (return/help) to return to the normal mode.



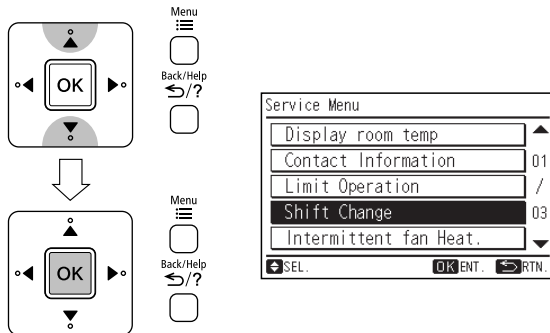
NOTE:

- The limit operation setting will remain unchanged after the unit is turned off.

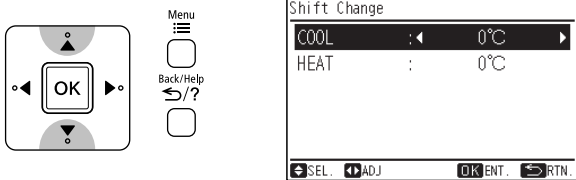
10.2.1.5 SHIFT CHANGE

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

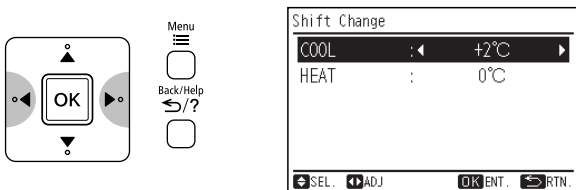
- 1 Select "Shift Change" from the service menu and press "OK". The shift change setting will be displayed.



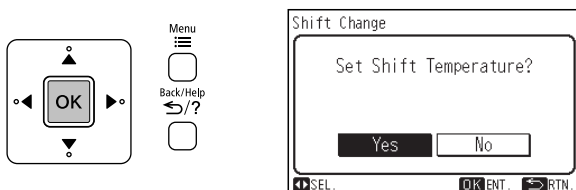
- 2 Press "△" or "▽" to select the operation mode. ("COOL" or "HEAT")



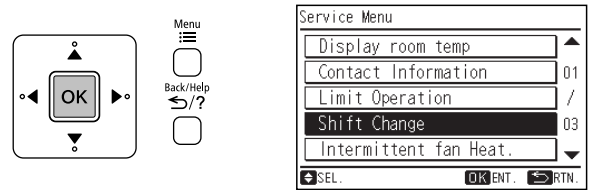
- 3 By pressing "◀" or "▶", the shift value will be changed as below.
 "...+5°C ↔ -5°C ↔ -4°C ↔ -3°C ↔ -2°C
 ↔ -1°C ↔ 0°C ↔ +1°C ↔ +2°C ↔
 +3°C ↔ +4°C ↔ +5°C ↔ -5°C (+10°F
 ↔ -10°F ↔ -8°F ↔ -6°F ↔ -4°F ↔
 -2°F ↔ 0°F ↔ +2°F ↔ +4°F ↔ +6°F
 ↔ +8°F ↔ +10°F ↔ -10°F...)"



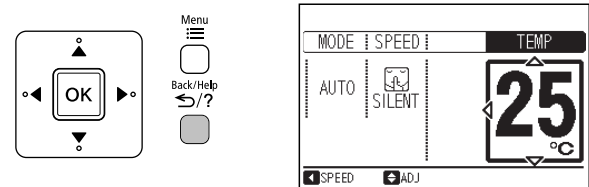
- 4 Press "OK" to finish the shift value setting. The confirmation screen will be displayed.



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



- 6 Press "Back/Help" (return/help) to return to the normal mode.



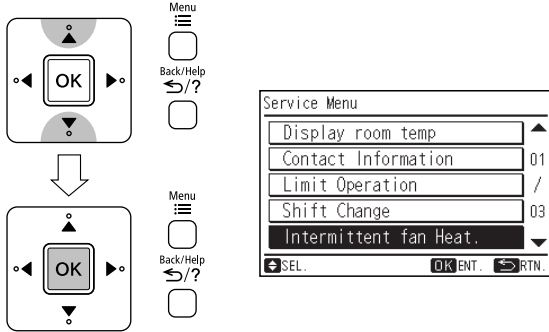
NOTE:

- When the setting is done, fan speed basically will be changed to "Silent"
- This setting cannot use during operation.
- The shift 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.

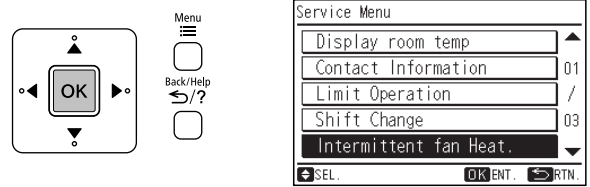
10.2.1.6 INTERMITTENT FAN CONTROL

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

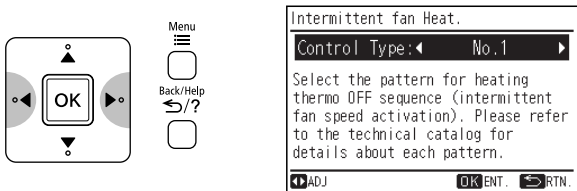
- 1 Select "Intermittent fan Heat." from the service menu and press "OK".
The intermittent fan control setting will be displayed.



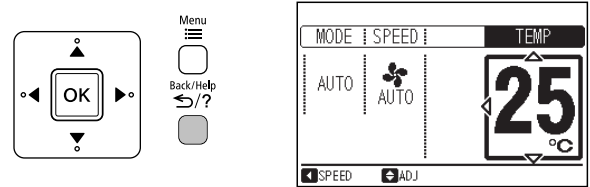
- 4 Select "Yes" by pressing "<" or ">" and press "OK".
The setting will be confirmed and the screen will return to the service menu.



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



- 5 Press "Back/Help" (return/help) to return to the normal mode.

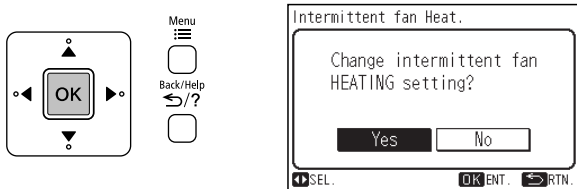


NOTE:

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

	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

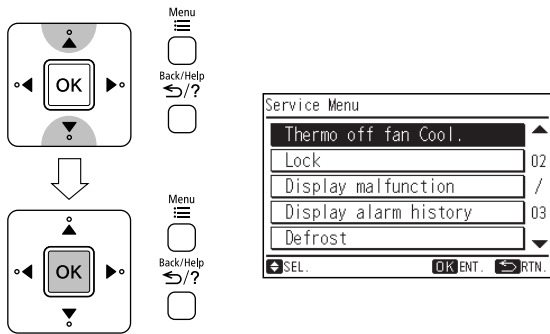
- 3 Press "OK" to finish the intermittent fan control setting. The confirmation screen will be displayed.



10.2.1.7 FAN SPEED DURING THERMO OFF

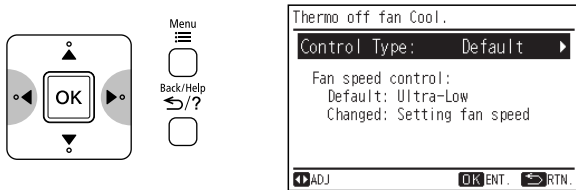
The fan speed during thermo off in Cooling mode can be changed.

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



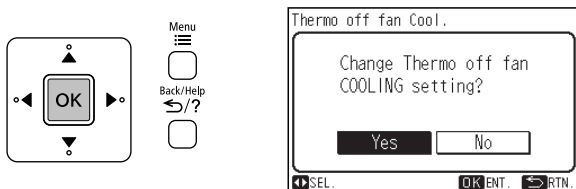
- 2 By pressing "<" or ">", the "Control Type" will be changed as below.

"Default" ↔ "Changed"



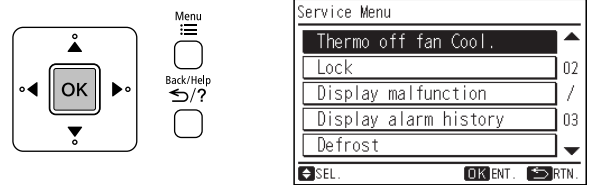
	Fan speed during thermo off
Default	Ultra low
Changed	Set fan speed (When auto fan is set, the fan speed is low.)

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

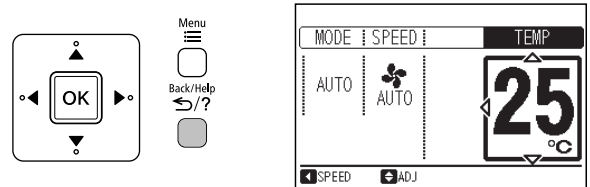


- 4 Select "Yes" by pressing "<" or ">" and press "OK".

The setting will be confirmed and the screen will return to the service menu.



- 5 Press "Back/Help" (return/help) to return to the normal mode.



NOTE:

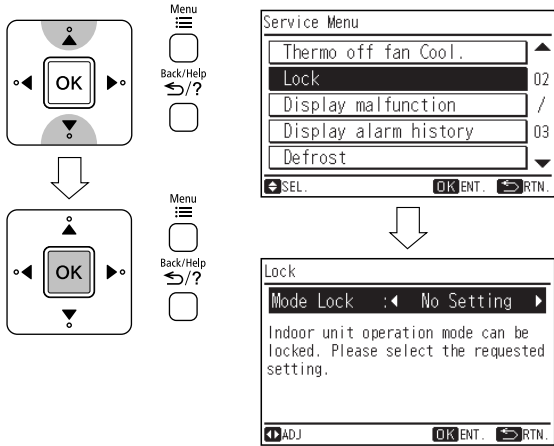
- This setting cannot use during operation.
- The fan speed during thermo off setting will remain unchanged after the unit is turned off.

10.2.1.8 OPERATION LOCK

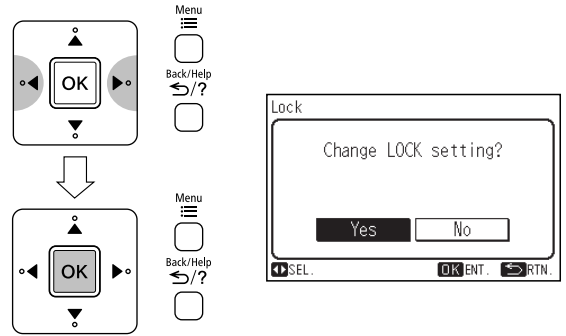
This function is used to lock the operation mode from the remote controller.

The remote controller can be set to fix the "Heating" mode (including "Fan"), "Cooling" mode and "Dehumidifying" mode (including "Fan") operations.

- When unit is OFF, select "Lock" from the service menu and press "OK".
The screen of "Mode Lock" selection will be displayed.

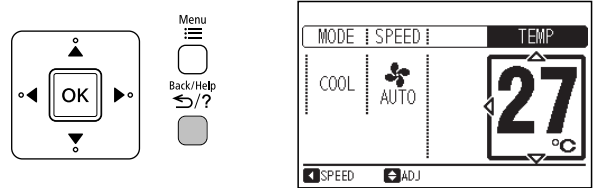


- Select "Yes" by pressing "<" or ">" and press "OK".
The setting will be confirmed and the screen will return to the service menu.



- 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.

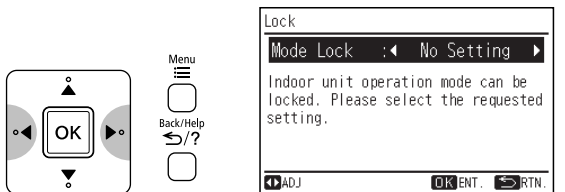
- Press "Back/Help" (return/help) to return to the normal mode.



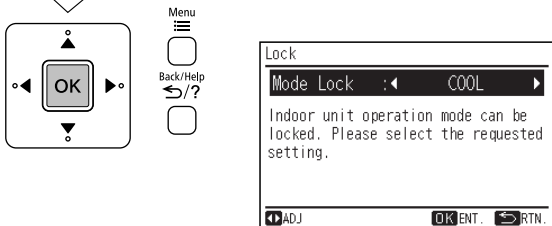
ex. Select "Cooling" mode lock

NOTE:

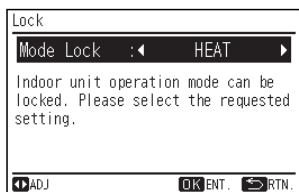
- The operation lock setting will remain unchanged after the unit is turned off.



When this function is not used



When "Cooling" mode lock is selected



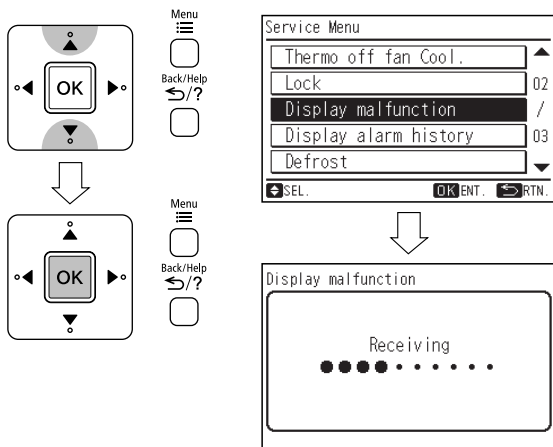
When "Heating" mode lock is selected

10.2.1.9 DISPLAY MALFUNCTION

Failure modes are stored in the nonvolatile memory of indoor unit and shall be redisplayed by this remote controller. This function is useful in checking the failure modes either during switching OFF the power or restarting the device without checking the error code on display or number of indication lamp blinking. The remote controller can redisplay up to last 5 failure modes from the memory. Thus, for some failure modes which are unable to retrieve because of remote controller limit to redisplay only 5 failure modes, it can be found by cleaning up the memory first then recheck the memory content again during the visit at the customer place.

a) How to redisplay failure diagnosis

- 1 Turn the circuit breaker OFF.
- 2 Then turn the circuit breaker ON.
- 3 To enter the service menu.
- 4 Select "Display malfunction" from the service menu and press "OK".



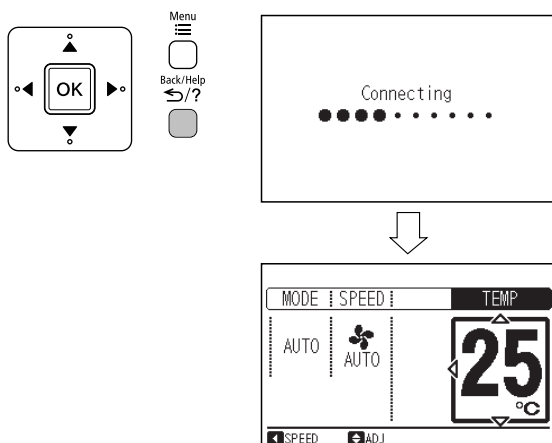
- 5 The last 5 failure modes from the memory will be displayed.

Display malfunction	
Unit	Code
Last IN	010
IN	010
IN	010
IN	009
IN	009

NOTE:

- During display, the timer lamp of indoor unit will blink at the last failure mode.

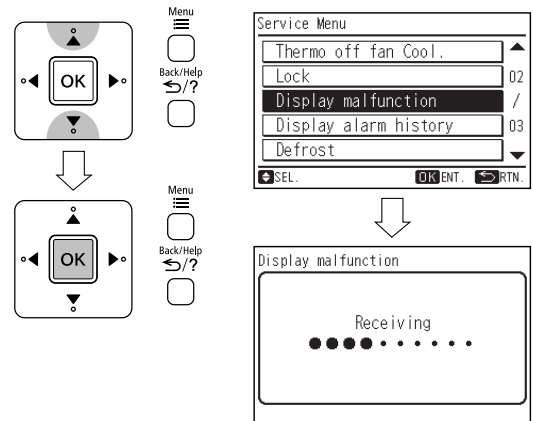
- 6 Press "Back/Help" (return/help) to return to the normal mode.



b) How to clear the failure diagnosis data

- 1 Redisplay the failure diagnosis data.
- 2 To enter the service menu.

- 3 Select "Display malfunction" from the service menu and press "OK".



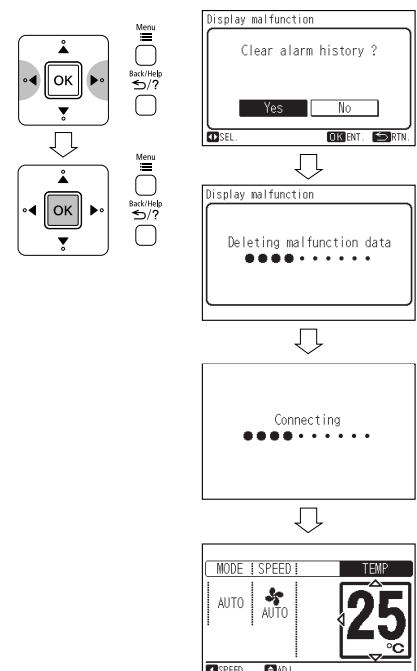
- 4 The last 5 failure modes from the memory will be displayed. "OK DeIA11" is displayed in this time.

Display malfunction	
Unit	Code
Last IN	010
IN	010
IN	010
IN	009
IN	009

Turned on

- 5 Press "OK". The confirmation screen is displayed. Select "Yes" by pressing "<" or ">" and press "OK".

When the failure diagnosis data is cleared, the screen will automatically return to the normal mode.



NOTE:

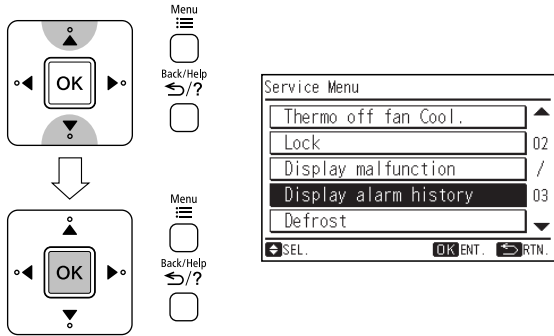
- The clear mode is valid only once after section "1.9.1" .

10.2.1.10 DISPLAY ALARM HISTORY

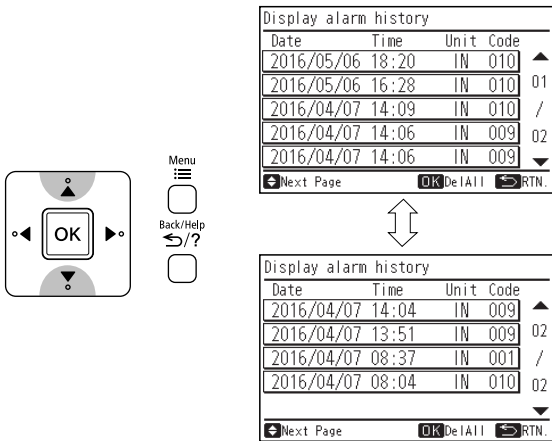
The history of failure modes are also stored in the nonvolatile memory of this remote controller. This function is useful for when a failure to check whether or not occurred. (Time and date is also indicated.) The remote controller can memorize to last 10 failure modes in the memory.

a) How to display alarm history

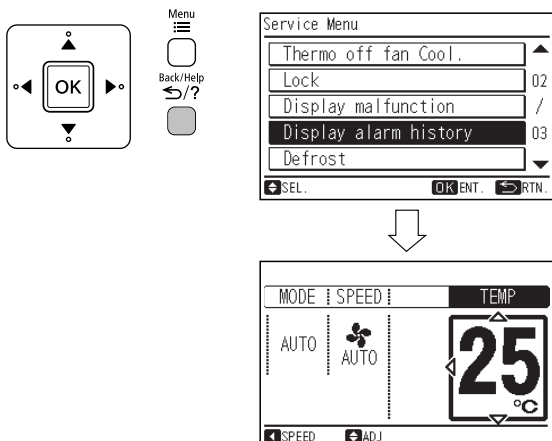
- 1 To enter the service menu.
- 2 Select "Display alarm history" from the service menu and press "OK".



- 3 The last 10 failure modes (up to 5 failure modes per one screen) in the memory will be displayed. By pressing "△" or "▽", scroll page.

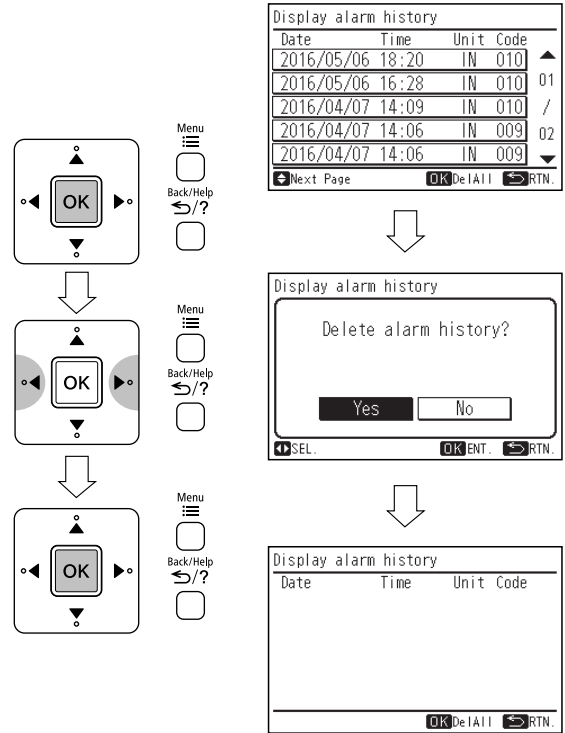


- 4 Press "Back/Help" (return/help) twice to return to the normal mode.

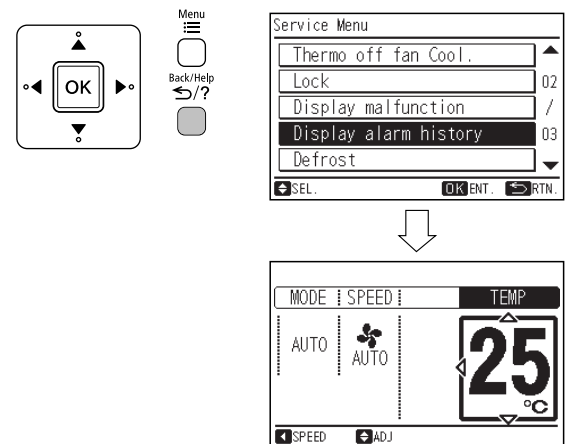


b) How to clear the alarm history

- 1 Redisplay the alarm history. (Refer to section "1.10.1")
- 2 Press "OK". The confirmation screen is displayed. Select "Yes" by pressing "◀" or "▶" and press "OK".



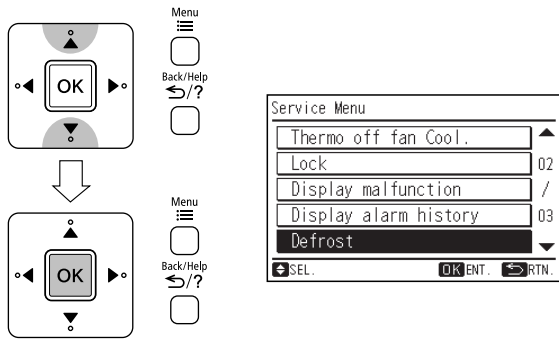
- 3 Press "Back/Help" (return/help) twice to return to the normal



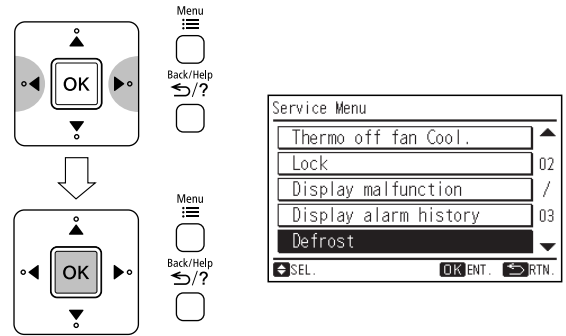
10.2.1.11 DEFROSTING INHIBIT PERIOD SELECTION

The defrosting inhibit period selection can be changed. This selection is valid with the single model only.

- 1 Turn the circuit breaker OFF.
- 2 Then turn the circuit breaker ON.
- 3 To enter the service menu.
- 4 Select "Defrost" from the service menu and press "OK".

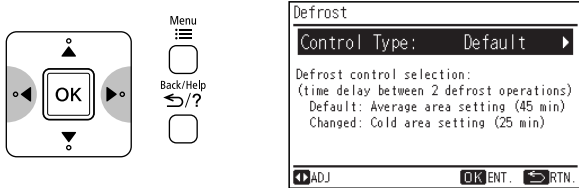


- 7 Select "Yes" by pressing "<" or ">" and press "OK". The setting will be confirmed and the screen will return to the service menu.

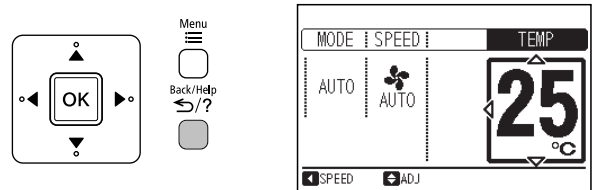


- 5 By pressing "<" or ">", the "Control Type" will be changed as below.

"Default" ↔ "Changed"



- 8 Press "Back/Help" (return/help) to return to the normal mode.

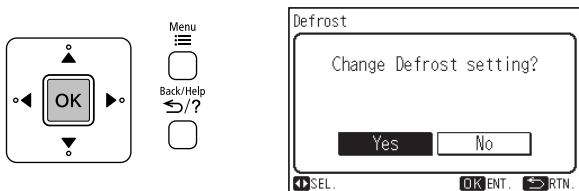


NOTE:

- The defrosting inhibit period selection setting will remain unchanged after the unit is turned off.

	Defrosting inhibit period
Default	Average area setting (Around 45 min)
Changed	Cold area setting (Around 25 min)

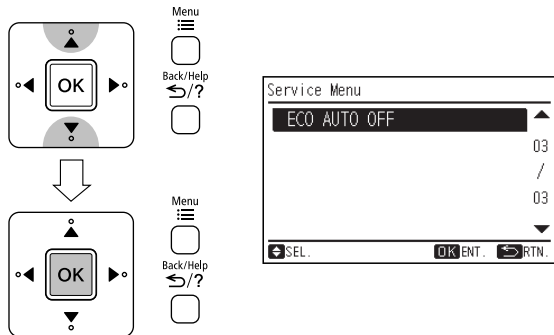
- 6 Press "OK" to finish the defrosting inhibit period selection setting. The confirmation screen will be displayed.



10.2.1.12 ECO AUTO OFF

This function is only available in the model with human detected sensor. When this function is set, the unit will be stopped automatically after set "Auto off time" when nobody is in the room at the eco mode setting.

- 1 Select "ECO AUTO OFF" from the service menu and press "OK".
The ECO AUTO OFF setting will be displayed.

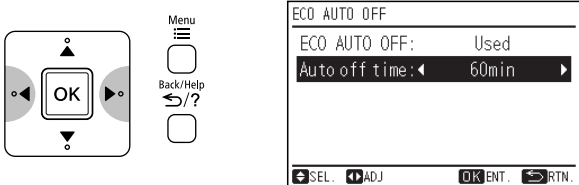


- 2 Press "△" or "▽" to select the setting items. The setting items are displayed "ECO AUTO OFF" and "Auto off time".

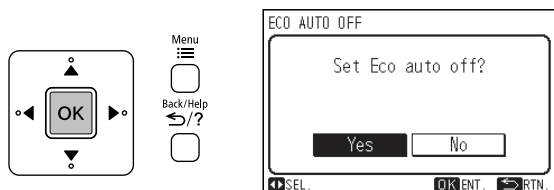


- 3 Press "◀" or "▶" to set each setting content for the selected item. When "ECO AUTO OFF" is selected, the setting contents are switched in order of "Not Used" ↔ "Used" by pressing "◀" or "▶".

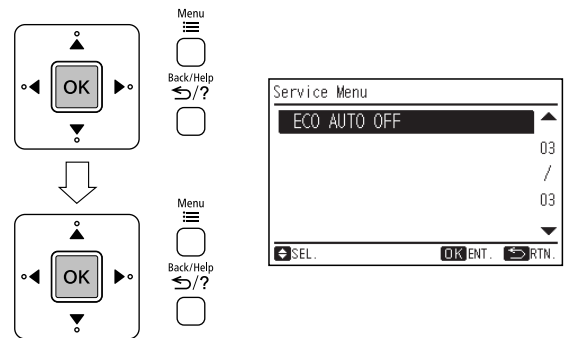
When "Auto off time" is selected, the setting time can be set between "20 min" and "120 min" by pressing "◀" or "▶" cyclically. (The set unit is 10 min.)



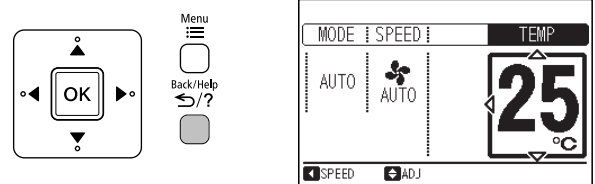
- 4 Press "OK" to finish the ECO AUTO OFF setting. The confirmation screen will be displayed.



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



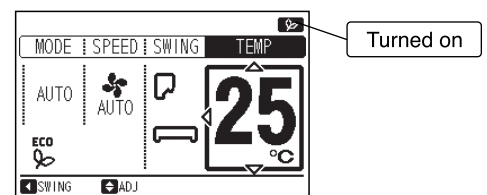
- 6 Press "Back/Help" (return/help) to return to the normal mode.



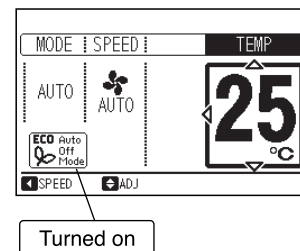
NOTE:

- The ECO AUTO OFF setting will remain unchanged after the unit is turned off.
- 7 When the ECO AUTO OFF setting is used, the screen indication will be below.

- (1) If "Eco Auto Off" setting is used, when "Eco" operation is started, "ECO" and "ECO" will be indicated on the screen of normal mode.



- (2) "ECO Auto Off Mode" will be indicated on the screen of normal mode when the operation is stopped by "ECO AUTO OFF" function.



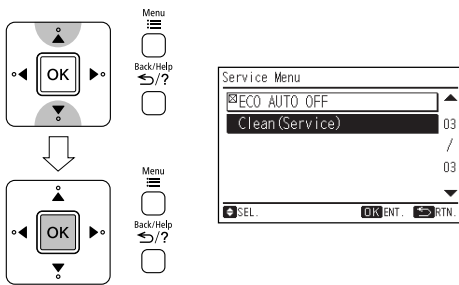
NOTE:

If the operation is stopped by "ECO AUTO OFF" function by wireless remote controller, "ECO Auto Off Mode" won't be indicated on the screen of normal mode.

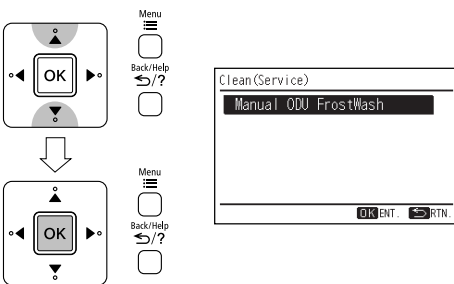
10.2.1.13 CLEAN (SERVICE)

Clean(service) can be started. (i.e. FrostWash for outdoor unit)

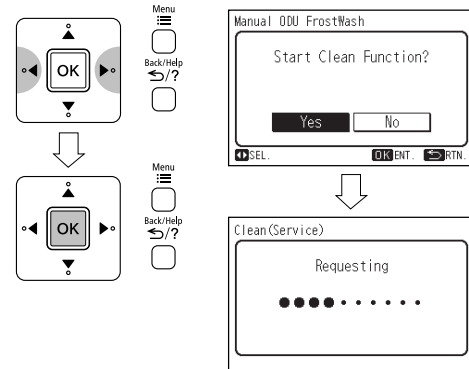
- 1 Select "Clean(Service)" from the service menu and press "OK".
Setting item will be displayed.



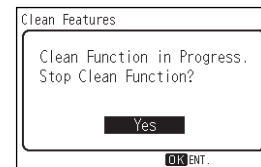
- 2 Press "△" or "▽" to select the setting items. And press "OK".
The confirmation screen will be displayed.



- 3 Select "Yes" by pressing "◀" or "▶" and press "OK".
The setting will be confirmed and Requesting display will be setting item will be displayed. appeared.



- 4 After a few seconds, Clean(service) will be started.
The running display will appear.



The clean operation will be stopped and the screen will be displayed the normal mode.

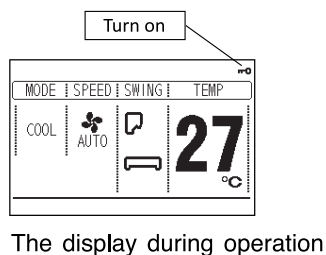
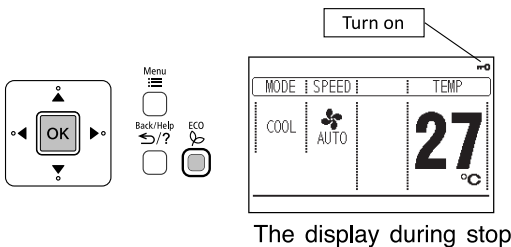
NOTE

- Based on the temperature condition and etc., Clean(service) might not start. In case of that, the running display will not appear. The display will return to normal mode.
- When clean operation finish, unit will stop automatically.
- If Weekly Timer or Simple Timer is set, Clean (Service) might stop at the middle point because of the timer setting.

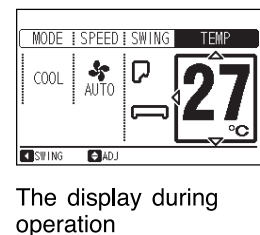
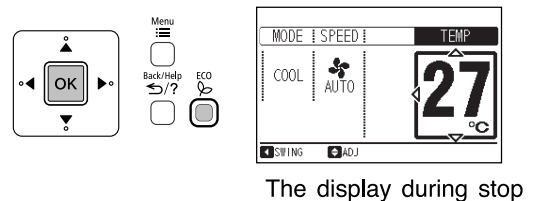
10.2.1.14 KEY LOCK

This function is used to lock all buttons from the remote controller. When this function is set, the all buttons of remote controller will be locked.

- 1 Setting of the key lock, press "OK" and "ECO" simultaneously for 3 seconds.
"🔒" will be indicated on the screen of normal mode, and the key lock will be set.



- 2 Cancellation of the key lock, press "OK" and "ECO" simultaneously for 3 seconds.
"🔒" will be turned off, and the key lock will be canceled.





NOTE

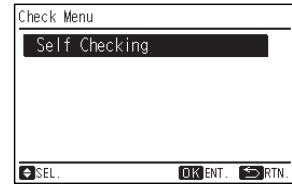
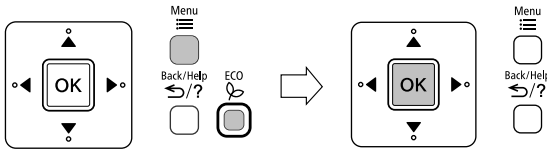
- Every time pressing "OK" and "ECO" simultaneously for 3 seconds, the key lock state will be switched alternately to locked/unlocked.





10.2.2 CHECK MENU OPERATION

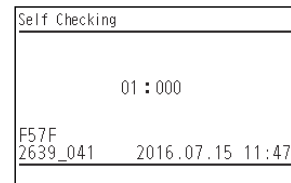
10.2.2.1 SELF CHECKING

Self checking of PCB using this remote controller. The self checking performs to check the remote controller button and to clear EEPROM.

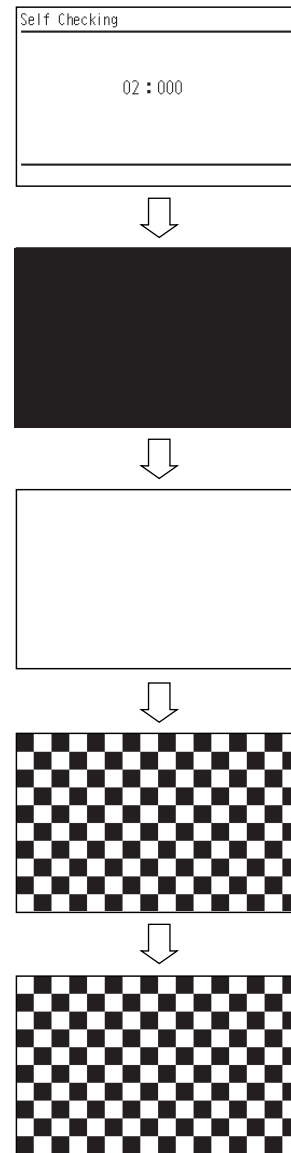
- (1) Press and hold  and  simultaneously for at least 3 seconds during the normal mode. The check menu will be displayed. Select "Self Checking" from the check menu and press "OK".

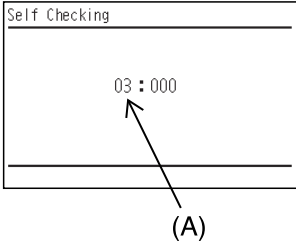
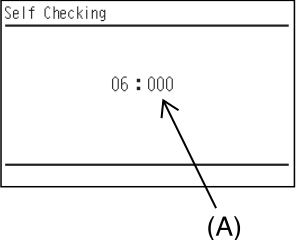

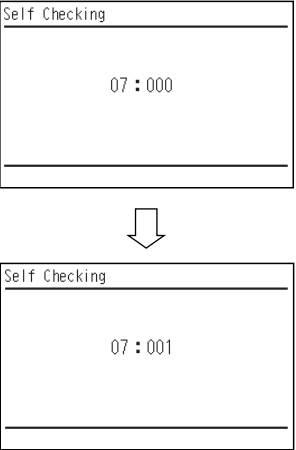
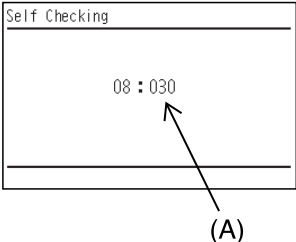
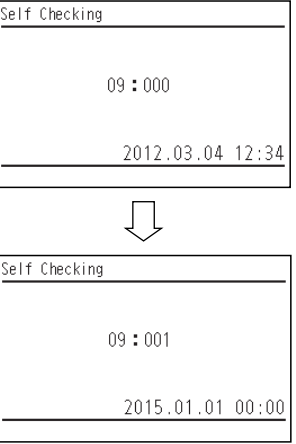


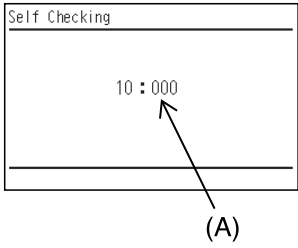
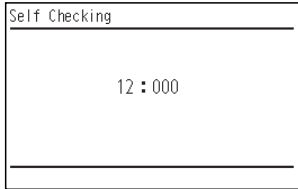
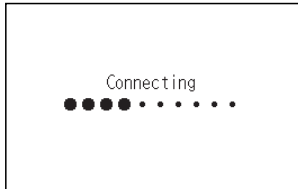
- (2) Select the process for "Self Checking".
- * To start self check, press "  ".
 - * To clear EEPROM, press "  " and "  " and "  " simultaneously. (see EEPROM clear process (14).)



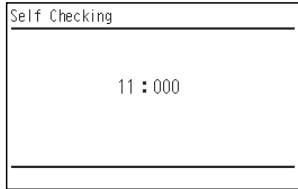
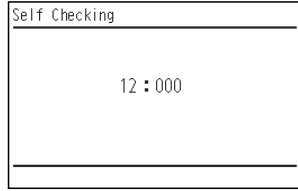
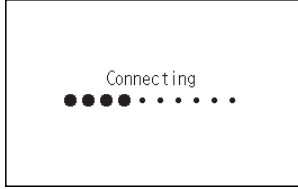
- (3) LCD test
Press "OK" and the screen will be switched as shown in the picture.



<p>(4) Back light test LCD brightness is changed gradually by pressing "OK"</p>	<p>(A) : 03 : Back light test 04 : Contrast test 05 : Operation indicator test</p>
<p>(5) Contrast test Contrast of the LCD gradually changes by pressing "OK"</p>	
<p>(6) Operation indicator test Press "OK" and the operation indicator will flash in red and green twice for each.</p>	
<p>(7) Switch input test Press the 9 switched one by one. The number indicated with "(A)" will count up as switch being pressed. * The order of pressing switch is at random. Do not press more than 1(one) button for it will not be counted.</p>	
<p>(8) Transmission circuit test The remote controller automatically starts to check the transmission circuit. * To proceed next step, press "  ".</p>	
<p>(9) Remote controller thermistor test The detected temperature by remote controller thermistor is displayed at "(A)" in the right picture.</p>	
<p>(10) Date/Time test The date and time is switched from "2012.03.04 12:34" to "2015.01.01 00:00".</p>	

<p>(11) EEPROM test <EEPROM Clearing Cancel> Press " ^{ECO} ". <EEPROM Clear> Press " OK" or wait 15 seconds. EEPROM data will be cleared. During the process , the numbers will be indicated on where is located with "(A)". If "(A)" has value of "999", EEPROM is in faulty condition. * In case "(A)" has "999", the process does not proceed to next step.</p>	
<p>(12) Watchdog Timer test The remote controller will automatically start to check the watchdog timer. After 10 seconds are passed, the self checking is completed and the remote controller is automatically restarted. If does not restart, this check is in faulty condition.</p>	
<p>(13) When the self checking is completed, the remote controller is automatically restarted. In this case, "Connecting" is indicated and operation indicator will flash in red. So please turn the circuit breaker OFF and ON.</p>	

EEPROM process

<p>(14) Clear EEPROM The remote controller will automatically restart EEPROM clearing process.</p>	
<p>(15) Watchdog Timer test The remote controller will automatically start to check the watchdog timer. After 10 seconds are passed, the self checking is completed and the remote controller is automatically restarted. If does not restart, this check is in faulty condition.</p>	
<p>(16) When the process is completed, the remote controller is automatically restarted. In this case, "Connecting" is indicated and operation indicator will flash in red. So please turn the circuit breaker OFF and ON.</p>	

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.


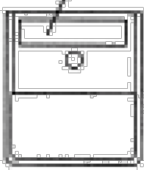

CAUTION:




- 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	 <p>With two 1.8m cables</p>
1 piece of cover for hiding the covering	 <p>Attached 2 sided tapes</p>
Two-sided tape for attaching to Adaptor	 <p>110x40x3mm</p>

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

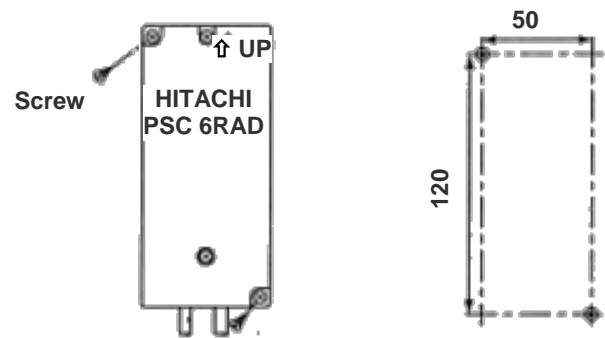


Mark “↑ UP”

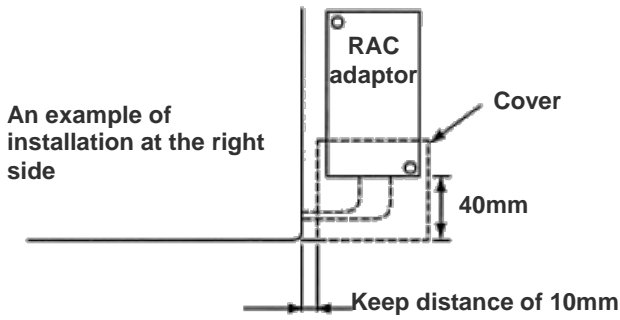
Wiring outlet

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.

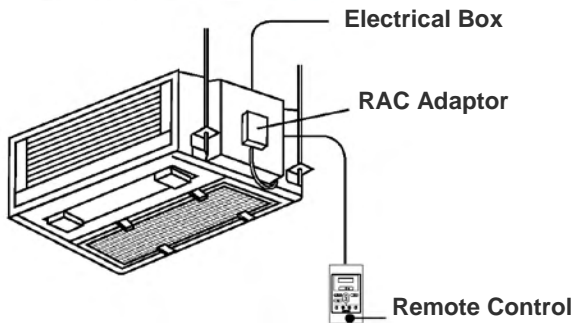
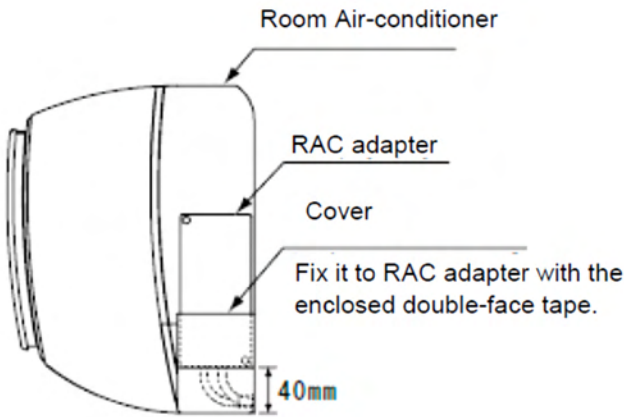


- ii) When using the cover
It can be installed at the right and left side of room air conditioner. Fix the cover and RAC adaptor with the two-sided tape (accessory).



An example of installation at the right side

- 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.

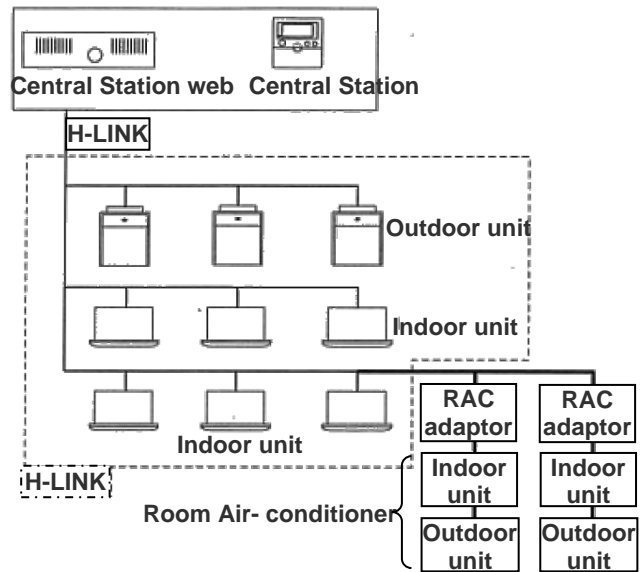


NOTE:

- 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



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 (0.7mm² to 1.25mm² 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.

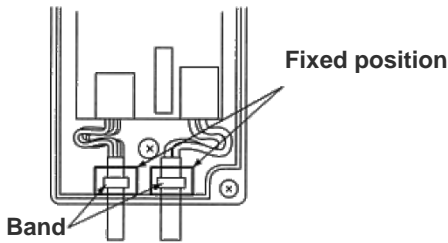
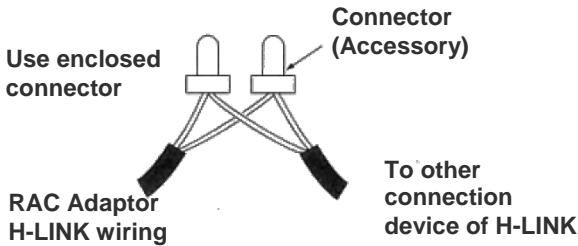


- Wiring Connection
 - Connection with Room Air-Conditioner
 - i) Remove the front cover of the room air-conditioner and the cover of electrical box.
 - ii) The cable attached with the connector of the RAC adaptor shall be connected with the connector of indoor PCB

- 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.

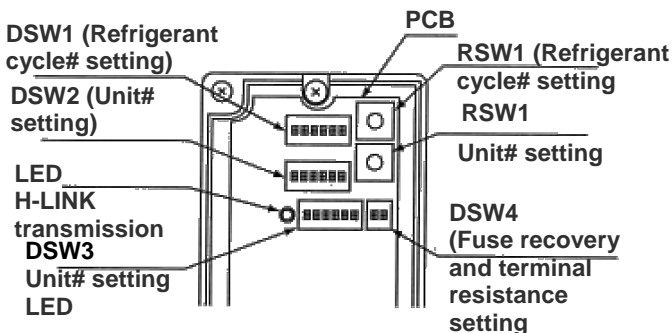


CAUTION:

- 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
Refrigerant Unit#	0	●	○	○	○	○			
	1			●	○	○			
	2				●	○	○	○	○
	3		●						
	4								

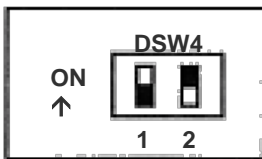
CAUTION:

– 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)

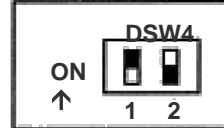
PCB



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



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

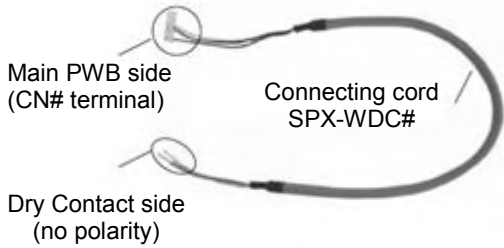
Confirm if the RAC adaptor connection is recognized.
- 3) Confirmation of RUN/STOP Operation.

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-WDC2 AND SPX-WDC3) APPLICATION (USING DIP SWITCH)

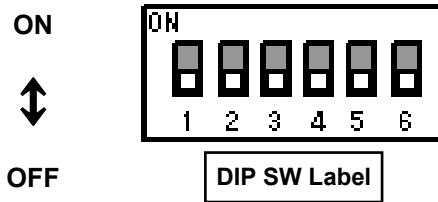
The dry contact system enables the operation of the air conditioner indoor unit to be controlled by using external dry contacts (with non voltage) such as card-key controller or window for facilities such as hotels.

Table 1 (Applicable models and related information)

Optional Connecting cord Accessory SPX-WDC#	Model	DIP SW Label	CN#	
	SPX-WDC2	RAI-SH07/09/12/18QHLAE	SW501	CN5
		RAD-SH07/09/12/18/24QHLAE	SW501	CN5
	SPX-WDC3	RAS-EH07QHLAE RAS-EH09/12/18/24RHLAE RAS-SH07QHLAE RAS-SH09/12/18/24RHLAE	DSW1	CN6
		RAF-SH07/09/12/18QHLAE	DSW1	CN6

Note:

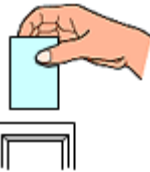
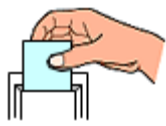




- 1) DRY CONTACT function is "Enable" by set pin No. 2 of the DIP SWITCH (refer to table 1 for the label) to ON position.
- 2) Select the proper setting for DRY CONTACT LOGIC INPUT pin No. 3 on DIP SWITCH (refer to Table 1 for the label)
 - i) Set to OFF position (Hi Input) if the type of Dry Contact switch to be used (for the CARD KEY UNIT or Window) is of contact type a (Normally Open Type) as shown in below diagram.
 - ii) Set to ON position (Lo Input) if the type of Dry contact switch to be used (for the CARD KEY UNIT or Window) is of contact type b (Normally Close Type) as shown in below diagram.






Pin No.	Function	Switch Position / Setting			
		2	DRY CONTACT function	OFF	Disable
3	DRY CONTACT Input Logic	OFF	HI Input Active	ON	LO Input Active

- Please decide the type of dry contact you will be using and set the position of the DIP Switch No. 2 and 3 accordingly

[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 

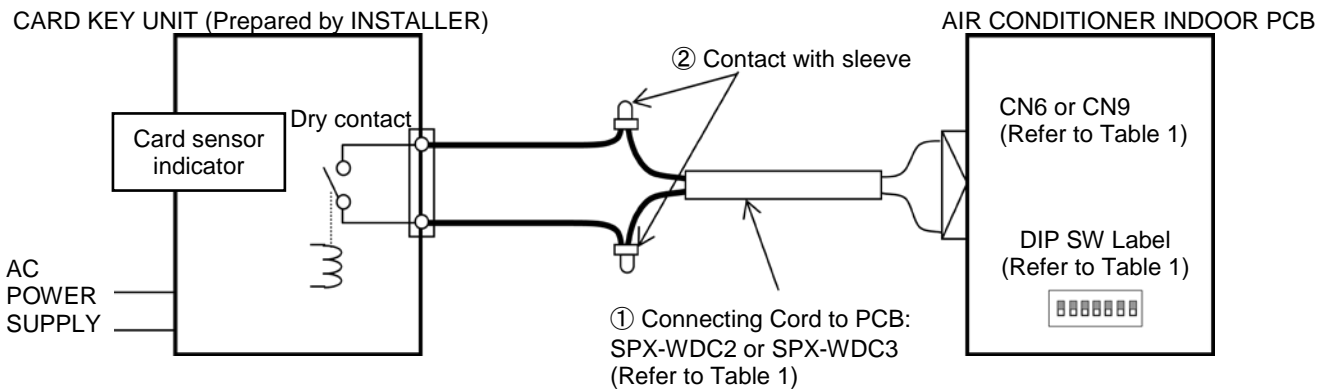
[2] SET THE POSITION OF DIP SWITCH

POSITION CONDITION OF DIP SWITCH	
 INITIAL CONDITION (CARD KEY NO USE) No.2 : OFF No.3 : OFF	
 HI Input Active No.2 : ON No.3 : OFF	
 LO Input Active No.2 : ON No.3 : ON	

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.

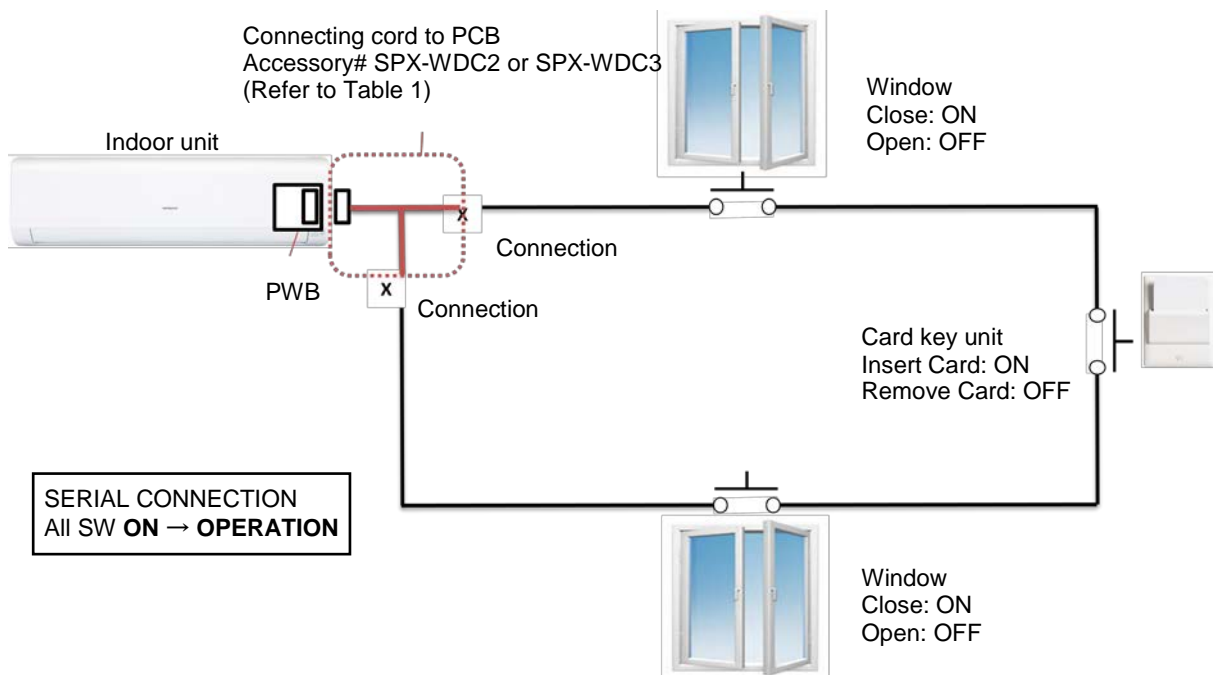
- When the CARD KEY is in insert condition, the air conditioner operation is allowable by remote controller.
- When the dry contact switch on the Card Key Unit is open (refer to diagram below for contact type a), the unit stops to operate (it takes 10 seconds to stop the unit operation after the dry 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-WDC2 or 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)

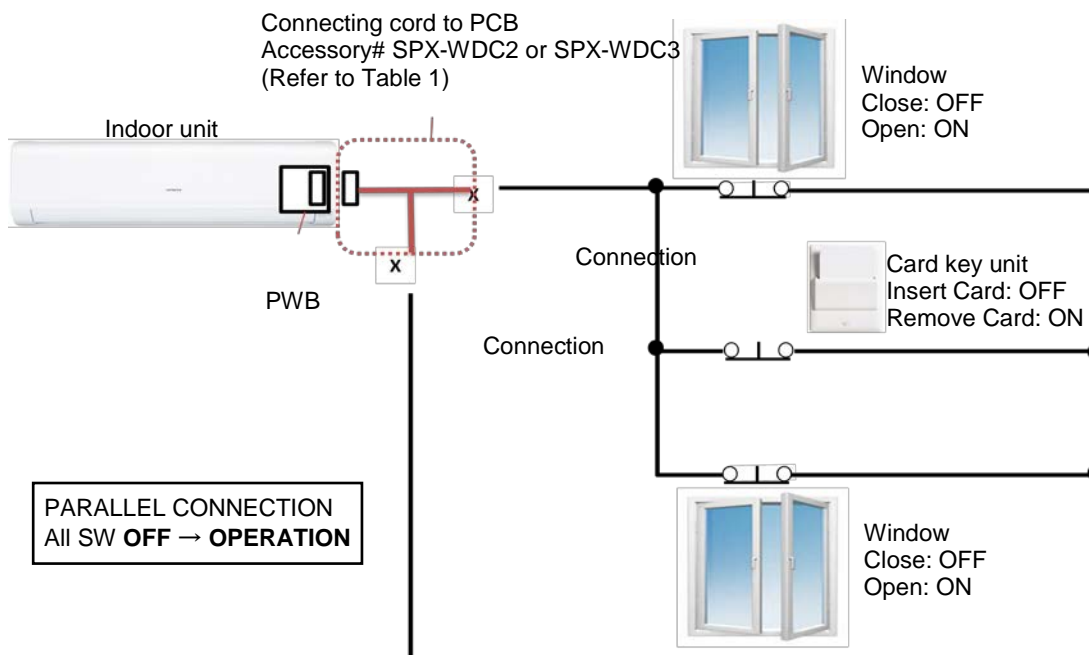


• CONNECTION EXAMPLE

i. Pin No. 3 of DIP SWITCH is set to OFF position (HI Input Active) for Dry Contact Type a



ii. Pin No. 3 of DIP SWITCH is set to ON position (LO Input Active) for Dry Contact Type b

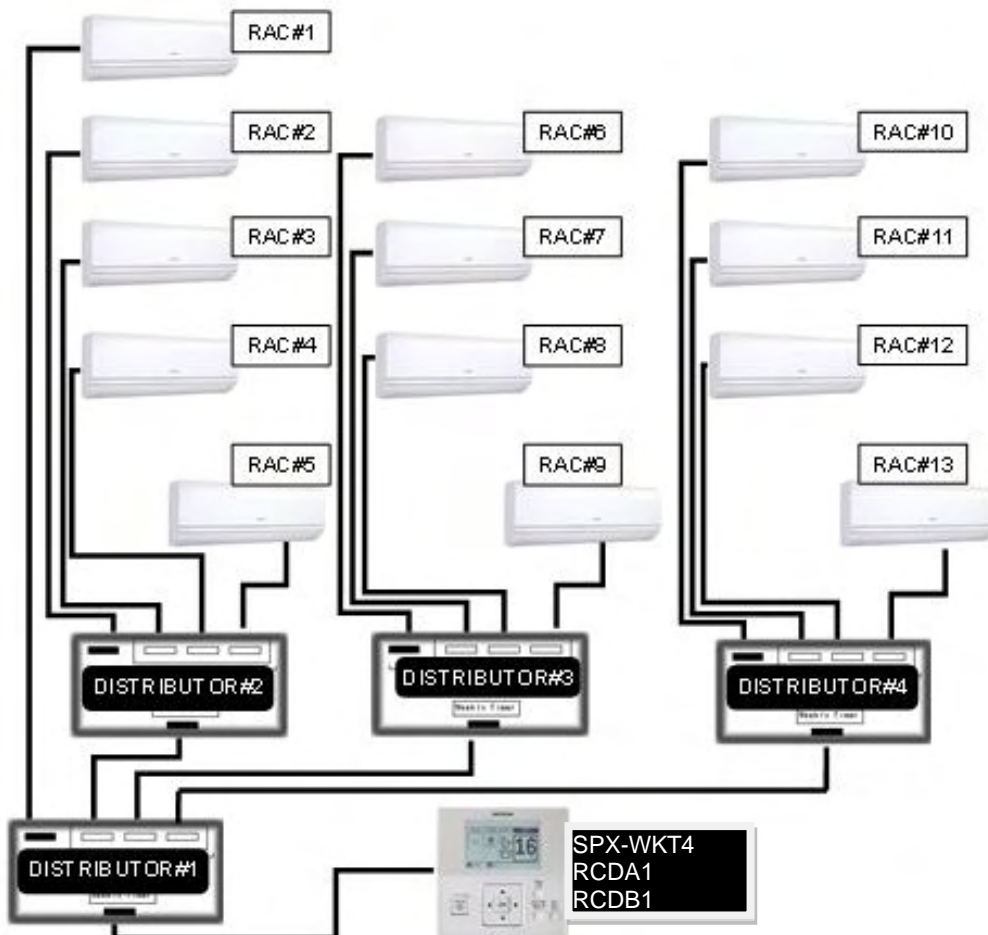
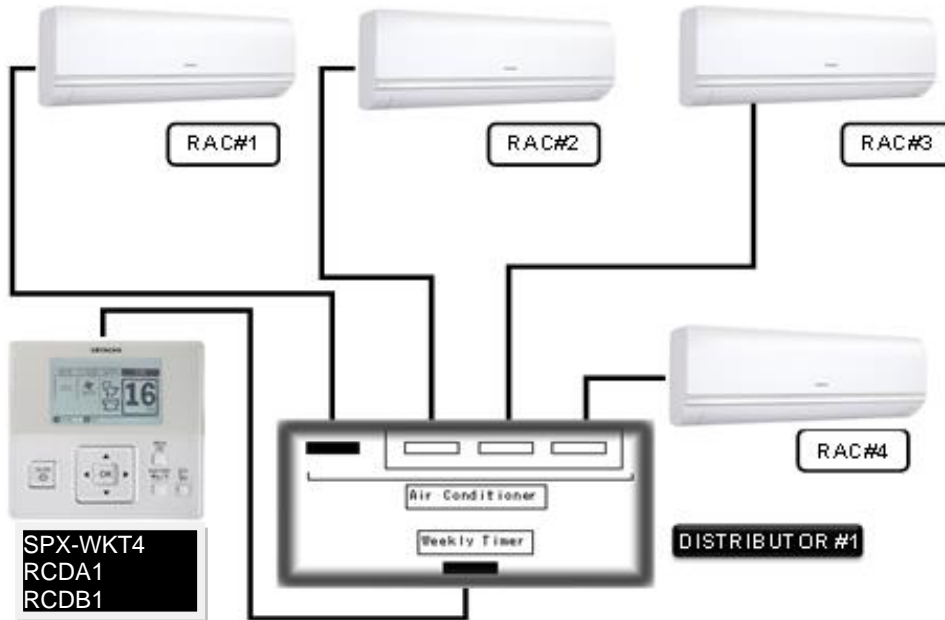


Please refer to the actual manual supplied with the optional connecting cords SPX-WDC2/WDC3 for more details.

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.



10.6 REMOTE SENSOR - SPX-RTH1

This remote sensor is applicable to Duct type indoor unit for Hitachi split system air conditioner.

10.6.1 SELECTION OF INSTALLATION POSITION

The thermistor for detecting room temperature is installed inside the remote sensor

The installation position of the remote sensor should be determined in consideration with the following conditions.

- Where the average room temperature can be detected.
- Where is not exposed to the sun
- Where the heat source is not located near the remote sensor.
- Where the discharge air from the air conditioner does not blow directly.
- Where is not affected by the outdoor air when opening / closing the door, etc

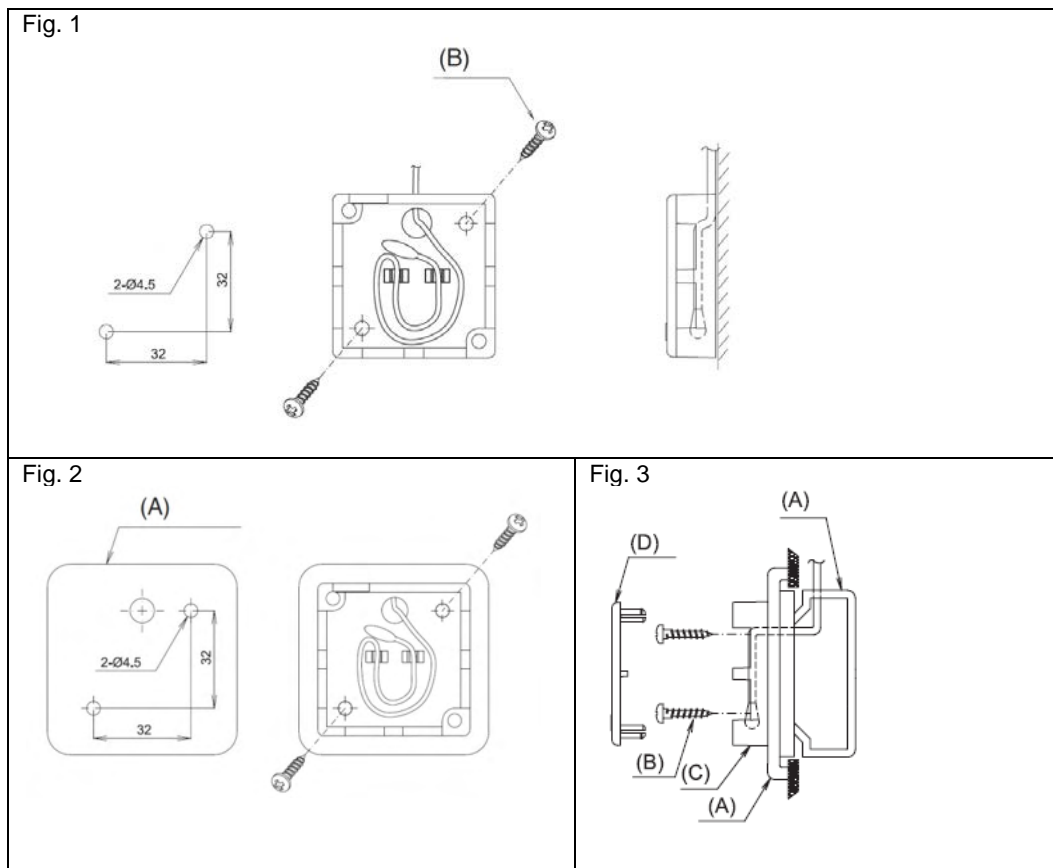
10.6.2 INSTALLATION PROCEDURE

▪ In case of mounting onto the wall (Fig.1)

- Make the wiring on the sensor box, and let the wires for sensor through the box slot.
- Fix the sensor box onto the wall with 2 screws (B)
- In case that the sensor box can not be fixed onto the wall with screws, fix it onto the wall by using the double sided adhesive tapes, etc.

▪ In case of mounting onto Electrical Switch box (Fig. 2 and 3)

- Make the holes for fixing sensor box on the Switch Box Cover (A) (field-supplied) as shown on the Fig. 3 and fix the sensor box to the plate with screws (B)
- Pay attention that the hole for air intake on the sensor box (C) may not be shut.



10.6.3 WIRING PROCEDURES

- Remove the original room thermistor from CN1 at the indoor printed circuit board.
- Connect the cord (15m) of the remote sensor to CN1 (Black) of the indoor printed circuit board.

Please refer to the actual manual supplied with the SPX- RTH1 for more details.

HITACHI

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LIT 12013832