Air Exchanger (JX5, JX4, D-EXR, D-EX)











Technical Catalogue

DC Inverter Air exchanger RAS/RAC



HITACHI

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1 SYSTEM DESCRIPTION

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1.1 HITACHI NEW TECHNOLOGY IN AIR CONDITIONING

Hitachi introduces the new "Triple Change" Concept to bring the latest cutting edge technology, with guarantee of safe and comfortable use. Hitachi air conditioners fulfill such "3C" concept

1.1.1 AIR EXCHANGING TECHNOLOGY

HITACHI delivers the highest quality with its original role of the product to give you maximum benefit and satisfaction.

Hitachi proudly introduces the new Air Exchanger[™] feature. With the new air exchanger, fresh air can be exchanger into the room and foul air can be exhaust to the outdoor without opening the window. The new air exhaust function is capable of removing odors and fine dust where no conventional air conditioners are able to do. The air intake function refresh the room with fresh air from the outside and fill the room with oxygen, thus, providing the best comfortness and keeping the room constantly cool.

Fresh air intake delivers sufficient oxygen into the room, balancing the room oxygen level to the same as the natural atmosphere, even without opening the window.

Air exhaust feature takes away the foul odor and bacteria from your living room, and speeds up the cleaning action of removing unpleasant odor.

The air exchanger designed with the separate air exchanging blower fan, are capable of deliver fresh air from the outside to the cooling space with a volume of $4m^3/h$. The blower is control using motorize damper to switch from fresh air intake and air exhaust mode. The blower fan is capable of exhaust air to the outside with a volume of $12m^3/h$.

1.1.2 CLEAN TECHNOLOGY

Hitachi new Air Exchanger™ comes with an exclusive multiple filter system to promote the awareness towards cleanliness.

The multiple filtration system use for the fresh air intake can filter the smells and warmful particles from the outside, to provide total clean solution when you bring in the air. Hitachi uses Nano titanium, Japan's cutting edge technology as the air purifying filter which is capable of removing fine particles up to size of nano (10^{-9}) .

Conventional Filter

Nano Titanum™ Filter

Normal Air Purifying Filter

Nano Titanum Filter

Minus ion stick is used to enhance the capture of dust and bacteria. The minus ion stick induced minus ion charge which are capable of attract and draws fine dust and airborne particles, enabling the filters to catch them effectively.

1.1.3 COMFORT TECHNOLOGY

By bring in air from the outside and exhaust air to the outside, the unit will need cleaning very frequently. Hitachi developed the *self cleaning* feature for your easy maintenance for your air conditioner.

Hitachi promotes the easy maintainence of the air conditioner unit to bring you the convenience and comfort.

The front panel can be easily dismantle and cleaned with a simple wipe, or for a complete wash.

The full flat panel allows cool fresh air to be maintained in a room for a longer period as compared to conventional models. The louver designed to move up and down automatically, and also move left and right parallel. This action disperses the cool air across a much wider range and cools the room efficiently and evenly.

Model	Air Exchanger	Nano Titanum	Ion Stick	Twin Air Swing	Self Cleaning	Washable Front Panel
RAS-25JX5	0	0	-	0	0	0
RAS-35JX5	0	0	-	0	0	0
RAS-25JX4	0	0	-	0	0	0
RAS-35JX4	0	0	-	0	0	0
RAS-D10EXR	0	0	-	0	0	0
RAS-D14EXR	0	0	-	0	0	0
RAS-D10EX	0	0	-	0	0	Ó
RAS-D14EX	0	0	-	0	0	0

O: Available features

2 GENERAL DATA

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2.1. AIR EXCHANGER MODEL

2.1.1. RAS-25JX5, RAS-35JX5

Model		RAS-25JX5	RAS-35JX5	
Power Supply		From Outdoor Unit	From Outdoor Unit	
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)	
Cooling Power Input	Cooling Power Input W		990 (155-1380)	
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)	
Heating Power Input	W	795 (115-1,170)	1040 (115-1350)	
Dehumidifying Capacity	L/h	1.4	1.6	
Indoor Fan Air Flow Rate (Hi/Me/Lo)	m³/min	(C)8.5/7.0/5.3/3.8 (H)9.5/7.8/5.6/3.8	(C) 10.0/7.8/5.8/4.7 (H)10.8/8.2/6.5/5.0	
Fan Motor	W	25	25	
Drain Pump Pressure Lift	cm	-	-	
Sound Pressure Level (Overall Scale) (Hi/Me/Lo/Sleep)	dB (A)	(C) 39/34/28/22 (H) 40/35/28/22	(C) 43/37/32/25 (H) 44/37/32/26	
Refrigerant Type		R410A	R410A	
Pipe Sizes	mm	6.35 / 9.52	6.35 / 9.52	
Pipe Sizes	(in)	1/4 , 3/8	1/4,3/8	
Max exhaust air volume	m³/hr	12	12	
Max air in volume	m³/hr	4	4	
Max air pipe length m		3	3	
Electrical Data	-			
Power Cable	No.	2 pcs + Earth	2 pcs + Earth	
Cable Size	Ømm	2.5	2.5	
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth	
Wire Size	mm ²	2.0	2.0	
Dimensions				
Width	mm	790	790	
Height	mm	298	298	
Depth	mm	210	210	
Net Weight	kg	10	10	
Color (Munsell Code)	-	Pure White(N9.5)	Pure White(N9.5)	
Condensate Drain	mm	Ø16 OD	Ø16 OD	
Features				
Auto Restart	yes/no	yes	yes	
Auto Changeover	yes/no	yes	yes	
Air Purifying Filter Type		SPX-CFH15, SPX-NFH1	SPX-CFH15, SPX-NFH1	

NOTE:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system.

Operation Conditions	Cooling	Heating			
Indoor Air Inlot Tomporaturo	dB	27.0 °C	20.0 °C		
Indoor Air Iniet Temperature	WB	19.0 °C			
Outdoor Air Inlot Tomporaturo	dB	35.0 °C	7.0 °C		
	WB	24.0 °C	6.0 °C		
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.

2.1.2. RAC-25JX5, RAC-35JX5

Model		RAC-25JX5	RAC-35JX5	
Power Supply		AC 1Ø, 220-230V, 50Hz	AC 1Ø, 220-230V, 50Hz	
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)	
Cooling Power Input	W	580 (155-1160)	990 (155-1380)	
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)	
Heating Power Input	W	795 (115-1,170)	1040 (115-1350)	
Sound Pressure Level	dB	(C) 45	(C) 47	
(Overall A Scale)		(H) 47	(H) 47	
Starting Current	А	(C)3.11-2.97 (H)4.02-3.85	(C)4.74-4.54 (H)4.98-4.76	
Recommended Fuse Size	А	16	16	
Power Cable	No.	From Indoor Unit	From Indoor Unit	
Cable Size	Ømm	-	-	
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth	
Wire Size	mm ²	2.0	2.0	
Dimensions				
Width	mm	750	750	
Height	mm	548	548	
Depth	mm	288	288	
Net Weight	kg	35	35	
Cabinet		Synthetic Resin Paint Baked on Galvanised Steel Plate	Synthetic Resin Paint Baked on Galvanised Steel Plate	
Color (Munsell Code)		Beige (2.5Y 8/2)	Beige (2.5Y 8/2)	
System				
Refrigerant Flow Control		Micro-Computer Control Expansion Valve	Micro-Computer Control Expansion Valve	
Compressor		Scroll	Scroll	
Compressor Oil Type		HAF68D1	HAF68D1	
Compressor Coil	Мо	1.069 at 20°C	1.069 at 20°C	
Resistance	IVIC2	1.300 at 75°C	1.300 at 75°C	
Condenser Fan		Propeller Fan	Propeller Fan	
Quantity		1	1	
Air Flow Rate (C/H)	m³/min	31/27	32/28	
Refrigerant Piping		Flare-Nut and/or Flange Connection (Factory supplied)	Flare-Nut and/or Flange Connection (Factory supplied)	
	mm	Ø6.35	Ø6.35	
	(in.)	(1/4)	(1/4)	
Gastine	mm	Ø9.52	Ø9.52	
	(in.)	(3/8)	(3/8)	
Piping Length Max/Height	m	20/10	20/10	
Chargeless Pipe Length	m	20	20	
Additional Charge	g/m	-	-	
Individual Pipe Length		-	-	
Refrigerant Type		R410A	R410A	
Refrigerant Charge	gram	870	870	

2.1.3. RAS-25JX4,RAS-35JX4

Model		RAS-25JX4	RAS-35JX4
Power Supply		From Outdoor Unit	From Outdoor Unit
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)
Cooling Power Input	Cooling Power Input W		1010 (155-1380)
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)
Heating Power Input	W	810 (115-1,170)	1075 (115-1350)
Dehumidifying Capacity	L/h	1.4	1.6
Indoor Fan Air Flow Rate (Hi/Me/Lo)	m³/min	(C)8.5/7.0/5.3/3.8 (H)9.5/7.8/5.6/3.8	(C) 10.0/7.8/5.8/4.7 (H)10.8/8.2/6.5/5.0
Fan Motor	W	25	25
Drain Pump Pressure Lift	cm	-	-
Sound Pressure Level (Overall Scale) (Hi/Me/Lo/Sleep)	dB (A)	(C) 39 (H) 42	(C) 44 (H) 45
Refrigerant Type		R410A	R410A
Pipe Sizes	mm	6.35 / 9.52	6.35 / 9.52
Pipe Sizes (in)		1/4,3/8	1/4 , 3/8
Electrical Data			
Power Cable	No.	2 pcs + Earth	2 pcs + Earth
Cable Size	Ømm	2.5	2.5
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth
Wire Size	mm ²	2.0	2.0
Dimensions			
Width	mm	790	790
Height	mm	298	298
Depth	mm	210	210
Net Weight	kg	10	10
Color (Munsell Code)		Pure White(N9.5)	Pure White(N9.5)
Condensate Drain	mm	Ø16 OD	Ø16 OD
Features			
Auto Restart	yes/no	Yes	yes
Auto Changeover	yes/no	Yes	yes
Air Purifying Filter Type		SPX-CFH15, SPX-NFH1	SPX-CFH15, SPX-NFH1

NOTE:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system.

Operation Conditions	Cooling	Heating			
Indoor Air Inlot Tomporaturo	dB	27.0 °C	20.0 °C		
muoor Air miet Temperature	WB	19.0 °C			
Outdoor Air Inlot Tomporaturo	dB	35.0 °C	7.0 ℃		
	WB	24.0 °C	6.0 °C		
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.

2.1.4. RAC-25JX4, RAC-35JX4

Model		RAC-25JX4	RAC-35JX4	
Power Supply		AC 1Ø, 220-230V, 50Hz	AC 1Ø, 220-230V, 50Hz	
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)	
Cooling Power Input	W	595 (155-1160)	1010 (155-1380)	
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)	
Heating Power Input	W	810 (115-1,170)	1075 (115-1350)	
Sound Pressure Level	dB	(C) 46	(C) 48	
(Overall A Scale)		(H) 47	(H) 48	
Starting Current	А	(C)3.19-3.05 (H)4.10-3.92	(C)4.84-4.63 (H)5.15-4.92	
Recommended Fuse Size	А	16	16	
Power Cable	No.	From Indoor Unit	From Indoor Unit	
Cable Size	Ømm	-	-	
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth	
Wire Size	mm ²	2.0	2.0	
Dimensions				
Width	mm	750	750	
Height	mm	548	548	
Depth	mm	288	288	
Net Weight	kg	35	35	
Cabinet		Synthetic Resin Paint Baked on Galvanised Steel Plate	Synthetic Resin Paint Baked on Galvanised Steel Plate	
Color (Munsell Code)		Beige (2.5Y 8/2)	Beige (2.5Y 8/2)	
System				
Refrigerant Flow Control		Micro-Computer Control Expansion Valve	Micro-Computer Control Expansion Valve	
Compressor		Twin Rotary	Twin Rotary	
Compressor Oil Type	-	α68HES-H	α68HES-H	
Compressor Coil	MΩ	0.63 at 20°C	0.63 at 20°C	
Resistance		0.76 at 75°C	0.76 at 75°C	
Condenser Fan		Propeller Fan	Propeller Fan	
Quantity		1	1	
Air Flow Rate (C/H)	m³/min	31/27	32/28	
Refrigerant Piping	-	Flare-Nut and/or Flange Connection (Factory supplied)	Flare-Nut and/or Flange Connection (Factory supplied)	
Liquid Line	mm	Ø6.35	Ø6.35	
	(in.)	(1/4)	(1/4)	
Gas Line	mm	Ø9.52	Ø9.52	
	(in.)	(3/8)	(3/8)	
Piping Length Max/Height	m	20/10	20/10	
Chargeless Pipe Length	m	20	20	
Additional Charge	g/m	-	-	
Individual Pipe Length		-	-	
Refrigerant Type		R410A	R410A	
Refrigerant Charge	gram	870	870	

2.1.5. RAS-D10EXR, RAS-D14EXR

Model		RAS-D10EXR	RAS-D14EXR
Power Supply		From Outdoor Unit	From Outdoor Unit
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)
Cooling Power Input	W	580 (155-1160)	990 (155-1380)
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)
Heating Power Input	W	795 (115-1,170)	1040 (115-1350)
Dehumidifying Capacity	L/h	1.4	1.6
Indoor Fan Air Flow Rate (Hi/Me/Lo)	m³/min	(C)8.5/7.0/5.3/3.8 (H)9.5/7.8/5.6/3.8	(C) 10.0/7.8/5.8/4.7 (H)10.8/8.2/6.5/5.0
Fan Motor	W	25	25
Drain Pump Pressure Lift	cm	-	-
Sound Pressure Level (Overall Scale) (Hi/Me/Lo/Sleep)	dB (A)	(C) 39/34/28/22 (H) 40/35/28/22	(C) 43/37/32/25 (H) 44/37/32/26
Refrigerant Type		R410A	R410A
Pipe Sizes	mm	6.35 / 9.52	6.35 / 9.52
Pipe Sizes	(in)	1/4 , 3/8	1/4 , 3/8
Max exhaust air volume	m³/hr	12	12
Max air in volume	m³/hr	4	4
Max air pipe length	m	3	3
Electrical Data			
Power Cable	No.	2 pcs + Earth	2 pcs + Earth
Cable Size	Ømm	2.5	2.5
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth
Wire Size	mm ²	2.0	2.0
Dimensions			
Width	mm	790	790
Height	mm	298	298
Depth	mm	210	210
Net Weight	kg	10	10
Color (Munsell Code)		Pure White(N9.5)	Pure White(N9.5)
Condensate Drain	mm	Ø16 OD	Ø16 OD
Features			
Auto Restart	yes/no	yes	yes
Auto Changeover	yes/no	yes	yes
Air Purifying Filter Type		SPX-CFH15, SPX-NFH1	SPX-CFH15, SPX-NFH1

NOTE:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system.

Operation Conditions	Cooling	Heating	
Indoor Air Inlot Tomporaturo	dB	27.0 °C	20.0 °C
muoor Air miet remperature	WB	19.0 °C	
Outdoor Air Inlot Tomporaturo	dB	35.0 °C	7.0 ℃
Outdoor Air miet remperature	WB	24.0 °C	6.0 °C
Piping Length: 7.5 meters; Pipi dB: Dry Bulb; WB: Wet Bulb	ng Lift:	0 meter	

- 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.

2.1.6. RAC-D10EXR, RAC-D14EXR

Model		RAC-D10EXR	RAC-D14EXR						
Power Supply		AC 1Ø, 220-230V, 50Hz	AC 1Ø, 220-230V, 50Hz						
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)						
Cooling Power Input	W	580 (155-1160)	990 (155-1380)						
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)						
Heating Power Input	W	795 (115-1,170)	1040 (115-1350)						
Sound Pressure Level	dB	(C) 45	(C) 47						
(Overall A Scale)		(H) 47	(H) 47						
Starting Current	А	(C)3.11-2.97 (H)4.02-3.85	(C)4.74-4.54 (H)4.98-4.76						
Recommended Fuse Size	А	16	16						
Power Cable	No.	From Indoor Unit	From Indoor Unit						
Cable Size	Ømm	-	-						
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth						
Wire Size	mm ²	2.0	2.0						
Dimensions									
Width	mm	750	750						
Height	mm	548	548						
Depth	mm	288	288						
Net Weight	kg	35	35						
Cabinet		Synthetic Resin Paint Baked on Galvanised Steel Plate	Synthetic Resin Paint Baked on Galvanised Steel Plate						
Color (Munsell Code)		Beige (2.5Y 8/2)	Beige (2.5Y 8/2)						
System									
Refrigerant Flow Control		Micro-Computer Control Expansion Valve	Micro-Computer Control Expansion Valve						
Compressor		Scroll	Scroll						
Compressor Oil Type		HAF68D1	HAF68D1						
Compressor Coil	MO	1.069 at 20°C	1.069 at 20°C						
Resistance	1412.2	1.300 at 75°C	1.300 at 75°C						
Condenser Fan		Propeller Fan	Propeller Fan						
Quantity		1	1						
Air Flow Rate (C/H)	m³/min	31/27	32/28						
Refrigerant Piping		Flare-Nut and/or Flange Connection (Factory supplied)	Flare-Nut and/or Flange Connection (Factory supplied)						
	mm	Ø6.35	Ø6.35						
	(in.)	(1/4)	(1/4)						
Gastine	mm	Ø9.52	Ø9.52						
	(in.)	(3/8)	(3/8)						
Piping Length Max/Height	m	20/10	20/10						
Chargeless Pipe Length	m	20	20						
Additional Charge	g/m	-	-						
Individual Pipe Length		-	-						
Refrigerant Type		R410A	R410A						
Refrigerant Charge	gram	870	870						

2.1.7. RAS-D10EX, RAS-D14EX

Model		RAS-D10EX	RAS-D14EX
Power Supply		From Outdoor Unit	From Outdoor Unit
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)
Cooling Power Input	W	595 (155-1160)	1010 (155-1380)
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)
Heating Power Input	W	810 (115-1,170)	1075 (115-1350)
Dehumidifying Capacity	L/h	1.4	1.6
Indoor Fan Air Flow Rate (Hi/Me/Lo)	m³/min	(C)8.5/7.0/5.3/3.8 (H)9.5/7.8/5.6/3.8	(C) 10.0/7.8/5.8/4.7 (H)10.8/8.2/6.5/5.0
Fan Motor	W	25	25
Drain Pump Pressure Lift	cm	-	-
Sound Pressure Level (Overall Scale) (Hi/Me/Lo/Sleep)	dB (A)	(C) 39 (H) 42	(C) 44 (H) 45
Refrigerant Type		R410A	R410A
Pipe Sizes	mm	6.35 / 9.52	6.35 / 9.52
Pipe Sizes	(in)	1/4,3/8	1/4 , 3/8
Electrical Data			
Power Cable	No.	2 pcs + Earth	2 pcs + Earth
Cable Size	Ømm	2.5	2.5
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth
Wire Size	mm ²	2.0	2.0
Dimensions			
Width	mm	790	790
Height	mm	298	298
Depth	mm	210	210
Net Weight	kg	10	10
Color (Munsell Code)		Pure White(N9.5)	Pure White(N9.5)
Condensate Drain	mm	Ø16 OD	Ø16 OD
Features			
Auto Restart	yes/no	Yes	yes
Auto Changeover	yes/no	Yes	yes
Air Purifying Filter Type		SPX-CFH15, SPX-NFH1	SPX-CFH15, SPX-NFH1

NOTE:

1. The nominal cooling and heating capacity is the combined capacity of the HITACHI standard split system.

Operation Conditions	Cooling	Heating	
Indoor Air Inlot Tomporaturo	dB	27.0 ℃	20.0 °C
muoor Air inier remperature	WB	19.0 °C	
Outdoor Air Inlot Tomporaturo	dB	35.0 °C	7.0 ℃
	WB	24.0 °C	6.0 °C
Piping Length: 7.5 meters; Pipin dB: Dry Bulb; WB: Wet Bulb	ng Lift:	0 meter	

- 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.

2.1.8. RAC-D10EX, RAC-D14EX

Model		RAC-D10EX	RAC-D14EX						
Power Supply		AC 1Ø, 220-230V, 50Hz	AC 1Ø, 220-230V, 50Hz						
Nominal Cooling Capacity	kW	2.5 (0.9-3.1)	3.5 (0.9-4.0)						
Cooling Power Input	W	595 (155-1160)	1010 (155-1380)						
Nominal Heating Capacity	kW	3.4 (0.9-4.4)	4.2 (0.9-5.0)						
Heating Power Input	W	810 (115-1,170)	1075 (115-1350)						
Sound Pressure Level	dB	(C) 46	(C) 48						
(Overall A Scale)		(H) 47	(H) 48						
Starting Current	А	(C)3.19-3.05 (H)4.10-3.92	(C)4.84-4.63 (H)5.15-4.92						
Recommended Fuse Size	А	16	16						
Power Cable	No.	From Indoor Unit	From Indoor Unit						
Cable Size	Ømm	-	-						
Interconnection Wires	No.	4 pcs + Earth	4 pcs + Earth						
Wire Size	mm ²	2.0	2.0						
Dimensions									
Width	mm	750	750						
Height	mm	548	548						
Depth	mm	288	288						
Net Weight	kg	35	35						
Cabinet		Synthetic Resin Paint Baked on Galvanised Steel Plate	Synthetic Resin Paint Baked on Galvanised Steel Plate						
Color (Munsell Code)		Beige (2.5Y 8/2)	Beige (2.5Y 8/2)						
System									
Refrigerant Flow Control		Micro-Computer Control Expansion Valve	Micro-Computer Control Expansion Valve						
Compressor		Twin Rotary	Twin Rotary						
Compressor Oil Type		α68HES-H	α68HES-H						
Compressor Coil	MQ	0.63 at 20°C	0.63 at 20°C						
Resistance	1412.2	0.76 at 75°C	0.76 at 75°C						
Condenser Fan		Propeller Fan	Propeller Fan						
Quantity		1	1						
Air Flow Rate (C/H)	m³/min	31/27	32/28						
Refrigerant Piping	1	Flare-Nut and/or Flange Connection (Factory supplied)	Flare-Nut and/or Flange Connection (Factory supplied)						
Liquid Line	mm	Ø6.35	Ø6.35						
	(in.)	(1/4)	(1/4)						
Gas Line	mm	Ø9.52	Ø9.52						
	(in.)	(3/8)	(3/8)						
Piping Length Max/Height	m	20/10	20/10						
Chargeless Pipe Length	m	20	20						
Additional Charge	g/m	-	-						
Individual Pipe Length		-	-						
Refrigerant Type	1	R410A	R410A						
Refrigerant Charge	gram	870	870						

3 DIMENSIONAL DATA

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		RAC-D10EX, RAC-D14EX	_3-3

3.1.1. RAS-25JX5, RAS-35JX5, RAS-25JX4, RAS-35JX4, RAS-D10EXR, RAS-D14EXR, RAS-D10EX, RAS-D14EX

Unit : mm

3.1.2. RAC-25JX5, RAC-35JX5, RAC-25JX4, RAC-35JX4, RAC-D10EXR, RAC-D14EXR, RAC-D10EX, RAC-D14EX

4 CAPACITIES AND SELECTION DATA

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4.1. 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.

4.1.1. SELECTION UNIT FEATURES

Considering the building distribution, the possible indoor unit position and the available air flow distribution, select the unit features that is 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

4.1.2. SELECTION GUIDE

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

* Step 1: Determine the system requirements

Calculate the cooling capacity and heating capacity of indoor unit according room size and the thermal load.

Choose the indoor and outdoor unit according to the temperature condition for proper unit working range.

Temperature Working Range

Cooling	Heating
Outdoor Air Inlet Dry Bulb: 35.0°C	Outdoor Air Inlet Dry Bulb: 7°C Wet Bulb: 0°C
Indoor Air Inlet Dry Bulb: 27,0°C Wet Bulb: 19.5°C	Indoor Air Inlet Dry Bulb: 20°C

*Example

* Step 2: Select Unit Capacity Performance

The unit kW is selected following the Cooling capacity and Heating capacity showed in the general data.

* 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 room thermal load

4.2. OPERATION SPACE

4.2.1. WALL TYPE

(Hole for Piping on the Wall)

Operation and Installation Space

Models RAS-25JX5 RAS-35JX5 Models RAS-25JX4 Models Models RAS-35JX4 Models RAS-D10EXR Models RAS-D14EXR Models RAS-D10EX Models RAS-D14EX

4.2.2. OUTDOOR UNITS

Models

Models

RAC-D10EX RAC-D14EX

4.3. CAPACITY CHARACTERISTIC CURVES OF OUTDOOR UNITS

The following charts show the characteristics of outdoor unit capacity, which corresponds with the operating ambient temperature of outdoor unit. These characteristic curves are only applicable to mono-multi outdoors. See the examples of the actual combinations.

Power Input (W)

Cooling Capacity (kW)

Heating Capacity (kW)

Heating Capacity Heating Characteristic Curve of RAS/RAC-35JX5 RAS/RAC-D14EXR

Power Input (W)

Power Input (W)

Ambient Temperature

Heating Capacity Cooling Characteristic Curve of RAS/RAC-25JX4, RAS/RAC-D10EX

Ambient Temperature

Cooling Capacity (kW)

Power Input (W)

Ambient Temperature

Power Input (W)

Cooling Capacity (kW)

Ambient Temperature

4.4. SELECTION TABLE

4.4.1. RAS/RAC-25JX5, RAS/RAC-D10EXR

								[50)Hz,	23	0V]								
	COOLING																		
INDO	INDOOR OUTDOOR TEMPERATURE (°CDW)																		
EWB	EDB		21 27 32 35 40 43																
°C	°C	TC SHC PI TC SHC PI TC SHC PI TC SHC PI						PI	тс	SHC	PI	тс	SHC	PI					
12.0	18	2350	2257	410	2175	2083	483	2050	1975	534	1975	1888	557	1850	1779.4	597	1775	1692.6	621
14.0	20	2525	2257	410	2350	2105	489	2200	1975	539	2125	1910	563	1975	1779.4	603	1900	1714	632
16.0	22	2700	2257	415	2500	2105	495	2350	1975	545	2275	1910	574	2125	1779.4	615	2050	1714	638
18.0	25	2875	2452	421	2650	2279	500	2500	2148	551	2400	2062	574	2250	1931	621	2150	1845	644
19.0	27	2975	2582	426	2750	2387	506	2600	2257	557	2500	2170	580	2350	2039.8	621	2250	1953	644
22.0	30	3300	00 2561 426 3050 2365 506 2875 2235 563 2775 2148 586 2500 2083.2 644 2325 2039.8 679											679					
24.0	32	3525	2561	432	3250	2365	512	3075	2235	563	2950	2148	592	2600	2126.6	661	2375	2105	702

								[50)Hz	, 23	80V]								
	HEATING																		
IN	INDOOR OUTDOOR TEMPERATURE (°CDW)																		
I	EDB		-10 -5 0 7 10 15																
	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	ΡI	тс	SHC	PI	TC	SHC	PI
	16	1938	0	604	2390	0	647	2910	0	724	3437	0	734	3750	0	754	4328	0	791
	18	1921	0	612	2366	0	664	2880	0	743	3420	0	771	3737	0	787	4311	0	828
	20	1904	0	620	2346	0	676	2856	0	755	3400	0	795	3655	0	823	4284	0	867
	22	1887	0	628	2312	0	693	2825	0	774	3380	0	827	3696	0	853	4264	0	902
	24	1870	0	636	2292	0	710	2802	0	792	3359	0	859	3675	0	886	4202	0	939

4.4.2. RAS/RAC-35JX5, RAS/RAC-D14EXR

								[50)Hz,	23	0V]								
	COOLING																		
INDO	DOR	OUTDOOR TEMPERATURE (°CDW)																	
EWB	EDB		21 27 32 35 40 43																
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
12.0	18	3133	2702	666	2900	2494	785	2870	2482	911	2765	2373	950	2590	2236	1020	2485	2127	1059
14.0	20	3367	2702	666	3133	2520	795	3080	2482	921	2975	2401	960	2765	2236	1030	2660	2155	1079
16.0	22	3600	2702	675	3333	2520	804	3290	2482	931	3185	2401	980	2975	2236	1049	2870	2155	1089
18.0	25	3833	2936	684	3533	2728	813	3500	2701	941	3360	2592	980	3150	2428	1059	3010	2319	1099
19.0	27	3967	3092	693	3667	2858	822	3640	2837	950	3500	2728	990	3290	2564	1059	3150	2455	1099
22.0	30	4400	3066	693	4067	2832	822	4025	2810	960	3885	2701	1000	3500	2618	1099	3255	2564	1158
24.0	32	4700	3066	701	4333	2832	832	4305	2810	960	4130	2701	1010	3640	2673	1129	3325	2646	1198

								[5	50H:	z, 2	30V]							
	HEATING																		
IN	NDOOR OUTDOOR TEMPERATURE (°CDW)																		
	EDB	-10 -5 0 7 10 15											15						
	°C	тс	SHC	PI	тс	SHC	PI	тс	SHC	PI	тс	SHC	PI	тс	SHC	PI	тс	SHC	PI
	16	2394	0	790	2953	0	847	3595	0	947	4246	0	960	4633	0	986	5347	0	1035
	18	2373	0	801	2923	0	868	3557	0	971	4225	0	1009	4616	0	1030	5326	0	1084
	20	2352	0	811	2898	0	884	3528	0	988	4200	0	1040	4515	0	1076	5292	0	1134
	22	2331	0	822	2856	0	907	3490	0	1012	4175	0	1082	4565	0	1116	5267	0	1180
	24	2310	0	832	2831	0	929	3461	0	1036	4150	0	1123	4540	0	1159	5191	0	1228

4.4.3. RAS/RAC-25JX4, RAS/RAC-D10EX

								[50	Hz,	230)V]								
	COOLING																		
INDOOR OUTDOOR TEMPERATURE (°CDW)																			
EWB	EDB	DB 21 27 32 35 40													43				
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	тс	SHC	PI
12.0	18	2350	3900	452	2175	3600	506	2050	3413	547	1975	3263	571	1850	3075	613	1775	2925	637
14.0	20	2525	3900	452	2350	3638	512	2200	3413	553	2125	3300	577	1975	3075	619	1900	2963	649
16.0	22	2700	3900	426	2500	3638	518	2350	3413	559	2275	3300	589	2125	3075	631	2050	2963	655
18.0	25	2875	4238	464	2650	3938	524	2500	3713	565	2400	3563	589	2250	3338	637	2150	3188	660
19.0	27	2975	4463	470	2750	4125	530	2600	3900	571	2500	3750	595	2350	3525	637	2250	3375	660
22.0	30	3300	4425	470	3050	4088	530	2875	3863	577	2775	3713	601	2500	3600	660	2325	3525	696
24.0	32	3525	4425	476	3250	4088	536	3075	3863	577	2950	3713	607	2600	3675	678	2375	3638	720

[50Hz,	230V]
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									HEA	TING	3								
INI	DOOR		OUTDOOR TEMPERATURE (°CDW)																
E	EDB	-10			-5			0			7			10			15		
	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	16	1938	0	616	2390	0	659	2910	0	738	3437	0	748	3750	0	768	4328	0	806
	18	1921	0	624	2366	0	676	2880	0	757	3420	0	786	3737	0	802	4311	0	844
	20	1904	0	632	2346	0	689	2856	0	770	3400	0	810	3655	0	838	4284	0	883
	22	1887	0	640	2312	0	706	2825	0	788	3380	0	842	3696	0	869	4264	0	919
	24	1870	0	648	2292	0	723	2802	0	807	3359	0	875	3675	0	902	4202	0	957

4.4.4. RAS/RAC-35JX4, RAS/RAC-D14EX

								[50)Hz	, 23	6V]								
	COOLING																		
INDO	DOR	OUTDOOR TEMPERATURE (°CDW)																	
EWB	EDB	21 27 32 35 40 43												43					
°C	°C	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
12.0	18	3210	3805	690	2971	3512	813	2870	3413	920	2765	3263	960	2590	3075	1030	2485	2925	1070
14.0	20	3449	3805	690	3210	3549	822	3080	3413	930	2975	3300	970	2765	3075	1040	2660	2963	1090
16.0	22	3688	3805	699	3415	3549	832	3290	3413	940	3185	3300	990	2975	3075	1060	2870	2963	1100
18.0	25	3927	4134	708	3620	3841	841	3500	3713	950	3360	3563	990	3150	3338	1070	3010	3188	1110
19.0	27	4063	4354	717	3756	4024	851	3640	3900	960	3500	3750	1000	3290	3525	1070	3150	3375	1110
22.0	30	4507	4317	717	4166	3988	851	4025	3863	970	3885	3713	1010	3500	3600	1110	3255	3525	1170
24.0	32	4815	4317	726	4439	3988	860	4305	3863	970	4130	3713	1020	3640	3675	1140	3325	3638	1210

	[50Hz, 230V]																		
	HEATING																		
IN	DOOR OUTDOOR TEMPERATURE (°CDW)																		
	EDB	DB -10 -5 0 7											10						
	°C	TC	SHC	ΡI	TC	SHC	PI	тс	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
	16	2394	0	798	2953	0	855	3595	0	957	4246	0	969	4633	0	995	5347	0	1045
	18	2373	0	809	2923	0	877	3557	0	981	4225	0	1019	4616	0	1040	5326	0	1094
	20	2352	0	819	2898	0	893	3528	0	998	4200	0	1050	4515	0	1087	5292	0	1145
	22	2331	0	830	2856	0	916	3490	0	1022	4175	0	1092	4565	0	1127	5267	0	1192
	24	2310	0	840	2831	0	938	3461	0	1046	4150	0	1134	4540	0	1170	5191	0	1240

4.5. CORRECTION FACTOR ACCORDING TO PIPING LENGTH

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

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

- $CCA = CC \times F$
- CCA: Actual Corrected Cooling Capacity (kcal/h)
- CC: Cooling Capacity in the Performance Table (kcal/h)
- F: Correction Factor Based on the Equivalent Piping Length

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

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

- HCA= HC x F
- HCA: Actual Corrected Heating Capacity (kcal/h)
- HC: Heating Capacity in the Performance Table (kcal/h)
- F: Correction Factor Based on the Equivalent Piping Length

The correction factors are shown in the following figure.

- Equivalent Piping Length for:
 - One 90° Elbow is 0.5m.
 - One 180° Curve is 1.5m.
 - One Multi-Kit is 0.5m.

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

Air Exchanger JX5 ,JX4 Series 10,000Btu/h

Air Exchanger JX5 ,JX4 Series 13,000Btu/h

Piping length (m)

Piping length (m)
5 WORKING RANGE

5	WORKING RANGE	5-1
5.1.	Power supply	5-2
5.2.	Temperature Range	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. TEMPERATURE RANGE

The temperature range is indicated in the following table.

Cooling	l
---------	---

working range	min (°C)	max (°C)	rated (°C)
outdoor	21	43	35
indoor	16	32	27







The temperature range is indicated in the following table.

Coo	li	n	a
			-

working range	min (°C)	max (°C)	rated (°C)
outdoor	-10	43	35
indoor	16	32	27



Heating

working range	min (°C)	max (°C)	rated (°C)
outdoor	-15	21	7
indoor	16	27	20



6 ELECTRICAL DATA

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6.1. INDOOR UNIT

		Unit Main Power	Main Power Applicable Current Indoor Fan Motor			an Motor	
	VOL, PH, Hz	Power Cord (mm)	Fuse Rating (A)	STC(A)	RNC(A)	RNC(A)	IPT(W)
RAS-25JX5	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 3.11-2.97 (H) 4.02-3.85	(C) 3.11-2.97 (H) 4.02-3.85	0.85	25
RAS-35JX5	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 4.74-4.54 (H) 4.98-4.76	(C) 4.74-4.54 (H) 4.98-4.76	0.85	25
RAS-25JX4	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 3.19-3.05 (H) 4.02-3.85	(C) 3.19-3.05 (H) 4.02-3.85	0.85	25
RAS-35JX4	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 4.84-4.63 (H) 5.15-4.92	(C) 4.84-4.63 (H) 5.15-4.92	0.85	25
RAS-D10EXR	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 3.11-2.97 (H) 4.02-3.85	(C) 3.11-2.97 (H) 4.02-3.85	0.85	25
RAS-D14EXR	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 4.74-4.54 (H) 4.98-4.76	(C) 4.74-4.54 (H) 4.98-4.76	0.85	25
RAS-D10EX	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 3.19-3.05 (H) 4.02-3.85	(C) 3.19-3.05 (H) 4.02-3.85	0.85	25
RAS-D14EX	220-230, 1, 50 & DC35V	3 x 1.5	16	(C) 4.84-4.63 (H) 5.15-4.92	(C) 4.84-4.63 (H) 5.15-4.92	0.85	25

VOL: Rated Unit Power Supply Voltage (V)

Hz: Frequency (Hz)

STC: Starting Current (A)

 RNC:
 Running Current (A)

 PH:
 Phase (φ)

 OPT:
 Output (W)

6.2. OUTDOOR UNIT

		Applicable Voltage			Compressor Motor								
Model	Fuse Rating (A)	Min	Max	Locked Rotor	STC	Cooling Operation		Heating Operation					
										Ampere (A)	(A)	RNC(A)	IPT(W)
RAC-25JX5	16	198	253	24.4	3.00/3.90	3.00	580	3.90	795				
RAC-35JX5	16	198	253	24.4	4.60/4.80	4.60	990	4.80	1040				
RAC-25JX4	16	198	253	24.4	3.05/3.92	3.05	595	3.92	810				
RAC-35JX4	16	198	253	24.4	4.63/4.92	4.63	1010	4.92	1075				
RAC-D10EXR	16	198	253	24.4	3.00/3.90	3.00	580	3.90	795				
RAC-D14EXR	16	198	253	24.4	4.60/4.80	4.60	990	4.80	1040				
RAC-D10EX	16	198	253	24.4	3.05/3.92	3.05	595	3.92	810				
RAC-D14EX	16	198	253	24.4	4.63/4.92	4.63	1010	4.92	1075				

VOL: Rated Unit Power Supply Voltage (V)

HZ: Frequency (Hz)

STC: Starting Current (A)

RNC: Running Current (A) PH: Phase (ϕ)

IPT: Input (kW)

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.

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RAC-25JX5, RAC-35JX5, RAC-25JX4, RAC-35JX4



7/4 ELECTRICAL WIRING DIAGRAMS



RAC-D10EXR, RAC-D14EXR, RAC-D10EX, RAC-D14EX

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8.1.1. RAS-25JX5/RAC-25JX5, RAS-35JX5/RAC-35JX5



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8.1.3. RAS-D10EXR/RAC-D10EXR, RAS-D14EXR/RAC-D14EXR



Ø 9.52



9 REMOTE CONTROLLERS OPERATION

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9.1 REMOTE CONTROL FUNCTION

Remote Controller For Models: RAS-25JX5, RAS-35JX5, RAS-D10EXR, RAS-D14EXR, RAS-25JX4, RAS-35JX4, RAS-D10EX, RAS-D14EX

CAUTION:

Press switches only with fingers. Do not press switches by any other item, as it may damage the switches.



NOTE:

Handle the remote controller with care. Dropping it or getting it wet may compromise its signal transmission capability. After new batteries are inserted into the remote controller, the unit will initially require approximately 10 seconds to respond to commands and operate.

Above illustration of remote controller does not represent the remote controller for all models mentioned in this catalogue, but only a sample guide for using the remote controller.

9.1.1. AUTOMATIC OPERATION

The remote controller will automatic determines the mode of operation, COOL, or DEHUMIDIFY depending on the current room temperature. The selected mode of operation will change when the room temperature varies.

- 1. Press the function selector so that the display indicates AUTO mode of operation.
- 2. Press the START / STOP button, operation will starts with a beep. Press again to stop the operation.
- 3. Press the temperature button and the temperature setting will change by 1°C each time.

NOTE:

- 1. The preset temperature and actual room temperature may vary somewhat depending on the conditions.
- 2. The display does not indicate the preset temperature in the AUTO mode. If you change the setting, the indoor unit will produce a beep.

Initial Room Temperature	Function	Temperature setting
Over 27°C	Cool	27°C
16 ~ 27°C	Deuhmidifying	Slightly lower than the room temperature

9.1.2. AUTO RESTART CONTROL

If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction. (As the operation is not stopped by the remote controller)

When the circuit breaker is resumed, the operation will be automatically restarted with previous operation mode and airflow direction. If you do not intend to continue the operation when the power is resumed, switch of the power supply.

9.1.3. HEATING OPERATION

- 1. Press the function selector so that the display indicates HEAT mode of operation.
- 2. Set the desired room temperature with the TEMP button.
- 3. Press the START / STOP button, operation will starts with a beep. Press again to stop the operation.

NOTE:

 The preset temperature and actual room temperature may vary somewhat depending on the conditions.

9.1.4. COOLING OPERATION

- 1. Press the function selector so that the display indicates COOL mode of operation.
- 2. Set the desired FAN SPEED with the FAN SPEED button.
- 3. Set the desired room temperature with the TEMP button.
- 4. Press the START / STOP button, operation will starts with a beep. Press again to stop the operation.

9.1.5. DEHUMIDIFYING OPERATION

- Press the function selector so that the display indicates DEHUMIDIFY mode of operation. The FAN SPEED is set at LOW automatically.
- 2. The FAN SPEED button does not work.
- Set the desired room temperature with the TEMP button.
- 5. Press the START / STOP button, operation will starts with a beep. Press again to stop the operation.

NOTE:

- 1. When the room temperature is higher that the temperature setting, the device will dehumidify the room, reducing the room temperature to the preset level.
- 2. When the room temperature is lower than the temperature setting, dehumidifying will be performed at the temperature setting slightly lower than the current room temperature, regardless of the temperature setting. The function will stop as soon as the room temperature becomes lower than the setting temperature.

9.1.6. AUTO CHANGEOVER*

Auto changeover function only applicable during auto mode is on. During the auto mode, the changeover function is triggered by determine the outdoor temperature and the indoor temperature.

The auto-changeover mode operation will be restricted or automatically changeover when the temperature of the outdoor and indoor matches the criteria as below,

During cooling	
Outdoor temperature >27°C	Restricted to cooling
Room temperature < 2°C below	Change to heating
preset temperature	
During heating	
Outdoor temperature<16°C	Restricted to heating
Room temperature > 3°C above	Change to cooling
preset temperature	



The auto changeover mode is only applicable to

Applicable models
RAS-25JX5/RAC-25JX5
RAS-35JX5/RAC-35JX5
RAS-25JX4/RAC-25JX4
RAS-35JX4/RAC-35JX4
RAS-D10EXR/RAC-D10EXR
RAS-D14EXR/RAC-D14EXR
RAS-D10EX/RAC-D10EX
RAS-D14EX/RAC-D14EX

*Auto changeover function not applicable when connected to Multizone outdoor unit.

9.1.7. AIR EXCHANGER OPERATION

9-4

- 1. Press the air exchanger button. The operation can be operated regardless of the air conditioner to be ON or OFF.
- Air exchanger sequences as below, Exhaust (HI) → Exhaust (MED) → Exhaust (LO) → Intake (HI) → Intake (MED) → Intake (LO) → Stop → Follow the sequence to select the air exchanger mode. LED lamp on the unit will light based on the selected air exchanger mode.
- 3. Press the air exchanger button until stop to quit the operation, or press the start/stop button to quit the operation.

9.1.8. SELF CLEAN OPERATION

- 1. Press the Self Clean button. The self clean lamp will turn on and blink with a beep.
- 2. The operation will perform for 1 hour. After self clean operation is perform, the unit will shut down.

9.1.9. HOW TO SET SLEEP TIMER

The device will continue working for the designated number of hours and then turn off.

The timer information will be displayed on the remote controller. The timer lamp lights with a beep from the indoor unit. When the sleep timer has been set, the display indicates the turn off time.

The device can be turn off by the SLEEP timer and turn on by the ON timer.

NOTE:

- 1. If date or current time is not set, the SLEEP timer cannot be set.
- If the SLEEP timer is set after the ON timer, OFF timer or the ON/OFF timer, the SLEEP timer becomes effective instead of the ON, OFF or ON/OFF timer set earlier.
- 3. SLEEP timer effective once only.

9.1.10. HOW TO ADJUST THE AIR DEFLECTOR

The horizontal air deflector is automatically set to the proper angle suitable for each operation.

The deflector can be swung up and down continuously and also set to the desired angle using the AUTO SWING button.



NOTE:

- 1. If the AUTO SWING button is pressed once, the horizontal air deflector swings up and down. If the button is pressed again, the deflector stops in it current position.
- 2. When the operation stop, the horizontal air deflector moves and stops at the position where the air outlet closes.

CAUTION:

 In cooling operation, do not keep the horizontal air deflectors swinging for a long time. Some dew may form on the horizontal air deflector and dew may drop.

9.1.11. HOW TO SET TIME

Whenever or after changing the batteries, the remote control will prompt for current month and date.

1. Set the current month and day with the TIMER control button.



2. Press the TIME button.



3. Set the current time with the TIME control button.



4. Press the TIME button again, the time indication starts lighting instead of flashing.



9.1.12. HOW TO SET OFF TIMER

1. Press the OFF TIMER button. Then set the turn-off time with the timer control button



2. Press the RESERVE button so that the OFF indication lights and the RESERVE indication blinks.



 Press the CANCEL button to cancel the timer reservation mode, the RESERVE sign goes out with a beep and the timer lamp turns off on the indoor unit.

9.1.13. HOW TO SET ON TIMER

1. Press the ON TIMER button. Then set the turn-off time with the timer control button



2. Set the turn on time with the TIMER control button.



3. Press the RESERVE button, the ON indication start lighting instead of flashing and the RESERVE sign light. A beep occur and the TIMER lamps lights up on the indoor unit.



9.1.14. HOW TO SET ON/OFF TIMER

1. Press the OFF TIMER button. Then set the turn-off time with the timer control button



4. Press the ON TIMER button. Then set the turn-off time with the timer control button



 Press the RESERVE button so that the ON indication lights and the RESERVE sign lights. A beep occurs and the TIMER lamp lights on the indoor unit.



NOTE:

You can set only one of the OFF timer, ON timer and ON/OFF timer.

To cancel time reservation, press the cancel button. The reserve sign goes out with a beep and the timer lamp turn off on the indoor unit.

9.2 AIR EXCHANGER NOTES:

9.2.1. AIR PURIFYING OPERATION

When the two way air exchange operation is configured during the air purifier operation, the fan speed operation is combined with the two way air exchange operation.

9.2.2. AIR EXCHANGE OPERATION

When the air temperature outside the room is more than 30° Cor less than 3° C, the fresh air in does not operate to prevent dew condensation on the two way air exchanger fan and hose.

If the temperature difference between the indoor and the outside room temperature is more than $7^{\circ}C$, the fresh air intake does not operate to prevent dew condensation on the two way air exchanger fan and hose.

When the room temperature is above 43°C the exhaust operation does not operate to prevent the exhaust fan to damage.

9.2.3. AIR EXCHANGER SWITCH

The air exchanger switch is located on the indoor unit. The air exchanger function can be choose to enabled or disabled.



1). Air Exchanger function disabled.

Select this when consider to install only for air conditioner purpose or any installation constrain of the air hose.

2). Fresh air intake function disabled.

Select this when consider the outside air is not suitable for intake or any poison substances that may contain in the air if intake or any installation contrain of the air hose to an open space for exhaust the air

3). Air exchanger function enabled.

Select this when consider to enable the air exchanging function and may not have conflict to the above situations.

9.2.4. AIR EXCHANGER SPECIFICATION

Mode	Specification
Air intake (HI) volume	12m ³ / hour
Air exhaust (HI) volume	20m ³ / hour
Testing standard	JIS (Japan Industry Standard) B8330
	Pipe length 0.54m
Testing condition	Installed horizontal and backward
	1 time bending of air hose, with installed anti-insect and rain proof
	сар

10 UNITS INSTALLATION

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	10.1.2	Installation of Outdoor unit	10-3

10.1 INSTALLATION OF INDOOR UNIT

10.1.1 INSTALLATION OF WALL TYPE INDOOR

WARNING:

The unit should be mounted at stable, non vibratory location which can provide full support to the unit.

CAUTION:

Do not install the unit near heat source or obstruction near the air outlet.

The installation location must be of convenience for water drainage and pipe connection with the outdoor unit.

The installation height for indoor unit must be at minimum 2.3m or more in a non-public area.

There are 6 piping installation directions, namely backward, backward from left, horizontal from right, horizontal from left, vertical down from left, vertical down from right.





NOTE:

The connecting pipe should be insulated with insulation pipe and then wrapped with vinyl tape. The insulator will deteriorate if it is not properly wrapped with tape.





Models	Piping direction	Maximum piping length (m)	Maximum piping height (m)
RAS-25JX5	6	20	10
RAS-35JX5	6	20	10
RAS-25JX4	6	20	10
RAS-35JX4	6	20	10
RAS-D10EXR	6	20	10
RAS-D14EXR	6	20	10
RAS-D10EX	6	20	10
RAS-D14EX	6	20	10

10.1.2 INSTALLATION OF OUTDOOR UNIT

WARNING:

The unit should be mounted at stable, non vibratory location which can provide full support to the unit.

CAUTION:

Do not install the unit near heat source or obstruction near the air outlet.

The installation location must be of convenience for water drainage.

Place the outdoor unit on the mounting stand (optional) or on blocks to raise its level more than 100mm from the ground surface.



Outer diameter 16mm

NOTE:

The connecting pipe should be insulated with insulation pipe and then wrapped with vinyl tape. The insulator will deteriorate if it is not properly wrapped with tape.



11 REFRIGERANT PIPING AND REFRIGERANT CHARGE

11	REFRI	GERANT PIPING AND REFRIGERANT CHARGE	11-1
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	11.1.1.	Refrigerant charged method	11-2

11.1. REFRIGERANT PIPING

11.1.1. REFRIGERANT CHARGED METHOD

- Remove the flare nut and seal cap from the service valve.
- Apply refrigerator oil to the service valve and the flared portion of the pipe.
- Using a wrench, securely tighten.



- 1. Remove the valve cap of valve core.
- 2. Connect the charge hoses to the vacuum pump and the charge port of the valve core large diameter pipe side service valve, respectively.
- Fully open the LO knob of the manifold valve. 3.
- Run the vacuum pump. 4.
- 5. Open the valve cap from the spindle of the service valve.
- 6. Turn the spindles of each large and small diameter pipe side service valves full counterclockwise until there are securely tightened. Then retighten them more than 10 degrees.
- Disconnect the charge hose from the service valve. 7.
- Attach the valve cap to the spindles of each large and 8. small diameter pipe side service valve.



When meter reaches -101kPa during pumping, fully tighten the shuttle.



air sucked in. Then tighten the flare nut

WARNING:

Please ensure that the air conditioner is in normal operating condition during the operation test.

12 DRAIN PIPING

12	DRAIN PIPING	12-1
12.1	General	12-2

12.1 GENERAL

CAUTION:

 Do not create an upper-slope or rise for the drain piping, since drain water will flow back to the unit and leakage to the room will occur when the unit operation is stopped.



- Do not connect the drainpipe with sanitary or sewage piping or any other drainage piping.
- When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drainpipe must be large enough according to the unit size and number of unit.



Common Drain Piping

- Drain piping will require insulating if the drain is installed in a location where condensation forming on the outside of drain pipe may drop and cause damage. The insulation for the drainpipe must be selected to insure vapor sealing and prevent condensation forming.
- Drain trap should be installed next to indoor unit. This trap must be designed to good practice and be checked with water (charged) and tested for correct flow.

Do not tie or clamp the drain pipe and refrigerant pipe together.

NOTE:

Install drainage in accordance with national and local codes.

After performing drain piping work and electrical wiring, check to ensure that water flows smoothly as in the following procedure:

Checking Unit without Drain-up Mechanism

- Pour approximately 1.8 liters of water into the drain pan.
- Check to ensure that the water flows smoothly or whether no water leakage occurs. When water cannot be found at the end of the drain piping, pour another approximately 1.8 liters of water into the drain pan.
- Checking with Drain-Up Mechanism and Float Switch
 - Switch ON the power supply.
 - Pour approximately 1.8 liters of water into the drain pan, then float switch up and drain pump start working automatically.
 - Check to ensure that the water flows smoothly or whether no water leakage occurs. When water cannot be found at the end of the drain piping, pour another approximately 1.8 liters of water into the drain pan.
 - Switch OFF the power supply after.

NOTE:

Pay attention to the thickness of the insulation when the left side piping is performed. If it is too thick, piping can not be installed in the unit.

13 ELECTRICAL WIRING

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	13.2.1 Electrical Wiring Connection	13-2
13.3	Electrical wiring for Outdoor Unit	13-3
	13.3.1 Electrical Wiring Connection	13-3

13.1 GENERAL CHECK

ATTENTION:

- Turn OFF the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, drain pipe, electrical parts, etc. from rats or other small animals. If not protected, rats or other small animals may gnaw at unprotected parts and at the worst, a fire will occur.
- Avoid the wires from touching the refrigerant pipes, plate edges and electrical parts inside the unit.
 Otherwise, the wires will be damaged and at the worst, a fire will occur.

CAUTION:

Tightly secure the wires with the cord clamp inside the indoor unit.

NOTE:

Fix the rubber bushes with adhesive when conduit tubes to the outdoor unit are not used.

- Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in this technical catalog. Make sure that the components comply with National Electrical Code (NEC).
- 2. Check to ensure that the power supply voltage is within ±10% of the rated voltage.
- 3. Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.
- 4. Check to ensure that the ground wire is connected.
- Power Source Main Switch Install a multi-pole main switch with a space of 3.5mm or more between each phase.

13.2 ELECTRICAL WIRING FOR INDOOR UNIT

13.2.1 ELECTRICAL WIRING CONNECTION

- Remove the front panel and electrical cover to expose the electrical box in the indoor unit.
- Insert the connecting cord from the bottom of the unit.
- Fixed the wire firmly to the therminal.



Before installation, it is necessary to check the power source and wiring work. To ensure the wiring capacity is proper, use the table below as a guideline for the indoor/outdoor connecting cord for the wiring from the switchboard and outdoor unit in consideration of the locked rotor current.

Cable length	Wire cross section
Up to 6m	1.5mm ²
Up to 15m	2.5mm ²
Up to 25m	4.0 mm ²

Installation procedure and and notice

- In the electrical installation a separator with a contact gap of more than 3mm has to be installed. During cleaning or servicing the set has to be switched off with this separator.
- Connect the electrical wiring correctly as shown. In case of wrong connection, the unit does not operate properly and it may cause malfunction.
- The connecting cord must be fixed by the band which is located near the terminal board.

Connection of connecting cords and power cord

 Cut of the connecting cord, the power cord and strip the insulation of the wire.



- Connect the connecting cord and power cord to the terminal board.
- Fix the connecting cords and power cord with steel band certainly.

WARNING:

- The naked part of the wire core should be10 mm and fix tem tightly to the terminal. Then try to pull the individual wireto check if the contact is tight. Improper insertion may cause the terminal to burn.
- Be sure to use only power cables approved from the authorities from your country.

13.3 ELECTRICAL WIRING FOR OUTDOOR UNIT

13.3.1 ELECTRICAL WIRING CONNECTION

 Keep the space around the unit for maintenance and avoiding the effect of hindrance for normal ventilation of the unit.



*All diagram shown is for sample purposes, does not represent the true wiring for each model

Installation procedure and and notice

- In the electrical installation a separator with a contact gap of more than 3mm has to be installed. During cleaning or servicing the set has to be switched off with this separator.
- Connect the electrical wiring correctly as shown. In case of wrong connection, the unit does not operate properly and it may cause malfunction.
- The connecting cord must be fixed by the band which is located near the terminal board.

Connection of connecting cords and power cord

 Cut of the connecting cord, the power cord and strip the insulation of the wire.





- Connect the connecting cord and power cord to the terminal board.
- Fix the connecting cords and power cord with steel band certainly.

WARNING:

- The naked part of the wire core should be10 mm and fix tem tightly to the terminal. Then try to pull the individual wireto check if the contact is tight. Improper insertion may cause the terminal to burn.
- Be sure to use only power cables approved from the authorities from your country.

14 TROUBLESHOOTING

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	14.3.1	RAS-25JX5, RAS-35JX5, RAS-25JX4, RAS-35JX4, RAS-D10EXR, RAS-D14EXR, RA	۸S-	
		D10EX, RAS-D14EX	14-8	
	14.3.2	RAC-25JX5, RAC-35JX5, RAC-25JX4, RAC-35JX4, RAC-D10EXR, RAC-D14EXR ,		
		RAC-D10EX. RAC-D14EX	14-9	

14.1 INITIAL TROUBLESHOOTING

14.1.1 PRECAUTION FOR TROUBLESHOOTING

Danger:

Be caution when handling the electrical parts. Switch off the power source before performing any checking or troubleshooting.

Always allow 10 minutes after switching off the power source before performing checking and troubleshooting. This allows the voltage to fall to ground level after the power source is switched off.

Always keep your hands and metallic conductors away from the oscilloscope. Do not install the ground lie from the oscilloscope.



Procedure:

- 1. Turn off the power supply to the outdoor unit.
- 2. After the power supply is turn off. Wait for 10 minutes or more. Remove the electrical cover for access to the electrical board.
- 3. Apply soldering iron of 30 to 75W for 15 seconds or more to P2 and N1 terminals on the power system module to discharge the voltage in the smoothing capacitor.
- 4. Remove gray/red lead wire connected to the power system module from diode stack before performing operation.



Warning:

Do not use a soldering iron with transformer to avoid thermal fuse inside the transformer to blow.
14.2 TROUBLESHOOTING FLOW CHART

14.2.1 PRELIMINARY CHECK



14.2.2 CHECKING THE INDOOR UNIT ELECTRICAL PARTS

1. Power does not operate (no operation)





4. Air deflector does not move



5. All system stop after operation is started.



6. Check main P.W.B.



14.2.3 CHECKING THE REMOTE CONTROLLER



14.2.4 CHECKING THE OUTDOOR UNIT



14.3 FAULT FINDING CHART

14.3.1 RAS-25JX5, RAS-35JX5, RAS-25JX4, RAS-35JX4, RAS-D10EXR, RAS-D14EXR, RAS-D10EX, RAS-D14EX

TIMER LAMP	DETAILS	MAIN CHECK POINT
1 time	Reversing valve defective	 When indoor heat exchanger temperature is too low in heating mode, or it is too high in the cooling mode 1. Reversing valve defect 2. Heat exchanger thermistor disconnected (only in heating mode)
2 times	Outdoor unit forced operation	When the outdoor unit is in forced operation or balancing operation after forced operation.1. Electrical parts in the outdoor unit
3 times	Indoor/Outdoor interface defective	When the interface signal from the outdoor unit is interrupted.1. Indoor interface circuit2. Outdoor interface circuit
9 times	Room thermistor or heat exchanger thermistor faulty	 When room thermistor or heat exchanger thermistor is opened circuit or short circuit. 1. Room thermistor 2. Heat exchanger thermistor
10 times	Over current at DC fan motor	 When over current is detected at the DC fan motor of the indoor unit 1. Fan motor locked 2. Indoor control P.W.B.
13 times	Data reading error	When data read from IC401 or IC402 is incorrect 1. IC401 2. IC402
16 times	Air exchanger defective	Check air exchanger function Air exchanger operational damage
17 times	Dirt sensor abnormal	Dirt sensor disconnected or short circuit. 1. Dirt sensor circuit 2. Dirt sensor disconnected

NOTE:

If the interface circuit is faulty when power is supplied, the self-diagnosis display will not display. Check the indoor unit F-cable if the indoor unit does not operate at all.

14.3.2 RAC-25JX5, RAC-35JX5, RAC-25JX4, RAC-35JX4, RAC-D10EXR, RAC-D14EXR , RAC-D10EX, RAC-D14EX

LD301	LD302	LD303	SELF DIAGNOSIS NAME	DETAIL	MAIN CHECK POINT	
				1. DURING OPERATIO	DN	
			Normal operation	Compressor operation	Not malfunction	
			Overload (1)		This shows an overload but not malfunction.	
			Overload (2)	The rotation speed is automatically controlled to protect the compressor in the overload condition.		
			Overload (3)			
				2. DURING STOP		
			Normal stop	Indoor thermostat off, Main operation off.	Not malfunction	
1 time			Reset stop	When stop with power reset.	P.W.B.	
2 times			Peak current cut	Current overload	 Compressor P.W.B. System power module 	
3 times			Abnormal low speed rotation	Position detection signal is not input during operation	 System power module Compressor P.W.B. 	
4 times			Switching failure	Switching from low frequency sync start to position detection operation failure	 System power module Compressor P.W.B. 	
5 times			Overload lower limit cut	Under the lower limit of rotation speed with overload control operated.	 Outdoor is exposed to direct sunlight or airflow is block. Fan motor/fan motor circuit Voltage is abnormal low. 	
6 times			OH thermistor temperature rise	OH thermistor operated	 Leak of refrigerant. Compressor OH thermistor circuit. Fan motor/fan motor circuit. 	
7 times			Abnormal thermistor	Thermistor is opened or shorted	 Thermistor. Connection of thermistor. Thermistor circuit. 	
8 times			Acceleration defective	No acceleration over the lower limit of the rotation speed.	 Leak of refrigerant. Compressor. 	
9 times			Communication error	Communication between indoor and outdoor is interrupted	 C, D cable reversed installation. Cable disconnected. Interface circuit of indoor/outdoor unit. 	
10 times			Abnormal power voltage	Power voltage is abnormal low.	 Power voltage. Reactor connection. 	
12 times			Fan defective	Outdoor fan rotation is abnormal	 Outdoor fan motor Fan motor circuit. P.W.B. (fuse) 	

13 times		EEPROM read error	Microcomputer cannot read the data in EEPROM.	Main P.W.B.



Note: Blinking lights at every 0.25sec interval, and repeat signal every 2 sec interval.

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