Manual No.'11•PAC/RAC-T-159

MHI

TECHNICAL MANUAL

INVERTER AIR-CONDITIONERS
(Split system, air to air heat pump type)

WALL MOUNTED TYPE
SRK50ZJX-S1
60ZJX-S1

FLOOR STANDING TYPE
SRF50ZJX-S1

CEILING CASSETTE- 4WAY TYPE
FDT40ZJXVD
50ZJXVD
60ZJXVD

CEILING SUSPENDED TYPE
FDEN40ZJXVD
50ZJXVD
60ZJXVD

CEILING CASSETTE- 4WAY COMPACT TYPE
FDTC40ZJXVD
50ZJXVD
60ZJXVD

DUCT CONNECTED-LOW/MIDDLE STATIC PRESSURE TYPE
FDUM50ZJXVD
60ZJXVD

MITSUBISHI HEAVY INDUSTRIES, LTD.

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■How to read the model name

Example: SRK 50 Z JX-S1

- Series code
- Inveter type
- Product capacity (Cooling capacity : 5000W)
- Model name
  - SRK : Wall mounted type
  - SRF : Floor standing type
  - SRC : Outdoor unit

Example: FDT 50 Z JXVD

- Series code
- Inveter type
- Product capacity (Cooling capacity : 5000W)
- Model name
  - FDT : Ceiling cassette-4way type
  - FDTC : Ceiling cassette-4way compact type
  - FDEN : Ceiling suspended type
  - FDUM : Duct connected-Low/Middle static pressure type
  - FDC : Outdoor unit

1. SPECIFICATIONS

(1) Wall mounted type (SRK)

Adapted to **RoHS & MD** directive

Item				Model	SRK50ZJX-S1	
					Indoor unit **SRK50ZJX-S1**	Outdoor unit **SRC50ZJX-S**
Cooling capacity (1)				W	5000 (1100 (Min.) ～ 5800 (Max.))	
Heating capacity (1)				W	6000 (600 (Min.) ～ 7700 (Max.))	
Power supply					1 Phase, 220 ～ 240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	1.30 (0.2 ～ 1.80)	
			Heating		1.36 (0.2 ～ 2.43)	
	Running current		Cooling	A	6.0 / 5.7 / 5.5 (220/ 230/ 240 V)	
			Heating		6.2 / 6.0 / 5.7 (220/ 230/ 240 V)	
	Inrush current				6.2 / 6.0 / 5.7 (220/ 230/ 240 V)	
	Max current				15	
	COP		Cooling		3.85	
			Heating		4.41	
	Noise level	Cooling	Sound level	dB(A)	Hi: 47 Me: 40 Lo: 27	54
			Power level	dB	60	63
		Heating	Sound level	dB(A)	Hi: 48 Me: 40 Lo: 33	50
			Power level	dB	64	63
Exterior dimensions (Height x Width x Depth)				mm	309 x 890 x 220	640 x 800(+71) x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	15	45
Refrigerant equipment	Compressor type & Q'ty				—	RMT5113MCE2 (Twin Rotary type) x 1
	Motor (Starting method)			kW	—	0.9 (Line starting)
	Refrigerant oil			ℓ	0.45 (MA68)	
	Refrigerant (3)			kg	R410A 1.5 (Pre-Charged up to the piping length of 15m)	
	Heat exchanger				Louver fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Tangential fan x 1	Propeller fan x 1
	Motor			W	27	34
	Air flow		Cooling	CMM	Hi: 13.5 Me: 11 Lo: 8	39.0
			Heating		Hi: 17.0 Me: 14.5 Lo: 10.5	33.0
	Fresh air intake				Not possible	—
	Air filter,Quality / Quantity				Polypropylene net (washable) x 2	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Electric heater					—	—
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN: Green , TIMER: Yellow , HI POWER: Green , 3D AUTO: Green , ECONO: Blue	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Heating overload protection(High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	connecting method				Flare connecting	
	Attached length of piping			m	Liquid line : 0.55 Gas Line : 0.49	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way)length			m	Max.30	
	Vertical height difference between outdoor unit and indoor unit				Max.20 (Outdoor unit is higher) Max.20 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					—	
Recommended breaker size				A	16	
Connection wiring		Size x Core number			1.5mm^2 x 4 cores (Including earth cable)	
		Connecting method			Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Allergen clear filter x 1, Photocatalytic washable deodorizing filter x 1)	
Optional parts					Interface kit (SC-BIKN-E)	

Note (1) The data are measured at the following conditions. The pipe length is 7.5m.

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1 , JIS C 9612
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 15m connecting piping.
(Purging is not required even for the short piping.)

RWA000Z237 B

Adapted to **RoHS & MD** directive

Item				Model	SRK60ZJX-S1	
					Indoor unit **SRK60ZJX-S1**	Outdoor unit **SRC60ZJX-S**
Cooling capacity (1)				W	6000 (1100 (Min.) ~ 6800 (Max.))	
Heating capacity (1)				W	6800 (600 (Min.) ~ 8200 (Max.))	
Power supply					1 Phase, 220 ~ 240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	1.86 (0.2 ~ 2.50)	
			Heating		1.67 (0.2 ~ 2.70)	
	Running current		Cooling	A	8.5 / 8.2 / 7.8 (220/ 230/ 240 V)	
			Heating		7.7 / 7.3 / 7.0 (220/ 230/ 240 V)	
	Inrush current				8.5 / 8.2 / 7.8 (220/ 230/ 240 V)	
	Max current				15	
	COP		Cooling		3.23	
			Heating		4.07	
	Noise level	Cooling	Sound level	dB(A)	Hi: 51 Me: 41 Lo: 29	54
			Power level	dB	62	64
		Heating	Sound level	dB(A)	Hi: 48 Me: 41 Lo: 34	54
			Power level	dB	64	64
Exterior dimensions (Height x Width x Depth)				mm	309 x 890 x 220	640 x 800(+71) x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	15	45
Refrigerant equipment	Compressor type & Q'ty				—	RMT5113MCE2 (Twin Rotary type) x 1
	Motor (Starting method)			kW	—	0.9 (Line starting)
	Refrigerant oil			ℓ	0.45 (MA68)	
	Refrigerant (3)			kg	R410A 1.5 (Pre-Charged up to the piping length of 15m)	
	Heat exchanger				Louver fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Tangential fan x 1	Propeller fan x 1
	Motor			W	27	34
	Air flow		Cooling	CMM	Hi: 14.5 Me: 12.5 Lo: 8.5	41.5
			Heating		Hi: 17.5 Me: 15.0 Lo: 11.0	39.0
	Fresh air intake				Not possible	—
	Air filter,Quality / Quantity				Polypropylene net (washable) x 2	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Electric heater					—	—
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN: Green , TIMER: Yellow , HI POWER: Green , 3D AUTO: Green , ECONO: Blue	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Heating overload protection(High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line: φ6.35 (1/4″) Gas line:φ12.7 (1/2″)	
	connecting method				Flare connecting	
	Attached length of piping			m	Liquid line : 0.55 Gas Line : 0.49	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way)length			m	Max.30	
	Vertical height difference between outdoor unit and indoor unit				Max.20 (Outdoor unit is higher) Max.20 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					—	
Recommended breaker size				A	16	
Connection wiring	Size x Core number				1.5mm^2 x 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Allergen clear filter x 1, Photocatalytic washable deodorizing filter x 1)	
Optional parts					Interface kit (SC-BIKN-E)	

Note (1) The data are measured at the following conditions. The pipe length is 7.5m.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1 , JIS C 9612
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 15m connecting piping.
(Purging is not required even for the short piping.)

RWA000Z237 B

(2) Floor standing type (SRF)

Adapted to **RoHS & MD** directive

Item				Model	SRF50ZJX-S1	
					Indoor unit **SRF50ZJX-S1**	Outdoor unit **SRC50ZJX-S**
Cooling capacity (1)				W	5000 (1100 (Min.) ～ 5200 (Max.))	
Heating capacity (1)				W	6000 (600 (Min.) ～ 6900 (Max.))	
Power supply					1 Phase, 220 ～ 240 V, 50Hz	
Operation data (1)	Power consumption		Cooling	kW	1.390 (0.2 ～ 1.70)	
			Heating		1.540 (0.2 ～ 2.15)	
	Running current		Cooling	A	6.4 / 6.1 / 5.8 (220/ 230/ 240 V)	
			Heating		7.1 / 6.8 / 6.5 (220/ 230/ 240 V)	
	Inrush current				7.1 / 6.8 / 6.5 (220/ 230/ 240 V)	
	Max current				15	
	COP		Cooling		3.60	
			Heating		3.90	
	Noise level	Cooling	Sound level	dB(A)	Hi: 46 Me: 42 Lo: 32	52
			Power level	dB	58	63
		Heating	Sound level	dB(A)	Hi: 47 Me: 41 Lo: 33	51
			Power level	dB	58	62
Exterior dimensions (Height x Width x Depth)				mm	600 x 860 x 238	640 x 800 x 290
Exterior appearance (Munsell color)					Fine snow (8.0Y 9.3/0.1) near equivalent	Stucco white (4.2Y 7.5/1.1) near equivalent
Net weight				kg	19	45
Refrigerant equipment	Compressor type & Q'ty				—	RMT5113MCE2 (Twin Rotary type) x 1
	Motor (Starting method)			kW	—	0.9 (Line starting)
	Refrigerant oil			ℓ	0.45 (MA68)	
	Refrigerant (3)			kg	R410A 1.5 (Pre-Charged up to the piping length of 15m)	
	Heat exchanger				Louver fins & inner grooved tubing	M fins & inner grooved tubing
	Refrigerant control				Capillary tubes + Electronic expansion valve	
	Deice control				Microcomputer control	
Air handling equipment	Fan type & Q'ty				Turbo fan x 1	Propeller fan x 1
	Motor			W	40	34
	Air flow		Cooling	CMM	Hi: 11.5 Me: 9.6 Lo: 6.6	36.0
			Heating		Hi: 12.0 Me: 10.0 Lo: 7.6	33.0
	Fresh air intake				Impossible	—
	Air filter,Quality / Quantity				Polypropylene net (washable) x 1	—
Shock & vibration absorber					—	Cushion rubber (for compressor)
Electric heater					—	—
Operation control	Operation switch				Wireless-Remote control	—
	Room temperature control				Microcomputer thermostat	—
	Operation Display				RUN: Green , TIMER: Yellow , HI POWER: Green , AIR OUTLET SELECTION: Green , ECONO: Green	
Safety devices					Compressor overheat protection, Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Heating overload protection(High pressure control), Cooling overload protection	
Installation data	Refrigerant piping size (O.D)			mm	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	connecting method				Flare connecting	
	Attached length of piping			m	—	—
	Insulation for piping				Necessary (Both sides), independent	
	Refrigerant line (one way)length			m	Max.30	
	Vertical height difference between outdoor unit and indoor unit				Max.20 (Outdoor unit is higher) Max.20 (Outdoor unit is lower)	
Drain hose					Connectable (VP 16)	—
Power cable					—	
Recommended breaker size				A	16	
Connection wiring	Size x Core number				1.5mm^2 x 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural Enzyme Filter x 1, Photocatalytic washable deodorizing filter x 1)	
Optional parts					Interface kit (SC-BIKN-E)	

Note (1) The data are measured at the following conditions. The pipe length is 7.5m.

Operation \ Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1 , JIS C 9612
Heating	20℃	—	7℃	6℃	

(2) This air-conditioner is manufactured and tested in conformity with the ISO.
(3) The operation data are applied to the 220/230/240V districts respectively.
(4) The refrigerant quantity to be charged includes the refrigerant in 15m connecting piping.
(Purging is not required even for the short piping.)

RWB000Z055 B

(3) Ceiling cassette -4way type (FDT)

Adapted to **RoHS** directive

Item \ Model		FDT40ZJXVD	
		Indoor unit **FDT40VD**	Outdoor unit **SRC40ZJX-S**
		Panel **T-PSA-3AW-E**	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	4.0 [1.1(Min.)～ 4.7(Max.)]	4.5 [0.6(Min.)～ 5.4(Max.)]
Power consumption	kW	0.930	1.06
Running current	A	4.4 / 4.6	5.1 / 5.3
Power factor	%	92 / 92	90 / 91
Inrush current	A	5<Max. running current 12 >	
Sound Pressure Level	dB(A)	P-Hi:39 Hi:33 Me:31 Lo:30	50
Exterior dimensions Height x Width x Depth	mm	Unit 246 × 840 × 840 Panel 35 × 950 × 950	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 22 PANEL 5.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	50 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:20 Hi:18 Me:16 Lo:14	Cooling:36 Heating:33
Available static pressure	Pa	0	—
Outside air intake		Possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-T-36W-E (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″)	
		Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	※1.See page 54
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

PJF000Z194 A

Adapted to **RoHS** directive

Item \ Model		FDT50ZJXVD	
		Indoor unit **FDT50VD**	Outdoor unit **SRC50ZJX-S**
		Panel **T-PSA-3AW-E**	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.0 [1.1(Min.)～ 5.6(Max.)]	5.4 [0.6(Min.)～ 6.3(Max.)]
Power consumption	kW	1.29	1.29
Running current	A	6.0 / 6.2	6.0 / 6.2
Power factor	%	93 / 95	93 / 95
Inrush current	A	5＜Max. running current 15 ＞	
Sound Pressure Level	dB(A)	P-Hi:39 Hi:33 Me:31 Lo:30	Cooling:54 Heating:50
Exterior dimensions Height x Width x Depth	mm	Unit 246 × 840 × 840 Panel 35 × 950 × 950	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 22 PANEL 5.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	50 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:20 Hi:18 Me:16 Lo:14	Cooling:40 Heating:33
Available static pressure	Pa	0	—
Outside air intake		Possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-T-36W-E (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″)	
		Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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Adapted to **RoHS** directive

Item \ Model		FDT60ZJXVD	
		Indoor unit **FDT60VD**	Outdoor unit **SRC60ZJX-S**
		Panel **T-PSA-3AW-E**	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.6 [1.1(Min.)～ 6.3(Max.)]	6.7 [0.6(Min.)～ 7.1(Max.)]
Power consumption	kW	1.52	1.70
Running current	A	6.9 / 7.2	7.9 / 8.3
Power factor	%	96 / 96	94 / 93
Inrush current	A	5 <Max. running current 15 >	
Sound Pressure Level	dB(A)	P-Hi:46 Hi:33 Me:31 Lo:30	54
Exterior dimensions Height x Width x Depth	mm	Unit 246 × 840 × 840 Panel 35 × 950 × 950	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 24 PANEL 5.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	50 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:28 Hi:18 Me:16 Lo:14	Cooling:41.5 Heating:39
Available static pressure	Pa	0	—
Outside air intake		Possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-T-36W-E (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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(4) Ceiling cassette -4way compact type (FDTC)

Adapted to **RoHS** directive

Item \ Model		FDTC40ZJXVD	
		Indoor unit **FDTC40VD**	Outdoor unit **SRC40ZJX-S**
		Panel **TC-PSA-25W-E**	
Power source			220-240V ~ 50Hz / 220V ~ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	4.0 [1.1(Min.)~ 4.7(Max.)]	4.5 [0.6(Min.)~ 5.4(Max.)]
Power consumption	kW	1.04	1.10
Running current	A	4.9 / 5.1	5.2 / 5.5
Power factor	%	92 / 93	92 / 91
Inrush current	A	5<Max. running current 12 >	
Sound Pressure Level	dB(A)	Cooling P-Hi:47 Hi:42 Me:36 Lo:30 Heating P-Hi:47 Hi:42 Me:36 Lo:32	50
Exterior dimensions Height x Width x Depth	mm	Unit 248 × 570 × 570 Panel 35 × 700 × 700	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 15 PANEL 3.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	33 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	Cooling P-Hi:13.5 Hi:11.5 Me:9 Lo:7 Heating P-Hi:13.5 Hi:11.5 Me:9 Lo:8	Cooling:36 Heating:33
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-TC-24W-ER (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	※1.See page 54
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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Adapted to **RoHS** directive

Item \ Model		FDTC50ZJXVD	
		Indoor unit **FDTC50VD**	Outdoor unit **SRC50ZJX-S**
		Panel **TC-PSA-25W-E**	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.0 [1.1(Min.)～ 5.6(Max.)]	5.4 [0.6(Min.)～ 6.3(Max.)]
Power consumption	kW	1.56	1.45
Running current	A	7.2 / 7.5	6.7 / 7.0
Power factor	%	94 / 95	94 / 94
Inrush current	A	5<Max. running current 15 >	
Sound Pressure Level	dB(A)	Cooling P-Hi:47 Hi:42 Me:36 Lo:30 Heating P-Hi:47 Hi:42 Me:36 Lo:32	Cooling:54 Heating:50
Exterior dimensions Height x Width x Depth	mm	Unit 248 × 570 × 570 Panel 35 × 700 × 700	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 15 PANEL 3.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	33 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	Cooling P-Hi:13.5 Hi:11.5 Me:9 Lo:7 Heating P-Hi:13.5 Hi:11.5 Me:9 Lo:8	Cooling:40 Heating:33
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-TC-24W-ER (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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Adapted to **RoHS** directive

Item \ Model		FDTC60ZJXVD	
		Indoor unit **FDTC60VD**	Outdoor unit **SRC60ZJX-S**
		Panel **TC-PSA-25W-E**	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.6 [1.1(Min.)～ 6.3(Max.)]	6.7 [0.6(Min.)～ 6.7(Max.)]
Power consumption	kW	1.99	2.07
Running current	A	9.1 / 9.5	9.6 / 10.1
Power factor	%	95 / 95	94 / 93
Inrush current	A	5<Max. running current 15 >	
Sound Pressure Level	dB(A)	Cooling P-Hi:47 Hi:46 Me:39 Lo:30 Heating P-Hi:47 Hi:46 Me:39 Lo:32	54
Exterior dimensions Height x Width x Depth	mm	Unit 248 × 570 × 570 Panel 35 × 700 × 700	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	UNIT 15 PANEL 3.5	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan ×1	Propeller fan ×1
Motor <Starting method>	W	33 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	Cooling P-Hi:13.5 Hi:13.5 Me:10 Lo:7 Heating P-Hi:13.5 Hi:13.5 Me:10 Lo:8	Cooling:41.5 Heating:39
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×1(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-TC-24W-ER (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Overload protection for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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(5) Ceiling suspended type (FDEN)

Adapted to **RoHS** directive

Item \ Model		FDEN40ZJXVD	
		Indoor unit **FDEN40VD**	Outdoor unit **SRC40ZJX-S**
		—	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	4.0 [1.1(Min.)～ 4.7(Max.)]	4.5 [0.6(Min.)～ 5.4(Max.)]
Power consumption	kW	1.02	1.10
Running current	A	4.8 / 5.0	5.2 / 5.5
Power factor	%	92 / 93	92 / 91
Inrush current	A	5＜Max. running current 12 ＞	
Sound Pressure Level	dB(A)	P-Hi:46 Hi:39 Me:38 Lo:37	50
Exterior dimensions Height x Width x Depth	mm	210 × 1,070 × 690	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	28	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Centrifugal fan ×2	Propeller fan ×1
Motor <Starting method>	W	25 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:13 Hi:11 Me:9 Lo:7	Cooling:36 Heating:33
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×2(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-E1R (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Internal thermostat for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″)	
		Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		—	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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Adapted to **RoHS** directive

Item \ Model		FDEN50ZJXVD	
		Indoor unit **FDEN50VD**	Outdoor unit **SRC50ZJX-S**
		—	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.0 [1.1(Min.)～ 5.6(Max.)]	5.4 [0.6(Min.)～ 6.3(Max.)]
Power consumption	kW	1.53	1.46
Running current	A	7.1 / 7.4	6.7 / 7.0
Power factor	%	94 / 94	95 / 95
Inrush current	A	5＜Max. running current 15 ＞	
Sound Pressure Level	dB(A)	P-Hi:46 Hi:39 Me:38 Lo:37	Cooling:54 Heating:50
Exterior dimensions Height x Width x Depth	mm	210 × 1,070 × 690	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	28	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Centrifugal fan ×2	Propeller fan ×1
Motor <Starting method>	W	25 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:13 Hi:11 Me:9 Lo:7	Cooling:40 Heating:33
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×2(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-E1R (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Internal thermostat for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″)	
		Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		—	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

PFA003Z911 A

Adapted to **RoHS** directive

Item \ Model		FDEN60ZJXVD	
		Indoor unit **FDEN60VD**	Outdoor unit **SRC60ZJX-S**
		—	
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.6 [1.1(Min.)～ 6.3(Max.)]	6.7 [0.6(Min.)～ 7.1(Max.)]
Power consumption	kW	1.78	1.87
Running current	A	8.1 / 8.5	8.7 / 9.1
Power factor	%	96 / 95	93 / 93
Inrush current	A	5<Max. running current 15 >	
Sound Pressure Level	dB(A)	P-Hi:50 Hi:41 Me:39 Lo:38	54
Exterior dimensions Height x Width x Depth	mm	210 × 1,320 × 690	640×800(+71)×290
Exterior appearance (Munsell color)		Plaster White (6.8Y8.9/0.2)near equivalent	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	37	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Centrifugal fan ×4	Propeller fan ×1
Motor <Starting method>	W	20 ×2 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:22 Hi:18 Me:14 Lo:12	Cooling:41.5 Heating:39
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net ×2(Washable)	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-E1R (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Internal thermostat for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″)	
		Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		—	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Mounting kit, Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature	
Operation	DB	WB	DB	WB
Cooling	27 ℃	19 ℃	35 ℃	24 ℃
Heating	20 ℃		7 ℃	6 ℃

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) When wireless remote controller is used, fan is 3 speed setting(Hi-Me-Lo) only.

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(6) Duct connected -Low/Middle static pressure type (FDUM)

Adapted to **RoHS** directive

Item \ Model		FDUM50ZJXVD	
		Indoor unit **FDUM50VD**	Outdoor unit **SRC50ZJX-S**
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.0 [1.1(Min.)～ 5.6(Max.)]	5.4 [0.6(Min.)～ 6.3(Max.)]
Power consumption	kW	1.52	1.41
Running current	A	7.0 / 7.3	6.5 / 6.8
Power factor	%	95	95
Inrush current	A	5<Max. running current 15 >	
Sound Pressure Level	dB(A)	P-Hi:35 Hi:34 Me:31 Lo:28	Cooling:54 Heating:50
Exterior dimensions Height x Width x Depth	mm	299 × 750 × 635	640×800(+71)×290
Exterior appearance (Munsell color)		—	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	34	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Centrifugal fan ×2	Propeller fan ×1
Motor <Starting method>	W	60 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:14 Hi:13 Me:12 Lo:11	Cooling:40 Heating:33
External static pressure	Pa	85/90 (at 14CMM)	—
Outside air intake		Possible	—
Air filter, Q'ty		Procure locally	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option)	wireless : RCN-KIT3-E (option)
Room temperature control		Thermostat by electronics	—
Safety equipment		Internal thermostat for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	※1.See page 54
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		External static pressure of indoor unit
Operation	BD	WB	DB	WB	Pa
Cooling	27℃	19℃	35℃	24℃	60
Heating	20℃		7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) Static pressure of optional air filter ″UM-FL1E″ is 5Pa initially.
(6) If wireless remote controller is used, only 3-speed fan setting (Hi-Me-Lo) is available.

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Adapted to **RoHS** directive

Item \ Model		FDUM60ZJXVD	
		Indoor unit **FDUM60VD**	Outdoor unit **SRC60ZJX-S**
Power source			220-240V ～ 50Hz / 220V ～ 60Hz
Operation data		Cooling	Heating
Nominal capacity	kW	5.6 [1.1(Min.)～ 6.3(Max.)]	6.7 [0.6(Min.)～ 7.1(Max.)]
Power consumption	kW	1.81	1.96
Running current	A	8.2 / 8.6	9.1 / 9.5
Power factor	%	96	94
Inrush current	A	5<Max. running current 15 >	
Sound Pressure Level	dB(A)	P-Hi:38 Hi:34 Me:31 Lo:28	54
Exterior dimensions Height x Width x Depth	mm	299 × 950 × 635	640×800(+71)×290
Exterior appearance (Munsell color)		—	Stucco White (4.2Y7.5/1.1)near equivalent
Net weight	kg	40	45
Refrigerant equipment Compressor type & Q'ty		—	RMT5113MCE2 (Twin Rotary type)×1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.45 MA68
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Capillary tubes + Electronic expansion valve
Air handling equipment Fan type & Q'ty		Centrifugal fan ×2	Propeller fan ×1
Motor <Starting method>	W	100 < Direct line start >	34 < Direct line start >
Air flow(Standard)	CMM	P-Hi:18 Hi:16 Me:15 Lo:14	Cooling:41.5 Heating:39
External static pressure	Pa	85/100 (at 18CMM)	—
Outside air intake		Possible	—
Air filter, Q'ty		Procure locally	—
Shock & vibration absorber		Rubber sleeve(for fan motor)	Rubber sleeve(for Compressor)
Insulation (noise & heat)		Polyurethane form	—
Electric heater	W	—	—
Remote controller		wired : RC-E4 (option) wireless : RCN-KIT3-E (option)	
Room temperature control		Thermostat by electronics	—
Safety equipment		Internal thermostat for fan motor Frost protection thermostat	Internal thermostat for fan motor Abnormal discharge temperature protection.
Installation data Refrigerant piping size	mm	Liquid line: I/U φ6.35 (1/4″) Pipe φ6.35(1/4″)x0.8 O/U φ6.35 (1/4″) Gas line: φ12.7 (1/2″) φ12.7(1/2″)x0.8 φ12.7 (1/2″)	
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max.30m	※1.See page 54
Vertical height difference between outdoor unit and indoor unit		Max.20m(Outdoor unit is higher) Max.20m(Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.5kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	Holes size φ20 x 5pcs
Insulation for piping		Necessary (both Liquid & Gas lines)	
Standard Accessories		Drain hose	Drain elbow, Drain hole grommet

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		External static pressure of indoor unit
Operation	BD	WB	DB	WB	Pa
Cooling	27℃	19℃	35℃	24℃	60
Heating	20℃		7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.
(4) The operation data indicates when the air-conditioner is operated at 230V50Hz or 220V60Hz.
(5) Static pressure of optional air filter ″UM-FL2E″ is 5Pa initially.
(6) If wireless remote controller is used, only 3-speed fan setting (Hi-Me-Lo) is available.

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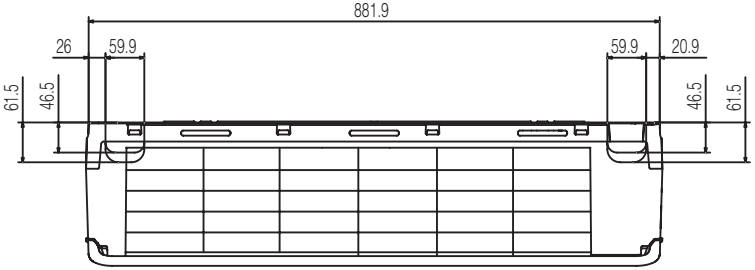
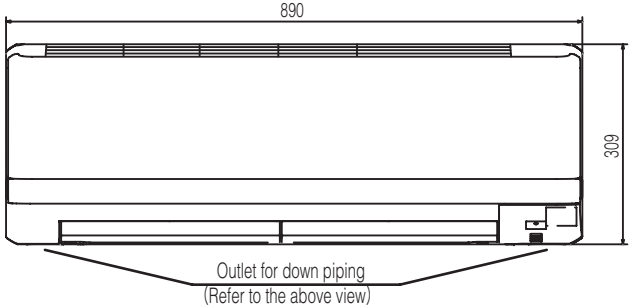
2. EXTERIOR DIMENSIONS

2.1 Indoor units

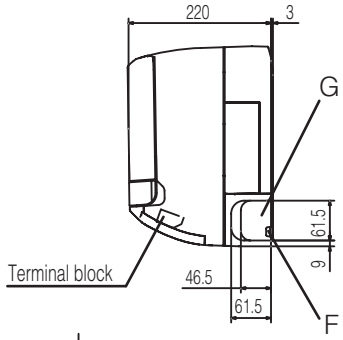
(1) Wall mounted type (SRK)

Models SRK50ZJX-S1, 60ZJX-S1

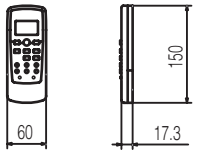




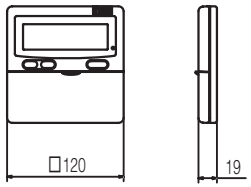
Symbol	Content	
A	Gas piping	φ12.7(1/2") (Flare)
B	Liquid piping	φ6.35(1/4") (Flare)
C	Hole on wall for right rear piping	(φ65)
D	Hole on wall for left rear piping	(φ65)
E	Drain hose	VP16
F	Outlet for wiring	
G	Outlet for piping(on both side)	



Wireless remote controller

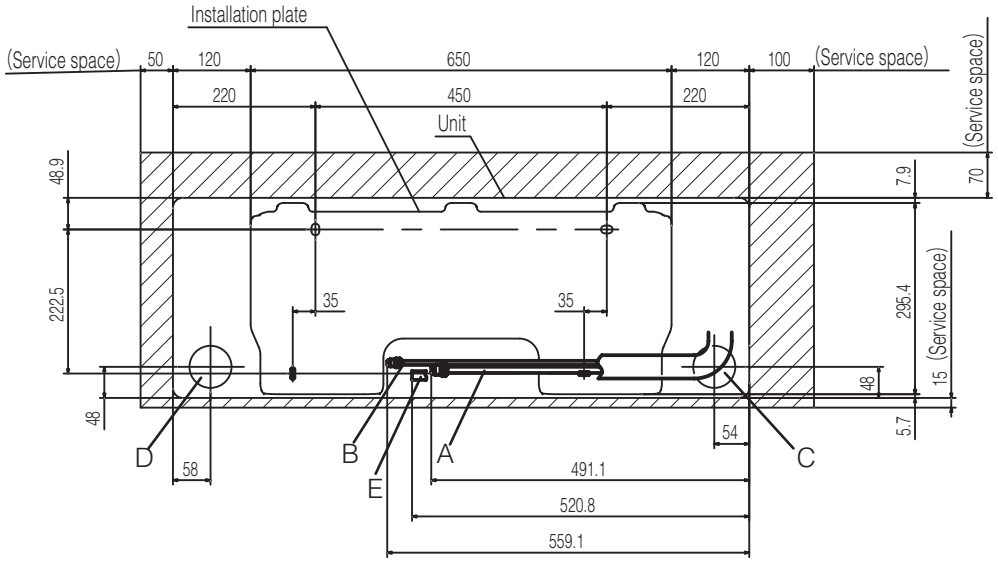


Wired - remote controller
(Option)



Notes(1) The model name label is attached on the underside of the panel.
(2) It takes the interface kit (SC-BIKN-E) to connect the wired remote controller.

Unit:mm



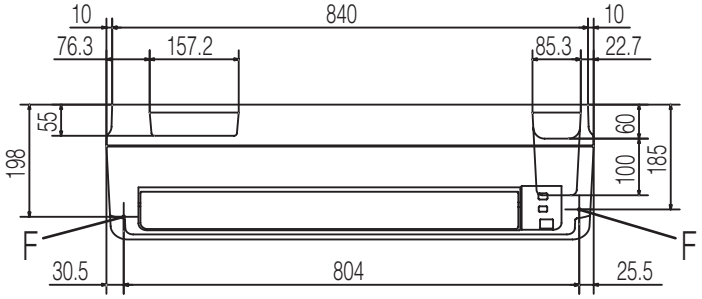
Space for installation and service when viewing from the front

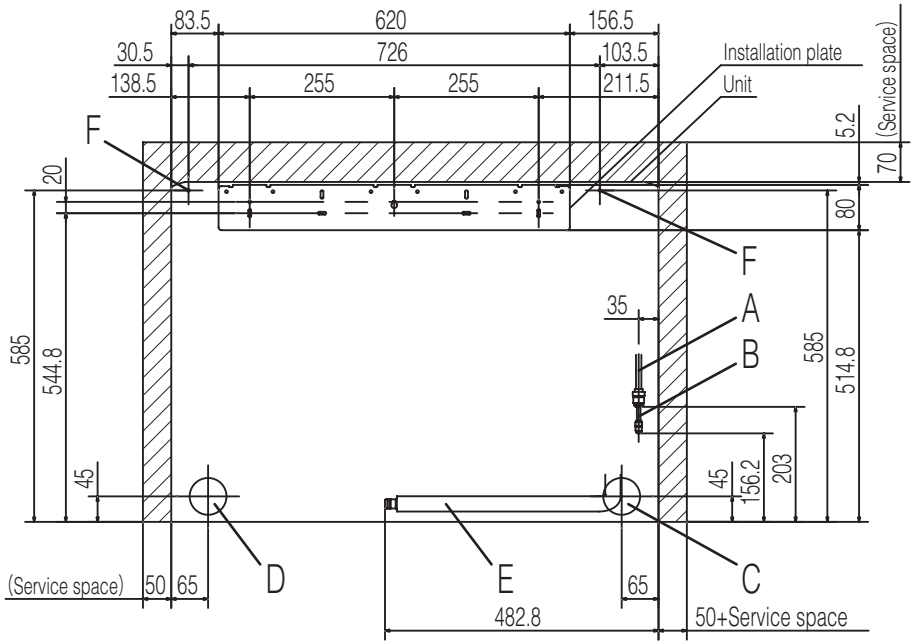
RKY000Z054

(2) Floor standing type (SRF)

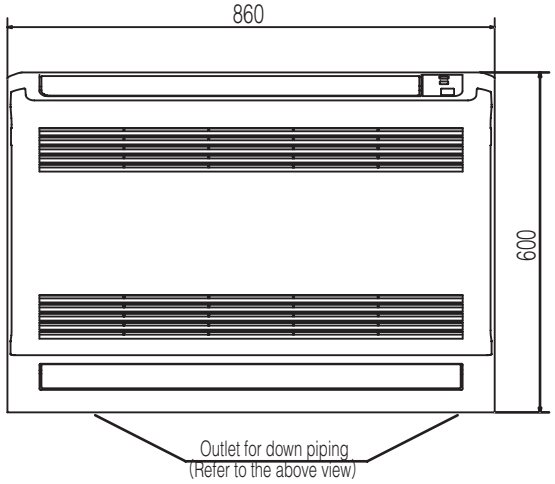
Model SRF50ZJX-S1

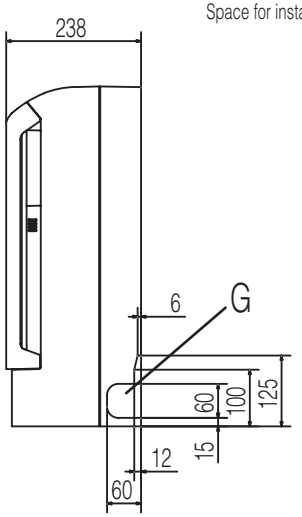
Symbol	Content	
A	Gas piping	φ12.7(1/2") (Flare)
B	Liquid piping	φ6.35(1/4") (Flare)
C	Hole on wall for right rear piping	(φ65)
D	Hole on wall for left rear piping	(φ65)
E	Drain hose	VP16
F	Screw point fasten the indoor unit	φ5
G	Outlet for piping(on both side)	



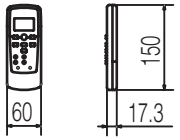


Space for installation and service when viewing from the front

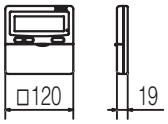




Wireless remote controller



Wired remote controller
(Option)

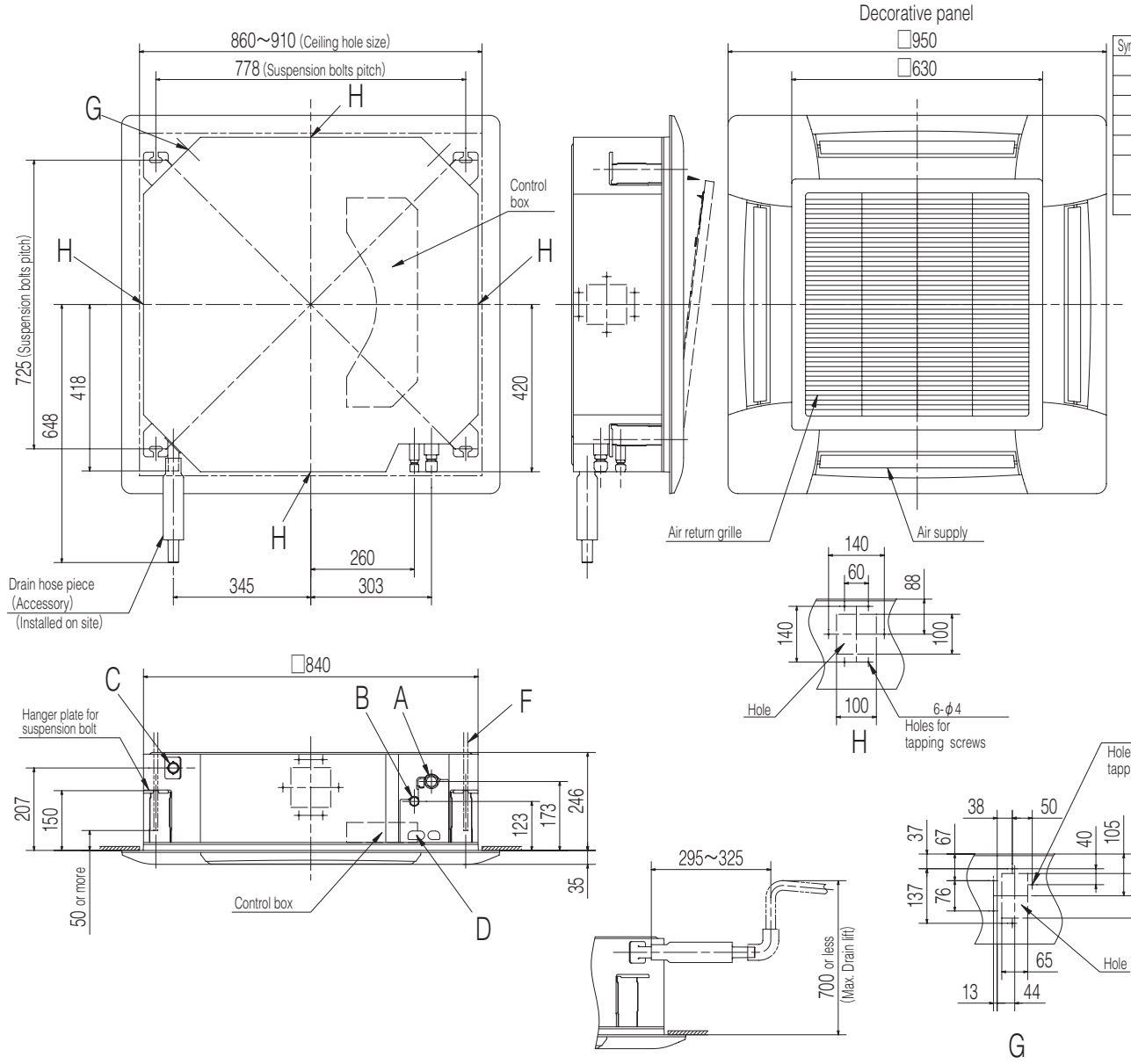


Notes
(1) The model name label is attached on the rightside of the unit.
(2) It takes the interface kit (SC-BIKN-E) to connect the wired remote controller.
(3) In case of wall installation, leave the unit 150mm or less from the floor.

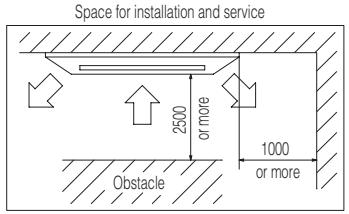
Unit:mm

(3) Ceiling cassette-4 way type (FDT)

Models FDT40VD, 50VD, 60VD

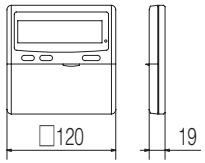


Symbol	Content	
A	Gas piping	φ12.7 (1/2") (Flare)
B	Liquid piping	φ6.35 (1/4") (Flare)
C	Drain piping	VP20 (I.D.20, O.D.26) Note (2)
D	Hole for wiring	
F	Suspension bolts	(M10 or M8)
G	Ducting for outdoor air intake	(Knock out)
H	Ducting for air outlet	(Knock out)



Make a space of 4000 or more between the units when installing more than one.

Remote controller
(Option)



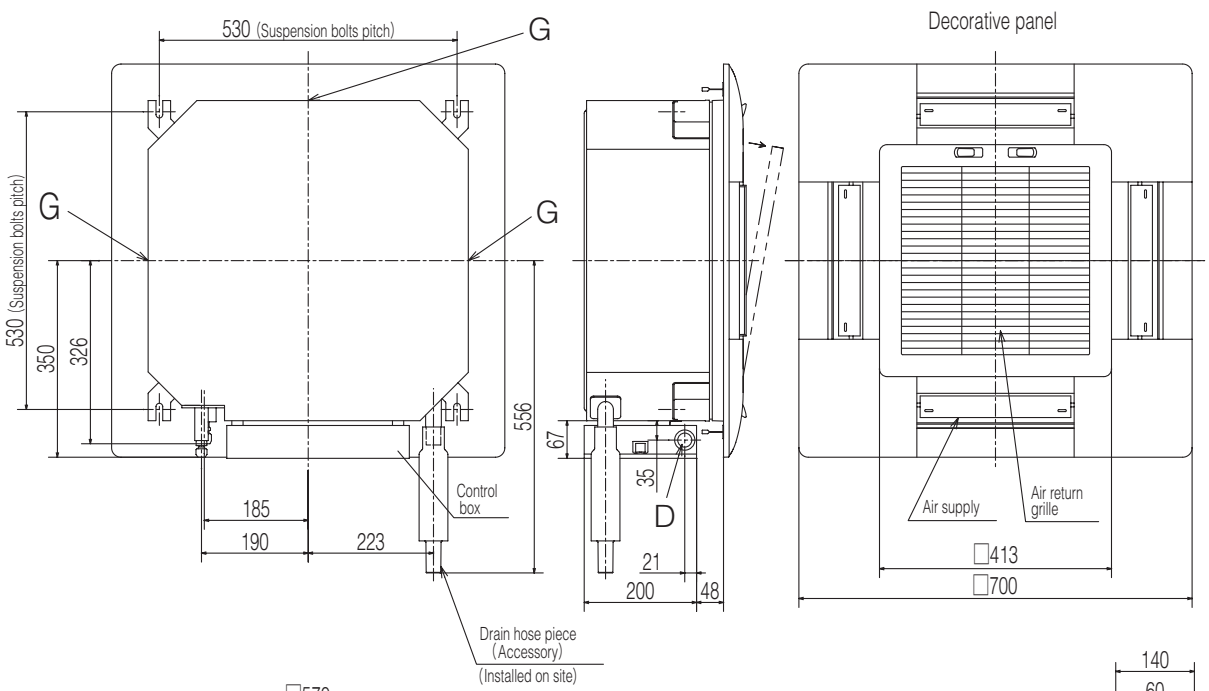
Notes (1) The model name label is attached inside the air return grille.
(2) Prepare the connecting socket (VP20) on site.

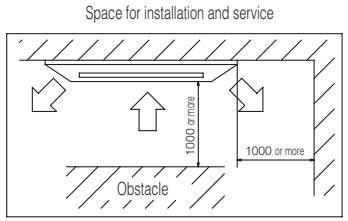
Unit:mm

PJF000Z045 ⓒ

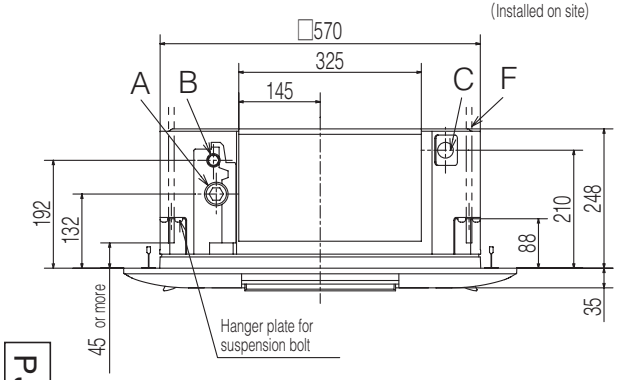
(4) Ceiling cassette-4 way compact type (FDTC)
Models FDTC40VD, 50VD, 60VD

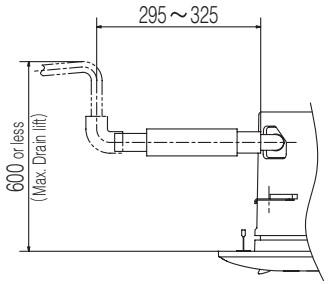
Symbol	Content	
A	Gas piping	φ12.7(1/2") (Flare)
B	Liquid piping	φ6.35(1/4") (Flare)
C	Drain piping	VP20 (I.D.20,O.D.26) Note (2)
D	Hole for wiring	φ25
F	Suspension bolts	(M10 or M8)
G	Ducting for air outlet	(Knock out)

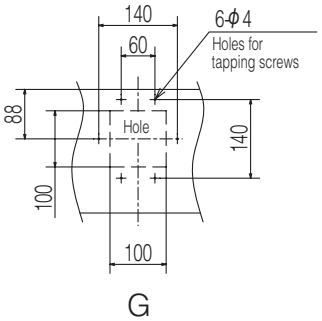


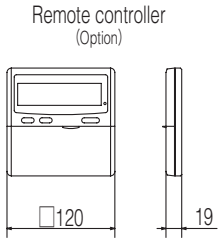


Make a space of 4000 or more between the units when installing more than one.









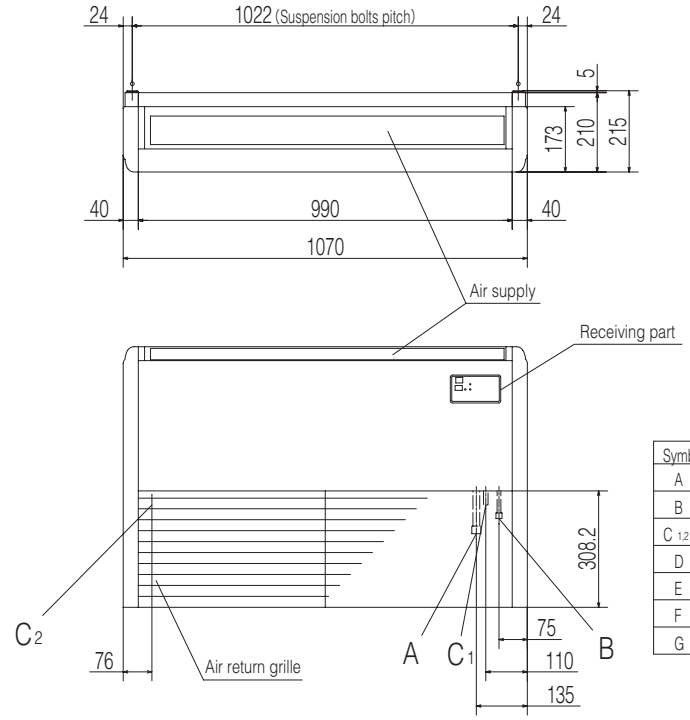
Unit:mm

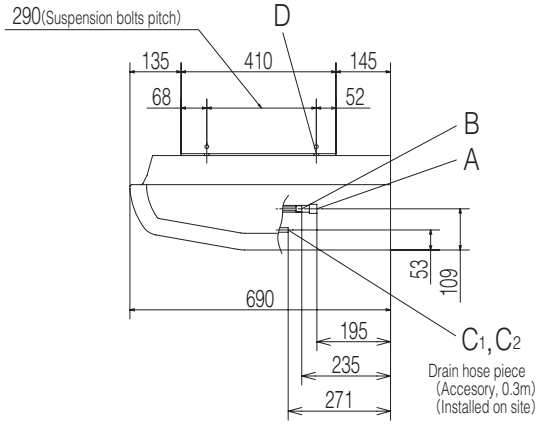
Notes (1) The model name label is attached on the control box lid.
(2) Prepare the connecting socket (VP20) on site.
(3) This unit is designed for 2x2 grid ceiling.
If it is installed on a ceiling other than 2x2 grid ceiling, provide an inspection port on the control box side.

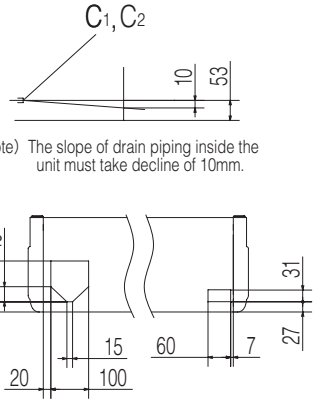
PJA003Z338 B

(5) Ceiling suspended type (FDEN)

Models FDEN40VD, 50VD



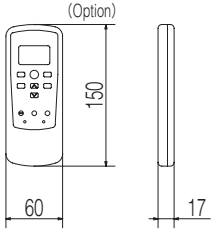




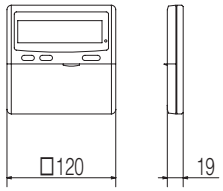
Note) The slope of drain piping inside the unit must take decline of 10mm.

Symbol	Content	
A	Gas piping	φ12.7 (1/2") (Flare)
B	Liquid piping	φ6.35 (1/4") (Flare)
C 1,2	Drain piping	VP20 (I.D.20, O.D.26)
D	Hole for suspension bolts	(M10 or M8)
E	Back cutout	PE cover
F	Top cutout	Plate cover
G	Drain piping (for left back)	(Knock out)

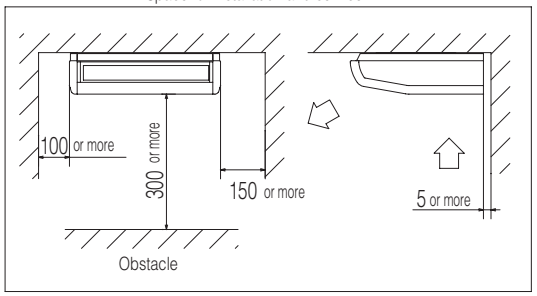
Wireless remote controller
(Option)



Wired remote controller
(Option)

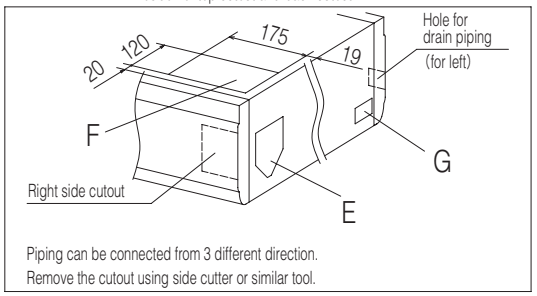


Space for installation and service



Make a space of 4000 or more between the units when installing more than one.

Position of top cutout and back cutout



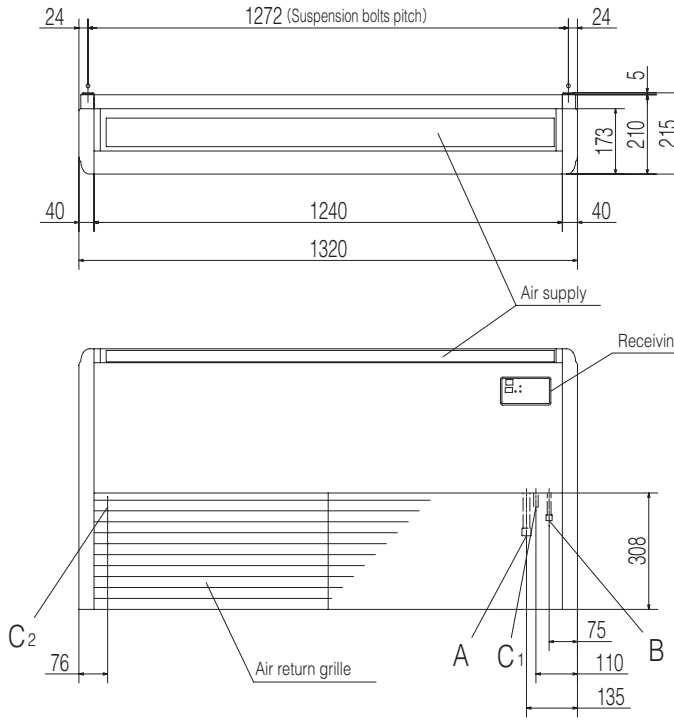
Piping can be connected from 3 different direction.
Remove the cutout using side cutter or similar tool.

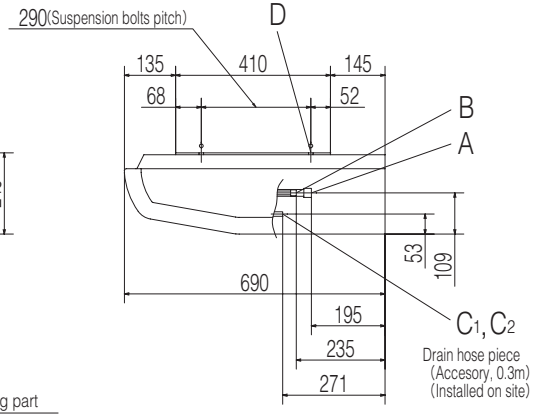
Note (1) The model name label is attached on the fan casing inside the air return grille.

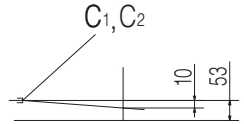
Unit:mm

PFA003Z816 b

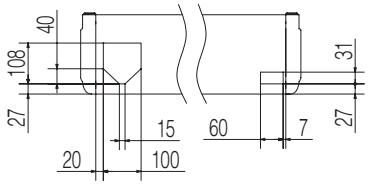
Model FDEN60VD





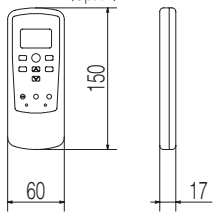


Note) The slope of drain piping inside the unit must take decline of 10mm.

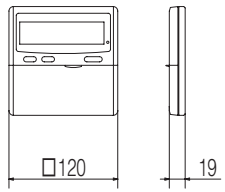


Symbol	Content	
A	Gas piping	φ12.7 (1/2") (Flare)
B	Liquid piping	φ6.35 (1/4") (Flare)
$C_{1,2}$	Drain piping	VP20 (I.D.20, O.D.26)
D	Hole for suspension bolts	(M10 or M8)
E	Back cutout	PE cover
F	Top cutout	Plate cover
G	Hole for drain piping (for left back)	(Knock out)

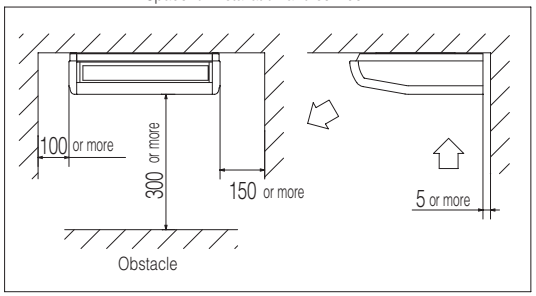
Wireless remote controller
(Option)



Wired remote controller
(Option)

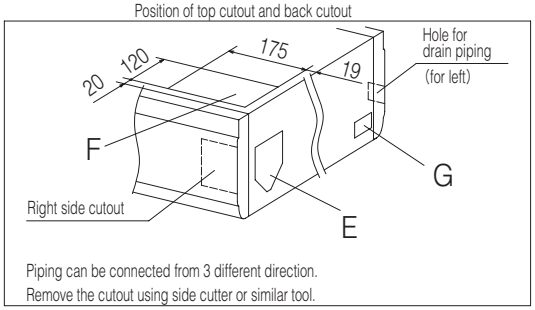


Space for installation and service



Make a space of 4500 or more between the units when installing more than one.

Position of top cutout and back cutout



Piping can be connected from 3 different direction.
Remove the cutout using side cutter or similar tool.

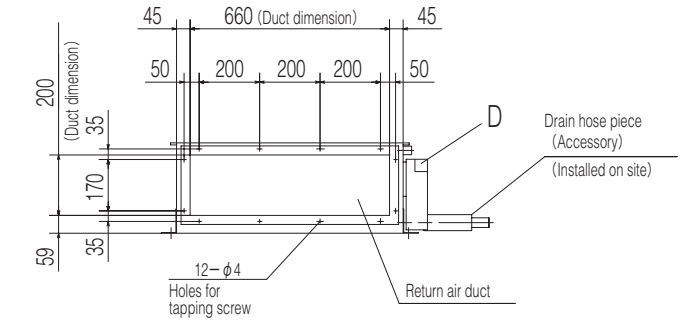
Note (1) The model name label is attached on the fan casing inside the air return grille.

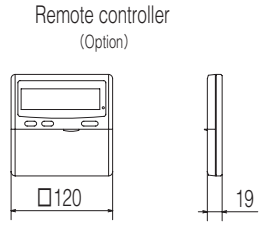
Unit:mm

PFA003Z817 6

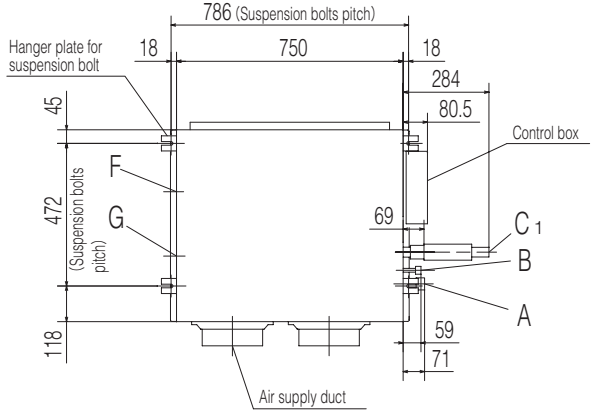
(6) Duct connected-Low/Middle static pressure type (FDUM)

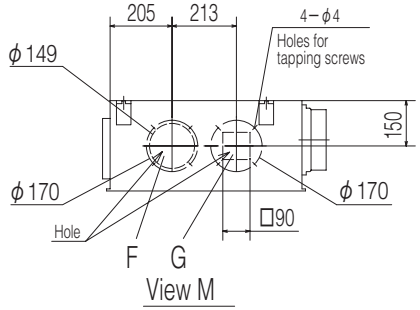
Model FDUM50VD

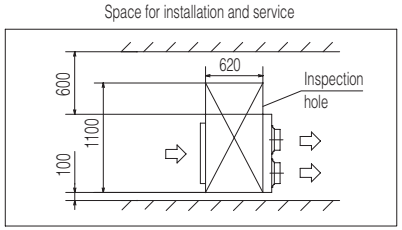


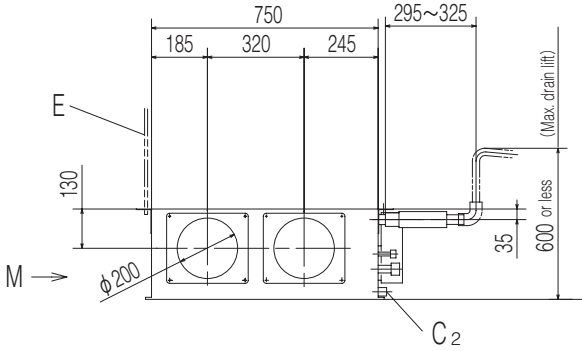


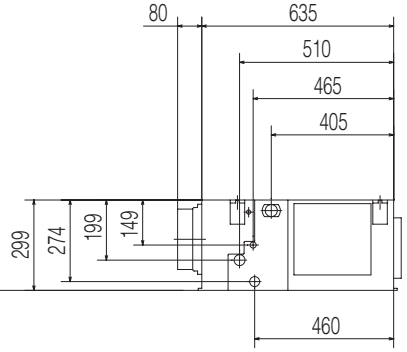
Symbol	Content	
A	Gas piping	φ12.7 (1/2") (Flare)
B	Liquid piping	φ6.35 (1/4") (Flare)
C1	Drain piping	VP20 (I.D.20, O.D.26) Note (2)
C2	Drain piping (Gravity drainage)	VP20 (I.D.20, O.D.26)
D	Hole for wiring	
E	Suspension bolts	(M10)
F	Ducting for outdoor air intake	(φ150) (Knock out)
G	Ducting for air outlet	(φ125) (Knock out)









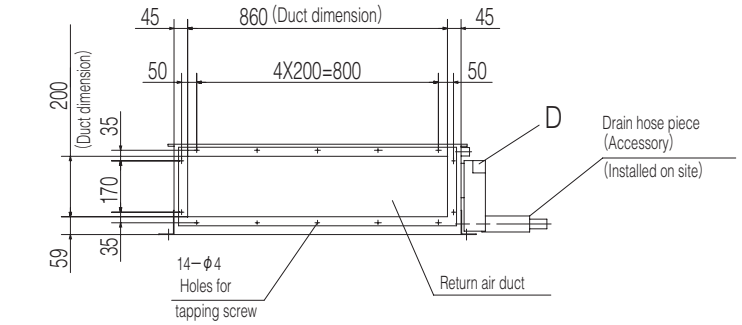


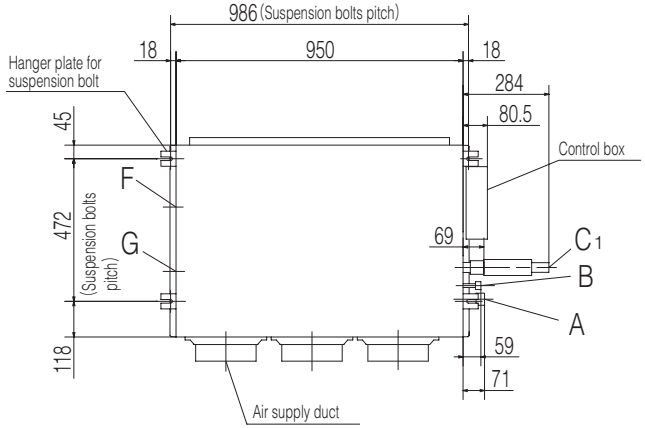
Notes (1) The model name label is attached on the lid of the control box.
(2) Prepare the connecting socket (VP20) on site.

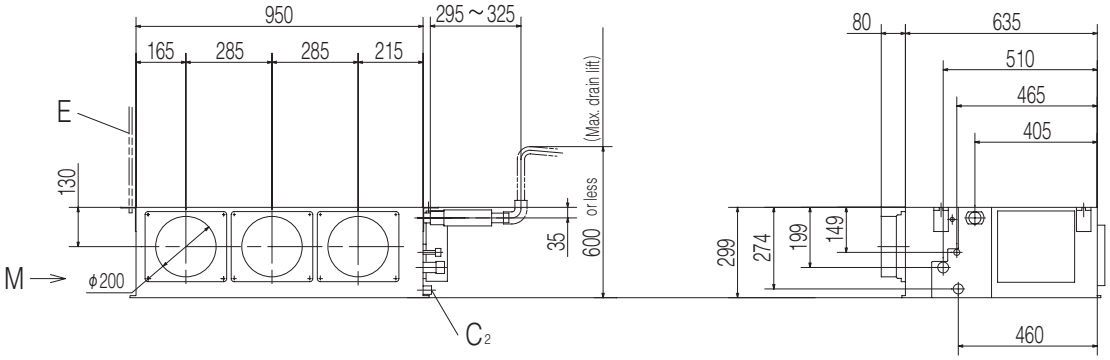
Unit:mm

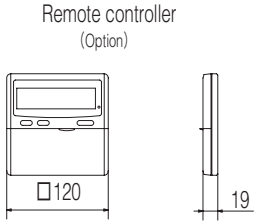
PJR002Z241 b

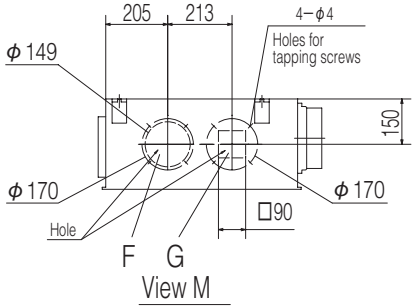
Model FDUM60VD





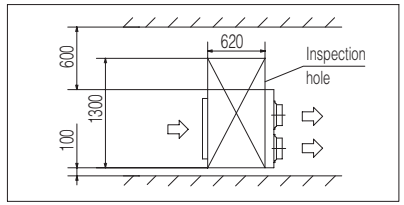






Symbol	Content	
A	Gas piping	φ12.7(1/2") (Flare)
B	Liquid piping	φ6.35(1/4") (Flare)
C1	Drain piping	VP20 (I.D.20, O.D.26) Note (2)
C2	Drain piping (Gravity drainage)	VP20 (I.D.20, O.D.26)
D	Hole for wiring	
E	Suspension bolts	(M10)
F	Ducting for outdoor air intake	(φ150) (Knock out)
G	Ducting for air outlet	(φ125) (Knock out)

Space for installation and service



Notes (1) The model name label is attached on the lid of the control box.
(2) Prepare the connecting socket (VP20) on site.

Unit:mm

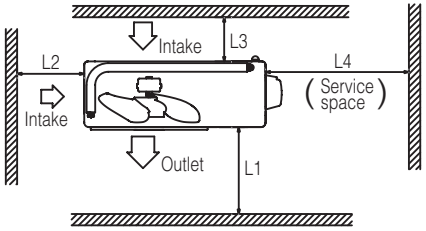
PJR002Z242 ⓒ

2.2 Outdoor units

Models SRC40ZJX-S, 50ZJX-S, 60ZJX-S

Notes

(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
(4) Leave 1m or more space above the unit.
(5) A wall in front of the blower outlet must not exceed the units height.
(6) The model name label is attached on the lower right corner of the front panel.

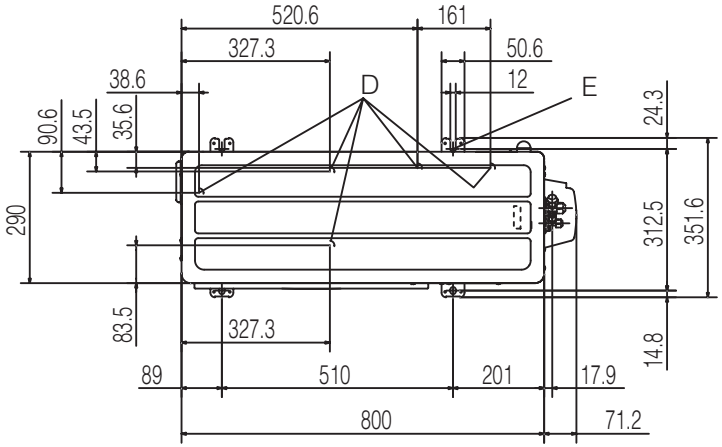


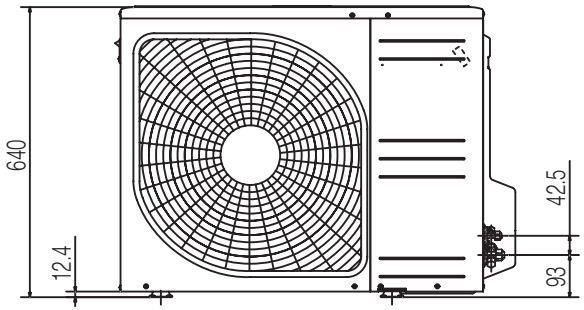
Minimum installation space

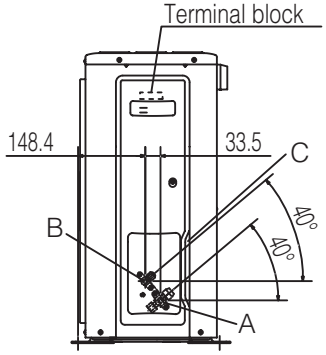
Dimensions \ Examples of installation	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

Unit:mm

Symbol	Content	
A	Service valve connection(gas side)	φ12.7(1/2") (Flare)
B	Service valve connection(liquid side)	φ6.35(1/4") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	φ20×5places
E	Anchor bolt hole	M10×4places





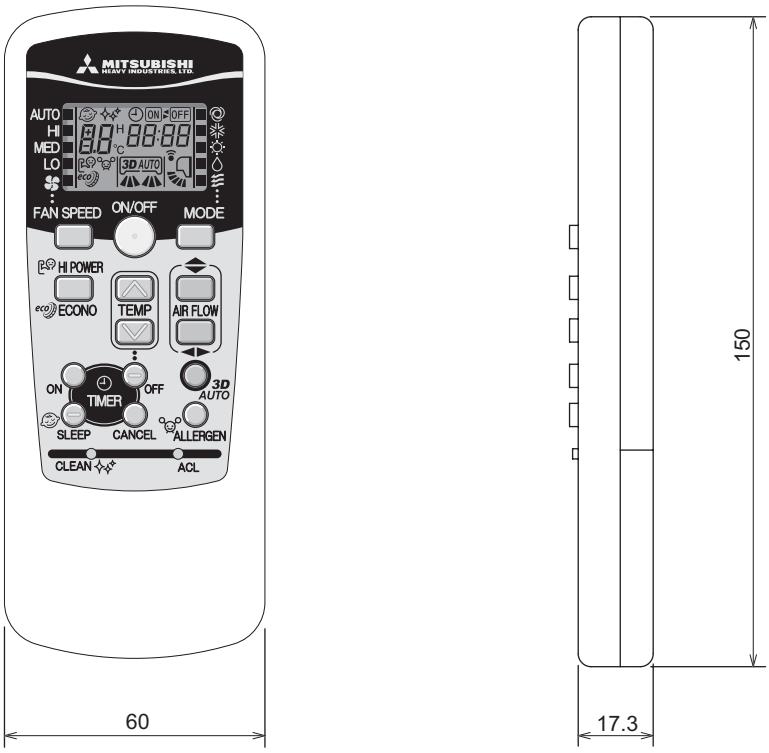


2.3 Remote controller

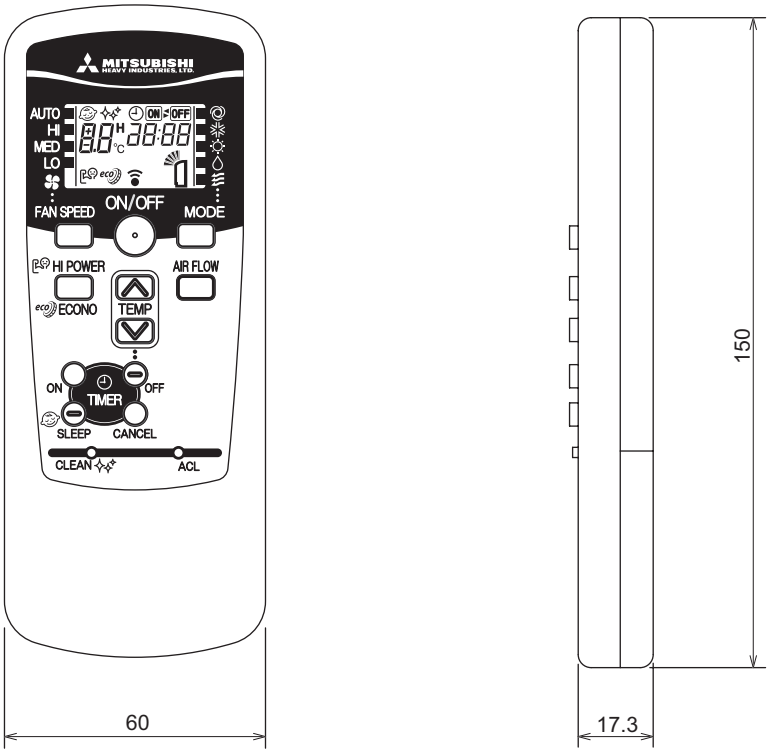
(1) Wireless remote controller

Model SRK

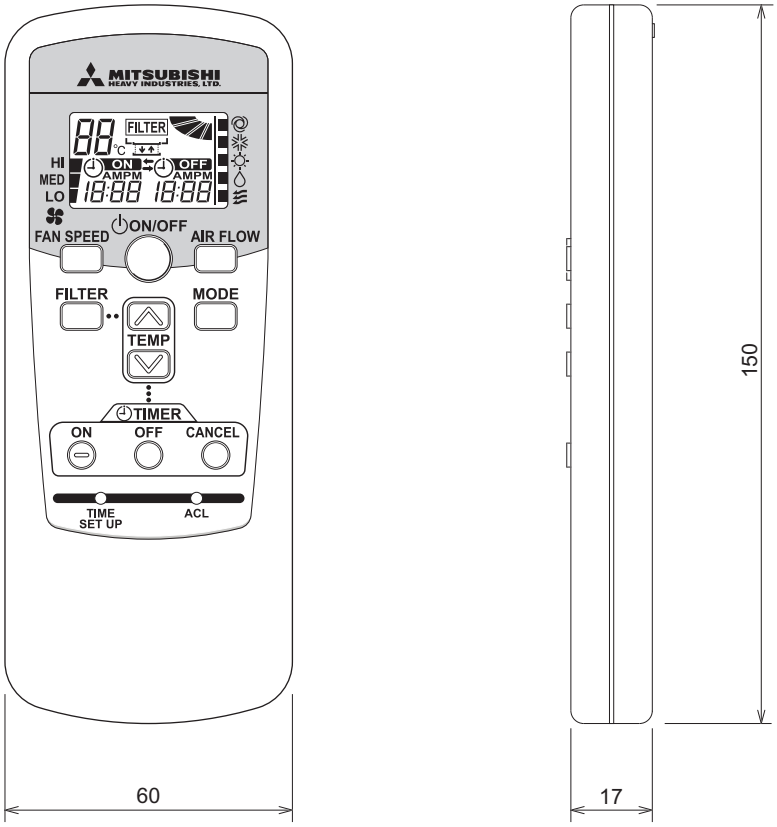
Unit: mm



Model SRF



Models FDT, FDTC, FDEN and FDUM (Option parts)

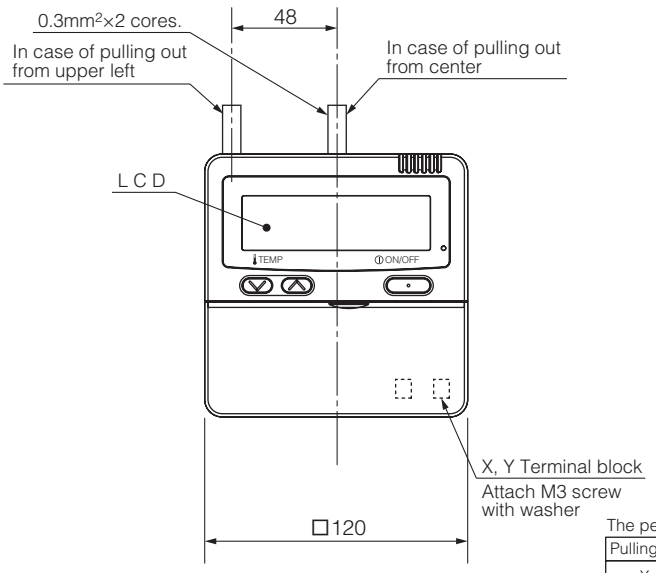


Unit: mm

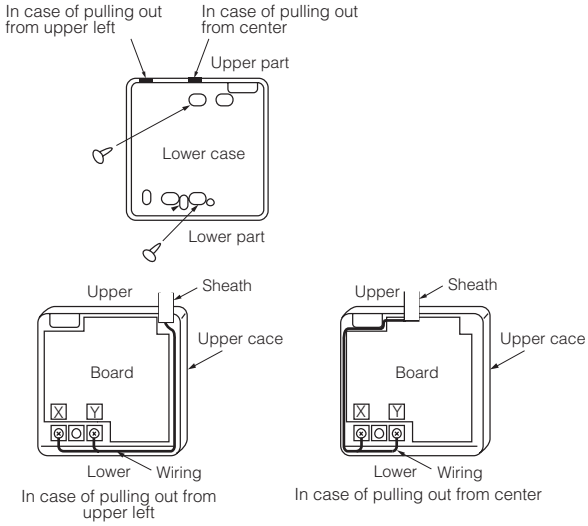
(2) Wired remote controller (Option parts)

Interface kit (SC-BIKN-E) is required to use the wired remote controller. (Only case of SRK and SRF)

Exposed mounting

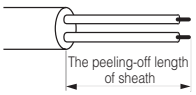


Wiring outlet
Cut off the upper thin part of remote control lower case with a nipper or knife, and grind burrs with a file etc.

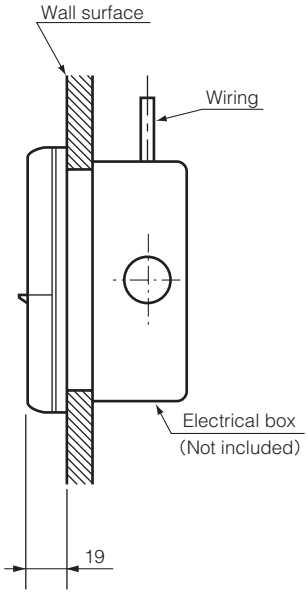


The peeling-off length of sheath

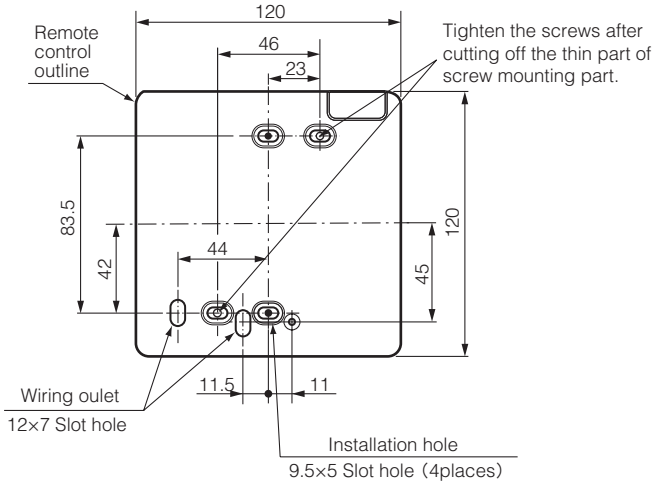
Pulling out from upper left	Pulling out from center
X wiring : 215mm Y wiring : 195mm	X wiring : 170mm Y wiring : 190mm



Embedded mounting



Remote control installation dimensions



(1) Installation screw for remote control
M4 Screw (2 pieces)

Unit:mm

Wiring specifications

(1) If the prolongation is over 100m, change to the size below.
But, wiring in the remote controller case should be under 0.5mm². Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.

Length	Wiring thickness
100 to 200m	0.5mm²×2 cores
Under 300m	0.75mm²×2 cores
Under 400m	1.25mm²×2 cores
Under 600m	2.0mm²×2 cores

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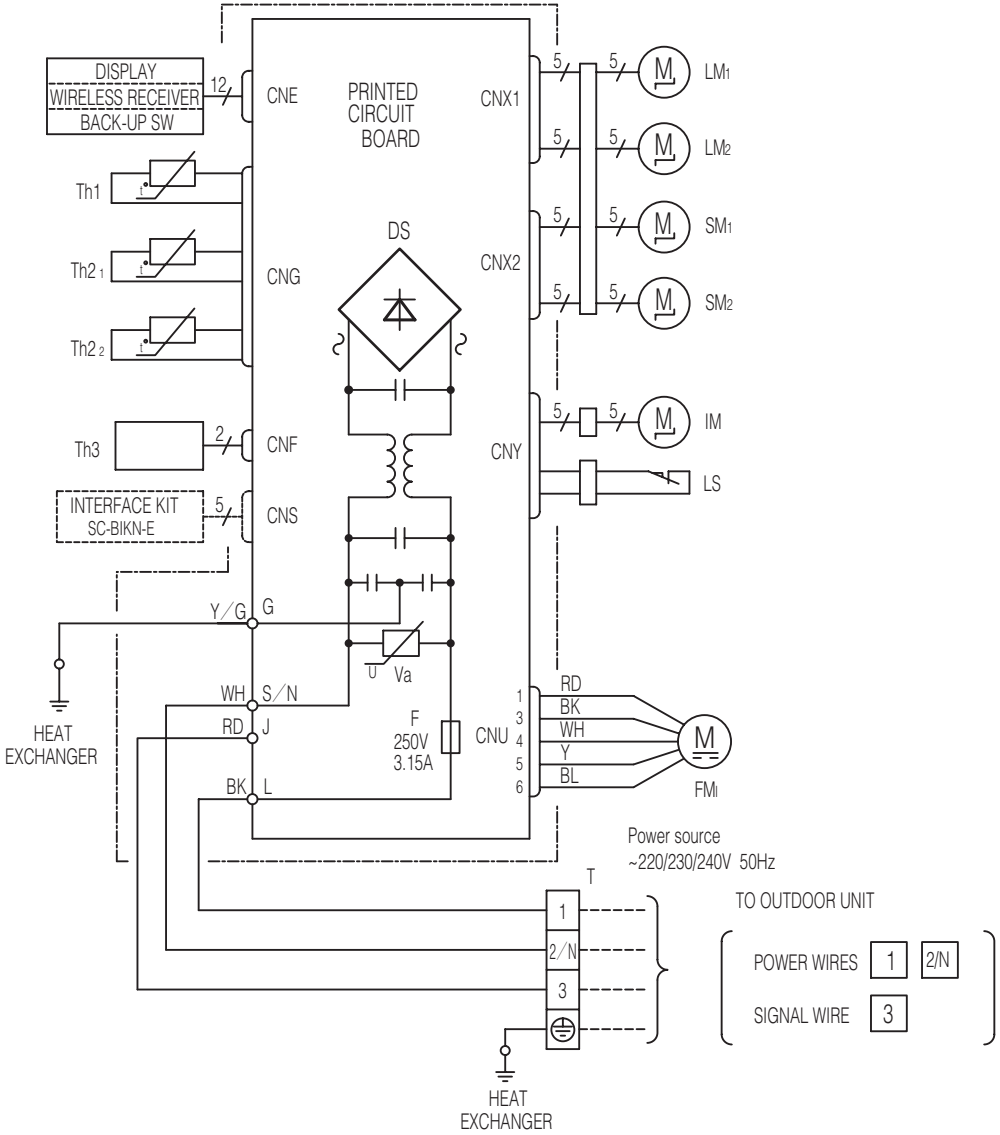
3. ELECTRICAL WIRING

3.1 Indoor units

(1) Wall mounted type (SRK)

Models SRK50ZJX-S1, 60ZJX-S1

Item	Description
CNE-CNY	Connector
FM_I	Fan motor
$SM_{1,2}$	Flap motor
$LM_{1,2}$	Louver motor
IM	Inlet motor
Th1	Room temp. sensor
$Th2_{1,2}$	Heat exch. sensor
Th3	Humidity sensor
LS	Limit switch
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

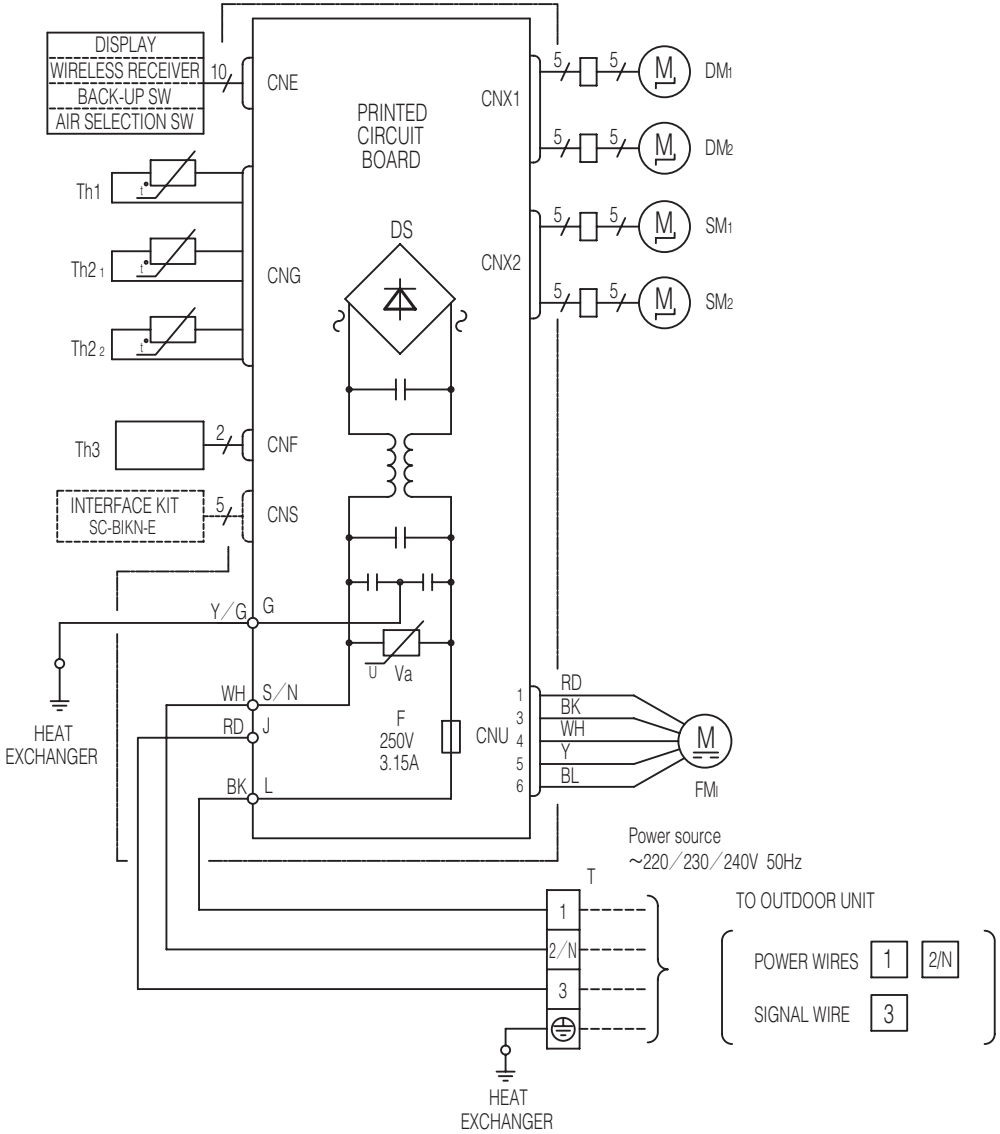


Color Marks

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

(2) Floor standing type (SRF)

Model SRF50ZJX-S1



Item	Description
CNE-CNX2	Connector
FM_I	Fan motor
$SM_{1,2}$	Flap motor
DM_1	Damper motor
DM_2	Damper arm motor
Th1	Room temp. sensor
$Th2_{1,2}$	Heat exch. sensor
Th3	Humidity sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

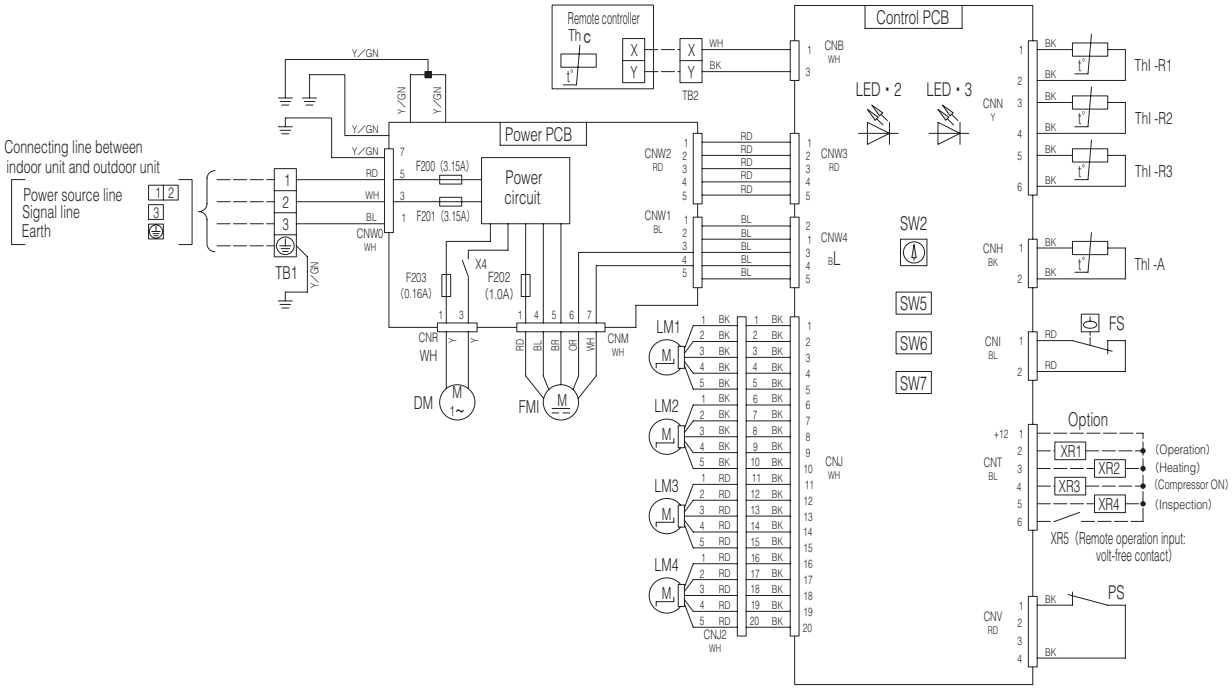
Color Marks

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

RWB000Z054

(3) Ceiling cassette-4 way type (FDT)

Models FDT40VD, 50VD, 60VD



CNB～Z	Connector
DM	Drain motor
F200～203	Fuse
FMI	Fan motor
FS	Float switch
LED・2	Indication lamp (Green-Normal operation)
LED・3	Indication lamp (Red-Inspection)
LM1～4	Louver motor
PS	Panel switch
SW2	Remote controller communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check, Drain motor test run
TB1	Terminal block〔Power source〕（□mark）
TB2	Terminal block〔Signal line〕（□mark）
Thc	Thermistor〔Remote controller〕
Thl -A	Thermistor〔Return air〕
Thl -R1,2,3	Thermistor〔Heat exchanger〕
X4	Relay for DM
■mark	Closed-end connector

Color Marks

Mark	Color	Mark	Color
BK	Black	RD	Red
BL	Blue	WH	White
BR	Brown	Y	Yellow
OR	Orange	Y／GN	Yellow／Green

Notes 1. – – – · indicates wiring on site.
2. See the wiring diagram of outside unit about the line between inside unit and outside unit.
3. Use twin core cable（0.3mm^2）at remote controller line. （Refer to page 30）of remote controller in case that the total length is more than 100m.
4. Do not put remote controller line alongside power source line.

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(4) Ceiling cassette-4 way compact type (FDTC)
Models FDTC40VD, 50VD, 60VD

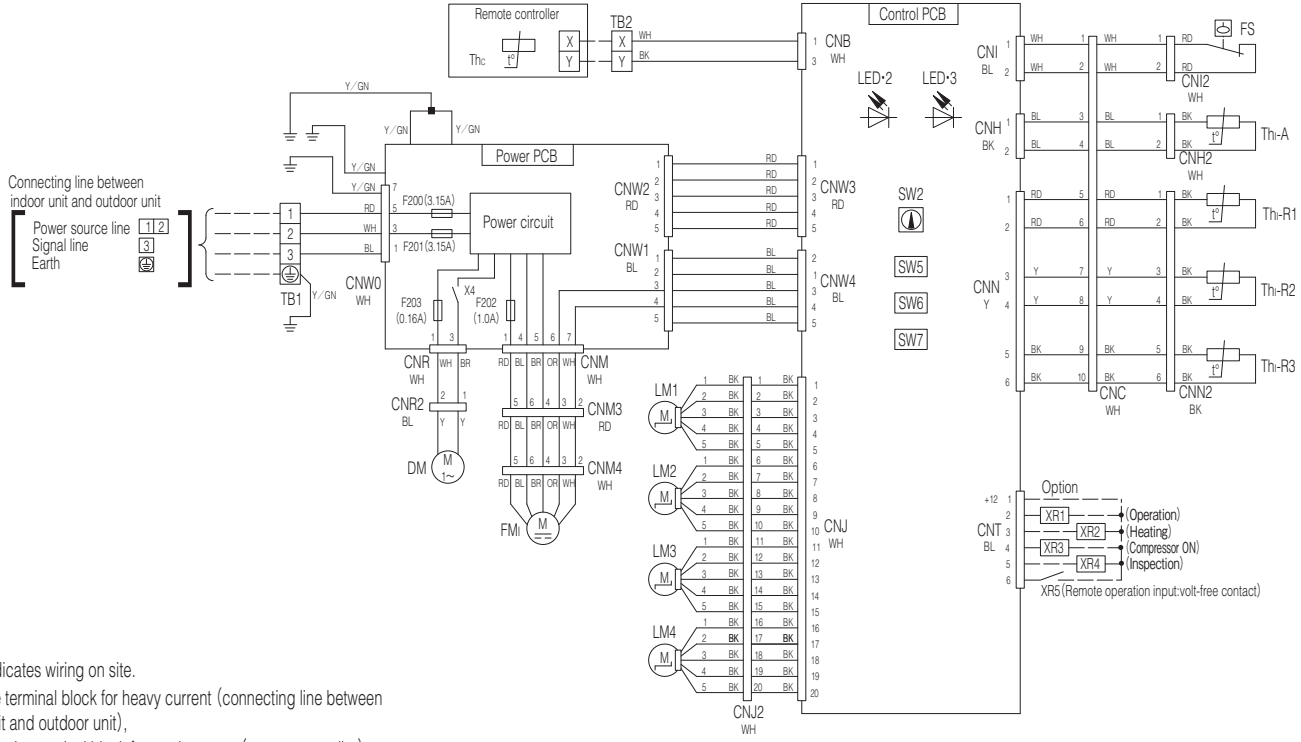
CNB~Z	Connector
DM	Drain motor
F200~203	Fuse
FMi	Fan motor
FS	Float switch
LED•2	Indication lamp (Green-Normal operation)

LED•3	Indication lamp (Red-Inspection)
LM1~4	Louver motor
SW2	Remote controller communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check, Drain motor test run

TB1	Terminal block (Power source) (□ mark)
TB2	Terminal block (Signal line) (□mark)
Thc	Thermistor (Remote controller)
Thi-A	Thermistor (Return air)
Thi-R1,2,3	Thermistor (Heat exchanger)
X4	Relay for DM
■ mark	Closed-end connector

Color Marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／GN	Yellow／Green



Notes 1. — — indicates wiring on site.
2. TB1 is the terminal block for heavy current (connecting line between indoor unit and outdoor unit), and TB2 is the terminal block for weak current (remote controller).
3. See the wiring diagram of outside unit about the line between inside unit and outside unit.
4. Use twin core cable (0.3mm^2) at remote controller line. (Refer to page 30) of remote controller in case that the total length is more than 100m.
5. Do not put remote controller line alongside power source line.

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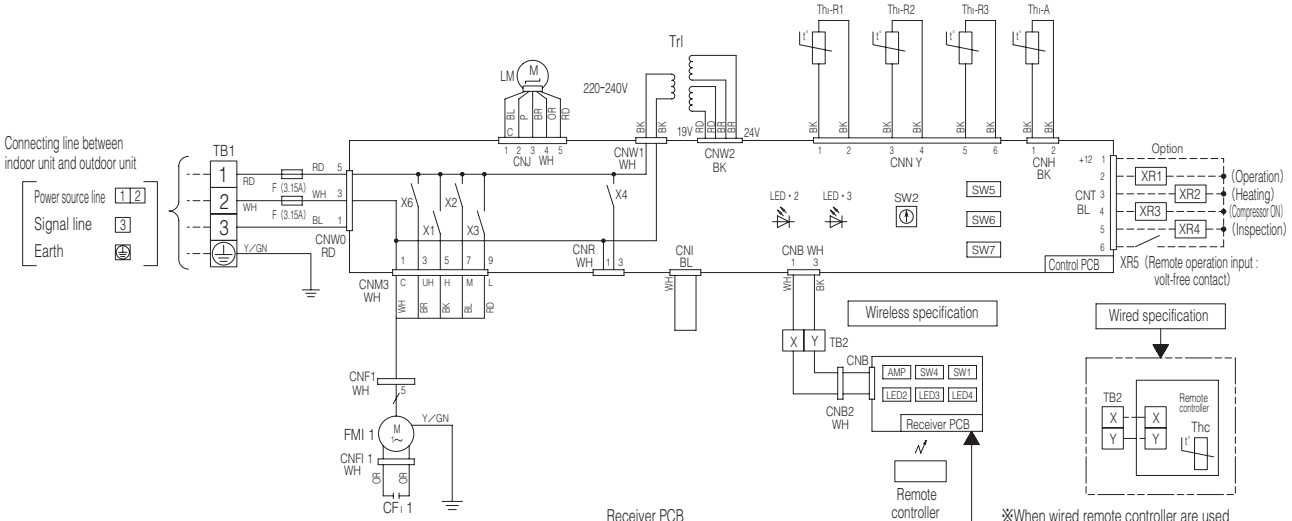
(5) Ceiling suspended type (FDEN)
Models FDEN40VD, 50VD

CFI 1	Capacitor for FMI
CNB～Z	Connector
F	Fuse
FMI 1	Fan motor (with thermostat)
LED・2	Indication lamp (Green-Normal operation)
LED・3	Indication lamp (Red-Inspection)
LM	Louver motor
SW2	Remote controller communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check, Drain motor test run
TB1	Terminal block〔Power source) (□mark)
TB2	Terminal block〔Signal line) (□mark)
Thc	Thermistor〔Remote controller)
Thl -A	Thermistor〔Return air)
Thl -R1,2,3	Thermistor〔Heat exchanger)
Trl	Transformer
X1～3,6	Relay for FM
X4	Relay for DM



Color Marks

Mark	Color	Mark	Color
BK	Black	RD	Red
BL	Blue	WH	White
BR	Brown	Y	Yellow
OR	Orange	Y／GN	Yellow／Green
P	Pink		

Receiver PCB

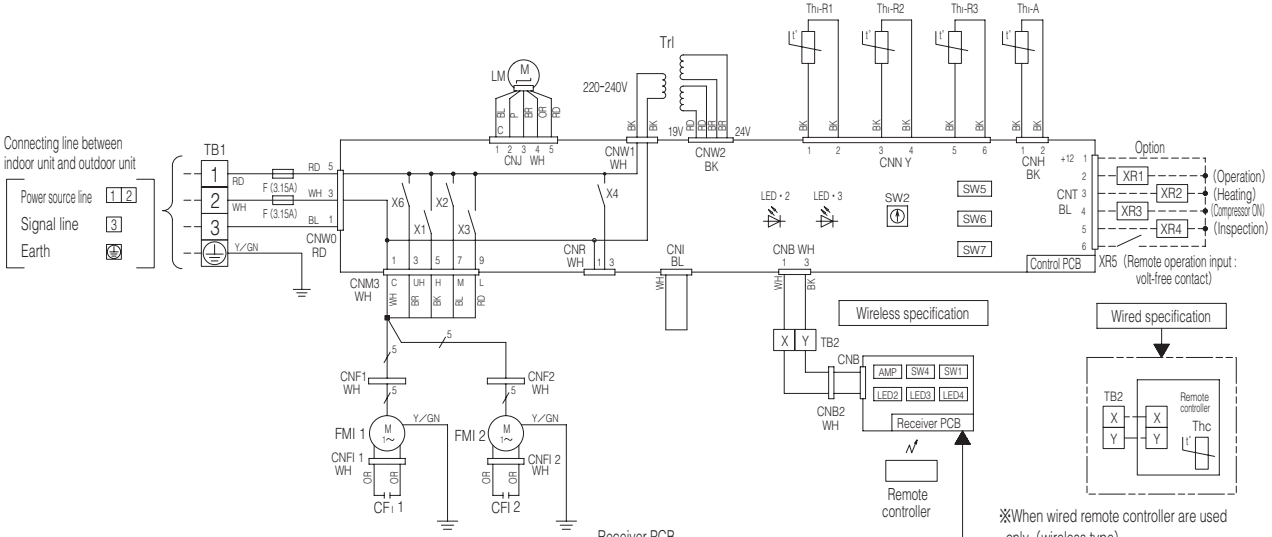
LED2	Indication lamp (Green-Normal operation)
LED3	Indication lamp (Yellow-Timer／Inspection)
LED4	7-segment display
SW1	Switches for setting
SW4	Back-up switch (Operation／Stop)

※When wired remote controller are used only (wireless type)
It is necessary to remove the line that is connected to the receiver.
Remove signal line connected to the receiver from primary side of terminal block (X,Y).

ATTENTION
① Insulate with tape the removed line.
② The LED of that removed connector will not be able to make any indication.

Notes 1. – – – · indicates wiring on site.
2. See the wiring diagram of outside unit about the line between indoor unit and outdoor unit.
3. Use twin core cable (0.3mm^2) at remote controller line. (Refer to page 30) of remote controller in case that the total length is more than 100m.
4. Do not put remote controller line alongside power source line.

PFA003Z819 A



CFI 1,2	Capacitor for FMI
CNB～Z	Connector
F	Fuse
FMI 1,2	Fan motor (with thermostat)
LED・2	Indication lamp (Green-Normal operation)
LED・3	Indication lamp (Red-Inspection)
LM	Louver motor
SW2	Remote controller communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check, Drain motor test run
TB1	Terminal block〔Power source〕(□mark)
TB2	Terminal block〔Signal line〕(□mark)
Thc	Thermistor〔Remote controller〕
Thl -A	Thermistor〔Return air〕
Thl -R1,2,3	Thermistor〔Heat exchanger〕
Trl	Transformer
X1～3,6	Relay for FM
X4	Relay for DM
■mark	Closed-end connector

Receiver PCB

LED2	Indication lamp (Green-Normal operation)
LED3	Indication lamp (Yellow-Timer／Inspection)
LED4	7-segment display
SW1	Switches for setting
SW4	Back-up switch (Operation／Stop)

※When wired remote controller are used only (wireless type)
It is necessary to remove the line that is connected to the receiver.
Remove signal line connected to the receiver from primary side of terminal block (X,Y).

ATTENTION
① Insulate with tape the removed line.
② The LED of that removed connector will not be able to make any indication.

Color Marks

Mark	Color	Mark	Color
BK	Black	RD	Red
BL	Blue	WH	White
BR	Brown	Y	Yellow
OR	Orange	Y／GN	Yellow／Green
P	Pink		

Notes 1. – – – · indicates wiring on site.
2. See the wiring diagram of outside unit about the line between indoor unit and outdoor unit.
3. Use twin core cable (0.3mm^2) at remote controller line. (Refer to page 30) of remote controller in case that the total length is more than 100m.
4. Do not put remote controller line alongside power source line.

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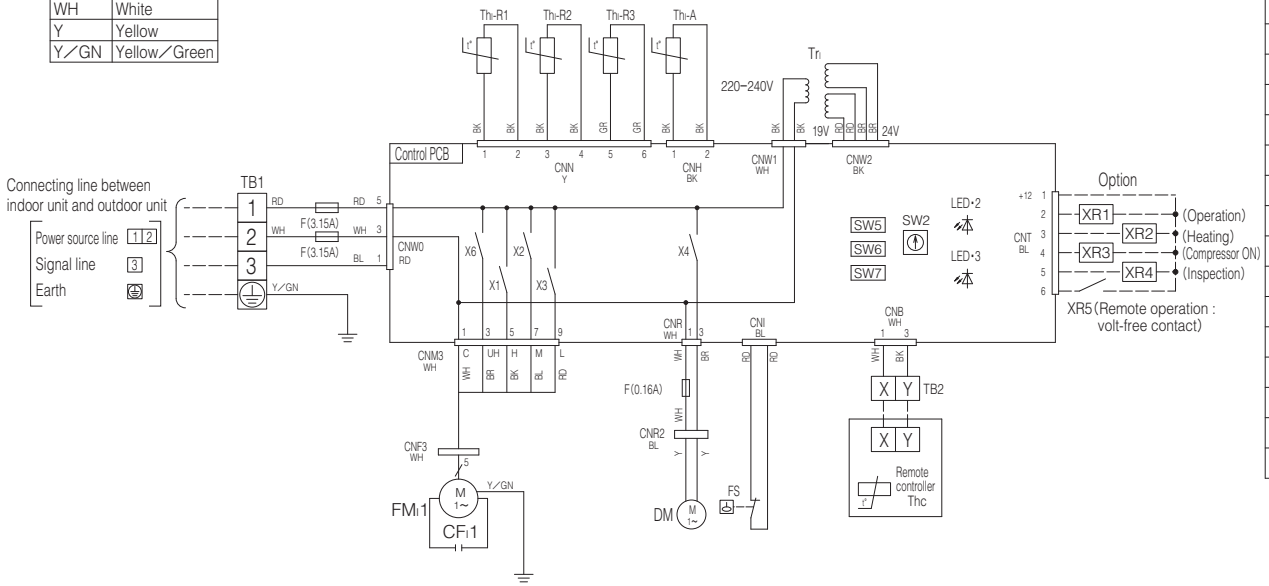
(6) Duct connected-Low/Middle static pressure type (FDUM)
Models FDUM50VD, 60VD

Color Marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
GR	Gray
RD	Red
WH	White
Y	Yellow
Y／GN	Yellow／Green



CFi1	Capacitor for FMI
CNB~Z	Connector
DM	Drain motor
F	Fuse
FMi1	Fan motor (with thermostat)
FS	Float switch
LED•2	Indication lamp (Green-Normal operation)
LED•3	Indication lamp (Red-Inspection)
SW2	Remote controller communication address
SW5	Plural units Master／Slave setting
SW6	Model capacity setting
SW7-1	Operation check, Drain motor test run
TB1	Terminal block (Power source) (□mark)
TB2	Terminal block (Signal line) (□mark)
Thc	Thermistor (Remote controller)
Thi -A	Thermistor (Return air)
Thi -R1,2,3	Thermistor (Heat exchanger)
Tri	Transformer
X1~3,6	Relay for FM
X4	Relay for DM

Notes 1. —— indicates wiring on site.
2. See the wiring diagram of outside unit about the line between inside unit and outside unit.
3. Use twin core cable (0.3mm^2) at remote controller line. (Refer to page 30) of remote controller in case that the total length is more than 100m.
4. Do not put remote controller line alongside power source line.

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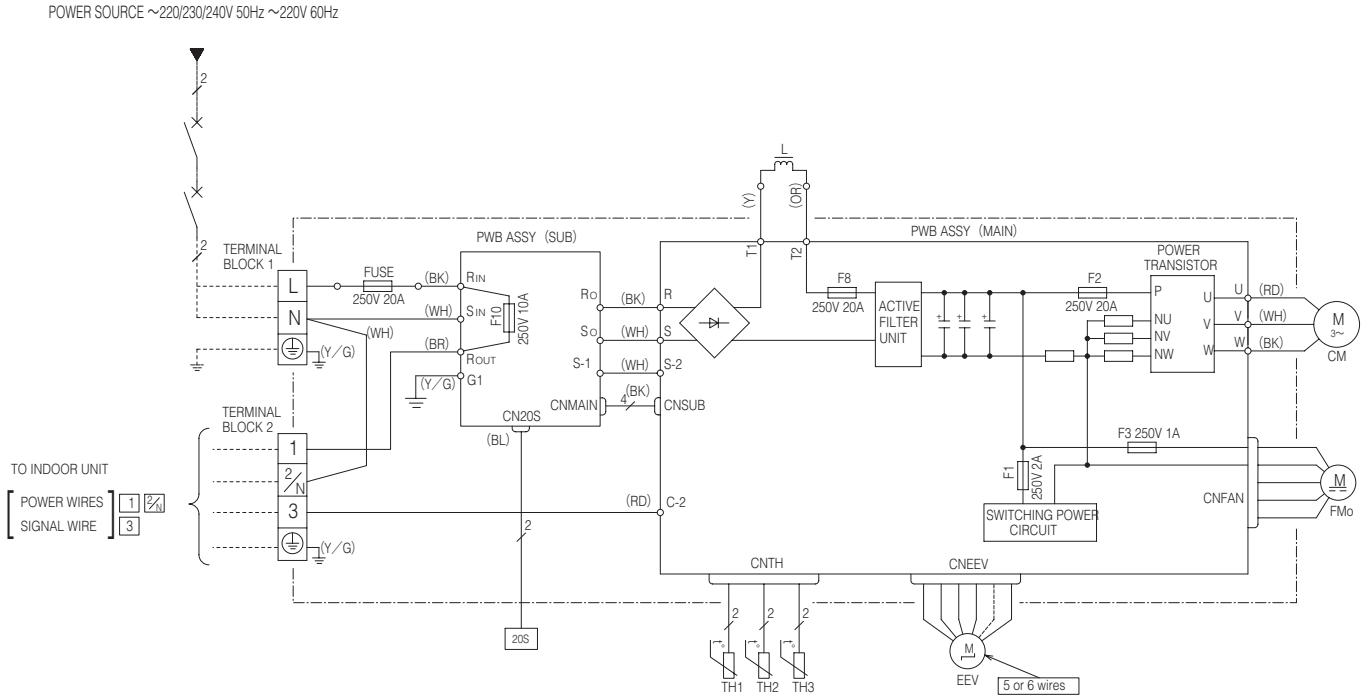
3.2 Outdoor units

Models SRC40ZJX-S, 50ZJX-S, 60ZJX-S



Power cable, indoor-outdoor connecting wires

Model	MAX running current (A)	Power cable size (mm^2)	Power cable length (m)	indoor-outdoor wire size x number	Earth wire size (mm^2)
40	15	2.0	18	$1.5mm^2$x 3	1.5
50					
60					

- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear of Circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
- The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, please follow the internal cabling regulations. Adapt it to the regulation in effect in each country.

Item	Description
CM	Compressor motor
CN20S CNTH CNEEV CNFAN	Connector
EEV	Electric expansion valve (coil)
FMo	Fan motor
L	Reactor
TH1	Heat exch. liquid pipe sensor
TH2	Outdoor air sensor
TH3	Discharge pipe sensor
20S	Solenoid coil for 4 way valve

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

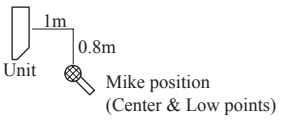
4. NOISE LEVEL

Notes(1) The data are based on the following conditions.
Ambient air temperature: Indoor unit 27℃WB. Outdoor unit 35℃DB.
(2) The data in the chart are measured in an anechoic room.
(3) The noise levels measured in the field are usually higher than the data because of reflection.

4.1 Indoor units

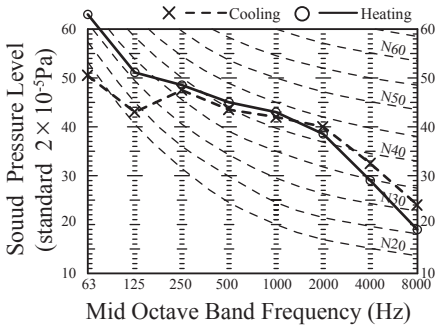
(1) Wall mounted type (SRK)

Measured based on JIS C 9612
Mike position as right

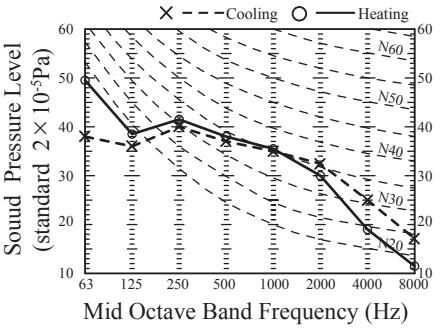


Model SRK50ZJX-S1

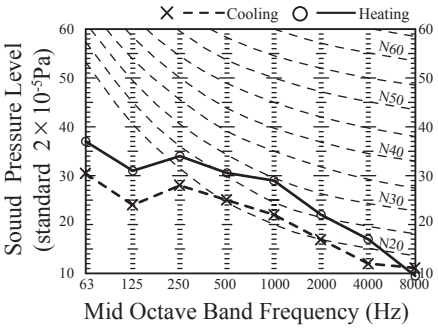
Cooling noise level 47 dB (A) at HIGH
Heating noise level 48 dB (A) at HIGH



Cooling noise level 40 dB (A) at MEDIUM
Heating noise level 40 dB (A) at MEDIUM

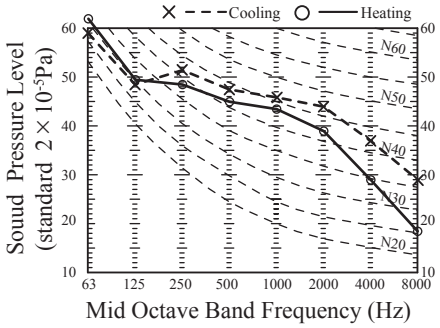


Cooling noise level 27 dB (A) at LOW
Heating noise level 33 dB (A) at LOW

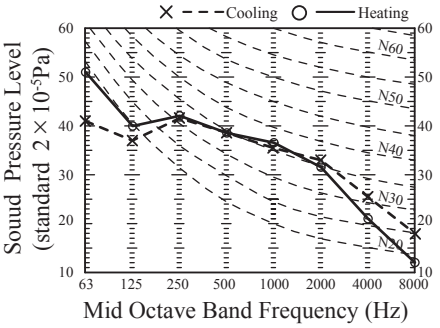


Model SRK60ZJX-S1

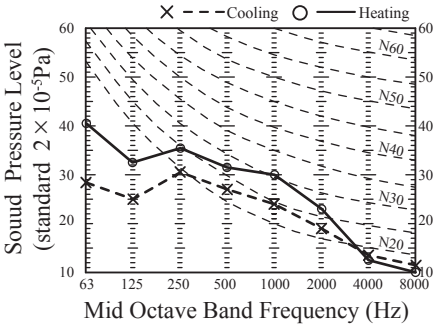
Cooling noise level 51 dB (A) at HIGH
Heating noise level 48 dB (A) at HIGH



Cooling noise level 41 dB (A) at MEDIUM
Heating noise level 41 dB (A) at MEDIUM

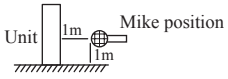


Cooling noise level 29 dB (A) at LOW
Heating noise level 34 dB (A) at LOW



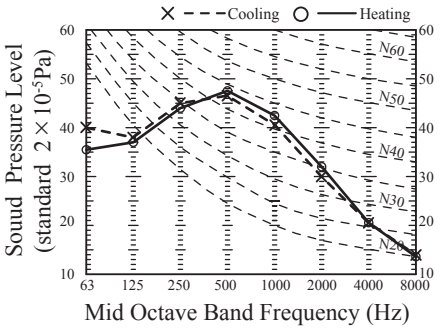
(2) Floor standing type (SRF)

Measured based on JIS C 9612
Mike position as right

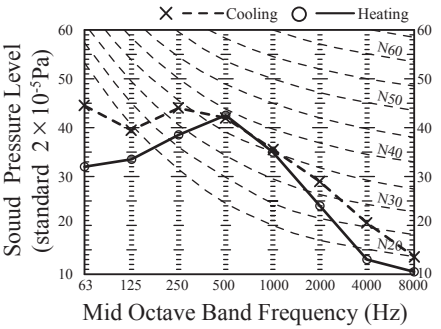


Model SRF50ZJX-S1

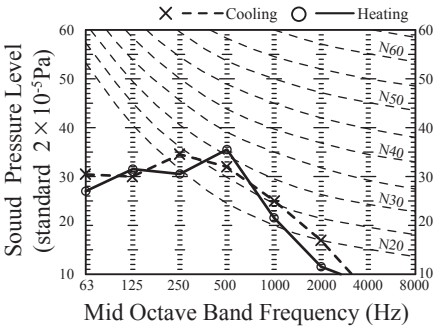
Cooling noise level 46 dB (A) at HIGH
Heating noise level 47 dB (A) at HIGH



Cooling noise level 42 dB (A) at MEDIUM
Heating noise level 41 dB (A) at MEDIUM

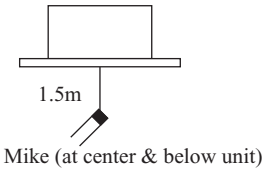


Cooling noise level 32 dB (A) at LOW
Heating noise level 33 dB (A) at LOW



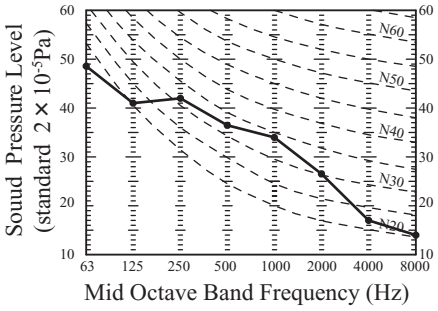
(3) Ceiling cassette-4way type (FDT)

Measured based on JIS B 8616
Mike position as right



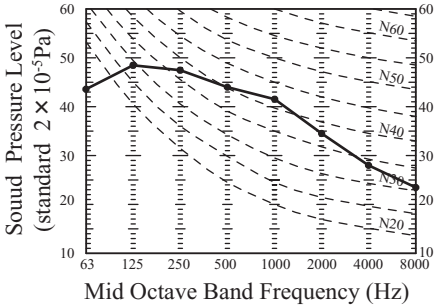
Models FDT40,50VD

Noise level 39 dB (A) at P-HIGH
33 dB (A) at HIGH
31 dB (A) at MEDIUM
30 dB (A) at LOW



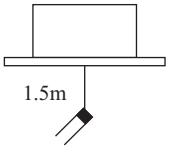
Model FDT60VD

Noise level 46 dB (A) at P-HIGH
33 dB (A) at HIGH
31 dB (A) at MEDIUM
30 dB (A) at LOW



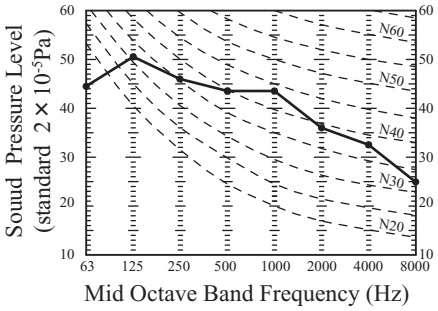
(4) Ceiling cassette-4way compact type (FDTC)

Measured based on JIS B 8616
Mike position as right

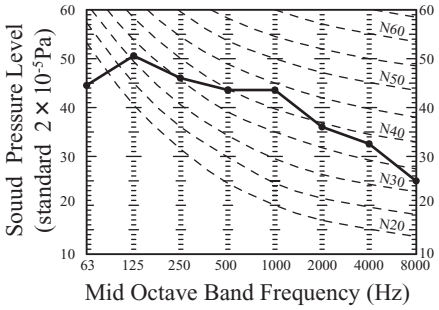


Models FDTC40VD,50VD

Cooling noise level 47 dB (A) at P-HIGH
42 dB (A) at HIGH
36 dB (A) at MEDIUM
30 dB (A) at LOW

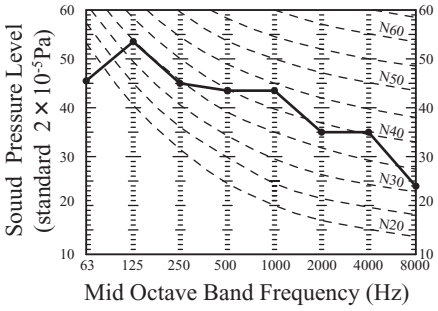


Heating noise level 47 dB (A) at P-HIGH
42 dB (A) at HIGH
36 dB (A) at MEDIUM
32 dB (A) at LOW

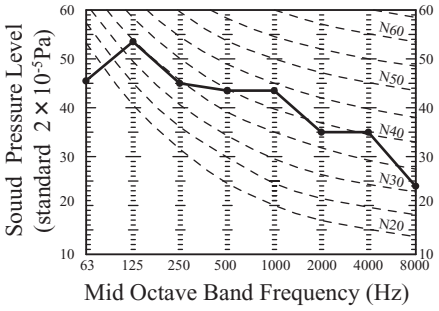


Model FDTC60VD

Cooling noise level 47 dB (A) at P-HIGH
46 dB (A) at HIGH
39 dB (A) at MEDIUM
30 dB (A) at LOW

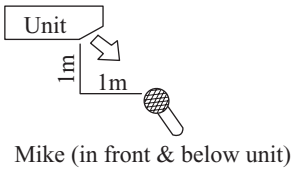


Heating noise level 47 dB (A) at P-HIGH
46 dB (A) at HIGH
39 dB (A) at MEDIUM
32 dB (A) at LOW



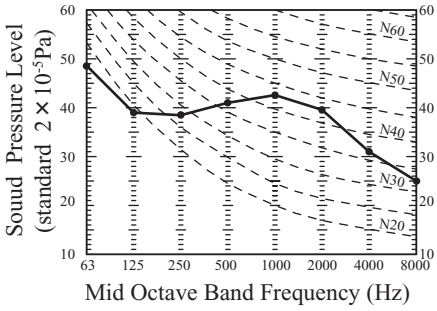
(5) Ceiling suspended type (FDEN)

Measured based on JIS B 8616
Mike position as right



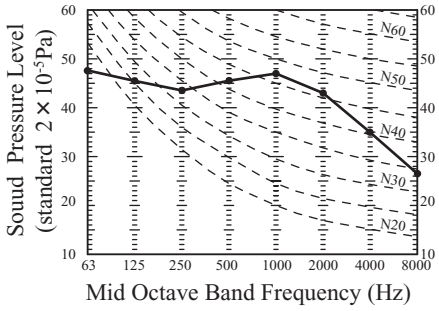
Models FDEN40,50VD

Noise level 46 dB (A) at P-HIGH
39 dB (A) at HIGH
38 dB (A) at MEDIUM
37 dB (A) at LOW



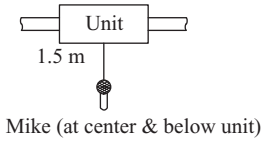
Model FDEN60VD

Noise level 50 dB (A) at P-HIGH
41 dB (A) at HIGH
39 dB (A) at MEDIUM
38 dB (A) at LOW



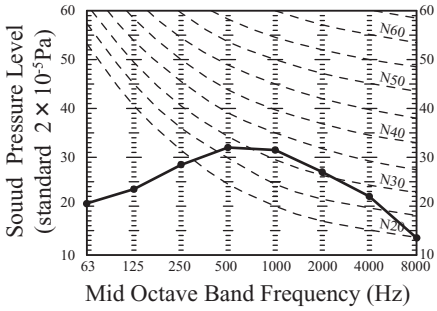
(6) Duct connected-Low/Middle static pressure type (FDUM)

Measured based on JIS B 8616
Mike position as right



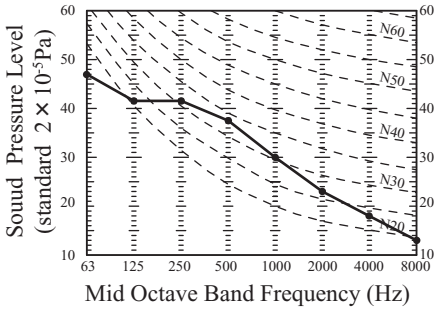
Model FDUM50VD

Noise level 35 dB (A) at P-HIGH
34 dB (A) at HIGH
31 dB (A) at MEDIUM
28 dB (A) at LOW



Model FDUM60VD

Noise level 38 dB (A) at P-HIGH
34 dB (A) at HIGH
31 dB (A) at MEDIUM
28 dB (A) at LOW

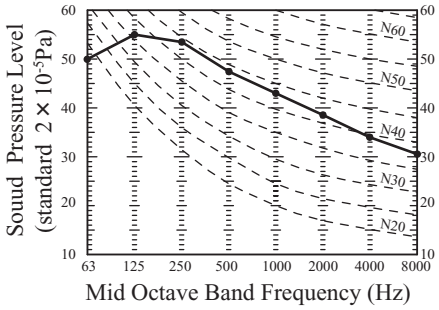


4.2 Outdoor units

Measured based or JIS B 8616 or JIS C 9612
Mike position: at highest noise level in position as mentined below.
Distance from front side 1m

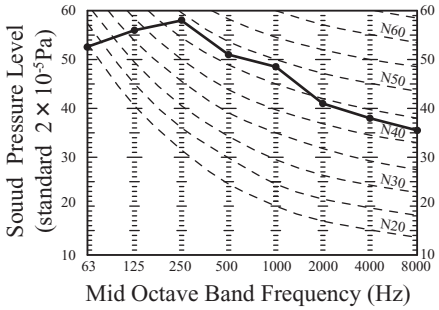
Model SRC40ZJX-S

Noise level 50 dB (A)

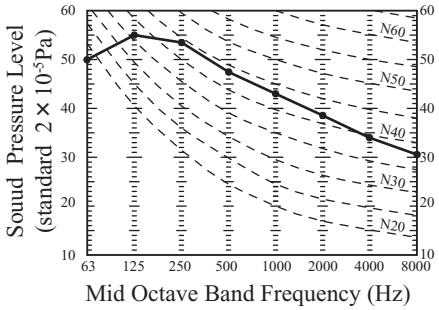


Model SRC50ZJX-S

Cooling noise level 54 dB (A)

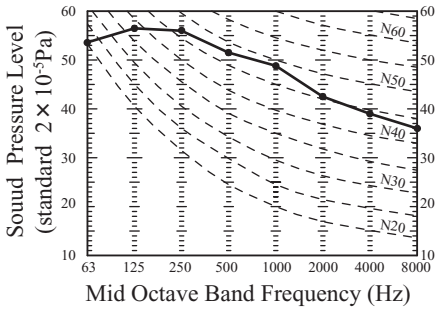


Heating noise level 50 dB (A)

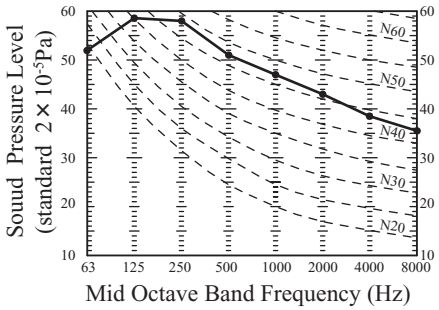


Model SRC60ZJX-S

Cooling noise level 54 dB (A)



Heating noise level 54 dB (A)



5. CHARACTERISTICS OF FAN

• External static pressure table

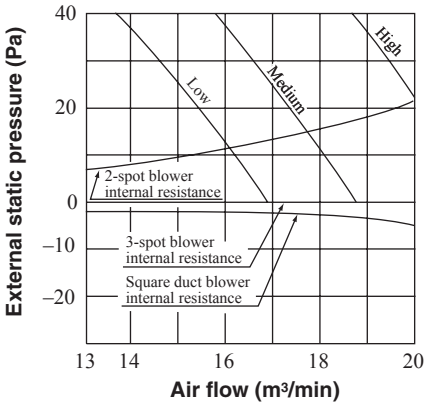
Unit : Pa (50Hz/60Hz)

Model \ Air flow (m^3/min) \ Duct specs.		1 spot closing (1)	Standard (2)	Square duct (3)
FDUM50VD	14	-	85/90	90/90
FDUM60VD	18	70/85	85/100	90/100

Notes(1) 1 spot closing: Round duct flange at center is removed and shield with a special panel (option).
(2) Standard: ø200 duct are installed at all blowout holes.
(3) Square duct: All round ducts are removed and replaced with special square duct flanges (option)

How to interpret the blower characteristics table

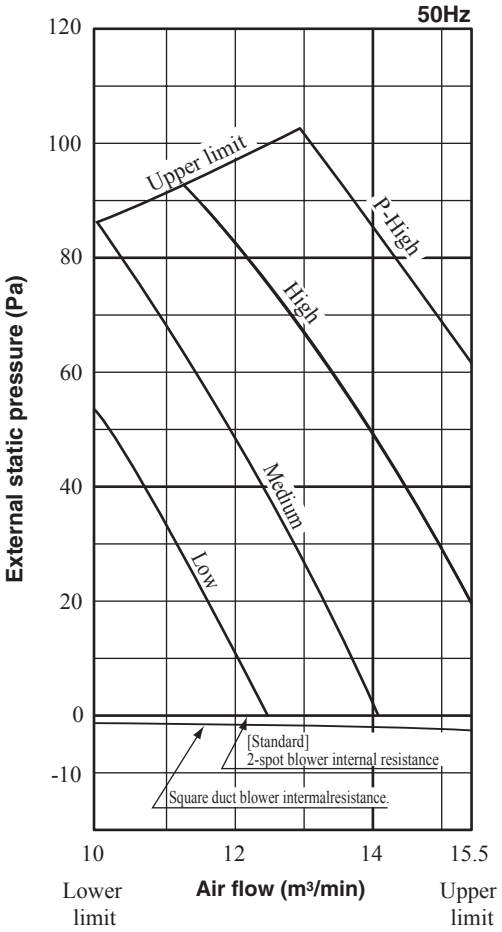
Example : Case of FDUM60VD (50Hz)

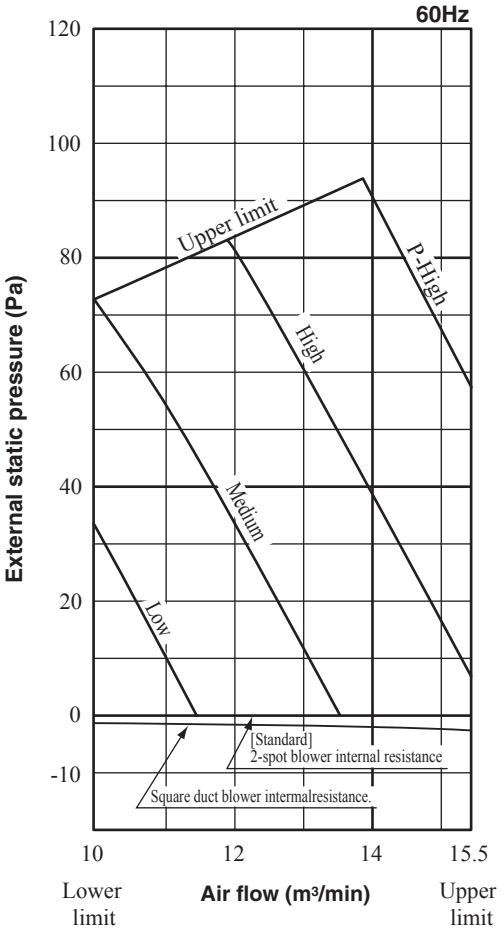


① 2-spot blowout.....
Internal resistance increases more than the standard 3-spot blowout.Approx. 14Pa at 17m^3/min

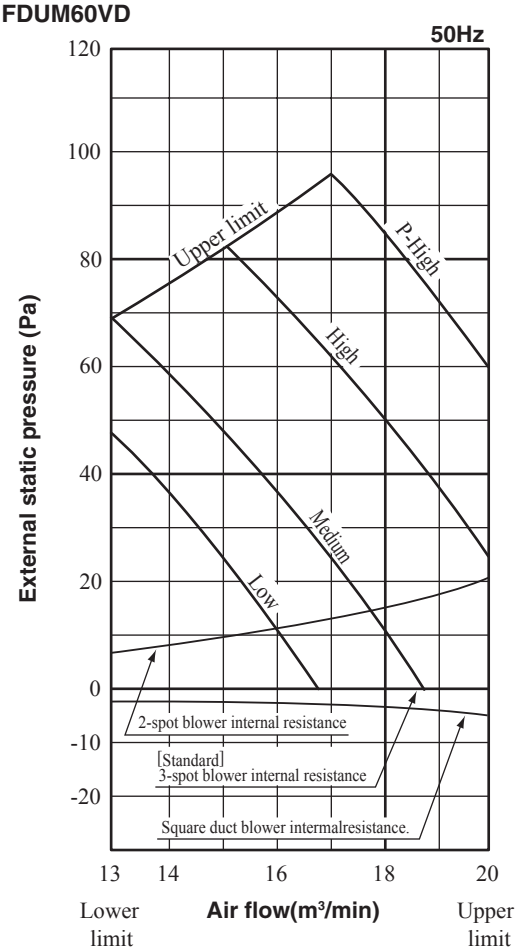
② Square duct blowout.....
Internal resistance decreases more than the standard round duct (ø200 3-spot). 3Pa at 17m^3/min. (External static pressure increases in reverse.)

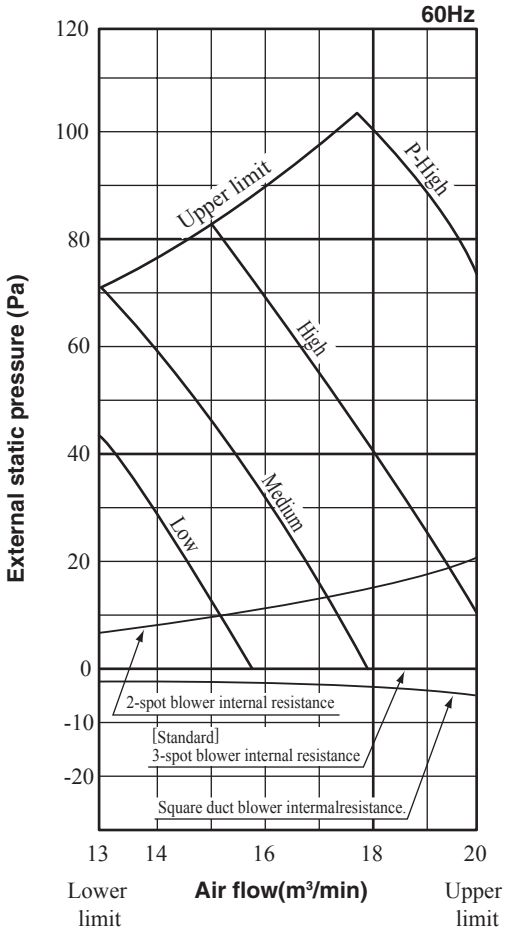
Model FDUM50VD





Model FDUM60VD





6. TEMPERATURE AND VELOCITY DISTRIBUTION

■ Indoor temperature

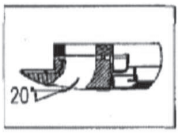
Cooling 27°CDB/ 19°CWB, Heating 20°CDB

Note(1)These figures represent the typical main range of temperature and velocity distribution at the center of air outlet within the published conditions. In the actual installation, they may differ from the typical figures under the influence of air temperature conditions, ceiling height, operation conditions and obstacles.

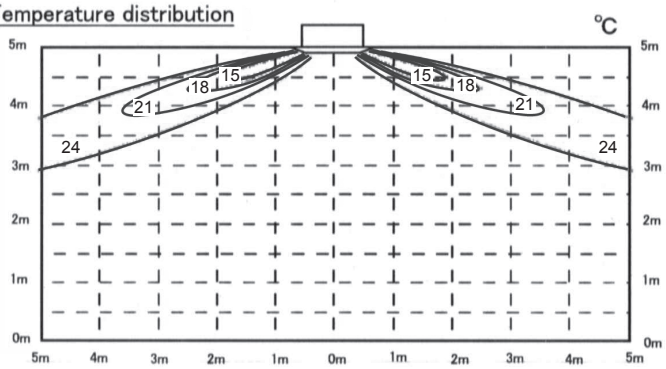
(1) Ceiling cassett-4way type (FDT)
Models FDT40VD, 50VD

Cooling Air flow : P-Hi

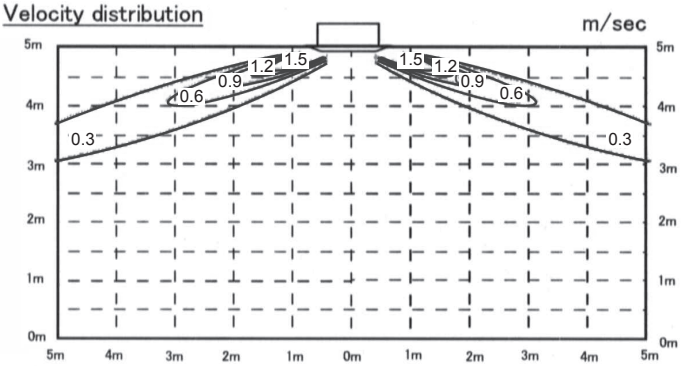
Louver position



Temperature distribution

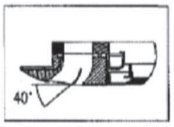


Velocity distribution

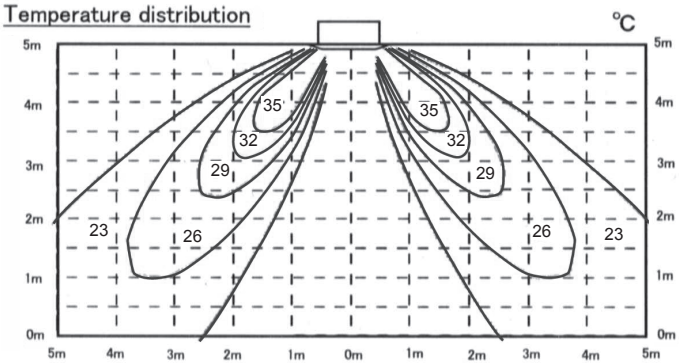


Heating Air flow : P-Hi

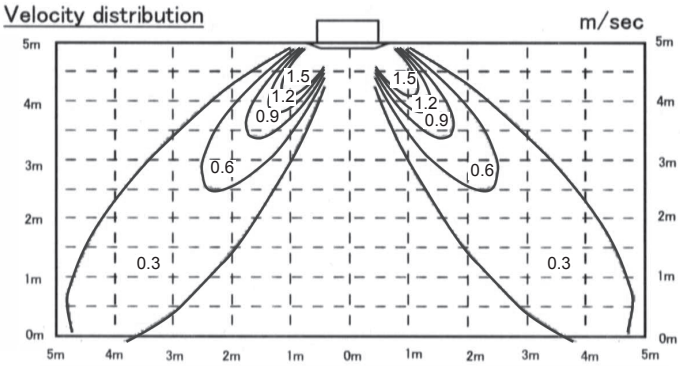
Louver position



Temperature distribution



Velocity distribution

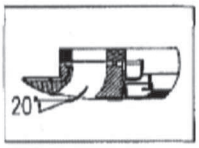


ISD09406

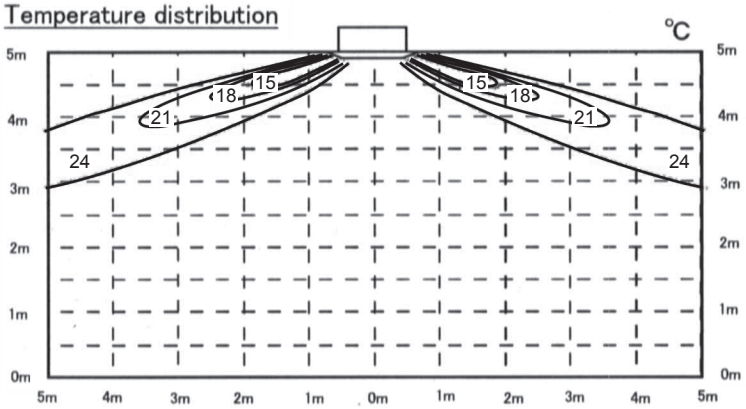
Model FDT60VD

Cooling Air flow : P-Hi

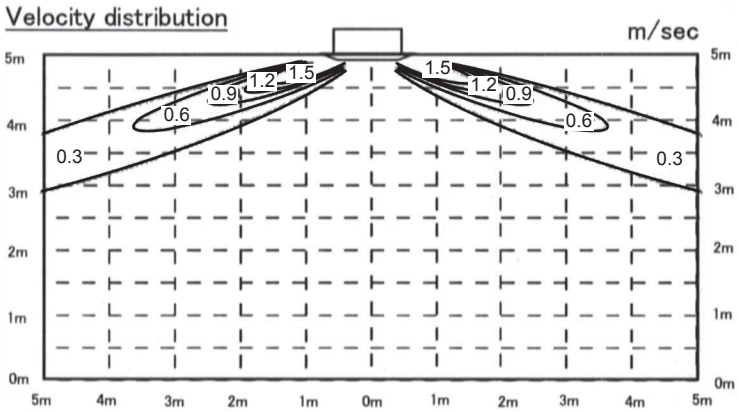
Louver position



Temperature distribution

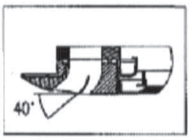


Velocity distribution

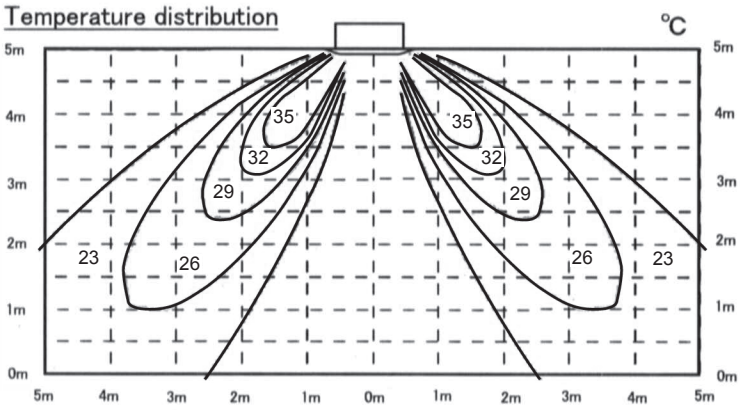


Heating Air flow : P-Hi

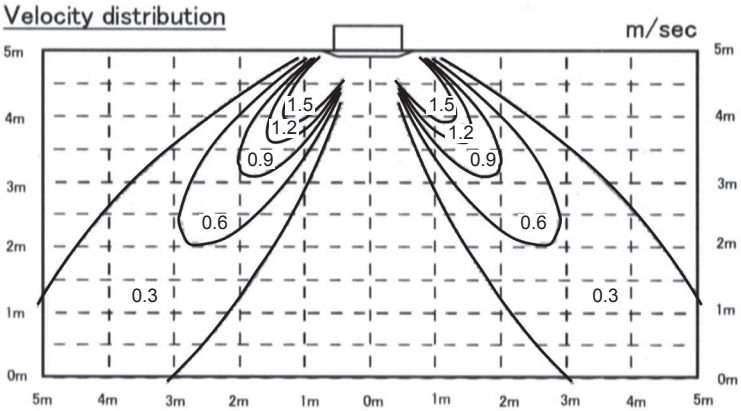
Louver position



Temperature distribution



Velocity distribution

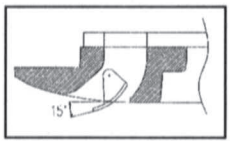


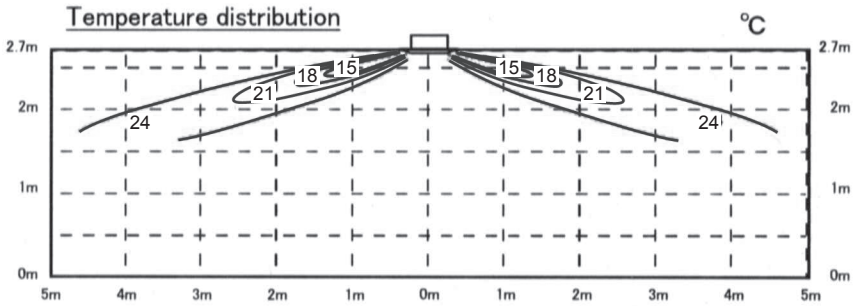
ISD09406

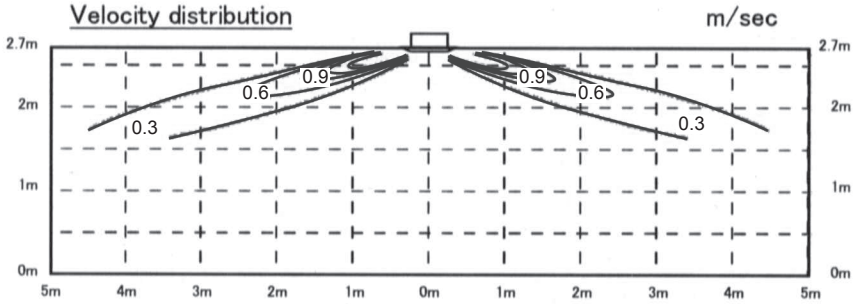
(2) Ceiling cassett-4way compact type (FDTC)
Models FDTC40VD, 50VD, 60VD

Cooling Air flow : P-Hi

Louver position

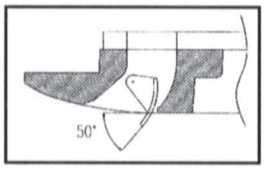


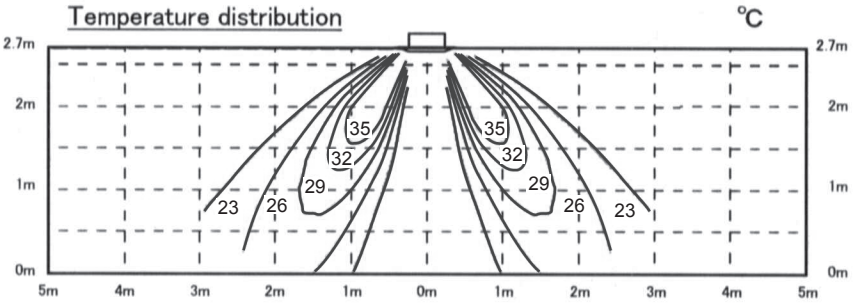


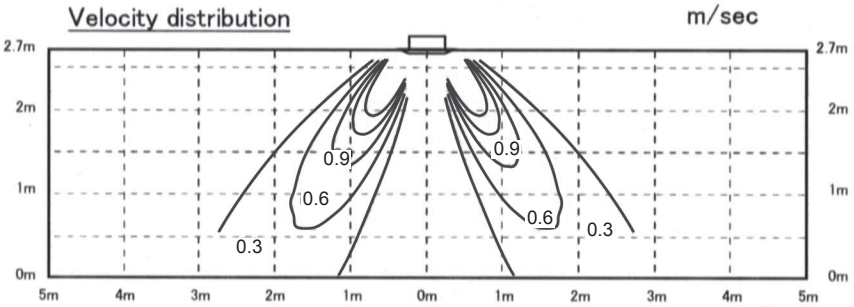


Heating Air flow : P-Hi

Louver position







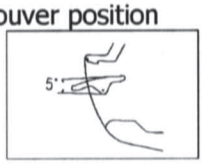
ISD09407

(3) Ceiling suspended type (FDEN)

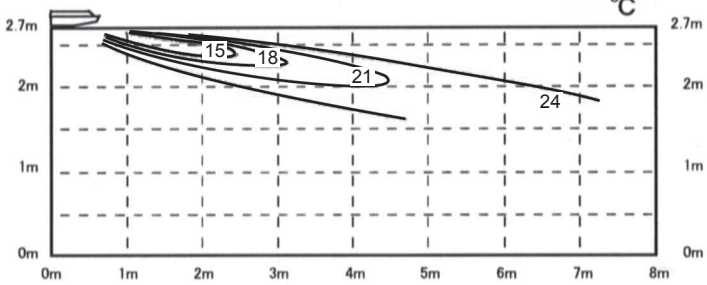
Models FDEN40VD, 50VD

Cooling Air flow : P-Hi

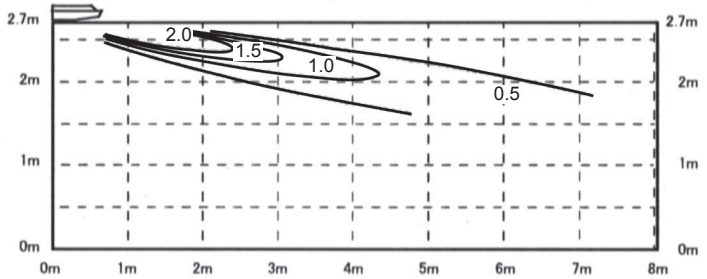
Louver position



Temperature distribution

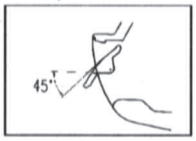


Velocity distribution

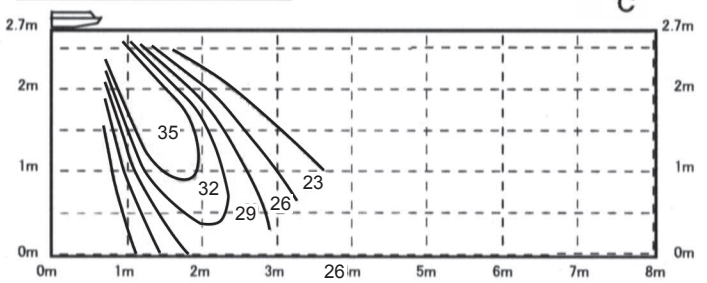


Heating Air flow : P-Hi

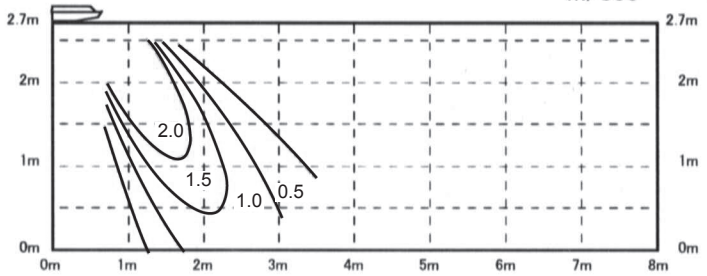
Louver position



Temperature distribution



Velocity distribution

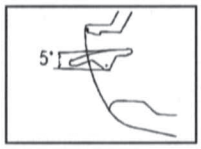


ISD09408

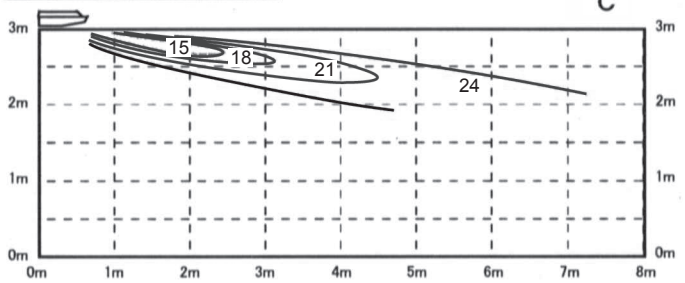
Model FDEN60VD

Cooling Air flow : P-Hi

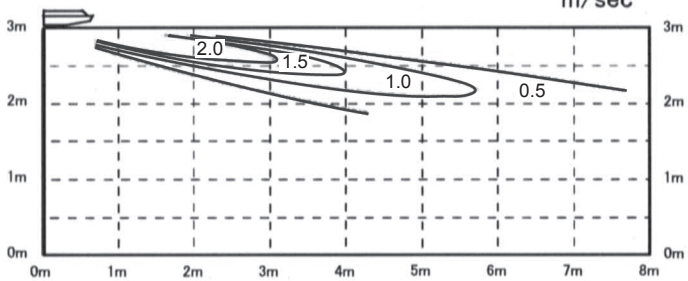
Louver position



Temperature distribution

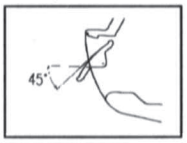


Velocity distribution

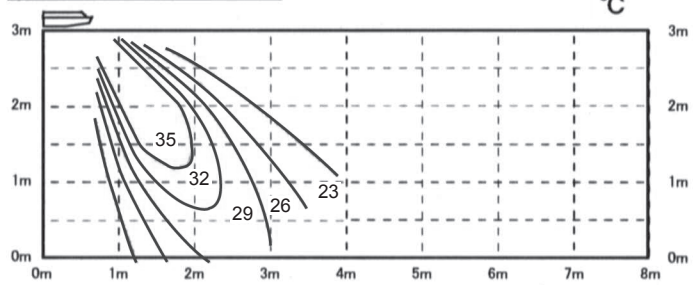


Heating Air flow : P-Hi

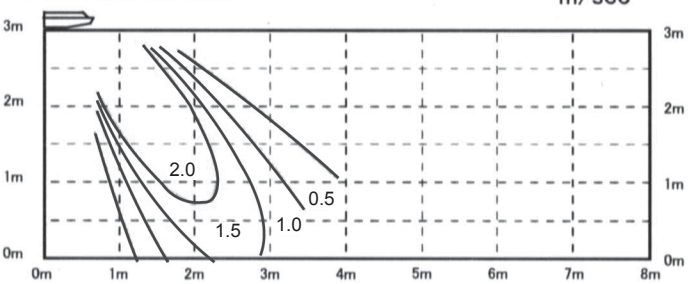
Louver position



Temperature distribution



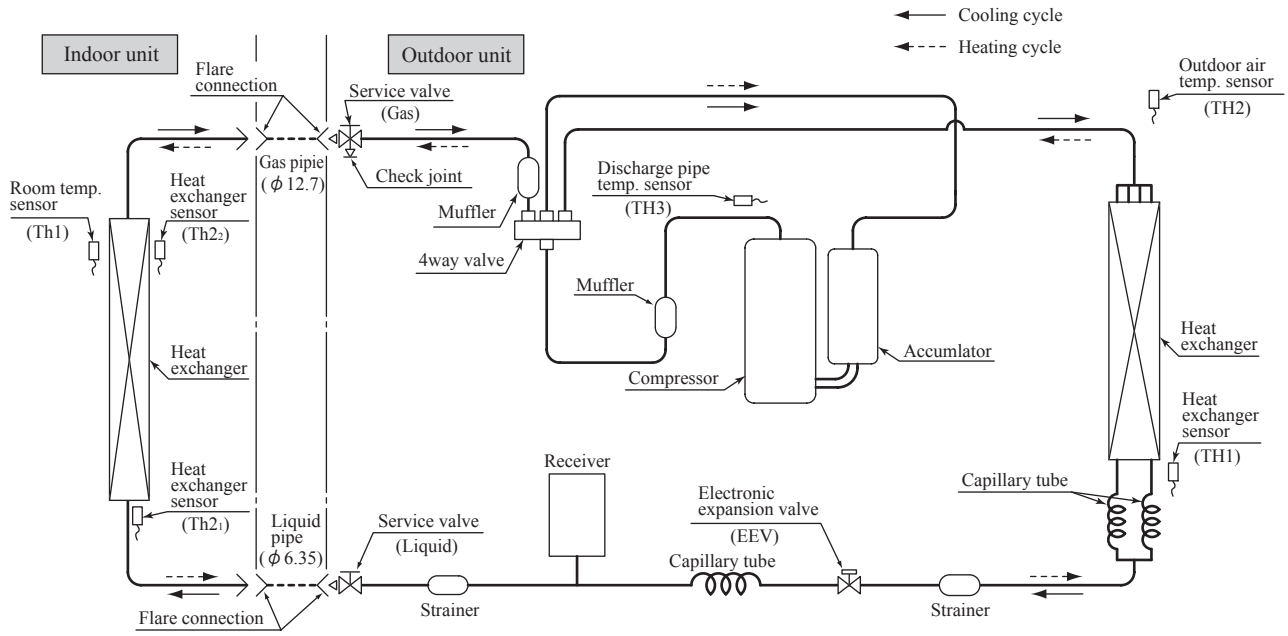
Velocity distribution



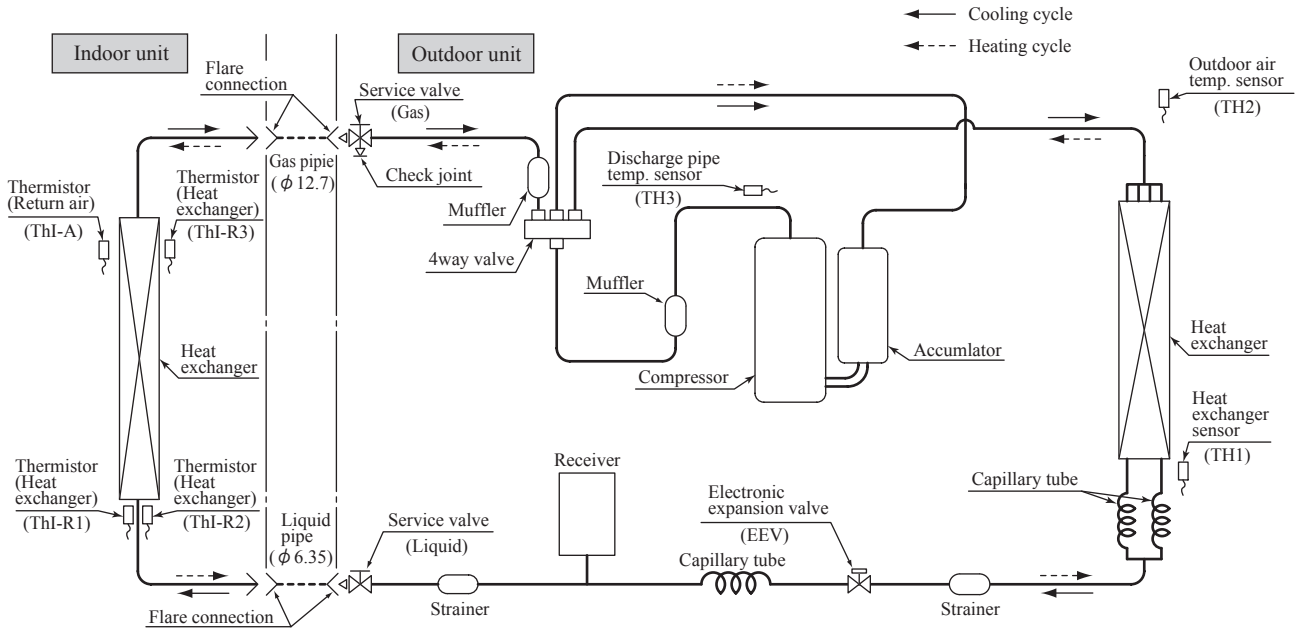
ISD09408

7. PIPING SYSTEM

Models SRK50ZJX-S1,60ZJX-S1,SRF50ZJX-S1



Models FDT40ZJXVD,50ZJXVD,60ZJXVD,FDTC40ZJXVD,50ZJXVD,60ZJXVD
FDEN40ZJXVD,50ZJXVD,60ZJXVD,FDUM50ZJXVD,60ZJXVD



Preset point of the protective devices

Parts name	Mark	Equipped unit	40～60 models
Thermistor (for protection overloading in heating)	**ThI-R**	Indoor unit **(FDT,FDTC,FDEN,FDUM series ony)**	ON 63℃ , OFF 56℃
Thermistor (for frost prevention)			ON 1.0℃ , OFF 10℃
Thermistor (for protection high pressure in cooling.)	**TH1**	Outdoor unit	ON 63℃ , OFF 53℃
Thermistor (for detecting discharge pipe temp.)	**TH3**		ON 115℃ , OFF 95℃

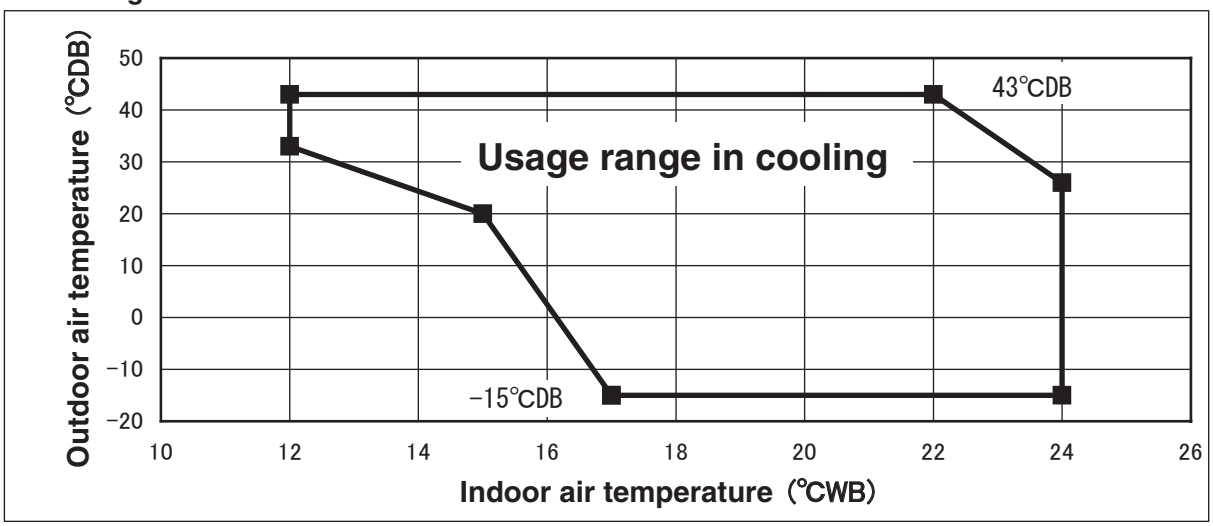
8. RANGE OF USAGE & LIMITATIONS

8.1 SRK and SRF series

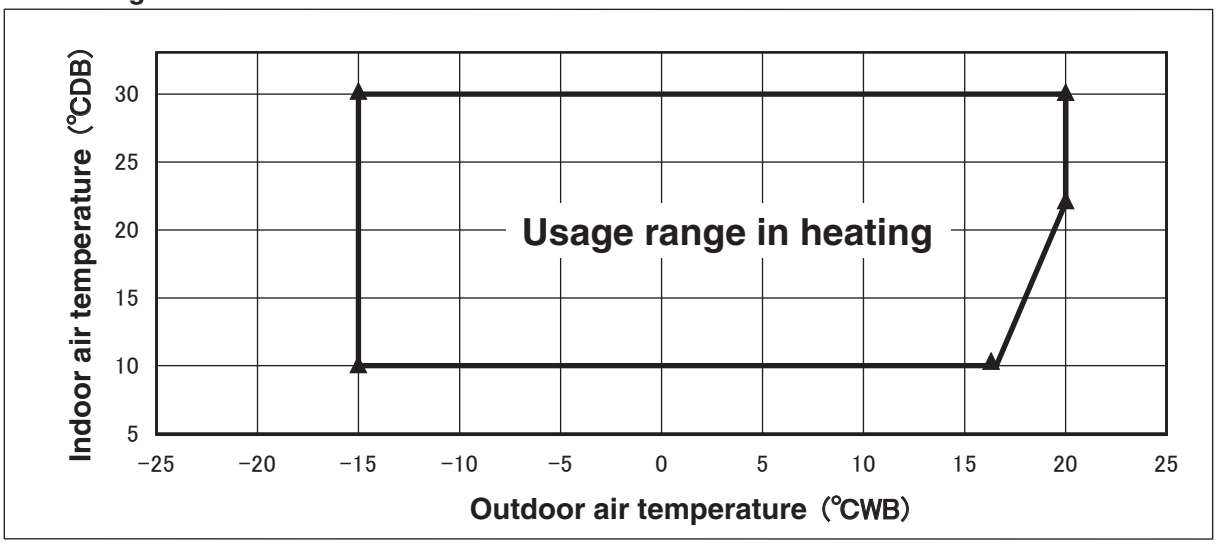
Item \ Models	SRK50,60ZJX-S1 SRF50ZJX-S1
Operating temperature range	See the following graph
Refrigerant line (one way) length	Max. 30m
Vertical height difference between outdoor unit and indoor unit	Max. 20m (Outdoor unit is higher) Max. 20m (Outdoor unit is lower)
Power source voltage	Rating ±10%
Voltage at starting	Min. 85% of rating
Frequency of ON-OFF cycle	Max. 5 times/h (Inching prevention 10 minutes)
ON and OFF interval	Min. 3 minutes

Operating temperature range

■ **Cooling**



■ **Heating**



Decline in cooling and heating capacity or operation stop may occur when the outdoor unit is installed in places where natural wind can increase or decrease its design airflow rate.

8.2 FDT, FDTC, FDEN and FDUM series

Operating temperature range		See next page.
Recommendable area to install		Considering to get sufficient heating capacity, the area where the averaged lowest ambient air temperature in day time during winter is above 0˚C, and it has no accumulation of snow.
Installation site		The limitations of installation space are shown in the page for outline drawing. Install the indoor unit at least 2.5m higher than the floor surface.
Temperature and humidity conditions surrounding the indoor unit in the ceiling (Note 2)		Dew point temperature : 28 (23) ˚C or less, relative hummdity : 80% or less (Note 4)
Limitations on unit and piping installation		See page 54
Compressor ON-OFF cycling	Cycle Time	13 minutes or more (from OFF to OFF) or (from ON to ON)
	Stop Time	3 minutes or more
Power source	Voltage range	Rating ±10%
	Voltage drop at start-up	Min.85% of rating
	Phase-to-phase imbalance	3% or less

Note 1. Do not install the unit in places which :
1) Flammable gas may leak.
2) Carbon fiber, metal particles, powder, etc. are floating.
3) Cosmetic or special sprays are used frequently.
4) Exposed to oil splashes or steam (e.g. kitchen and machine plant).
5) Exposed to sea breeze (e.g. coastal area) or calcium chloride (e.g. snow melting agent).
6) Exposed to ammonia substance (e.g. organic fertilizer).
7) Matters affecting devices, such as sulfuric gas, chlorine gas, acid, alkali, etc. may generate or accumulate.
8) Chimney smoke is hanging.
9) Sucking the exhaust gas from heat exchanger.
10) Adjacent to equipment generating electromagnetic waves or high frequency waves.
11) There is light beams that affect the receiving device of indoor unit in case of the wireless specification.
12) Snow falls heavily.
13) At an elevation of 1000 meters or higher.
14) On mobile machine (e.g. vehicle, ship, etc.)
15) Splashed with water to indoor unit (e.g. laundry room).

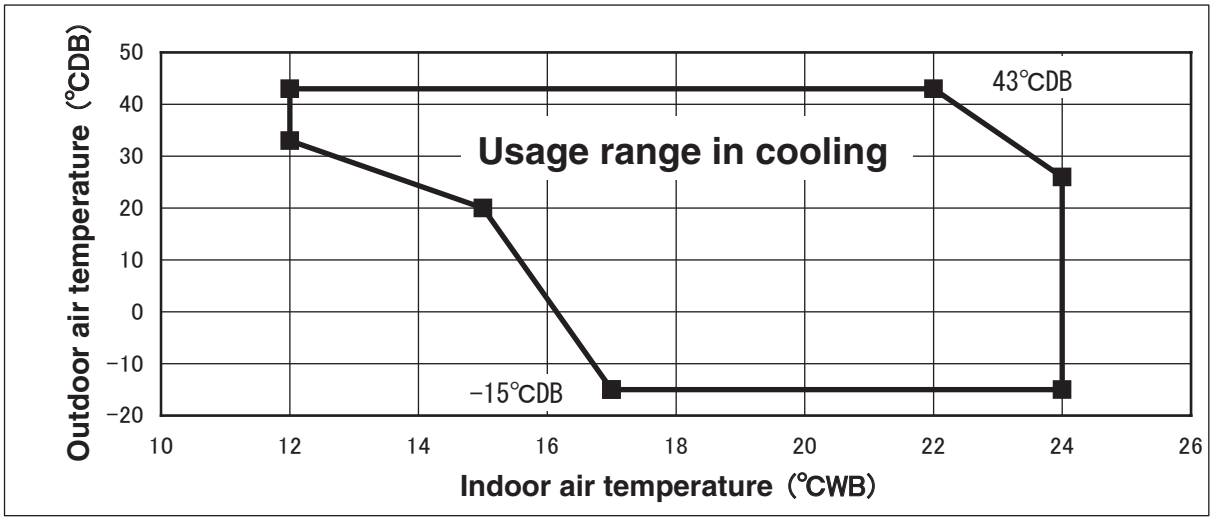
Note 2. If ambient temperature and humidity exceed the above conditions, add polyurethane foam insulation(10mm or thicker) on the outer plate of indoor unit.

Note 3. Both gas and liquid pipes need to be coverd with 20mm or thicker heat insulation materials at the place where humidity exceeds 70%.

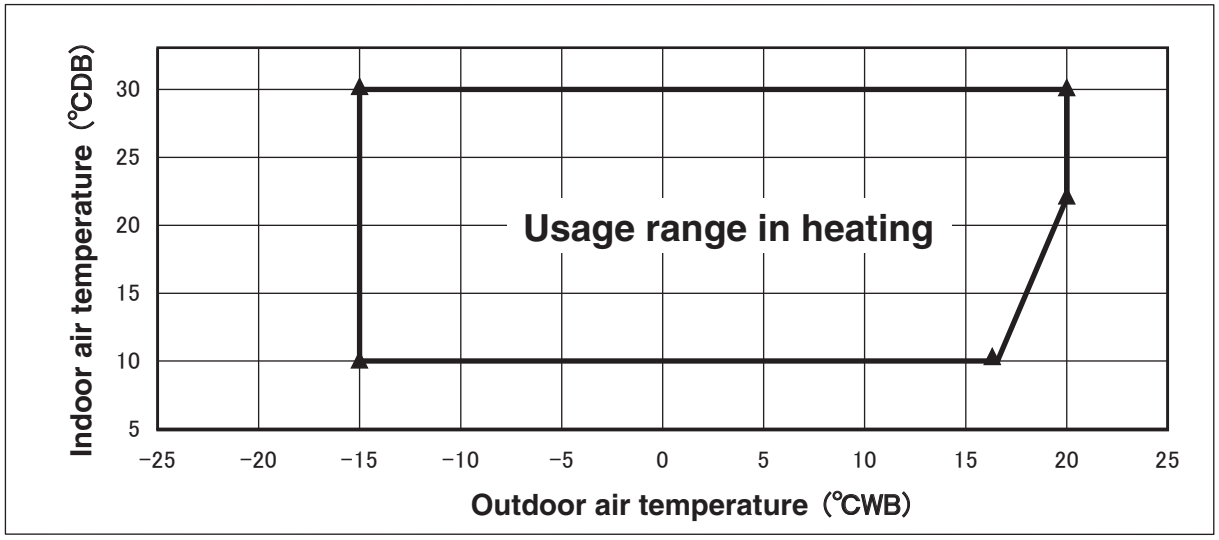
Note 4. Value in ( ) are for the model FDEN series.

Operating temperature range

■ Cooling



■ Heating



Decline in cooling and heating capacity or operation stop may occur when the outdoor unit is installed in places where natural wind can increase or decrease its design airflow rate.

PCA001Z612 Ⓐ

"CAUTION" Cooling operation under low outdoor air temperature conditions

PAC models can be operated in cooling mode at low outdoor air temperature condition within above temperature range. However in case of severely low temperature conditions if the following precaution is not observed, it may not be operated in spite of operable temperature range mentioned above and cooling capacity may not be established under certain conditions.

[Precaution]

In case of severely low temperature condition

1) Install the outdoor unit at the place where strong wind cannot blow directly into the outdoor unit.
2) If there is no installation place where can prevent strong wind from directly blowing into the outdoor unit, mount the flex flow adapter (prepared as optional part) or like such devices onto the outdoor unit in order to divert the strong wind.

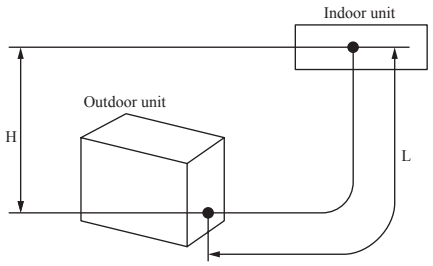
[Reason]

Under the low outdoor air temperature conditions of -5℃ or lower, the outdoor fan is controlled at lower or lowest speed by outdoor fan control, but if strong wind directly blow into the outdoor unit, the outdoor heat exchanger temperature will drop more.

This makes high and low pressures to drop as well. This low pressure drop makes the indoor heat exchanger temperature to drop and will activate anti-frost control at indoor heat exchanger at frequent intervals, that cooling operation may not be established for any given time.

Limitation on unit and piping installation.

Descriptions		Dimensional limitations	Marks appearing in the drawing
One-way pipe length		≦30m	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher	≦20m	H
	When the outdoor unit is positioned lower		



PCA001Z612 A

9. SELECTION CHART

9.1 SRK and SRF series

Correct the cooling and heating capacity in accordance with the operating conditions. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown in the capacity tables (1) × Correction factors shown in the table (2), (3), (4).

(1) Capacity tables.

(a) Wall mounted type (SRK)

Model SRK50ZJX-S1 Indoor unit SRK50ZJX-S1 Outdoor unit SRC50ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	3.46	4.45	3.72	4.56	3.69	4.69	3.66	4.94	3.86	5.19	3.78
13					4.32	3.50	4.56	3.77	4.68	3.73	4.81	3.70	5.07	3.90	5.32	3.82
15					4.42	3.54	4.68	3.81	4.80	3.78	4.93	3.75	5.19	3.94	5.45	3.86
17					4.53	3.59	4.79	3.86	4.92	3.83	5.06	3.80	5.32	3.98	5.58	3.90
19					4.62	3.63	4.89	3.90	5.02	3.86	5.19	3.84	5.51	4.05	5.84	3.98
21					4.76	3.69	4.99	3.94	5.13	3.91	5.32	3.89	5.70	4.11	6.09	4.06
23					4.81	3.71	5.04	3.96	5.19	3.93	5.37	3.91	5.73	4.13	6.10	4.07
25			4.66	3.87	4.86	3.74	5.10	3.98	5.25	3.95	5.42	3.93	5.76	4.14	6.11	4.07
27			4.70	3.89	4.91	3.76	5.16	4.01	5.31	3.98	5.46	3.95	5.75	4.13		
29			4.62	3.85	4.83	3.72	5.08	3.97	5.23	3.95	5.38	3.92	5.68	4.11		
31			4.54	3.81	4.75	3.69	5.00	3.94	5.15	3.92	5.30	3.89	5.60	4.08		
33	4.04	3.45	4.31	3.70	4.67	3.65	4.93	3.91	5.08	3.89	5.23	3.86	5.53	4.06		
35	4.11	3.49	4.30	3.70	4.59	3.62	4.85	3.88	5.00	3.86	5.15	3.83	5.45	4.03		
37	4.04	3.45	4.23	3.67	4.52	3.59	4.77	3.85	4.92	3.83	5.07	3.80	5.37	4.00		
39	3.97	3.42	4.16	3.63	4.45	3.56	4.70	3.82	4.85	3.80	4.99	3.77	5.29	3.97		
41	3.90	3.39	4.09	3.60	4.38	3.53	4.62	3.79	4.77	3.77	4.92	3.74	5.21	3.95		
43	3.83	3.35	4.01	3.56	4.30	3.49	4.55	3.76	4.69	3.74	4.84	3.72	5.13	3.92		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.56	3.50	3.45	3.39	3.34
-11.5	-12	3.78	3.73	3.67	3.62	3.56
-9.5	-10	4.00	3.95	3.90	3.84	3.78
-7.5	-8	4.22	4.17	4.12	4.06	4.01
-5.5	-6	4.31	4.26	4.21	4.17	4.12
-3.0	-4	4.39	4.35	4.31	4.27	4.23
-1.0	-2	4.47	4.44	4.41	4.37	4.33
1.0	0	4.56	4.53	4.50	4.47	4.44
2.0	1	4.60	4.58	4.55	4.52	4.50
3.0	2	4.89	4.87	4.84	4.81	4.78
5.0	4	5.48	5.45	5.42	5.39	5.35
7.0	6	6.07	6.04	6.00	5.96	5.92
9.0	8	6.38	6.34	6.30	6.25	6.21
11.5	10	6.69	6.64	6.59	6.55	6.50
13.5	12	7.07	7.01	6.95	6.85	6.80
15.5	14	7.45	7.37	7.30	7.15	7.10
16.5	16	7.63	7.56	7.48	7.31	7.25

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Model SRK60ZJX-S1 Indoor unit SRK60ZJX-S1 Outdoor unit SRC60ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					5.07	3.95	5.34	4.23	5.47	4.19	5.63	4.16	5.93	4.36	6.23	4.27
13					5.19	4.01	5.47	4.28	5.62	4.25	5.77	4.21	6.08	4.41	6.39	4.33
15					5.31	4.06	5.61	4.34	5.76	4.30	5.92	4.27	6.23	4.47	6.54	4.37
17					5.43	4.11	5.75	4.40	5.91	4.36	6.07	4.32	6.38	4.52	6.70	4.42
19					5.54	4.16	5.87	4.45	6.03	4.41	6.22	4.38	6.61	4.60	7.00	4.52
21					5.71	4.24	5.98	4.49	6.15	4.46	6.38	4.44	6.84	4.68	7.31	4.62
23					5.77	4.27	6.05	4.52	6.22	4.49	6.44	4.47	6.88	4.70	7.32	4.63
25			5.59	4.44	5.83	4.29	6.12	4.55	6.30	4.52	6.50	4.49	6.92	4.71	7.33	4.63
27			5.64	4.47	5.89	4.32	6.19	4.58	6.37	4.55	6.55	4.51	6.90	4.70		
29			5.55	4.42	5.80	4.28	6.10	4.54	6.28	4.51	6.45	4.47	6.81	4.67		
31			5.45	4.38	5.70	4.24	6.00	4.50	6.18	4.47	6.36	4.44	6.72	4.64		
33	4.85	3.97	5.17	4.24	5.61	4.19	5.91	4.46	6.09	4.43	6.27	4.40	6.63	4.61		
35	4.93	4.01	5.16	4.23	5.51	4.15	5.82	4.43	6.00	4.40	6.18	4.37	6.54	4.57		
37	4.84	3.97	5.07	4.19	5.43	4.11	5.73	4.39	5.91	4.36	6.09	4.33	6.44	4.54		
39	4.76	3.93	4.99	4.15	5.34	4.07	5.64	4.35	5.82	4.33	5.99	4.29	6.35	4.51		
41	4.68	3.89	4.90	4.11	5.25	4.03	5.55	4.31	5.72	4.29	5.90	4.26	6.25	4.47		
43	4.60	3.85	4.82	4.07	5.16	3.99	5.46	4.28	5.63	4.25	5.81	4.23	6.15	4.44		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	4.03	3.97	3.91	3.85	3.78
-11.5	-12	4.28	4.22	4.16	4.10	4.04
-9.5	-10	4.53	4.47	4.41	4.35	4.29
-7.5	-8	4.79	4.73	4.67	4.60	4.54
-5.5	-6	4.88	4.83	4.78	4.72	4.67
-3.0	-4	4.98	4.93	4.88	4.84	4.79
-1.0	-2	5.07	5.03	4.99	4.95	4.91
1.0	0	5.17	5.13	5.10	5.07	5.03
2.0	1	5.21	5.19	5.16	5.13	5.10
3.0	2	5.55	5.52	5.49	5.45	5.42
5.0	4	6.21	6.18	6.14	6.10	6.07
7.0	6	6.88	6.84	6.80	6.76	6.71
9.0	8	7.23	7.18	7.14	7.09	7.04
11.5	10	7.58	7.53	7.47	7.42	7.37
13.5	12	8.01	7.94	7.88	7.77	7.71
15.5	14	8.44	8.36	8.28	8.11	8.04
16.5	16	8.65	8.56	8.48	8.28	8.21

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

(b) Floor standing type (SRF)

Model SRF50ZJX-S1

Cool Mode (kW)

Air flow	Outdoor air temp.	Indoor air temp													
		21˚CDB		23˚CDB		26˚CDB		27˚CDB		28˚CDB		31˚CDB		33˚CDB	
		14˚CWB		16˚CWB		18˚CWB		19˚CWB		20˚CWB		22˚CWB		24˚CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
Hi 11.5 (m^3/min)	10	5.63	4.14	5.90	4.07	6.11	4.18	6.22	4.12	6.32	4.06	6.51	4.13	6.69	3.98
	12	5.53	4.09	5.80	4.02	6.03	4.13	6.14	4.08	6.25	4.02	6.44	4.09	6.62	3.96
	14	5.43	4.03	5.70	3.96	5.94	4.09	6.05	4.04	6.16	3.99	6.37	4.06	6.55	3.93
	16	5.32	3.97	5.59	3.91	5.85	4.04	5.96	4.00	6.08	3.94	6.29	4.03	6.48	3.91
	18	5.21	3.91	5.48	3.86	5.75	4.00	5.88	3.96	5.99	3.91	6.21	4.00	6.41	3.89
	20	5.10	3.85	5.37	3.80	5.65	3.95	5.78	3.92	5.90	3.87	6.13	3.97	6.33	3.86
	22	4.98	3.78	5.25	3.74	5.55	3.91	5.69	3.87	5.80	3.83	6.05	3.94	6.25	3.83
	24	4.86	3.72	5.14	3.68	5.45	3.86	5.59	3.83	5.71	3.79	5.96	3.91	6.17	3.80
	26	4.74	3.66	5.01	3.62	5.34	3.81	5.49	3.78	5.61	3.74	5.87	3.87	6.08	3.77
	28	4.61	3.60	4.89	3.56	5.23	3.76	5.39	3.74	5.50	3.70	5.78	3.84	5.99	3.74
	30	4.49	3.53	4.76	3.50	5.11	3.71	5.28	3.69	5.40	3.65	5.68	3.80	5.90	3.70
	32	4.35	3.46	4.63	3.44	5.00	3.66	5.17	3.65	5.29	3.61	5.58	3.76	5.81	3.67
	34	4.22	3.40	4.49	3.37	4.88	3.60	5.06	3.59	5.18	3.56	5.48	3.72	5.71	3.64
	35	4.15	3.36	4.42	3.34	4.82	3.58	5.00	3.57	5.12	3.54	5.43	3.70	5.66	3.62
	36	4.08	3.33	4.35	3.31	4.76	3.55	4.94	3.55	5.06	3.51	5.37	3.68	5.61	3.60
	38	3.94	3.26	4.21	3.24	4.63	3.49	4.82	3.50	4.94	3.47	5.27	3.64	5.50	3.56
	39	3.87	3.22	4.14	3.21	4.57	3.47	4.76	3.47	4.88	3.44	5.21	3.62	5.45	3.55

Heat Mode (kW)

Air flow	outdoor air temp.	indoor air temp				
		16˚CDB	18˚CDB	20˚CDB	22˚CDB	24˚CDB
Hi 12.0 (m^3/min)	-15˚CWB	3.69	3.61	3.53	3.45	3.38
	-10˚CWB	4.18	4.10	4.05	3.95	3.86
	-5˚CWB	4.52	4.46	4.37	4.32	4.25
	0˚CWB	4.74	4.67	4.59	4.54	4.47
	5˚CWB	6.04	5.97	5.94	5.82	5.74
	6˚CWB	6.14	6.07	6.00	5.92	5.85
	10˚CWB	6.52	6.46	6.42	6.34	6.27
	15˚CWB	7.10	7.04	6.99	6.91	6.85
	20˚CWB	7.63	7.57	7.53	7.45	7.39

(2) Correction of cooling and heating capacity in relation to air flow rate control (fan speed)

Fan speed	Hi	Me	Lo
Coefficient	1.00	0.97	0.95

(3) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

Piping length (m)	**7**	**10**	**15**	**20**	**25**	**30**
Cooling	1	0.99	0.975	0.965	0.95	0.935
Heating	1	1	1	1	1	1

(4) Height difference between the indoor unit and outdoor unit

When the outdoor unit is located below indoor units in cooling mode, or when the outdoor unit is located above indoor units in heating mode, the correction coefficient mentioned in the below table should be subtracted from the value in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	**5m**	**10m**	**15m**	**20m**
Adjustment coefficient	0.99	0.98	0.97	0.96

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK50ZJX-S1 with the air flow "High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0℃ and outdoor dry-bulb temperature 35℃ is

Net cooling capacity = 5.00 × 1.00 × 0.975 × 0.99 = 4.8kW

- 5.00: Net cooling total capacity of SRK50ZJX-S (Outdoor temp. : 35℃DB Indoor temp. : 19℃WB) shown in table (1)
- 1.00: Air flow : Hi shown in table (2)
- 0.975: Piping length :15m shown in table (3)
- 0.99: Height diff. :5m (Outdoor unit : below) shown in table (4)

9.2 FDT,FDTC,FDEN and FDUM serirs

Correct the cooling and heating capacity in accordance with the operating conditions. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown in the capacity tables (1) × Correction factors shown in the table (2) ,(3), (4).

(1) Capacity tables

(a) Ceiling cassette-4way type (FDT)

Model FDT40ZJXVD Indoor unit FDT40VD Outdoor unit SRC40ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					3.38	3.31	3.56	3.49	3.65	3.58	3.75	3.61	3.95	3.87	4.15	3.74
13					3.46	3.39	3.65	3.58	3.75	3.68	3.85	3.63	4.05	3.88	4.26	3.74
15					3.54	3.42	3.74	3.67	3.84	3.71	3.95	3.64	4.15	3.89	4.36	3.75
17					3.62	3.44	3.83	3.75	3.94	3.72	4.04	3.66	4.26	3.91	4.47	3.76
19					3.69	3.45	3.91	3.80	4.02	3.74	4.15	3.67	4.41	3.92	4.67	3.78
21					3.81	3.48	3.99	3.82	4.10	3.75	4.26	3.69	4.56	3.94	4.87	3.79
23					3.85	3.49	4.04	3.83	4.15	3.76	4.30	3.70	4.59	3.95	4.88	3.80
25			3.73	3.66	3.89	3.50	4.08	3.83	4.20	3.77	4.34	3.70	4.61	3.95	4.89	3.80
27			3.76	3.68	3.93	3.51	4.13	3.84	4.25	3.78	4.36	3.71	4.60	3.95		
29			3.70	3.63	3.86	3.49	4.06	3.83	4.18	3.77	4.30	3.70	4.54	3.94		
31			3.64	3.57	3.80	3.48	4.00	3.82	4.12	3.75	4.24	3.69	4.48	3.93		
33	3.23	3.17	3.44	3.37	3.74	3.46	3.94	3.81	4.06	3.74	4.18	3.68	4.42	3.93		
35	3.28	3.21	3.44	3.37	3.68	3.45	3.88	3.80	4.00	3.73	4.12	3.67	4.36	3.92		
37	3.23	3.17	3.38	3.31	3.62	3.44	3.82	3.74	3.94	3.72	4.06	3.66	4.30	3.91		
39	3.17	3.11	3.32	3.25	3.56	3.42	3.76	3.68	3.88	3.71	4.00	3.65	4.23	3.90		
41	3.12	3.06	3.27	3.20	3.50	3.41	3.70	3.63	3.82	3.70	3.93	3.64	4.17	3.90		
43	3.06	3.00	3.21	3.15	3.44	3.37	3.64	3.57	3.76	3.68	3.87	3.63	4.10	3.89		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	2.67	2.63	2.59	2.55	2.50
-11.5	-12	2.83	2.79	2.75	2.71	2.67
-9.5	-10	3.00	2.96	2.92	2.88	2.84
-7.5	-8	3.17	3.13	3.09	3.05	3.01
-5.5	-6	3.23	3.20	3.16	3.12	3.09
-3.0	-4	3.29	3.26	3.23	3.20	3.17
-1.0	-2	3.36	3.33	3.30	3.28	3.25
1.0	0	3.42	3.40	3.38	3.35	3.33
2.0	1	3.45	3.43	3.41	3.39	3.37
3.0	2	3.67	3.65	3.63	3.61	3.59
5.0	4	4.11	4.09	4.07	4.04	4.01
7.0	6	4.55	4.53	4.50	4.47	4.44
9.0	8	4.78	4.75	4.72	4.69	4.66
11.5	10	5.01	4.98	4.95	4.91	4.88
13.5	12	5.30	5.26	5.21	5.14	5.10
15.5	14	5.58	5.53	5.48	5.37	5.32
16.5	16	5.73	5.67	5.61	5.48	5.44

PJF000Z220

Model FDT50ZJXVD Indoor unit FDT50VD Outdoor unit SRC50ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	4.02	4.45	4.36	4.56	4.35	4.69	4.31	4.94	4.59	5.19	4.48
13					4.32	4.06	4.56	4.44	4.68	4.39	4.81	4.34	5.07	4.62	5.32	4.51
15					4.42	4.09	4.68	4.47	4.80	4.42	4.93	4.37	5.19	4.65	5.45	4.53
17					4.53	4.13	4.79	4.51	4.92	4.46	5.06	4.41	5.32	4.68	5.58	4.56
19					4.62	4.16	4.89	4.54	5.02	4.49	5.19	4.44	5.51	4.73	5.84	4.62
21					4.76	4.21	4.99	4.57	5.13	4.52	5.32	4.48	5.70	4.78	6.09	4.67
23					4.81	4.22	5.04	4.58	5.19	4.54	5.37	4.49	5.73	4.78	6.10	4.67
25			4.66	4.43	4.86	4.24	5.10	4.60	5.25	4.55	5.42	4.51	5.76	4.79	6.11	4.68
27			4.70	4.45	4.91	4.26	5.16	4.62	5.31	4.57	5.46	4.52	5.75	4.79		
29			4.62	4.42	4.83	4.23	5.08	4.60	5.23	4.55	5.38	4.50	5.68	4.77		
31			4.54	4.38	4.75	4.20	5.00	4.57	5.15	4.52	5.30	4.47	5.60	4.75		
33	4.04	3.96	4.31	4.22	4.67	4.18	4.93	4.55	5.08	4.50	5.23	4.45	5.53	4.73		
35	4.11	3.99	4.30	4.21	4.59	4.15	4.85	4.53	5.00	4.48	5.15	4.43	5.45	4.71		
37	4.04	3.96	4.23	4.15	4.52	4.12	4.77	4.50	4.92	4.46	5.07	4.41	5.37	4.69		
39	3.97	3.89	4.16	4.08	4.45	4.10	4.70	4.48	4.85	4.44	4.99	4.39	5.29	4.67		
41	3.90	3.82	4.09	4.01	4.38	4.08	4.62	4.46	4.77	4.41	4.92	4.37	5.21	4.66		
43	3.83	3.75	4.01	3.93	4.30	4.05	4.55	4.43	4.69	4.39	4.84	4.35	5.13	4.64		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.20	3.15	3.11	3.05	3.00
-11.5	-12	3.40	3.35	3.31	3.26	3.20
-9.5	-10	3.60	3.55	3.51	3.46	3.41
-7.5	-8	3.80	3.75	3.71	3.66	3.61
-5.5	-6	3.88	3.83	3.79	3.75	3.71
-3.0	-4	3.95	3.92	3.88	3.84	3.80
-1.0	-2	4.03	4.00	3.97	3.93	3.90
1.0	0	4.10	4.08	4.05	4.03	4.00
2.0	1	4.14	4.12	4.10	4.07	4.05
3.0	2	4.41	4.38	4.36	4.33	4.30
5.0	4	4.94	4.91	4.88	4.85	4.82
7.0	6	5.46	5.43	5.40	5.37	5.33
9.0	8	5.74	5.70	5.67	5.63	5.59
11.5	10	6.02	5.98	5.94	5.89	5.85
13.5	12	6.36	6.31	6.25	6.17	6.12
15.5	14	6.70	6.64	6.57	6.44	6.39
16.5	16	6.87	6.80	6.73	6.58	6.52

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

Model FDT60ZJXVD Indoor unit FDT60VD Outdoor unit SRC60ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.73	4.64	4.98	4.88	5.11	5.01	5.25	5.15	5.53	5.42	5.81	5.39
13					4.84	4.74	5.11	5.01	5.24	5.14	5.39	5.22	5.67	5.56	5.96	5.40
15					4.95	4.85	5.24	5.14	5.38	5.27	5.52	5.24	5.82	5.61	6.11	5.42
17					5.07	4.92	5.37	5.26	5.51	5.35	5.66	5.26	5.96	5.63	6.25	5.43
19					5.17	4.95	5.48	5.37	5.63	5.37	5.81	5.29	6.17	5.65	6.54	5.47
21					5.33	4.99	5.59	5.48	5.74	5.39	5.96	5.31	6.39	5.69	6.82	5.50
23					5.39	5.01	5.65	5.49	5.81	5.41	6.01	5.32	6.42	5.69	6.83	5.50
25			5.22	5.12	5.44	5.02	5.71	5.50	5.88	5.42	6.07	5.33	6.45	5.69	6.84	5.50
27			5.27	5.16	5.50	5.03	5.78	5.52	5.94	5.43	6.11	5.34	6.44	5.69		
29			5.18	5.08	5.41	5.01	5.69	5.50	5.86	5.42	6.02	5.33	6.36	5.68		
31			5.09	4.99	5.32	4.99	5.60	5.48	5.77	5.40	5.94	5.31	6.27	5.67		
33	4.53	4.44	4.82	4.72	5.23	4.96	5.52	5.41	5.69	5.38	5.85	5.30	6.19	5.66		
35	4.60	4.51	4.81	4.71	5.15	4.94	5.43	5.32	5.60	5.36	5.77	5.28	6.10	5.64		
37	4.52	4.43	4.73	4.64	5.06	4.92	5.35	5.24	5.51	5.35	5.68	5.27	6.01	5.63		
39	4.44	4.35	4.65	4.56	4.98	4.88	5.26	5.15	5.43	5.32	5.59	5.25	5.92	5.62		
41	4.37	4.28	4.58	4.49	4.90	4.80	5.18	5.08	5.34	5.23	5.51	5.24	5.83	5.61		
43	4.29	4.20	4.50	4.41	4.82	4.72	5.10	5.00	5.26	5.15	5.42	5.22	5.74	5.60		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.97	3.91	3.85	3.79	3.73
-11.5	-12	4.22	4.16	4.10	4.04	3.98
-9.5	-10	4.47	4.41	4.35	4.29	4.23
-7.5	-8	4.72	4.66	4.60	4.54	4.48
-5.5	-6	4.81	4.76	4.70	4.65	4.60
-3.0	-4	4.90	4.86	4.81	4.77	4.72
-1.0	-2	5.00	4.96	4.92	4.88	4.84
1.0	0	5.09	5.06	5.03	4.99	4.96
2.0	1	5.14	5.11	5.08	5.05	5.02
3.0	2	5.47	5.44	5.41	5.37	5.34
5.0	4	6.12	6.09	6.05	6.01	5.98
7.0	6	6.78	6.74	6.70	6.66	6.61
9.0	8	7.12	7.08	7.03	6.98	6.94
11.5	10	7.47	7.41	7.36	7.31	7.26
13.5	12	7.89	7.82	7.76	7.65	7.59
15.5	14	8.31	8.23	8.15	7.99	7.93
16.5	16	8.53	8.44	8.35	8.16	8.09

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(b) Ceiling cassette-4way compact type (FDTC)

Model FDTC40ZJXVD Indoor unit FDTC40VD Outdoor unit SRC40ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					3.38	2.87	3.56	3.10	3.65	3.08	3.75	3.05	3.95	3.22	4.15	3.17
13					3.46	2.91	3.65	3.14	3.75	3.11	3.85	3.09	4.05	3.26	4.26	3.20
15					3.54	2.94	3.74	3.17	3.84	3.15	3.95	3.13	4.15	3.29	4.36	3.23
17					3.62	2.98	3.83	3.21	3.94	3.19	4.04	3.16	4.26	3.33	4.47	3.27
19					3.69	3.01	3.91	3.24	4.02	3.22	4.15	3.20	4.41	3.38	4.67	3.33
21					3.81	3.06	3.99	3.27	4.10	3.25	4.26	3.24	4.56	3.43	4.87	3.39
23					3.85	3.08	4.04	3.29	4.15	3.27	4.30	3.25	4.59	3.44	4.88	3.40
25			3.73	3.20	3.89	3.09	4.08	3.31	4.20	3.29	4.34	3.27	4.61	3.45	4.89	3.40
27			3.76	3.21	3.93	3.11	4.13	3.33	4.25	3.31	4.36	3.28	4.60	3.44		
29			3.70	3.19	3.86	3.08	4.06	3.30	4.18	3.28	4.30	3.25	4.54	3.42		
31			3.64	3.16	3.80	3.05	4.00	3.28	4.12	3.26	4.24	3.23	4.48	3.40		
33	3.23	2.85	3.44	3.06	3.74	3.03	3.94	3.25	4.06	3.23	4.18	3.21	4.42	3.38		
35	3.28	2.88	3.44	3.06	3.68	3.00	3.88	3.23	4.00	3.21	4.12	3.19	4.36	3.36		
37	3.23	2.85	3.38	3.04	3.62	2.98	3.82	3.20	3.94	3.19	4.06	3.17	4.30	3.34		
39	3.17	2.82	3.32	3.01	3.56	2.95	3.76	3.18	3.88	3.16	4.00	3.14	4.23	3.32		
41	3.12	2.80	3.27	2.99	3.50	2.93	3.70	3.16	3.82	3.14	3.93	3.12	4.17	3.30		
43	3.06	2.77	3.21	2.96	3.44	2.90	3.64	3.13	3.76	3.12	3.87	3.10	4.10	3.27		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	2.67	2.63	2.59	2.55	2.50
-11.5	-12	2.83	2.79	2.75	2.71	2.67
-9.5	-10	3.00	2.96	2.92	2.88	2.84
-7.5	-8	3.17	3.13	3.09	3.05	3.01
-5.5	-6	3.23	3.20	3.16	3.12	3.09
-3.0	-4	3.29	3.26	3.23	3.20	3.17
-1.0	-2	3.36	3.33	3.30	3.28	3.25
1.0	0	3.42	3.40	3.38	3.35	3.33
2.0	1	3.45	3.43	3.41	3.39	3.37
3.0	2	3.67	3.65	3.63	3.61	3.59
5.0	4	4.11	4.09	4.07	4.04	4.01
7.0	6	4.55	4.53	4.50	4.47	4.44
9.0	8	4.78	4.75	4.72	4.69	4.66
11.5	10	5.01	4.98	4.95	4.91	4.88
13.5	12	5.30	5.26	5.21	5.14	5.10
15.5	14	5.58	5.53	5.48	5.37	5.32
16.5	16	5.73	5.67	5.61	5.48	5.44

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

Model FDTC50ZJXVD Indoor unit FDTC50VD Outdoor unit SRC50ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	3.31	4.45	3.54	4.56	3.51	4.69	3.48	4.94	3.66	5.19	3.59
13					4.32	3.35	4.56	3.59	4.68	3.56	4.81	3.53	5.07	3.70	5.32	3.63
15					4.42	3.40	4.68	3.64	4.80	3.61	4.93	3.58	5.19	3.75	5.45	3.67
17					4.53	3.45	4.79	3.68	4.92	3.65	5.06	3.63	5.32	3.79	5.58	3.72
19					4.62	3.49	4.89	3.73	5.02	3.70	5.19	3.68	5.51	3.86	5.84	3.80
21					4.76	3.55	4.99	3.77	5.13	3.74	5.32	3.73	5.70	3.93	6.09	3.89
23					4.81	3.58	5.04	3.79	5.19	3.77	5.37	3.75	5.73	3.94	6.10	3.89
25			4.66	3.72	4.86	3.60	5.10	3.81	5.25	3.79	5.42	3.77	5.76	3.95	6.11	3.89
27			4.70	3.74	4.91	3.62	5.16	3.84	5.31	3.81	5.46	3.79	5.75	3.95		
29			4.62	3.70	4.83	3.59	5.08	3.81	5.23	3.78	5.38	3.75	5.68	3.92		
31			4.54	3.66	4.75	3.55	5.00	3.77	5.15	3.75	5.30	3.72	5.60	3.89		
33	4.04	3.32	4.31	3.55	4.67	3.51	4.93	3.74	5.08	3.72	5.23	3.69	5.53	3.87		
35	4.11	3.36	4.30	3.54	4.59	3.48	4.85	3.71	5.00	3.69	5.15	3.66	5.45	3.84		
37	4.04	3.32	4.23	3.51	4.52	3.44	4.77	3.67	4.92	3.65	5.07	3.63	5.37	3.81		
39	3.97	3.29	4.16	3.48	4.45	3.41	4.70	3.64	4.85	3.63	4.99	3.60	5.29	3.78		
41	3.90	3.25	4.09	3.44	4.38	3.38	4.62	3.61	4.77	3.59	4.92	3.57	5.21	3.75		
43	3.83	3.22	4.01	3.40	4.30	3.34	4.55	3.58	4.69	3.56	4.84	3.54	5.13	3.72		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.20	3.15	3.11	3.05	3.00
-11.5	-12	3.40	3.35	3.31	3.26	3.20
-9.5	-10	3.60	3.55	3.51	3.46	3.41
-7.5	-8	3.80	3.75	3.71	3.66	3.61
-5.5	-6	3.88	3.83	3.79	3.75	3.71
-3.0	-4	3.95	3.92	3.88	3.84	3.80
-1.0	-2	4.03	4.00	3.97	3.93	3.90
1.0	0	4.10	4.08	4.05	4.03	4.00
2.0	1	4.14	4.12	4.10	4.07	4.05
3.0	2	4.41	4.38	4.36	4.33	4.30
5.0	4	4.94	4.91	4.88	4.85	4.82
7.0	6	5.46	5.43	5.40	5.37	5.33
9.0	8	5.74	5.70	5.67	5.63	5.59
11.5	10	6.02	5.98	5.94	5.89	5.85
13.5	12	6.36	6.31	6.25	6.17	6.12
15.5	14	6.70	6.64	6.57	6.44	6.39
16.5	16	6.87	6.80	6.73	6.58	6.52

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Model FDTC60ZJXVD Indoor unit FDTC60VD Outdoor unit SRC60ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.73	3.50	4.98	3.73	5.11	3.69	5.25	3.64	5.53	3.81	5.81	3.70
13					4.84	3.54	5.11	3.78	5.24	3.73	5.39	3.69	5.67	3.85	5.96	3.74
15					4.95	3.59	5.24	3.83	5.38	3.78	5.52	3.73	5.82	3.90	6.11	3.78
17					5.07	3.64	5.37	3.88	5.51	3.83	5.66	3.78	5.96	3.94	6.25	3.82
19					5.17	3.68	5.48	3.92	5.63	3.88	5.81	3.84	6.17	4.01	6.54	3.91
21					5.33	3.75	5.59	3.96	5.74	3.92	5.96	3.89	6.39	4.08	6.82	3.99
23					5.39	3.77	5.65	3.99	5.81	3.94	6.01	3.91	6.42	4.09	6.83	3.99
25			5.22	3.96	5.44	3.80	5.71	4.01	5.88	3.97	6.07	3.93	6.45	4.10	6.84	3.99
27			5.27	3.98	5.50	3.82	5.78	4.04	5.94	3.99	6.11	3.94	6.44	4.10		
29			5.18	3.94	5.41	3.78	5.69	4.00	5.86	3.96	6.02	3.91	6.36	4.07		
31			5.09	3.90	5.32	3.74	5.60	3.97	5.77	3.93	5.94	3.88	6.27	4.04		
33	4.53	3.55	4.82	3.77	5.23	3.71	5.52	3.94	5.69	3.90	5.85	3.85	6.19	4.01		
35	4.60	3.59	4.81	3.77	5.15	3.67	5.43	3.90	5.60	3.86	5.77	3.82	6.10	3.99		
37	4.52	3.55	4.73	3.73	5.06	3.63	5.35	3.87	5.51	3.83	5.68	3.79	6.01	3.96		
39	4.44	3.51	4.65	3.70	4.98	3.60	5.26	3.84	5.43	3.80	5.59	3.76	5.92	3.93		
41	4.37	3.47	4.58	3.67	4.90	3.57	5.18	3.81	5.34	3.77	5.51	3.73	5.83	3.90		
43	4.29	3.44	4.50	3.63	4.82	3.53	5.10	3.78	5.26	3.74	5.42	3.70	5.74	3.87		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-19.8	-20	3.26	3.20	3.14	3.07	3.00
-17.7	-18	3.49	3.43	3.37	3.30	3.24
-15.7	-16	3.72	3.66	3.61	3.54	3.48
-13.5	-14	3.97	3.91	3.85	3.79	3.73
-11.5	-12	4.22	4.16	4.10	4.04	3.98
-9.5	-10	4.47	4.41	4.35	4.29	4.23
-7.5	-8	4.72	4.66	4.60	4.54	4.48
-5.5	-6	4.81	4.76	4.70	4.65	4.60
-3.0	-4	4.90	4.86	4.81	4.77	4.72
-1.0	-2	5.00	4.96	4.92	4.88	4.84
1.0	0	5.09	5.06	5.03	4.99	4.96
2.0	1	5.14	5.11	5.08	5.05	5.02
3.0	2	5.47	5.44	5.41	5.37	5.34
5.0	4	6.12	6.09	6.05	6.01	5.98
7.0	6	6.78	6.74	6.70	6.66	6.61
9.0	8	7.12	7.08	7.03	6.98	6.94
11.5	10	7.47	7.41	7.36	7.31	7.26
13.5	12	7.89	7.82	7.76	7.65	7.59
15.5	14	8.31	8.23	8.15	7.99	7.93
16.5	16	8.53	8.44	8.35	8.16	8.09

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

(c) Ceiling suspended type (FDEN)

Model FDEN40ZJXVD Indoor unit FDEN40VD Outdoor unit SRC40ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					3.38	2.82	3.56	3.06	3.65	3.02	3.75	2.98	3.95	3.15	4.15	3.06
13					3.46	2.85	3.65	3.08	3.75	3.05	3.85	3.01	4.05	3.17	4.26	3.08
15					3.54	2.88	3.74	3.11	3.84	3.07	3.95	3.04	4.15	3.20	4.36	3.11
17					3.62	2.91	3.83	3.14	3.94	3.10	4.04	3.06	4.26	3.23	4.47	3.13
19					3.69	2.93	3.91	3.17	4.02	3.13	4.15	3.09	4.41	3.27	4.67	3.18
21					3.81	2.98	3.99	3.19	4.10	3.15	4.26	3.13	4.56	3.31	4.87	3.22
23					3.85	2.99	4.04	3.21	4.15	3.17	4.30	3.14	4.59	3.31	4.88	3.23
25			3.73	3.15	3.89	3.01	4.08	3.22	4.20	3.19	4.34	3.15	4.61	3.32	4.89	3.23
27			3.76	3.16	3.93	3.02	4.13	3.24	4.25	3.20	4.36	3.16	4.60	3.32		
29			3.70	3.13	3.86	2.99	4.06	3.22	4.18	3.18	4.30	3.14	4.54	3.30		
31			3.64	3.11	3.80	2.97	4.00	3.20	4.12	3.16	4.24	3.12	4.48	3.28		
33	3.23	2.82	3.44	3.03	3.74	2.95	3.94	3.18	4.06	3.14	4.18	3.10	4.42	3.27		
35	3.28	2.84	3.44	3.03	3.68	2.93	3.88	3.16	4.00	3.12	4.12	3.08	4.36	3.25		
37	3.23	2.82	3.38	3.01	3.62	2.91	3.82	3.14	3.94	3.10	4.06	3.07	4.30	3.24		
39	3.17	2.79	3.32	2.98	3.56	2.89	3.76	3.12	3.88	3.09	4.00	3.05	4.23	3.22		
41	3.12	2.77	3.27	2.96	3.50	2.86	3.70	3.10	3.82	3.07	3.93	3.03	4.17	3.20		
43	3.06	2.74	3.21	2.94	3.44	2.84	3.64	3.08	3.76	3.05	3.87	3.01	4.10	3.19		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	2.67	2.63	2.59	2.55	2.50
-11.5	-12	2.83	2.79	2.75	2.71	2.67
-9.5	-10	3.00	2.96	2.92	2.88	2.84
-7.5	-8	3.17	3.13	3.09	3.05	3.01
-5.5	-6	3.23	3.20	3.16	3.12	3.09
-3.0	-4	3.29	3.26	3.23	3.20	3.17
-1.0	-2	3.36	3.33	3.30	3.28	3.25
1.0	0	3.42	3.40	3.38	3.35	3.33
2.0	1	3.45	3.43	3.41	3.39	3.37
3.0	2	3.67	3.65	3.63	3.61	3.59
5.0	4	4.11	4.09	4.07	4.04	4.01
7.0	6	4.55	4.53	4.50	4.47	4.44
9.0	8	4.78	4.75	4.72	4.69	4.66
11.5	10	5.01	4.98	4.95	4.91	4.88
13.5	12	5.30	5.26	5.21	5.14	5.10
15.5	14	5.58	5.53	5.48	5.37	5.32
16.5	16	5.73	5.67	5.61	5.48	5.44

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Model FDEN50ZJXVD Indoor unit FDEN50VD Outdoor unit SRC50ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	3.40	4.45	3.65	4.56	3.62	4.69	3.59	4.94	3.77	5.19	3.70
13					4.32	3.44	4.56	3.69	4.68	3.66	4.81	3.63	5.07	3.82	5.32	3.74
15					4.42	3.48	4.68	3.74	4.80	3.71	4.93	3.68	5.19	3.86	5.45	3.78
17					4.53	3.53	4.79	3.79	4.92	3.75	5.06	3.73	5.32	3.90	5.58	3.82
19					4.62	3.57	4.89	3.83	5.02	3.79	5.19	3.77	5.51	3.97	5.84	3.91
21					4.76	3.63	4.99	3.87	5.13	3.84	5.32	3.82	5.70	4.04	6.09	3.99
23					4.81	3.66	5.04	3.89	5.19	3.86	5.37	3.84	5.73	4.05	6.10	3.99
25			4.66	3.81	4.86	3.68	5.10	3.91	5.25	3.88	5.42	3.86	5.76	4.06	6.11	3.99
27			4.70	3.83	4.91	3.70	5.16	3.94	5.31	3.91	5.46	3.88	5.75	4.05		
29			4.62	3.79	4.83	3.67	5.08	3.90	5.23	3.88	5.38	3.85	5.68	4.03		
31			4.54	3.75	4.75	3.63	5.00	3.87	5.15	3.85	5.30	3.82	5.60	4.00		
33	4.04	3.40	4.31	3.64	4.67	3.59	4.93	3.84	5.08	3.82	5.23	3.79	5.53	3.98		
35	4.11	3.44	4.30	3.64	4.59	3.56	4.85	3.81	5.00	3.79	5.15	3.76	5.45	3.95		
37	4.04	3.40	4.23	3.60	4.52	3.53	4.77	3.78	4.92	3.75	5.07	3.73	5.37	3.92		
39	3.97	3.37	4.16	3.57	4.45	3.50	4.70	3.75	4.85	3.73	4.99	3.70	5.29	3.89		
41	3.90	3.33	4.09	3.54	4.38	3.47	4.62	3.72	4.77	3.70	4.92	3.67	5.21	3.87		
43	3.83	3.30	4.01	3.50	4.30	3.43	4.55	3.69	4.69	3.67	4.84	3.64	5.13	3.84		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.20	3.15	3.11	3.05	3.00
-11.5	-12	3.40	3.35	3.31	3.26	3.20
-9.5	-10	3.60	3.55	3.51	3.46	3.41
-7.5	-8	3.80	3.75	3.71	3.66	3.61
-5.5	-6	3.88	3.83	3.79	3.75	3.71
-3.0	-4	3.95	3.92	3.88	3.84	3.80
-1.0	-2	4.03	4.00	3.97	3.93	3.90
1.0	0	4.10	4.08	4.05	4.03	4.00
2.0	1	4.14	4.12	4.10	4.07	4.05
3.0	2	4.41	4.38	4.36	4.33	4.30
5.0	4	4.94	4.91	4.88	4.85	4.82
7.0	6	5.46	5.43	5.40	5.37	5.33
9.0	8	5.74	5.70	5.67	5.63	5.59
11.5	10	6.02	5.98	5.94	5.89	5.85
13.5	12	6.36	6.31	6.25	6.17	6.12
15.5	14	6.70	6.64	6.57	6.44	6.39
16.5	16	6.87	6.80	6.73	6.58	6.52

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

Model FDEN60ZJXVD Indoor unit FDEN60VD Outdoor unit SRC60ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.73	4.01	4.98	4.37	5.11	4.29	5.25	4.21	5.53	4.47	5.81	4.29
13					4.84	4.03	5.11	4.40	5.24	4.32	5.39	4.24	5.67	4.49	5.96	4.31
15					4.95	4.06	5.24	4.43	5.38	4.35	5.52	4.26	5.82	4.51	6.11	4.32
17					5.07	4.09	5.37	4.46	5.51	4.37	5.66	4.29	5.96	4.53	6.25	4.34
19					5.17	4.12	5.48	4.48	5.63	4.40	5.81	4.32	6.17	4.56	6.54	4.37
21					5.33	4.16	5.59	4.51	5.74	4.42	5.96	4.34	6.39	4.60	6.82	4.40
23					5.39	4.18	5.65	4.52	5.81	4.44	6.01	4.35	6.42	4.60	6.83	4.41
25			5.22	4.45	5.44	4.19	5.71	4.54	5.88	4.45	6.07	4.37	6.45	4.61	6.84	4.41
27			5.27	4.47	5.50	4.21	5.78	4.55	5.94	4.46	6.11	4.37	6.44	4.60		
29			5.18	4.44	5.41	4.19	5.69	4.53	5.86	4.45	6.02	4.36	6.36	4.59		
31			5.09	4.41	5.32	4.16	5.60	4.51	5.77	4.43	5.94	4.34	6.27	4.58		
33	4.53	4.01	4.82	4.33	5.23	4.14	5.52	4.49	5.69	4.41	5.85	4.32	6.19	4.57		
35	4.60	4.03	4.81	4.33	5.15	4.12	5.43	4.47	5.60	4.39	5.77	4.31	6.10	4.55		
37	4.52	4.01	4.73	4.30	5.06	4.09	5.35	4.45	5.51	4.37	5.68	4.29	6.01	4.54		
39	4.44	3.98	4.65	4.28	4.98	4.07	5.26	4.43	5.43	4.36	5.59	4.27	5.92	4.53		
41	4.37	3.95	4.58	4.26	4.90	4.05	5.18	4.42	5.34	4.34	5.51	4.26	5.83	4.51		
43	4.29	3.93	4.50	4.23	4.82	4.03	5.10	4.40	5.26	4.32	5.42	4.24	5.74	4.50		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.97	3.91	3.85	3.79	3.73
-11.5	-12	4.22	4.16	4.10	4.04	3.98
-9.5	-10	4.47	4.41	4.35	4.29	4.23
-7.5	-8	4.72	4.66	4.60	4.54	4.48
-5.5	-6	4.81	4.76	4.70	4.65	4.60
-3.0	-4	4.90	4.86	4.81	4.77	4.72
-1.0	-2	5.00	4.96	4.92	4.88	4.84
1.0	0	5.09	5.06	5.03	4.99	4.96
2.0	1	5.14	5.11	5.08	5.05	5.02
3.0	2	5.47	5.44	5.41	5.37	5.34
5.0	4	6.12	6.09	6.05	6.01	5.98
7.0	6	6.78	6.74	6.70	6.66	6.61
9.0	8	7.12	7.08	7.03	6.98	6.94
11.5	10	7.47	7.41	7.36	7.31	7.26
13.5	12	7.89	7.82	7.76	7.65	7.59
15.5	14	8.31	8.23	8.15	7.99	7.93
16.5	16	8.53	8.44	8.35	8.16	8.09

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(d) Duct connected Low/middle pressure type (FDUM)

Model FDUM50ZJXVD Indoor unit FDUM50VD Outdoor unit SRC50ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.22	3.55	4.45	3.83	4.56	3.80	4.69	3.77	4.94	3.98	5.19	3.91
13					4.32	3.59	4.56	3.87	4.68	3.84	4.81	3.81	5.07	4.02	5.32	3.95
15					4.42	3.64	4.68	3.92	4.80	3.89	4.93	3.86	5.19	4.06	5.45	3.99
17					4.53	3.68	4.79	3.96	4.92	3.93	5.06	3.91	5.32	4.11	5.58	4.03
19					4.62	3.72	4.89	4.00	5.02	3.97	5.19	3.96	5.51	4.17	5.84	4.11
21					4.76	3.79	4.99	4.05	5.13	4.02	5.32	4.00	5.70	4.24	6.09	4.19
23					4.81	3.81	5.04	4.07	5.19	4.04	5.37	4.02	5.73	4.25	6.10	4.20
25			4.66	3.96	4.86	3.83	5.10	4.09	5.25	4.06	5.42	4.04	5.76	4.26	6.11	4.20
27			4.70	3.98	4.91	3.85	5.16	4.11	5.31	4.09	5.46	4.06	5.75	4.26		
29			4.62	3.94	4.83	3.82	5.08	4.08	5.23	4.06	5.38	4.03	5.68	4.23		
31			4.54	3.90	4.75	3.78	5.00	4.05	5.15	4.02	5.30	4.00	5.60	4.21		
33	4.04	3.53	4.31	3.79	4.67	3.75	4.93	4.02	5.08	4.00	5.23	3.97	5.53	4.18		
35	4.11	3.57	4.30	3.79	4.59	3.71	4.85	3.99	5.00	3.97	5.15	3.94	5.45	4.15		
37	4.04	3.53	4.23	3.76	4.52	3.68	4.77	3.96	4.92	3.93	5.07	3.91	5.37	4.13		
39	3.97	3.50	4.16	3.72	4.45	3.65	4.70	3.93	4.85	3.91	4.99	3.88	5.29	4.10		
41	3.90	3.46	4.09	3.69	4.38	3.62	4.62	3.90	4.77	3.88	4.92	3.85	5.21	4.07		
43	3.83	3.43	4.01	3.66	4.30	3.59	4.55	3.87	4.69	3.85	4.84	3.83	5.13	4.04		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.20	3.15	3.11	3.05	3.00
-11.5	-12	3.40	3.35	3.31	3.26	3.20
-9.5	-10	3.60	3.55	3.51	3.46	3.41
-7.5	-8	3.80	3.75	3.71	3.66	3.61
-5.5	-6	3.88	3.83	3.79	3.75	3.71
-3.0	-4	3.95	3.92	3.88	3.84	3.80
-1.0	-2	4.03	4.00	3.97	3.93	3.90
1.0	0	4.10	4.08	4.05	4.03	4.00
2.0	1	4.14	4.12	4.10	4.07	4.05
3.0	2	4.41	4.38	4.36	4.33	4.30
5.0	4	4.94	4.91	4.88	4.85	4.82
7.0	6	5.46	5.43	5.40	5.37	5.33
9.0	8	5.74	5.70	5.67	5.63	5.59
11.5	10	6.02	5.98	5.94	5.89	5.85
13.5	12	6.36	6.31	6.25	6.17	6.12
15.5	14	6.70	6.64	6.57	6.44	6.39
16.5	16	6.87	6.80	6.73	6.58	6.52

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

Model FDUM60ZJXVD Indoor unit FDUM60VD Outdoor unit SRC60ZJX-S

Cool Mode (kW)

Outdoor air temp.	Indoor air temperature															
	18°CDB		21°CDB		23°CDB		26°CDB		27°CDB		28°CDB		31°CDB		33°CDB	
	12°CWB		14°CWB		16°CWB		18°CWB		19°CWB		20°CWB		22°CWB		24°CWB	
°CDB	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11					4.73	4.22	4.98	4.58	5.11	4.54	5.25	4.50	5.53	4.77	5.81	4.69
13					4.84	4.27	5.11	4.62	5.24	4.59	5.39	4.55	5.67	4.82	5.96	4.73
15					4.95	4.31	5.24	4.67	5.38	4.64	5.52	4.60	5.82	4.87	6.11	4.78
17					5.07	4.36	5.37	4.72	5.51	4.68	5.66	4.65	5.96	4.91	6.25	4.82
19					5.17	4.40	5.48	4.76	5.63	4.73	5.81	4.70	6.17	4.98	6.54	4.90
21					5.33	4.47	5.59	4.81	5.74	4.77	5.96	4.75	6.39	5.05	6.82	4.98
23					5.39	4.49	5.65	4.83	5.81	4.79	6.01	4.77	6.42	5.06	6.83	4.99
25			5.22	4.68	5.44	4.51	5.71	4.85	5.88	4.82	6.07	4.79	6.45	5.07	6.84	4.99
27			5.27	4.70	5.50	4.54	5.78	4.88	5.94	4.84	6.11	4.81	6.44	5.07		
29			5.18	4.66	5.41	4.50	5.69	4.85	5.86	4.81	6.02	4.77	6.36	5.04		
31			5.09	4.62	5.32	4.46	5.60	4.81	5.77	4.78	5.94	4.74	6.27	5.01		
33	4.53	4.17	4.82	4.50	5.23	4.43	5.52	4.78	5.69	4.75	5.85	4.71	6.19	4.99		
35	4.60	4.21	4.81	4.49	5.15	4.39	5.43	4.75	5.60	4.72	5.77	4.68	6.10	4.96		
37	4.52	4.17	4.73	4.46	5.06	4.36	5.35	4.72	5.51	4.68	5.68	4.65	6.01	4.93		
39	4.44	4.13	4.65	4.42	4.98	4.32	5.26	4.68	5.43	4.65	5.59	4.62	5.92	4.90		
41	4.37	4.10	4.58	4.39	4.90	4.29	5.18	4.65	5.34	4.62	5.51	4.59	5.83	4.87		
43	4.29	4.06	4.50	4.36	4.82	4.26	5.10	4.62	5.26	4.59	5.42	4.56	5.74	4.84		

Heat Mode (kW)

Outdoor air temp.		Indoor air temperature °CDB				
°CDB	°CWB	16	18	20	22	24
-19.8	-20					
-17.7	-18					
-15.7	-16					
-13.5	-14	3.97	3.91	3.85	3.79	3.73
-11.5	-12	4.22	4.16	4.10	4.04	3.98
-9.5	-10	4.47	4.41	4.35	4.29	4.23
-7.5	-8	4.72	4.66	4.60	4.54	4.48
-5.5	-6	4.81	4.76	4.70	4.65	4.60
-3.0	-4	4.90	4.86	4.81	4.77	4.72
-1.0	-2	5.00	4.96	4.92	4.88	4.84
1.0	0	5.09	5.06	5.03	4.99	4.96
2.0	1	5.14	5.11	5.08	5.05	5.02
3.0	2	5.47	5.44	5.41	5.37	5.34
5.0	4	6.12	6.09	6.05	6.01	5.98
7.0	6	6.78	6.74	6.70	6.66	6.61
9.0	8	7.12	7.08	7.03	6.98	6.94
11.5	10	7.47	7.41	7.36	7.31	7.26
13.5	12	7.89	7.82	7.76	7.65	7.59
15.5	14	8.31	8.23	8.15	7.99	7.93
16.5	16	8.53	8.44	8.35	8.16	8.09

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Note(1) These data show average statuses.
Depending on the system control, there may be ranges where the operation is not conducted continuously.
These data show the case where the operation frequency of a compressor is fixed.
(2) Capacities are based on the following conditions.
Corresponding refrigerant piping length :7.5m
Level difference of Zero.
(3) Symbols are as follows.
TC : Total cooling capacity
SHC : Sensible heat capacity

(2) Correction of cooling and heating capacity in relation to air flow rate control (fan speed)

Fan speed	P-Hi	Me	Lo
Coefficient	1.00	0.97	0.95

(3) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

Piping length (m)	**7**	**10**	**15**	**20**	**25**	**30**
Cooling	1	0.99	0.975	0.965	0.95	0.935
Heating	1	1	1	1	1	1

(4) Height difference between the indoor unit and outdoor unit

When the outdoor unit is located below indoor units in cooling mode, or when the outdoor unit is located above indoor units in heating mode, the correction coefficient mentioned in the below table should be subtracted from the value in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	**5m**	**10m**	**15m**	**20m**
Adjustment coefficient	0.99	0.98	0.97	0.96

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDT50ZJXVD with the air flow "High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0℃ and outdoor dry-bulb temperature 35℃ is

Net cooling capacity = 5.00 × 1.00 × 0.975 × 0.99 ≒ 4.8kW

- 5.00: Net cooling total capacity of FDT50ZJXVD (Outdoor temp. : 35℃DB Indoor temp. : 19℃WB) shown in table (1)
- 1.00: Air flow : Hi shown in table (2)
- 0.975: Piping length :15m shown in table (3)
- 0.99: Height diff. :5m (Outdoor unit : below) shown in table (4)

10. APPLICATION DATA

10.1 Installation of indoor unit

RKY012A007B

(1) Wall mounted tyde (SRK)

Models SRK50ZJX-S1, 60ZJX-S1

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 91**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⊘	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 5m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○ Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board 4dia. by 25mm)	4
⑤	Wood screw (for remote control switch holder 3.5(mm). by 16mm)	2
⑥	Battery [R03(AAA,Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Insulation (#486 50 x 100 t3)	1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extention hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work		
1	Plus headed driver	
2	Knife	
3	Saw	
4	Tape measure	
5	Hammer	
6	Spanner wrench	
7	Torque wrench	(14.0 ~ 61.0N·m / 1.4 ~ 6.1kgf·m)
8	Hole core drill (65mm in diameter)	
9	Wrench key (Hexagon) [4m/m]	
10	Flaring tool set	(Designed specifically for R410A)
11	Gas leak detector	(Designed specifically for R410A)
12	Gauge for projection adjustment	(Used when flare is made by using conventional flare tool)
13	Pipe bender	

SELECTION OF INSTALLATION LOCATION

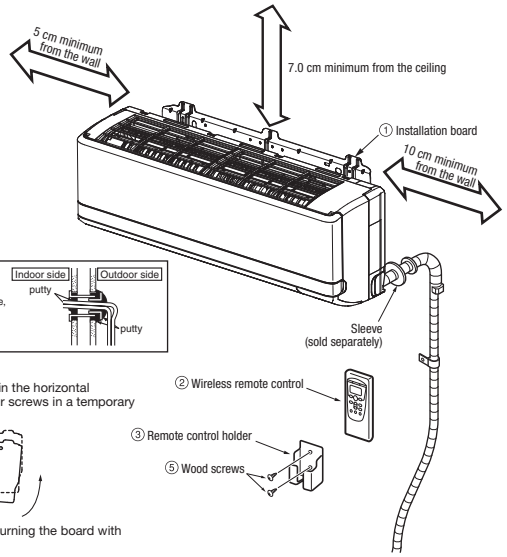
(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.

Wireless remote control

○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.

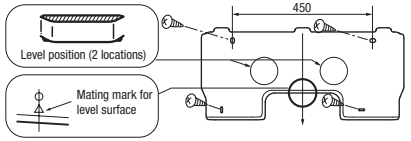


⚠ CAUTION
Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.

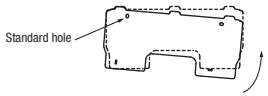
INSTALLATION OF INDOOR UNIT

Installation of Installation board

Look for the inside wall structures (Intersediats support or pillar and finally install the unit after level surface has been checked.)

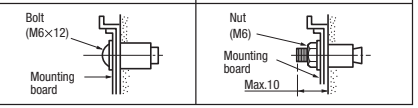


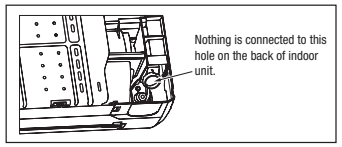
○Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.



○Adjust so the board will be level by turning the board with the standard hole as the center.

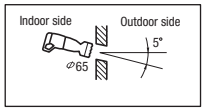
Fixing on concrete wall	
Use of nut anchor	Use of bolt anchor



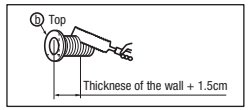


Drilling of holes and fixture of sleeve (Option parts)

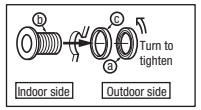
When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

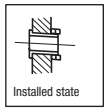


○ Drill a hole with whole core drill.

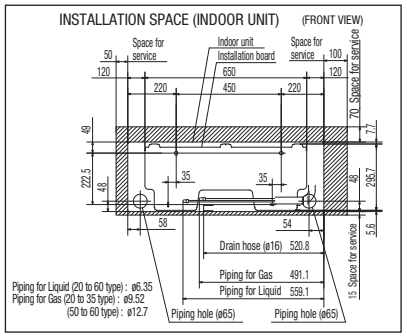


○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.





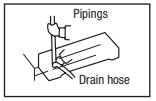
Relation between setting plate and indoor unit

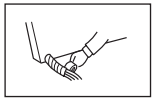


Installing the support of piping

In case of piping in the right rear direction

Shaping of pipings	Taping of the exterior





○ Hold the bottom of the piping and fix direction before stretching it and shaping it.

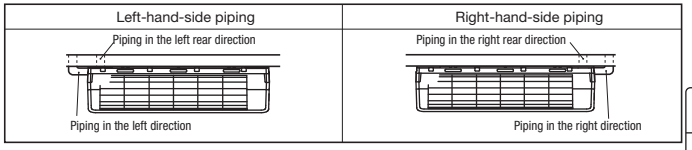
○ Tape only the portion that goes through the wall.
○ Always tape the wiring with the piping.

Sufficient care must be taken not to damage the panel when connecting pipes.

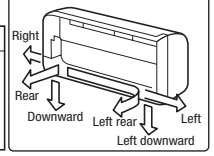
● Matters of special notice when piping from left or central/rear of tha unit.

[Top view]

Left-hand-side piping	Right-hand-side piping

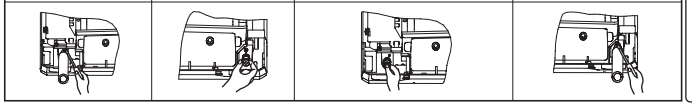


Piping is possible in the rear, left, left rear, left downward, right or downward direction.



[Drain hose changing procedures]

1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.



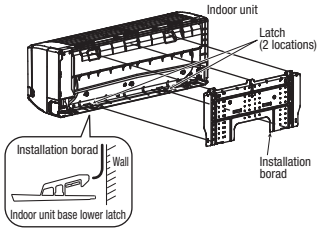
○ Remove the screw and drain hose, making it rotate.

○ Remove it with hand or pilers.

○ Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench etc.
Note: Be careful that If it is not Inserted securely, water leakage may occur.

○ Insert the drain hose securely, making rotate. And install the screw.
Note: Be careful that If it is not Inserted securely, water leakage may occur.

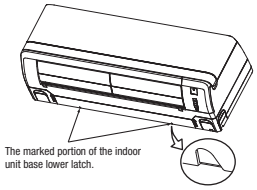
Fixing of indoor unit



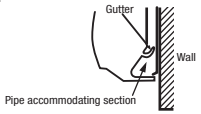
Installation Steps
①Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.
②Gently push the lower part to secure the unit.

● How to remove the indoor unit from the installation board

① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)
② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



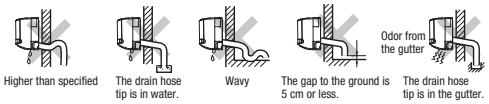
Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.



Drainage

○ Arrange the drain hose in a downward angle
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the drainage is all right. Otherwise water leak may occur.

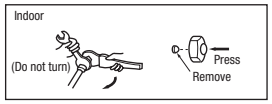


○ Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○ When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.

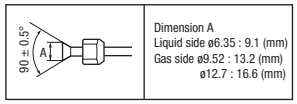
CONNECTION OF REFRIGERANT PIPINGS

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



○ Remove the flared nuts. (on both liquid and gas sides)

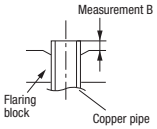


Dimension A
Liquid side ø6.35 : 9.1 (mm)
Gas side ø9.52 : 13.2 (mm)
ø12.7 : 16.6 (mm)

○ Install the removed flared nuts to the pipes to be connected, then flared the pipes.

⚠CAUTION
Do not apply refrigerating machine oil to the flared surface.

● Flaring work

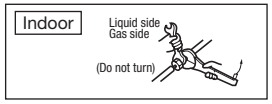


Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a coventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

⚠CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may checkdepending.

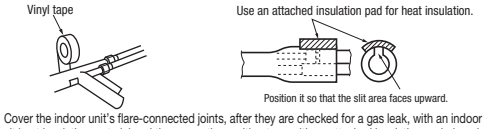
Connection



○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

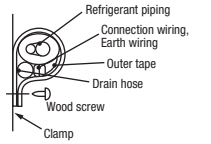
Insulation of the connection portion

Cover the coupling with insulator and then cover it with tapes.



● Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached insulation pad placed over the heat insulating material's slit area.

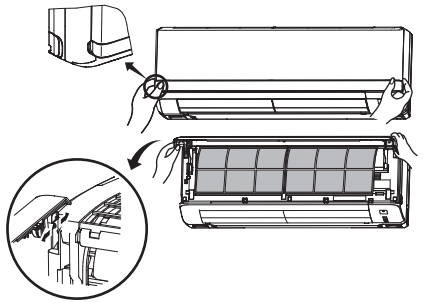
Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take.
Also fix the wiring and pipings to the wall with clamps.

Open/close and detachment/attachment of the air inlet panel

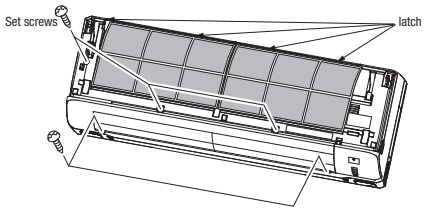
○ To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
(The panel stops at approx. 60° open position)
○ To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works.
○ To remove, pull up the panel to the position shown in right illustration and pull it toward you.
○ To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch warks.



How to remove and fit the front panel

○ Removing
① Remove the air inlet panel.
② Remove the 5 set screws.
③ Remove the 4 latches in the upper section.
④ Move the lower part of the panel forward and push upwards to remove.

○ Fitting
① Do remove the air filter.
② Cover the body with the front panel.
③ Fit the 4 latches in the upper section.
④ Tighten the 5 set screws.
⑤ Fit the air filter.
⑥ Fit the air inlet panel.



ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

① Open the air inlet panel.
② Remove the service panel.
③ Remove the wiring clamp
④ Connect the connecting wire securely to the terminal block.
  1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
  2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
  3) Fix the connection wire using the wiring clamp.
⑤ Fix the connecting wire by wiring clamp.
⑥ Attach the service panel.
⑦ Close the air inlet panel.

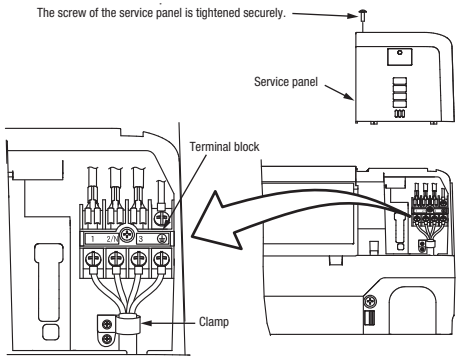
⚠CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

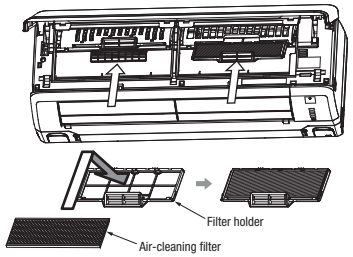
H05RNR4G1.5 (example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm²)



Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   - Each air-cleaning filter can be installed in the left or right filter holder.
3. Install the air filters and close the inlet panel.



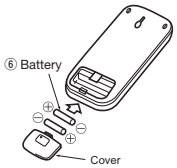
INSTALLATION OF REMOTE CONTROL SWITCH

Mounting method of battery

○Uncover the wireless remote control, and mount the batteries [R03(AAA,Micro),×2 pieces] in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fall)

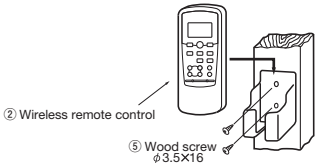
⚠ CAUTION

Do not use new and old batteries together.



Fixing to pillar or wall

○Conventionally, operate the remote control switch by holding in your hand.
○Avoid installing it on a clay wall etc.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly. At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation

- [ ] The power supply voltage is correct as the rating.
- [ ] No gas leaks from the joints of the operational valve.
- [ ] Power cables and crossover wires are securely fixed to the terminal board.
- [ ] The screw of the service panel is tightened securely.
- [ ] Operational valve is fully open.
- [ ] The pipe joints for indoor and outdoor pipes have been insulated.

Test run

- [ ] Air conditioning operation is normal.
- [ ] No abnormal noise.
- [ ] Water drains smoothly.
- [ ] Protective functions are not working.
- [ ] The remote control is normal.
- [ ] Operation of the unit has been explained to the customer.

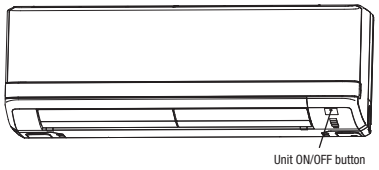
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3 minutes.
This is to protect the unit and it is not a malfunction.

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

<How to pump down>
① Connect charge hose to service port of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
  Gas side : Fully open the gas valve
  Carry out cooling operation . (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

● Forced cooling operation
Turn on a power supply again after a while after turn off a power supply.
Then press continually the ON/OFF button 5 seconds or more.



CONCERNING TERMINAL CONNECTION FOR AN INTERFACE

① Remove the front panel and lid of control.
② There is a terminal (respectively marked with CNS) for the indoor control board.
  In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional "Interface connection kit SC-BIKN-E" and fasten the connection harness onto the indoor control box with the clamp supplied with the kit.
  For more details, please refer to the user's manual of your "Interface connection kit SC-BIKN-E".

(2) Floor standing type (SRF)

RFB012A002B

Model SRF50ZJX-S1

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 91**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.

  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.

  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.

  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after com-pleted installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

	Never do it under any circumstances.		Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board 4dia. by 25mm)	9
⑤	Wood screws (for remote control switch holder 3.5(mm). by 16mm)	2
⑥	Battery [R03(AAA,Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Pipe cover (200mm)	1
⑩	Band	2

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extention hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work		
1	Plus headed driver	
2	Knife	
3	Saw	
4	Tape measure	
5	Hammer	
6	Spanner wrench	
7	Torque wrench (14.0 ~ 61.0N·m / (1.4 ~ 6.1kgf·m))	
8	Hole core drill (65mm in diameter)	
9	Wrench key (Hexagon) [4m/m]	
10	Flaring tool set (Designed specifically for R410A)	
11	Gas leak detector (Designed specifically for R410A)	
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)	
13	Pipe bender	

SELECTION OF INSTALLATION LOCATION

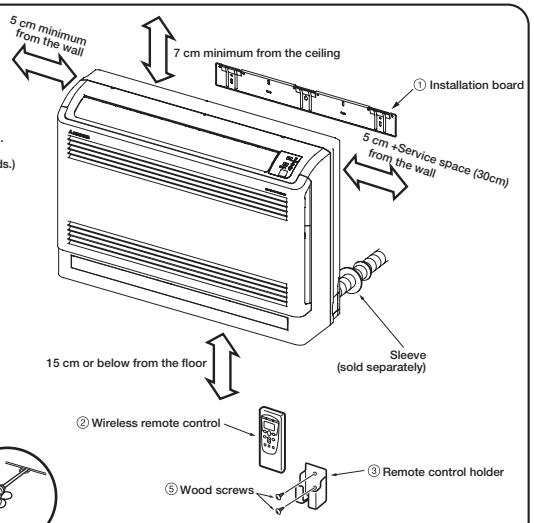
(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.
○ Install the indoor unit on flat wall.

Wireless remote control

○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.



INSTALLATION OF INDOOR UNIT

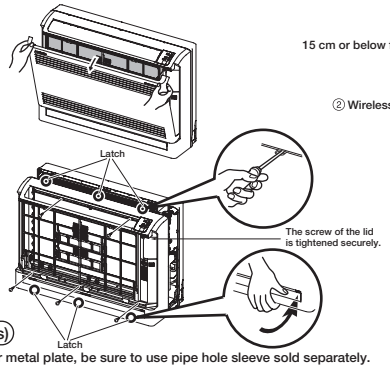
Open and detachment of the air inlet panel

○ To open, pull the panel at both ends of upper part and release latches, and undo the strings. Then remove the panel.

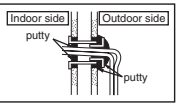
⚠CAUTION
When removing the air-inlet panel, be careful not to drop it on your feet.

How to remove the front panel

① Remove the air inlet panel.
② Remove the 5 set screws.
③ Remove the 3 latches in the upper section. If the latches are difficult to remove, push the latch portion out using a screw driver, for example.
④ Move the lower part of the panel forward and remove the 6 latches in the under section.

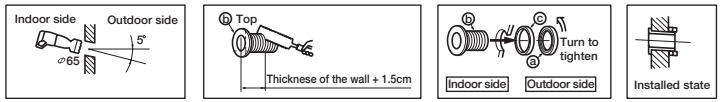


⚠CAUTION
Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.



Drilling of holes and fixture of sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

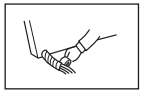


○ Drill a hole with whole core drill.
○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.

Installing the support of piping

In case of piping in the right rear direction

Taping of the exterior

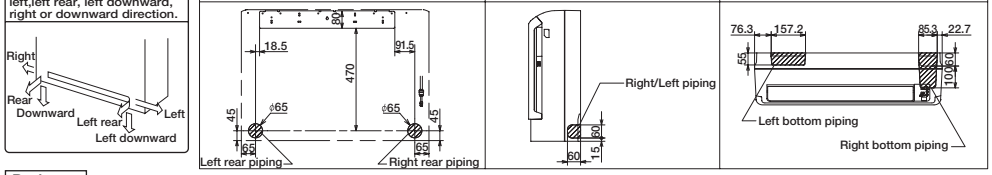


○ Tape only the portion that goes through the wall.
○ Always tape the wiring with the piping.

Sufficient care must be taken not to damage the panel when connecting pipes.

Indoor unit piping direction

Piping is possible in the rear, left,left rear, left downward, right or downward direction.

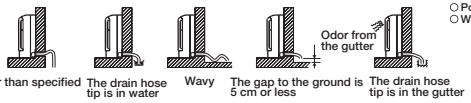


⚠CAUTION
Be careful not to stress the connecting refrigerant pipse. (Do not pull with a force of larger than 5 kgf.) If improperly installed, it may cause abnormal noise and vibration.

Drainage

○ Arrange the drain hose in a downward angle
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the dralnage is all right. Otherwise water leak may occur.



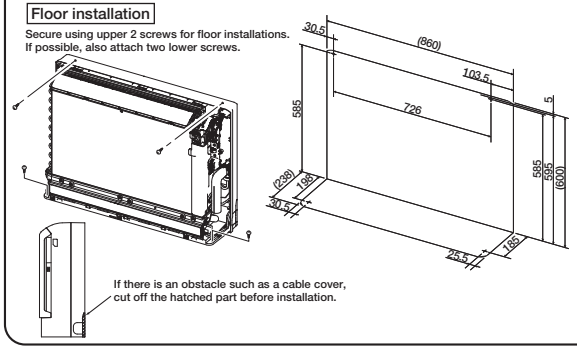
○ Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○ When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.

Fixing of indoor unit

⚠CAUTION
- During the installation, do not lean on the control box or the display, as they may be damaged.
- Install the indoor unit on flat wall. If improperly installed, it may cause abnormal noise and vibration. (Distortion on the wall shall be no larger than 3 mm.)

Floor installation

Secure using upper 2 screws for floor installations.
If possible, also attach two lower screws.



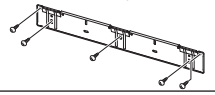
If there is an obstacle such as a cable cover, cut off the hatched part before installation.

Wall installation

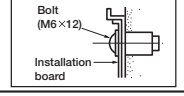
At first secure the installation board using 5 screws and the indoor unit using 2 screws.

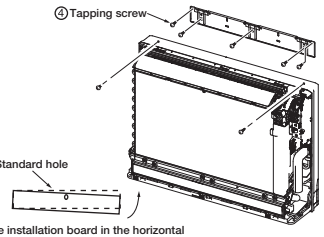
Installation of Installation board

Look for the inside wall structures (Intersediats support or pillar and finally install the unit after level surface has been checked.)



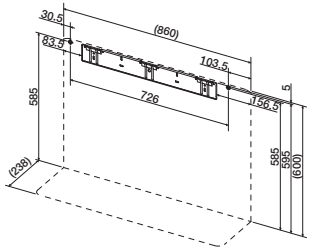
Fixing on concrete wall
Use of nut anchor





○Adjustment of the installation board in the horizontal direction is to be conducted with five screws in a temporary tightened state.

○Adjust so the board will be level by turning the board with the standard hole as the center.



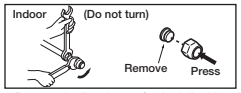
○When practicing the half-console, make sure to fix the unit securely. Otherwise, it could fall.

CONNECTION OF REFRIGERANT PIPINGS

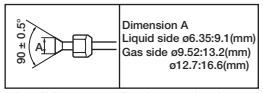
⚠CAUTION Be careful not to stress the connecting refrigerant pipes. (Do not pull with a force of larger than 5 kgf.)

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



○ Remove the flared nuts. (on both liquid and gas sides)

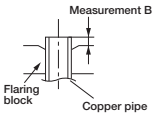


Dimension A
Liquid side ø6.35:9.1(mm)
Gas side ø9.52:13.2(mm)
ø12.7:16.6(mm)

○ Install the removed flared nuts to the pipes to be connected,then flared the pipes.

⚠CAUTION
Do not apply refrigerating machine oil to the flared surface.

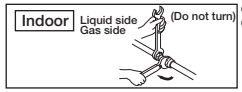
● Flaring work



Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a coventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

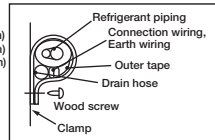
Connection



○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

⚠CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may check depending.

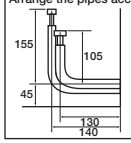
Finishing work and fixing



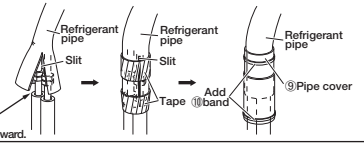
Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take. Also fix the wiring and pipings to the wall with clamps.

Insulation of the connection portion

Pass the refrigerant pipe through the piping hole to indoor side.
Arrange the pipes according to the direction of piping.



Cover the coupling with insulator and then cover it with tapes.
Use an attached ⑨ pipe cover for heat insulation.



Position it so that the slit area faces upward.

⚠CAUTION
If heat insulation is insufficient, water leakage may occur. In addition, the room temperature sensor may give a false alert due to heat radiation from the pipes.

● Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached ⑨ pipe cover placed over the heat insulating material's slit area.

ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

① Remove the fixing screw of clamp.
② Connect the connecting wire securely to the terminal block.
  1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
  2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
③ Fix the connecting wire by wiring clamp.
④ Pass the connecting wire through the wiring holder.

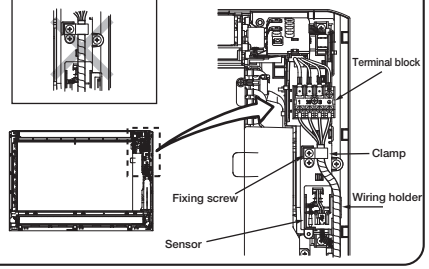
⚠CAUTION
In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

H05RNR4G1.5 (example) or 245IEC57

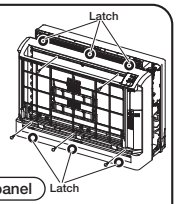
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm²)

⚠CAUTION
- During installation, do not lean on the control box or the display, as they may be damaged.
- Pass the connecting wire securely through the wiring holder. If it passes on the sensor, it may not detect suction temperature and/or humidity.



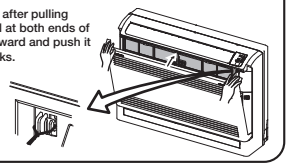
How to fit the front panel

○ Fitting
① Do remove the air filter.
② Cover the body with the front panel.
③ Fit the 6 latches in the lower section. then 3 latches in the upper section.
④ Tighten the 5 set screws.
⑤ Fit the air filter.
⑥ Fit the air inlet panel.



Close and attachment of the air inler panel

○ To close, attach the panel after pulling the strings, hold the panel at both ends of upper part to lower downward and push it slightly until the latch works.

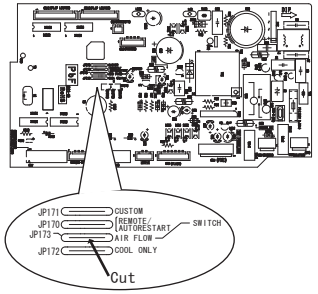


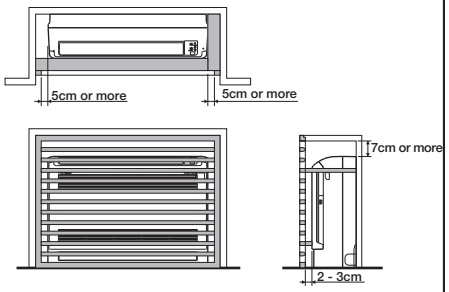
Concealed installation

Install the indoor unit according to the following instructions.

① Secure the upper, right, and left spaces according to the right figure.
② Do not let the horizontal bar obstruct wind from blowing out upward/downward or reception from the remote controller.
③ The lattice size should be 70 % or greater of the open rate.
④ Cut the jumper cable (JP173) on the indoor circuit board to control the blow-out angle.

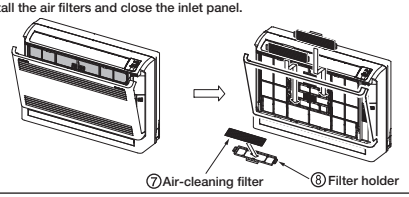
⚠ CAUTION
Incorrect installation may cause problems such as non-cooling, non-warming, and condensation water leaking into the room.





Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   - Each air-cleaning filter can be installed in the upper or lower filter holder.
3. Install the air filters and close the inlet panel.



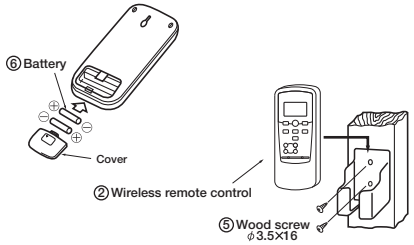
⚠ CAUTION
When installing an air-cleaning filter in the indoor unit, be careful not to injure your hand with the heat exchanger.

INSTALLATION OF REMOTE CONTROL

Mounting method of battery

○Uncover the wireless remote control, and mount the batteries [R03(AAA,Micro),×2 pieces] in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fall)

⚠ CAUTION
Do not use new and old batteries together.



Fixing to pillar or wall

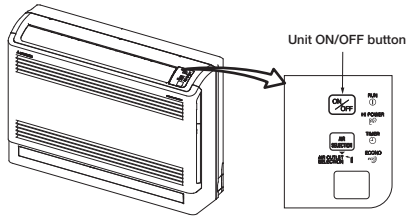
○Conventionally, operate the remote control switch by holding in your hand.
○Avoid installing it on a clay wall etc.

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

<How to pump down>
① Connect charge hose to service port of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
Gas side : Fully open the gas valve
Carry out cooling operation . (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

● Forced cooling operation
Turn on a power supply again after a while after turn off a power supply. Then press continually the ON/OFF button 5 seconds or more.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation
- [ ] The power supply voltage is correct as the rating.
- [ ] No gas leaks from the joints of the operational valve.
- [ ] Power cables and crossover wires are securely fixed to the terminal board.
- [ ] Operational valve is fully open.
- [ ] The pipe joints for indoor and outdoor pipes have been insulated.
- [ ] The screw of the lid is tightened securely.

Test run
- [ ] Air conditioning operation is normal.
- [ ] No abnormal noise.
- [ ] Water drains smoothly.
- [ ] Protective functions are not working.
- [ ] The remote control is normal.
- [ ] Operation of the unit has been explained to the customer.

(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3 minutes.
This is to protect the unit and it is not a malfunction.

CONCERNING TERMINAL CONNECTION FOR AN INTERFACE

① Remove the front panel and lid of control.
② There is a terminal (respectively marked with CNS) for the indoor control board.
In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional “Interface connection kit SC-BIKN-E” and fasten the connection harness onto the indoor control box with the clamp supplied with the kit.
For more details, please refer to the user's manual of your “Interface connection kit SC-BIKN-E”.

PJF012D016

(3) Ceiling cassette-4way type (FDT)

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached to a remote controller. For wireless kit installation, refer to the installation manual attached to a wireless kit. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to Page 91.
This unit must always be used with the panel.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown on the right:
  ⃠ Never do it under any circumstances. | ❶ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠ WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **Check the density refered by the foumula (accordance with ISO5149).**
  If the density exceeds the limit density, please consult the dealer and installate the ventilation system.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠ CAUTION

- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  · Places where flammable gas could leak.
  · Places where carbon fiber, metal powder or any powder is floated.
  · Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  · Places exposed to oil mist or steam directly.
  · On vehicles and ships
  · Places where machinery which generates high harmonics is used.
  · Places where cosmetics or special sprays are frequently used.
  · Highly salted area such as beach.
  · Heavy snow area
  · Places where the system is affected by smoke from a chimney.
  · Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  · Locations with any obstacles which can prevent inlet and outlet air of the unit
  · Locations where vibration can be amplified due to insufficient strength of structure.
  · Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  · Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  · Locations where drainage cannot run off safely.
  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

①Before installation

●Install correctly according to the installation manual.

●Confirm the following points:

○Unit type/Power supply specification ○Pipes/Wires/Small parts ○Accessory items

Accessory item

For unit hanging		For refrigerant pipe			For drain pipe			
Flat washer (M10)	Level gauge	Pipe cover(big)	Pipe cover (small)	Strap	Pipe cover(big)	Pipe cover(small)	Drain hose	Hose clamp
8	1	1	1	4	1	1	1	1
For unit hanging	For unit hanging and adjustment	For heat insulation of gas pipe	For heat insulation of liquid tube	For pipe cover fixing	For heat insulation of drain socket	For heat insulation of drain socket	For drain pipe connecting	For drain hose mounting

②Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.

- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.
  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

②Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

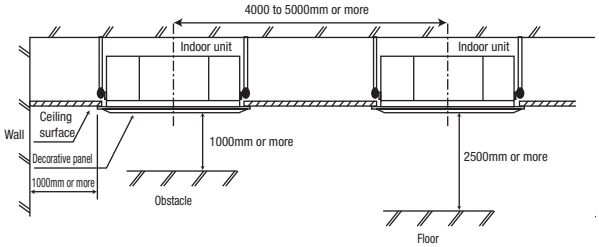
③If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.

④When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service

●When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.

●Install the indoor unit at a height of more than 2.5m above the floor.



Set blow-out pattern

●Select the most proper number of blow-out air supply port direction from 4 way, 3 way or 2 way according to the shape of the room and installation position. (1 way is not available.)

●If it is necessary to change the number of air supply port, prepare the covering materials. (sold as accessory)

●Instruct the user not to use low fan speed when 2way or 3way air supply is used.

●Do not use 2way air supply port under high temperature and humidity environment. (Otherwise it could cause condensation and leakage of water.)

●It is possible to set the airflow direction port by port independently. Refer to tne user's manual for details.

③Preparation before installation

●If suspension bolt becomes longer, do reinforcement of earthquake resistant.

○For grid ceiling

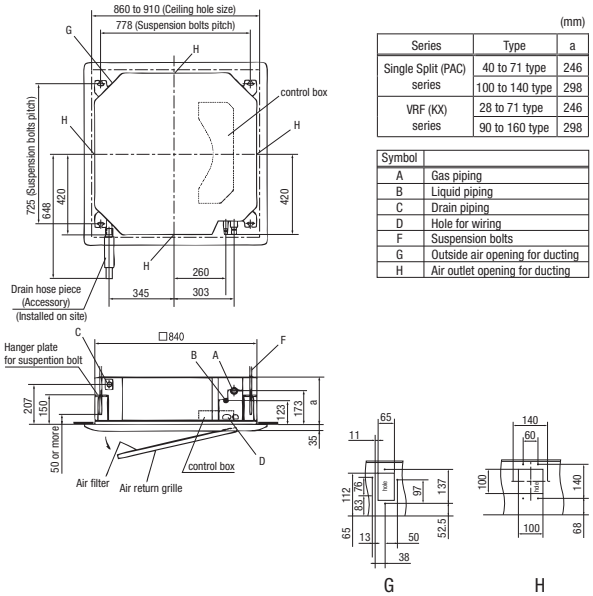
When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

○In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.

When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.

●Prepare four (4) sets of suspension bolt, nut and spring washer (M10 or M8) on site.

Ceiling opening, Suspension bolts pitch, Pipe position



(mm)

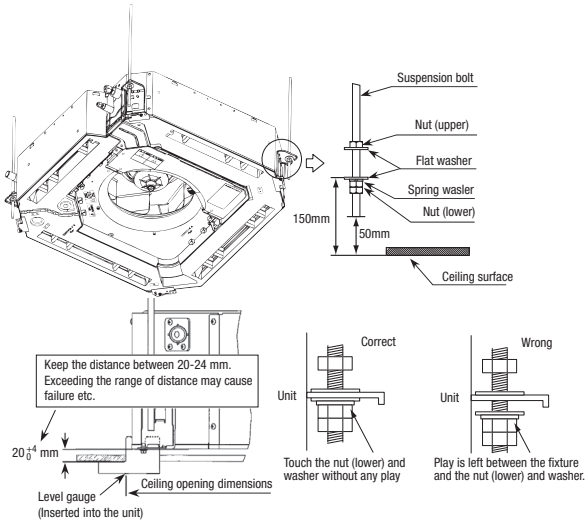
Series	Type	a
Single Split (PAC) series	40 to 71 type	246
	100 to 140 type	298
VRF (KX) series	28 to 71 type	246
	90 to 160 type	298

Symbol	
A	Gas piping
B	Liquid piping
C	Drain piping
D	Hole for wiring
F	Suspension bolts
G	Outside air opening for ducting
H	Air outlet opening for ducting

④Installation of indoor unit

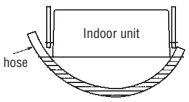
Work procedure

1. Prepare a ceiling hole with the size of from 860mm × 860mm to 910mm × 910mm referring to the template attached in the package.
2. Arrange the suspension bolt at the right position (725mm×778mm).
3. Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
4. Ensure that the lower end of the suspension bolt should be 50mm above the ceiling plane. Temporarily put the four lower nuts 150mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.
5. Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



④Installation of indoor unit (continued)

6. Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
7. Tighten four upper nuts and fix the unit after height and levelness adjustment.



Caution

- Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan.
- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, put the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor unit.

⑤Refrigerant pipe

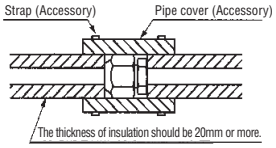
Caution

- Use the new refrigerant pipe.
  When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
  ・Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
  ・Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
  In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
  Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   (Gas may come out at this time, but it is not abnormal.)
   - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※Do a flare connection as follows:
   - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   - Make sure to insulate both gas pipes and liquid pipes completely.
     ※Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Pipe diameter	Tightening torque N·m
φ6.35	14 to 18
φ9.52	34 to 42
φ12.7	49 to 61
φ15.88	68 to 82
φ19.05	100 to 120



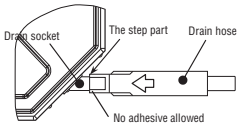
⑥Drain pipe

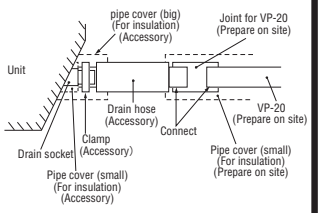
Caution

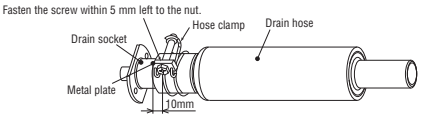
- Install the drain pipe according to the installation manual in order to drain properly.
  Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

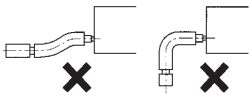
1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
   Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
   - Do not apply adhesives on this end.



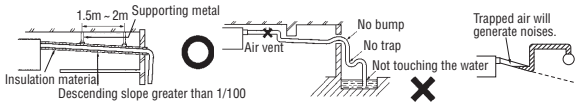




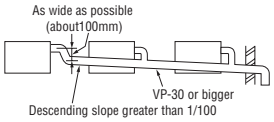
2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
   ※As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
   - Make sure that the adhesive will not get into the supplied drain hose.
     It may cause the flexible part broken after the adhesive is dried up and gets rigid.
   - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
   - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
   - Do nt set up air vent.



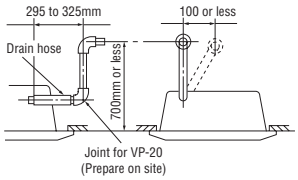
- When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



4. Insulate the drain pipe.
   - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
     ※After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

- The position for drain pipe outlet can be raised up to 700mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.

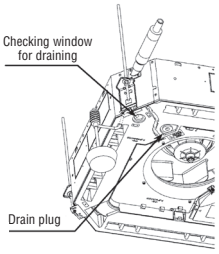


⑥Drain pipe (continued)

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not.
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.

1. Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test.
   Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.
3. Unplug the drain plug on the indoor unit to remove remain ing water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.



Drain pump operation

○In case electrical wiring work finished

Drain pump can be operated by remote controller (wired).
For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

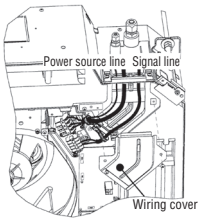
○In case electrical wiring work not finished

Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block ① and ②) is turned ON.
Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

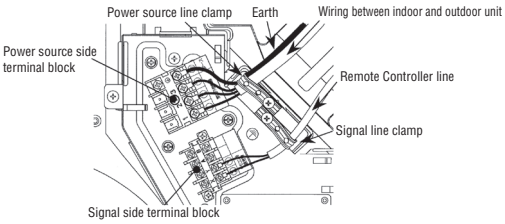
⑦Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
  Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

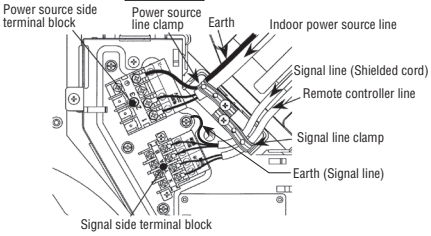
1. Remove a lid of the control box (3 screws) and the wiring cover (2 screws).
2. Hold each wiring inside the unit and fasten them to terminal block securely.
3. Fix the wiring with clamps.
4. Install the removed parts back to original place.



Single Split (PAC) series



VRF (KX) series



⑧Panel installation

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to attached manual for panel installation for details. (See next page)

⑨Check list after installation

- Check the following items after all installation work completed.

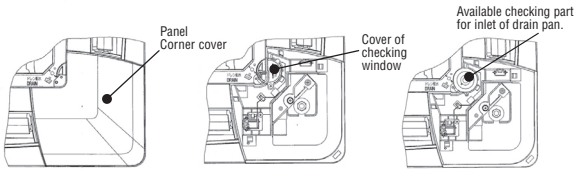
Check if;	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

⑩How to check the dirt of drain pan (Maintenance)

The method of checking the dirt of drain pan

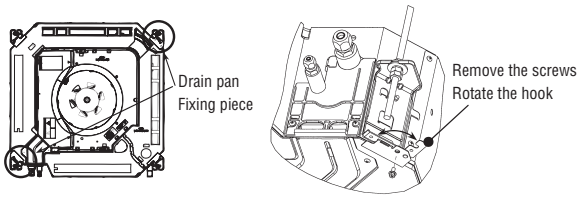
- It is possible to check the dirt for inlet of drain pan without detaching the panel.
  (Inspection is not possible when the high efficient filter and option spacer is installed.)

1. Open the air return grille and remove the panel corner cover on drain pan side.
2. Remove the cover of inspection window. (1screw)
3. Check the drain pan from the inspection window.
   If the drain pan is very dirty, remove the drain pan and clean it.
4. After checking of the dirty of drain pan, restore the cover of the inspection window securely. Improper restoration of the cover may cause dew condensation and water leakage.



Attention for removing drain pan

- The fixing components have been attached the with drain pan. Pay attention to these components during installation and removing. Take off the hanging hook after removing four screws. During the installation of drain pan, fix the drain pan firmly by using four screws after hanging it up with the fixing hook.



PANEL INSTALLATION MANUAL

PJF012D003A b

Read this manual together with the indoor unit's installation manual.

⚠ WARNING

- **Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.**
  Loose connection or hold will cause abnormal heat generation or fire.
- **Make sure the power supply is turned off when electric wiring work.**
  Otherwise, electric shock, malfunction and improper running may occur.

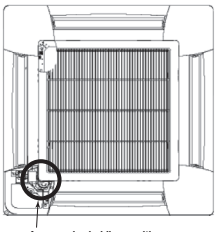
① Before installation

- Follow installation manual carefully, and install the panel properly.
- Check the following items.
  - ○ Accessories

Accessories

Bolt		4 pieces	For panel installation
Strap		4 pieces	For avoiding the corner panel from falling

Note: Accessories are laid in the position removing the corner panel.

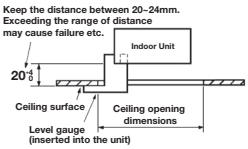


② Checking the indoor unit installation position

- Read this manual together with the air conditioner installation manual carefully.
- Check if the opening size for the indoor unit is correct with the level gauge supplied in the indoor unit.
- Check if the gap between the ceiling plane and the indoor unit is correct by inserting the level gauge into the air outlet port of the indoor unit. (See below drawing)
- Adjust the installation elevation if necessary.

Caution

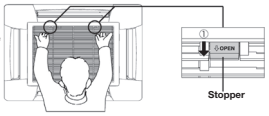
If there is a height difference beyond the design limit between the installation level of the indoor unit and the ceiling plane, the panel may be subject to excessive stress during installation, it may cause distortion and damage.



- The installation level of the indoor unit can be adjusted finely from the opening provided on the corner, even after panel is attached. (Refer to ⑥ Attaching the panel for details.)

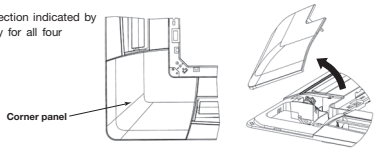
③ Removing the air return grille

1. Hold the stoppers on the air return grille (2 places) toward OPEN direction, open the air return grille.
2. Remove the hooks of the air return grille from the decorative panel while it is in the open position.



④ Removing a corner panel

- Pull the corner panel toward the direction indicated by the arrow and remove it. (Same way for all four corner panels)



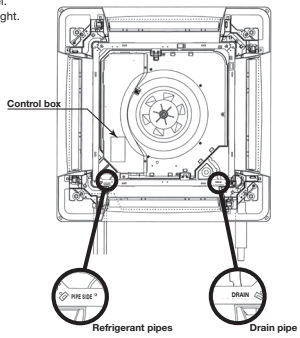
⑤ Orientation of the panel installation

Take note that there is an orientation to install the panel.

- Attach the panel with the orientation shown on the right.
- Align the "PIPE SIDE" mark (on the panel) with the refrigerant pipes on the indoor unit.
- Align the "DRAIN" mark (on the panel) with the drain pipe on the indoor unit.

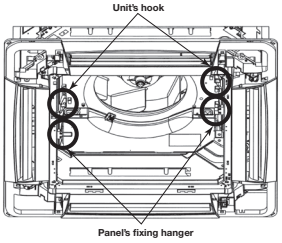
CAUTION

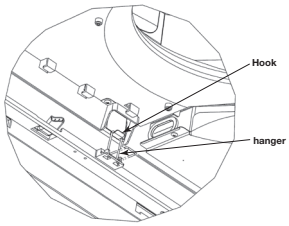
In case the orientation of the panel is not correct, it will lead to air leakage and also it is not possible to connect the louver motor wiring.



⑥ Attaching the panel

1. Temporary attaching
   - Lift up the hanger (2 places) on the panel for temporary support.
   - Hang the panel on the hook on the indoor unit.

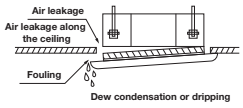


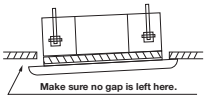


2. Fix the panel on the indoor unit
   - Fasten the panel on the indoor unit with the four bolts supplied with the panel.

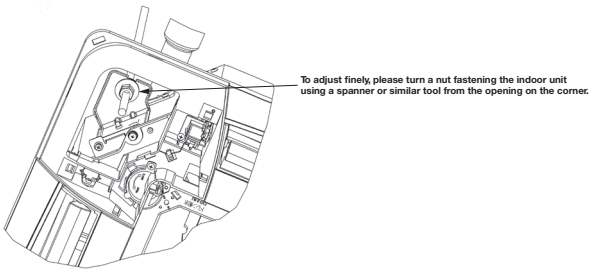
Caution

- Improperly tightened hanging bolts can cause the problems listed below, so make sure that you have tightened them securely.
- If there is a gap remaining between the ceiling and the decorative panel even after the hanging bolts are tightened, adjust the installation level of the indoor unit again.





- It is possible to adjust the installation height of the indoor unit with the panel attached as long as there is no influence on the drain pipe inclination and/or the indoor unit levelness.

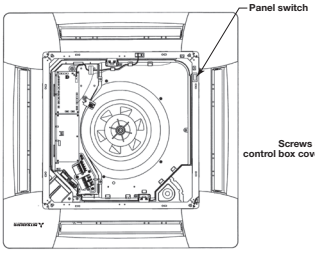


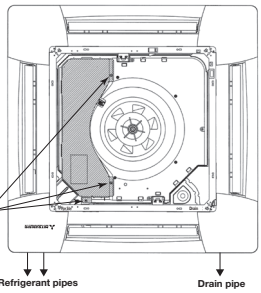
Caution

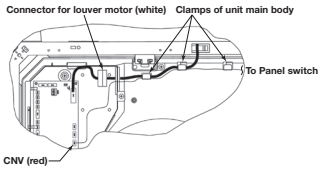
Make sure there is no stress given on the panel when adjusting the height of the indoor unit to avoid unexpected distortion. It may cause the distortion of panel or failing to close the air return grille.

⑦ Electrical wiring

1. After removing three screws of control box, detach the cover of control box (the hatched part).
2. Connect the connector for louver motor (white 20P).
   - Hold the wiring by using the clamps of the indoor unit.
   - Hold the connector inside the control box.
3. Connect the connector for panel switch.
   - Hold the wiring by using the clamps of the indoor unit.
   - Connect CNV (red) inside the control box.





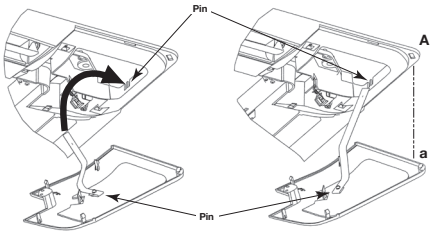


CAUTION

- If the air return grill is opened, the panel switch is turned off so that the air-conditioner cannot be operated any more.
- To start the air conditioner, close the air return grill.

⑧ Attaching a corner panel

1. To avoid unexpected falling of the corner panel, put the strap onto the corner panel's pin with turning the strap up.
2. Then hang the strap of a corner panel onto the decorative panel's pin.
3. First insert the part "a" of a corner panel into the part "A" of the decorative panel, and then engage four hooks.

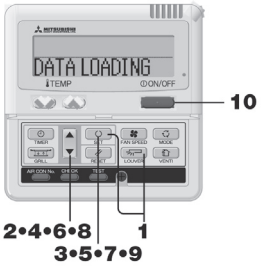


⑨ How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.
Note: This function is not able to be set with wireless remote controller or simple remote controller (RCH-H3).

1 Stop the air conditioner and press SET button and LOUVER button simultaneously for three seconds or more.

The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step 4.
" DATA LOADING "
↓
" No.1 ▲"
The following is displayed if the number of the indoor units connected to the remote controller are more than one
" SELECT I/U "
↓
" I/U000 ▲"



2 Press ▲ or ▼ button.(selection of indoor unit)
Select the indoor unit of which the louver is set.

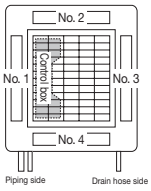
[EXAMPLE]
" I/U000 ▲"⇔" I/U001 ⇕ "⇔" I/U002 ⇕ "⇔
" I/U003 ⇕ "

3 Press SET button. (determination of indoor unit)
Selected indoor unit is fixed.

[EXAMPLE]
" I/U001 " (displayed for two seconds)
↓
" DATA LOADING "
↓
" No.1 ▲"

NOTICE

- For FDT type, in case the louver No to be set is uncertain, set any louver temporarily. The louver will swing once when the setting is completed and it is possible to confirm the louver No and the position.
  After that, choose the correct louver No and set the top and bottom position.



Louver No.

4 Press ▲ or ▼ button. (selection of louver No.)
Select the louver No. to be set according to the right figure.

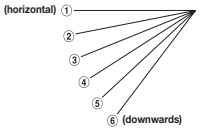
[EXAMPLE]
" No.1 ▲"⇔" No.2 ⇕ "⇔" No.3 ⇕ "⇔
" No.4 ▼"

5 Press SET button. (Determination of louver No.)
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

[EXAMPLE] If No.1 louver is selected,
"No.1 UPPER2 ⇕ " • current upper limit position

6 Press ▲ or ▼ button. (selection of upper limit position)
Select the upper limit of louver movable range.
"position1" is the most horizontal, and "position 6" is the most downward.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 ⇕" (the most horizotal)
⇔ "No.1 UPPER2 ⇕"
⇔ "No.1 UPPER3 ⇕"
⇔ "No.1 UPPER4 ⇕"
⇔ "No.1 UPPER5 ⇕"
⇔ "No.1 UPPER6 ⇕" (the most downwards)
⇔ "No.1 UPPER-- ▲" (return to the default setting)



the position of the louver

7 Press SET button (Fixing of the upper limit position)
The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.

[EXAMPLE]
No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ⇕ (shows current setting)

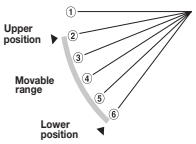
8 Press ▲ or ▼ button (Selection of lower limit position)
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6 "is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 ⇕ (the most horizontal)
No.1 LOWER2 ⇕
No.1 LOWER3 ⇕
No.1 LOWER4 ⇕
No.1 LOWER5 ⇕
No.1 LOWER6 ⇕ (the most horizontal)
No.1 LOWER-- ▲ (return to the default setting)

9 Press SET button (Fixing of the lower limit position)
Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.

- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)

[Example]
No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1 ▲



10 Press ON/OFF button.
Louver adjusting mode ends and returns to the original display.
For setting the swing range of other lourers, return to 1 and proceed same procedure respectively.

Caution

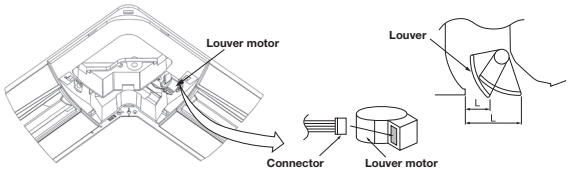
If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

ATTENTION

If you press RESET button during settings, the display will return to previous display. If you press ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

If it is necessary to fix the louver position manually, follow the procedure mentioned below.
1. Shut off the main power switch.
2. Unplug the connector of the louver motor which you want to fix the position. Make sure to insulate unplugged connectors electrically with a vinyl tape.
3. Adjust the louver position slowly by hand so as to be within the applicable range mentioned below table.



<Range of louver setting>

Vertical airflow direction	Horizontal 0°	Downwards 45°
Dimension L (mm)	43	26

※It can be set between 26~43mm freely.

Caution

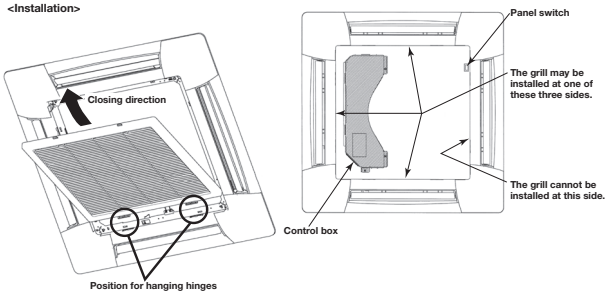
- Any automatic control or operation from the remote controller will be disabled on the louver whose position is fixed in the above way.
- Do not set a louver beyond the specified range. Failure to observe this instruction may result in dripping, dew condensation, the fouling of the ceiling and the malfunctioning of the unit.

⑩ Attaching the air return grille

To attach the air return grille, follow the procedure described in ③ Removing the air return grille in the reverse order.

1. Hang the hooks of the air return grille in the hole of the panel. (The hooks of the grille can be hanged in three side of the panel as following.)
2. After the grille is hanged, close the grille while the stoppers on the grille (2 places) are kept pressed to "OPEN" direction. When the grille comes to the original position, release the stoppers to hold the grille. Make sure to hear the sound of "CLICK" in both stoppers.

<Installation>



Caution

- Attaching the air return grille from the hinge side.
- Be careful in air return grille attaching, unstable attaching may cause grille falling.
- Repair or replace the distorted, broken stopper at once, or the grille falling may occur.

(4) Ceiling cassette-4way compact type (FDTC)

PJA012D786

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached to a remote controller. For wireless kit installation, refer to the installation manual attached to a wireless kit. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to Page 91.
This unit must always be used with the panel.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown as follows:
  ⃠ Never do it under any circumstances. | ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠ WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accidents.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠ CAUTION

- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  · Places where flammable gas could leak.
  · Places where carbon fiber, metal powder or any powder is floated.
  · Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  · Places exposed to oil mist or steam directly.
  · On vehicles and ships
  · Places where machinery which generates high harmonics is used.
  · Places where cosmetics or special sprays are frequently used.
  · Highly salted area such as beach.
  · Heavy snow area
  · Places where the system is affected by smoke from a chimney.
  · Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  · Locations with any obstacles which can prevent inlet and outlet air of the unit
  · Locations where vibration can be amplified due to insufficient strength of structure.
  · Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  · Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  · Locations where drainage cannot run off safely.
  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

① Before installation

- Install correctly according to the installation manual.
- Confirm the following points:
  - ○ Unit type/Power supply specification ○ Pipes/Wires/Small parts ○ Accessory items

Accessory itme

For unit hanging		For refrigerant pipe			For draom pipe			
Flat washer (M10)	Level gauge (Insulation)	Pipe cover(big)	Pipe cover (small)	Strap	Pipe cover(big)	Pipe cover(small)	Drain hose	Hose clamp
8	4	1	1	4	1	1	1	1
For unit hanging	For adjustment in hoisting in the unit's main body	For heat insulation of gas pipe	For heat insulation of liquid tube	For pipe cover fixing	For heat insulation of drain socket	For heat insulation of drain socket	For drain pipe connecting	For drain hose mounting

② Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.
  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

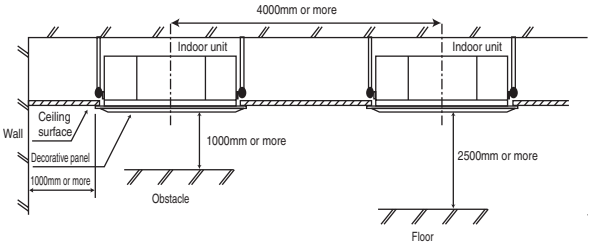
② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

③ If there are 2 units of wireless type, keep them away for more than 5m to avoid malfunction due to cross communication.

④ When plural indoor units are installed nearby, keep them away for more than 4m.

Space for installation and service

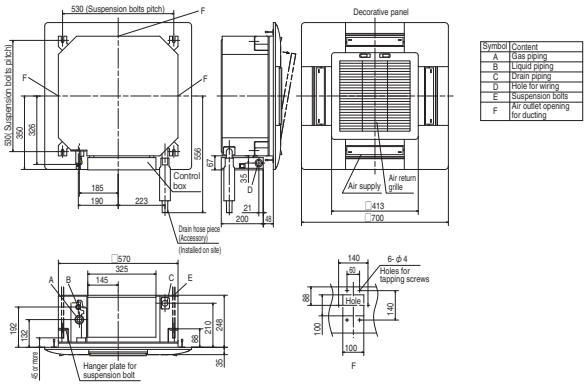
- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.
- Install the indoor unit at a height of more than 2.5m above the floor.



③ Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  - ○ For grid ceiling
    When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  - ○ In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
    When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10 or M8) on site.

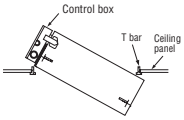
Ceiling opening, Suspension bolts pitch, Pipe position



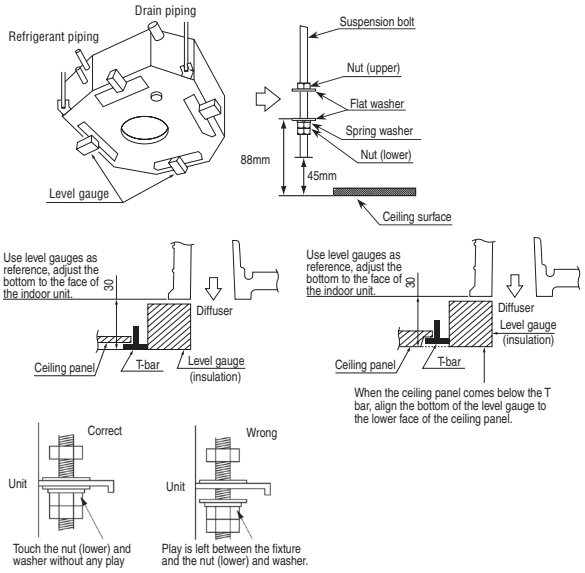
④ Installation of indoor unit

Work procedure

1. This units is designed for 2 x 2 grid ceiling.
   If necessary, please detach the T bar temporarily before you install it.
   If it is installed on a ceiling other than 2 x 2 grid ceiling, provide an inspection port on the control box side.
2. Arrange the suspension bolt at the right position (530mm×530mm).
3. Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
4. Ensure that the lower end of the suspension bolt should be 45mm above the ceiling plane.
   Temporarily put the four lower nuts 88mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.

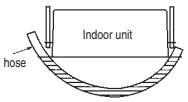


5. Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



④ Installation of indoor unit (continued)

6. Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
7. Tighten four upper nuts and fix the unit after height and levelness adjustment.



Caution

- Do not adjust the height by adjusting upper nuts. It will cause unexpected stress on the indoor unit and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan.
- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, put the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor unit.

⑤ Refrigerant pipe

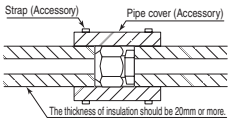
Caution

- Use the new refrigerant pipe.
  When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
  - Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
  - Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
  In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
  Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   (Gas may come out at this time, but it is not abnormal.)
   - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ※ Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※ Do a flare connection as follows:
   - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   - Make sure to insulate both gas pipes and liquid pipes completely.
     ※ Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Pipe diameter	Tightening torque N·m
ϕ 6.35	14 to 18
ϕ 9.52	34 to 42
ϕ 12.7	49 to 61
ϕ 15.88	68 to 82
ϕ 19.05	100 to 120



⑥ Drain pipe

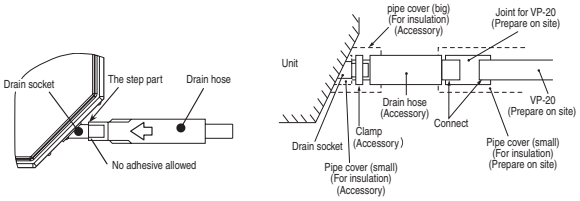
Caution

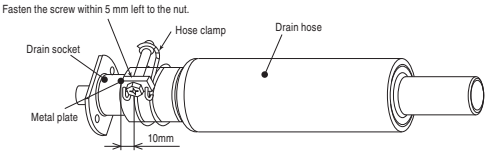
- Install the drain pipe according to the installation manual in order to drain properly.
  Imperfection in draining may cause flood indoors and wetting the household goods etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

⑥ Drain pipe (continued)

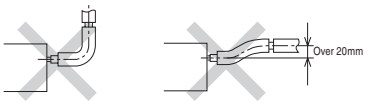
Work procedure

1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
   Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
   - Do not apply adhesives on this end.

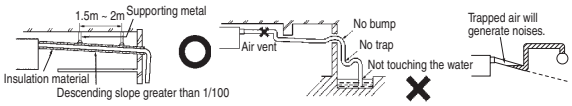




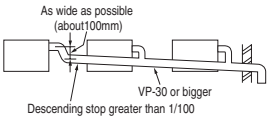
2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
   ※ As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
   - Make sure that the adhesive will not get into the supplied drain hose.
     It may cause the flexible part broken after the adhesive is dried up and gets rigid.
   - Do not bend or make an excess offset on the drain hose as shown in the picture.
     Bend or excess offset will cause drain leakage.



3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
   - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
   - Do not set up air vent.



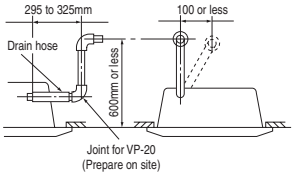
   - When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



4. Insulate the drain pipe.
   - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
     ※ After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

- The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.

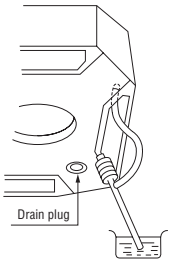


⑥ Drain pipe (continued)

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not.
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before hanging the ceiling.

1. Pour water of about 1000cc into the drain pan in the indoor unit by pump so as not to get the electrical component wet.
2. Make sure that water is drained out properly and there is no water leakage from any joints of the drain pipe at the test.
   Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.
3. Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.



Drain pump operation

○ In case electrical wiring work finished
Drain pump can be operated by remote controller (wired).
For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

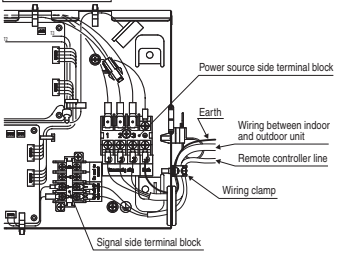
○ In case electrical wiring work not finished
Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (220-240VAC on the terminal block [① and ②] or [Ⓛ and Ⓝ]) is turned ON.
Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

⑦ Wiring-out position and wiring connection

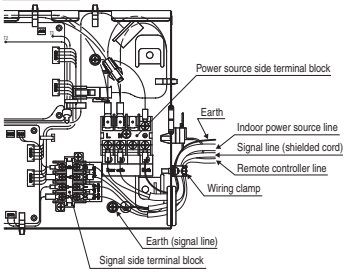
- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country. Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the control box (1 screws).
2. Hold each wiring inside the unit and fasten them to terminal block securely.
3. Fix the wiring with clamp.
4. Install a lid of the control box back to original place.

Single split (PAC) series



VRF (KX) series



⑧ Panel installation

- After wiring work finished, install the panel on the indoor unit.
- Refer to attached panel installation manual for details. (see next page)

Accessory items

1	Hook		1 piece	For fixing temporarily
2	Chain		2 pieces	
3	Bolt		4 pieces	For installing the panel
4	Screw		1 piece	For attaching a hook
5	Screw		2 pieces	For attaching a chain

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to attached manual for panel installation for details. (See next page)

⑨ Check list after installation

- Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

PANEL INSTALLATION MANUAL

PJA012D783 a

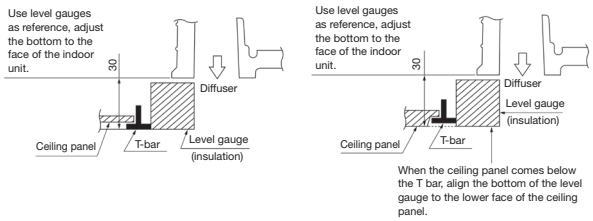
Please read this manual together with the indoor unit's installation manual.

⚠ WARNING

- **Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.**
  Loose connection or hold will cause abnormal heat generation or fire.
- **Make sure the power supply is turned off when electric wiring work.**
  Otherwise, electric shock, malfunction and improper running may occur.

① Checking the indoor unit installation position

- Read this manual together with the air conditioner installation manual carefully.
- Check if the gap between the ceiling plane and the indoor unit is correct by inserting the level gauge into the air outlet port of the indoor unit. (See below drawing)
- Adjust the installation elevation if necessary.
- Remove the level gauge before you attach the panel.

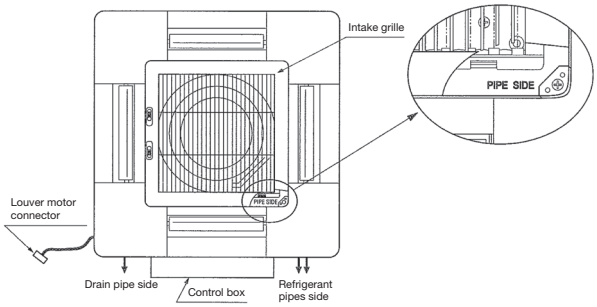


② Orientation of the panel and return air grille installation

1. Take note that there is an orientation to install the panel.
   - Attach the panel with the orientation shown on the below.
   - Align the "PIPE SIDE" mark (on the panel) with the refrigerant pipes on the indoor unit.
2. The intake grille can also be attached in a rotated position by 90 degrees.

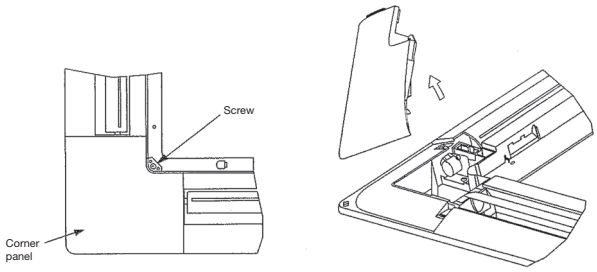
Caution

· In case the orientation of the panel is not correct, it will lead to air leakage and also it is not possible to connect the louver motor wiring.



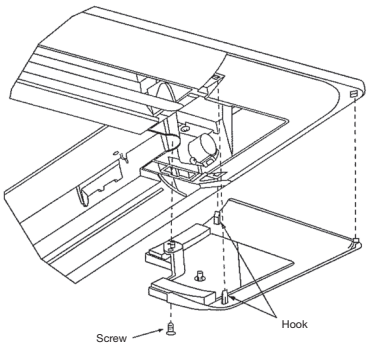
③ Removing a corner panel

- Unscrew the screw from the corner area, pull the corner panel toward the direction indicated by the arrow mark.



④ Attaching a corner panel

- First insert the part "a" of a corner panel into the part "A" of the cover panel, engage two hooks and tighten the screw.



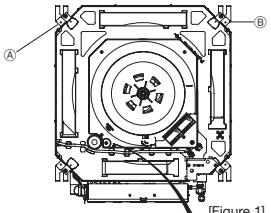
⑤ Panel installation

- Install the panel on the unit after completing the electrical wiring.

Accessories

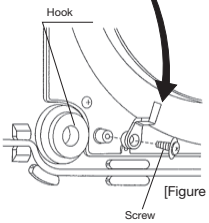
1	Hook		1 piece	For fixing temporarily
2	Chain		2 pieces	
3	Screw		4 pieces	For hoisting the panel
4	Screw		1 piece	For attaching a hook
5	Screw		2 pieces	For attaching a chain

1. Screw in two bolts out of the four supplied with the panel by about slightly less than 5mm. (● mark ⒶⒷ) [Figure 1]



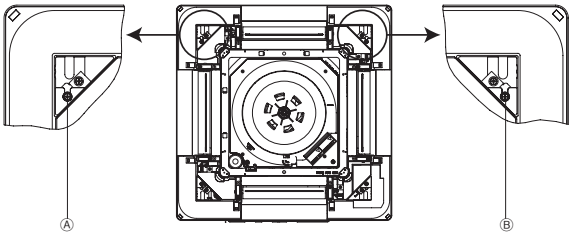
[Figure 1]

2. Attach the hook supplied with the panel to the main body with the hook fixing screw (1 screw). [Figure 2]
3. Open the intake grille.
4. Please remove the screw of a corner panel and remove a corner panel. (four places)



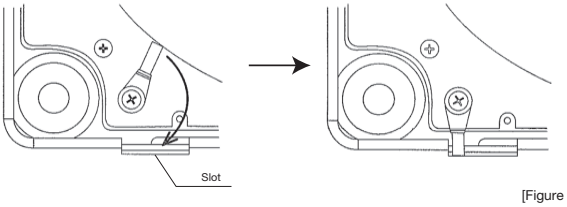
[Figure 2]

5. A panel is hooked on two bolts (● mark ⒶⒷ). [Figure 3]



[Figure 3]

6. Please rotate a hook, put in the slot on the panel, and carry out fixing the panel temporarily. [Figure 4]

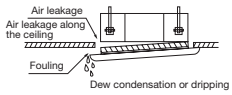


[Figure 4]

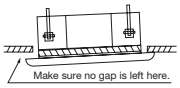
7. Tighten the two bolts used for fixing the panel temporarily and the other two.

Caution

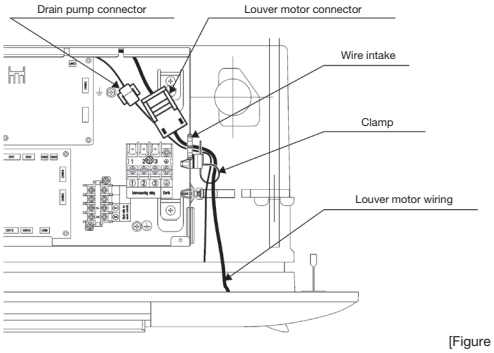
- Improperly tightened hanging bolts can cause the problems listed below, so make sure that you have tightened them securely.



- If there is a gap remaining between the ceiling and the decorative panel even after the hanging bolts are tightened, adjust the installation level of the indoor unit again.

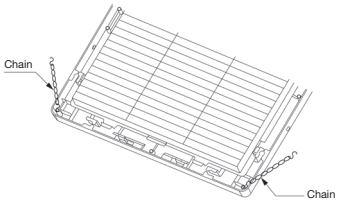


8. Please open the lid of a control box.
9. Like drain pump wiring, please band together by the clamp and put in louver motor wiring into a control box. [Figure 5]
10. Please connect a louver motor connector. [Figure 5]



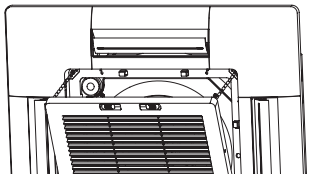
[Figure 5]

11. Attach two chains to the intake grille with two screws. [Figure 6]



[Figure 6]

12. Replace the corner panels. Please also close a chain with a screw together then. [Figure 7]
13. Close the intake grill.



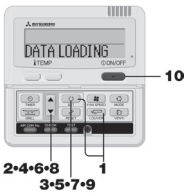
[Figure 7]

Caution

Make sure there is no stress given on the panel when adjusting the height of the indoor unit to avoid unexpected distortion. It may cause the distortion of panel or failing to close the air return grille.

⑦ How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.
Note: This function is not able to be set with wireless remote controll or simple remote controll (RCH-H3).



1 Stop the air conditioner and press SET button and LOUVER button simultaneously for three seconds or more.
The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step **4**.

"DATA LOADING"
↓
"No.1 ▲"

The following is displayed if the number of the indoor units connected to the remote controller are more than one

"SELECT I/U"
↓
"I/U000 ▲"

2 Press ▲ or ▼ button. (selection of indoor unit)
Select the indoor unit of which the louver is set.
[EXAMPLE]
"I/U000 ▲"⇔"I/U001 ⇕"⇔"I/U002 ⇕"⇔
"I/U003 ⇕"

3 Press SET button. (determination of indoor unit)
Selected indoor unit is fixed.
[EXAMPLE]
"I/U001" (displayed for two seconds)
↓
"DATA LOADING"
↓
"No.1 ▲"

4 Press ▲ or ▼ button. (selection of louver No.)
Select the louver No. to be set according to the right figure.
[EXAMPLE]
"No.1 ▲"⇔"No.2 ⇕"⇔"No.3 ⇕"⇔
"No.4 ▼"

5 Press SET button. (Determination of louver No.)
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.
[EXAMPLE] If No.1 louver is selected,
"No.1 UPPER2 ⇕" ← current upper limit position

6 Press ▲ or ▼ button. (selection of upper limit position)
Select the upper limit of louver movable range.
"position 1" is the most horizontal, and "position 6" is the most downward.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 ⇕" (the most horizontal)
⇔"No.1 UPPER2 ⇕"
⇔"No.1 UPPER3 ⇕"
⇔"No.1 UPPER4 ⇕"
⇔"No.1 UPPER5 ⇕"
⇔"No.1 UPPER6 ⇕" (the most downwards)
⇔"No.1 UPPER-- ▲" (return to the default setting)

7 Press SET button. (Fixing of the upper limit position)
The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.
[EXAMPLE]
No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ⇕ (shows current setting)

8 Press ▲ or ▼ button. (Selection of lower limit position)
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6" is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 ⇕ (the most horizontal)
No.1 LOWER2 ⇕
No.1 LOWER3 ⇕
No.1 LOWER4 ⇕
No.1 LOWER5 ⇕
No.1 LOWER6 ⇕ (the most downwards)
No.1 LOWER-- ▲ (return to the default setting)

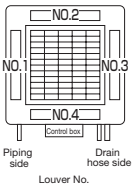
9 Press SET button. (Fixing of the lower limit position)
Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.
- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)

[EXAMPLE]
No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1 ▲

10 Press ON/OFF button.
Louver adjusting mode ends and returns to the original display.
For setting the swing range of other louvers, return to 1 and proceed same procedure respectively.

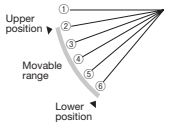
NOTICE

- In case the louver No to be set is uncertain, set any louver temporarily.
The louver will swing once when the setting is completed and it is possible to confirm the louver No and the position.
After that, choose the correct louver No and set the top and bottom position.



Louver No.

the position of the louver



Caution

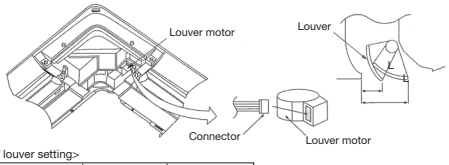
If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not function.

ATTENTION

If you press RESET button during settings, the display will return to previous display.
If you press ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

If it is necessary to fix the louver position manually, follow the procedure mentioned below.
1. Shut off the main power switch.
2. Unplug the connector of the louver motor which you want to fix the position.
Make sure to insulate unplugged connectors electrically with a vinyl tape.
3. Adjust the louver position slowly by hand so as to be within the applicable range mentioned below table.



<Range of louver setting>

Vertical airflow direction	Horizontal 23°	Downwards 50°
Dimension L (mm)	40	24

※It can be set between 24~40mm freely.

Caution

- Any automatic control or operation from the remote controller will be disabled on the louver whose position is fixed in the above way.
- Do not set a louver beyond the specified range. Failure to observe this instruction may result in dripping, dew condensation, the fouling of the ceiling and the malfunctioning of the unit.

(5) Ceiling suspended type (FDEN)

PFA012D621B ⚠b

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached to a remote controller. For wireless kit installation, refer to the installation manual attached to a wireless kit. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to Page 91.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING: Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown as follows:
  ⃠ Never do it under any circumstances. | ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠ WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accidents.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠ CAUTION

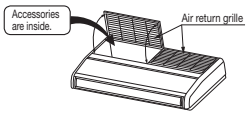
- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure, electric shock and fire due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause fire and electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  · Places where flammable gas could leak.
  · Places where carbon fiber, metal powder or any powder is floated.
  · Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  · Places exposed to oil mist or steam directly.
  · On vehicles and ships
  · Places where machinery which generates high harmonics is used.
  · Places where cosmetics or special sprays are frequently used.
  · Highly salted area such as beach.
  · Heavy snow area
  · Places where the system is affected by smoke from a chimney.
  · Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  · Locations with any obstacles which can prevent inlet and outlet air of the unit
  · Locations where vibration can be amplified due to insufficient strength of structure.
  · Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  · Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  · Locations where drainage cannot run off safely.
  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

①Before installation

- Install correctly according to the installation manual.
- Confirm the following points:
  - ○Unit type/Power supply specification ○Pipes/Wires/Small parts ○Accessory items

Accessory item

For unit hanging		For refrigerant pipe			For drain pipe					For air return grille
Flat washer (M10)	Paper pattern	Pipe cover (large)	Pipe cover (small)	Strap	Drain hose (with clamp)	Hose clamp	Fixing bracket	Screw	Heay insulation	Screw
8	1	1	1	4	1	1	1	2	1	4
For unit hanging	For unit hanging and adjustment	For heat insulation of gas pipe	For heat insulation of liquid pipe	For fixing of pipe cover	For drain pipe connection	For drain hose mounting	For fixing of drain hose	For installing of fixing bracket	For drain hose	For fixing air return grille



②Selection of installation location for the indoor unit

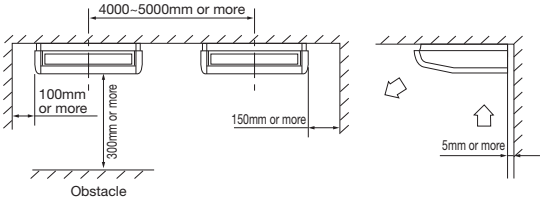
① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 23°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

③ If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.

④ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service



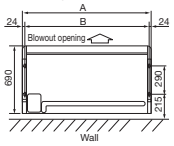
③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  - ○For grid ceiling
    When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  - ○In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
    When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

③Preparation before installation (continued)

Pitch of suspension bolts and pipe position

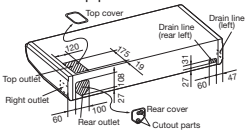
Pitch of suspension bolts



(mm)

Series	type	A	B
Single Split (PAC) series	40 to 50type	1070	1022
	60 to 71type	1320	1272
	100 to 140type	1620	1572
VRF (KX) series	36 to 56type	1070	1022
	71type	1320	1272
	112 to 140type	1620	1572

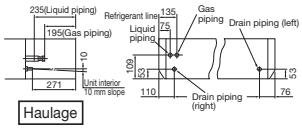
Location of pipe outlets



※The outlet through which the pipings are taken out is available in three directions.
※Pipes can be taken out in 3 directions (rear, right or top).
- Cut out holes using nippers, etc.
- Cut out holes to take out pipes along the cutoff line on the rear cover.
- Cut out the top face cover aligning to the piping position.
- When taking pipe out to right-hand side, cut out a hole along the groove at the inside of side panel.
- After installing pipes and wires, seal clearances around pipes and wires with putty, etc. to shut off dust.

Make sure to install the covers at rear and top in order to protect the inside of unit from intrusion of dust or protect wires from damages by sharp edges. When taking them out to the right-hand side, remove burrs or sharp edges from the cutout.

Pipe position

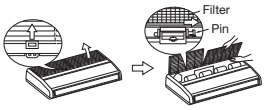


Haulage

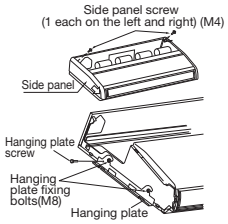
- Move the box as close to the installation area as possible packed.
- If it must be unpacked, wrap the unit with a nylon sling, and be careful not to damage the unit.
- If you need to lay the unit on a floor after unpacking, always put it with the intake grille facing upward.

Preparation before instalation

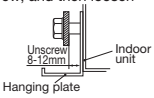
1. Remove the air return grille.
Slide stoppers (4 places) of the catches, then pull out the pins (4 or 6 places).



2. Remove the side panel.
Remove the screw and detach the side panel by sliding it toward the direction indicated by the arrow mark.



3. Remove the hanging plate.
Remove the screw, and then loosen the fixing bolts.



④Remote controller

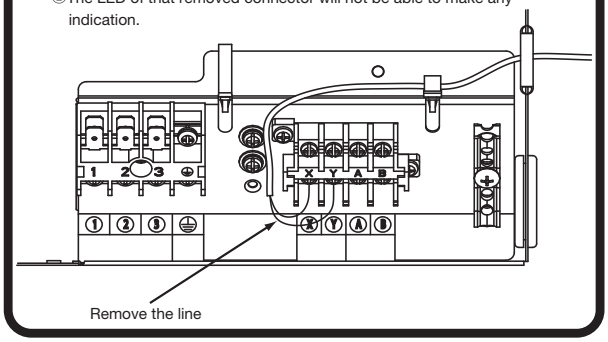
Installation of remote controller

Up to two receiver or wired remote controller can be installed in one indoor unit group.

- When both wired and wireless remote controller are used
  It is necessary to set wired or wireless remote controller as slave.
  (For the method of changing the setting, refer to the installtion manual attached to remote controller or wireless kit.)
- When wired remote controller are used only (wireless type)
  It is necessary to remove the line that is connected to the receiver.
  Remove signal line connected to the receiver from primary side of terminal block (X, Y).

ATTENTION

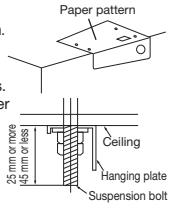
①Insulate with tape the removed line.
②The LED of that removed connector will not be able to make any indication.



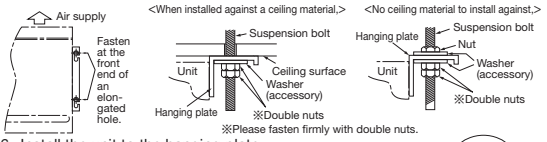
⑤Installation of indoor unit

Work procedure

1. Select the suspension bolt locations and the pipe hole location.
   (1) Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe.
   ※Decide the locations based on direct measurements.
   (2) Once the locations are properly placed, the paper pattern can be removed.
2. Install the suspension bolts in place.
3. Fix with 4 suspension bolts, which can endure load of 500N.
4. Check the measurements given at the right figure for the length of the suspension bolts.

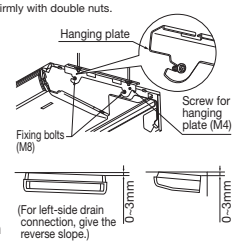


5. Fasten the hanging plate onto the suspension bolts.



※Please fasten firmly with double nuts.

6. Install the unit to the hanging plate.
   (1) Slide the unit in from front side to get it hanged on the hanging plate with the bolts.
   (2) Fasten the four fixing bolts (M8: 2 each on the left and right sides) firmly.
   (3) Fasten the two screws (M4: 1 each on the left and right sides).



⚠**WARNINIG** : Hang a side panel on from the panel side to the rear side and then fasten it securely onto the indoor unit with screws.

※To ensure smooth drain flow, install the unit with a descending slope toward the drain outlet.

⚠ **CAUTION** : Do not give the reversed slope, which may cause water leaks.

⑥Refrigerant pipe

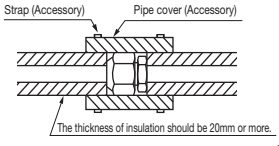
Caution

- Use the new refrigerant pipe.
  When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
  ・Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
  ・Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
  Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
   ●Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ・When taking out the pipe to rear or top, install it together with the electric wire⑧, passing them through the attached cover.
   ・Seal clearances with putty, etc. to shut off dust.
   ※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※Do a flare connection as follows:
   ●Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   ●When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   ●Make sure to insulate both gas pipes and liquid pipes completely.
   ※Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

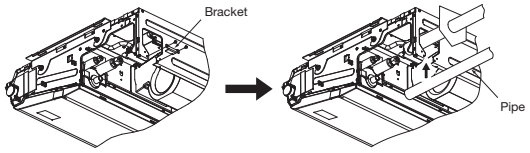
Pipe diameter	Tightening torque N·m
ø 6.35	14 to 18
ø 9.52	34 to 42
ø 12.7	49 to 61
ø 15.88	68 to 82
ø 19.05	100 to 120



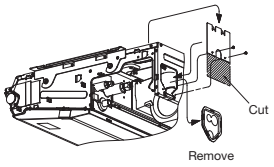
⑥Refrigerant pipe (continued)

The pipe can be connected from three different directions. (back, reight, top)

- When the pipe is routed through the back.
  If the bracket is removed, piping work will become easy.
  ※After piping, reinstall the removed bracket.



- When the pipe is routed through the back.
  Cut the removed top cover, and install to the rear panel instead of rear cover.



⑦Drain pipe

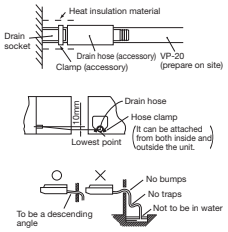
The drain pipes may face out towards the back to the left, or to the right side.

Caution

- Install the drain pipe according to the installation manual in order to drain properly. Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful andinflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

1. Insert drain hose completely to the base, and tighten the drain hose clamp securely. (adhesive must not be used.)
   ※When plumbing on the left side, move the rubber plug and the cylindrical insulating materials by the pipe connecting hole on the left side of the unit to the right side.



⚠Beware of a possible outflow of water that may occur upon removal of a drain plug.

2. Fix the drain hose at the lowest point with a hose clamp supplied as an accessory.
   ※Give a drain hose a gradient of 10mm as illustrated in the right drawing by laying it without leaving a slack.
   ●Take head of electrical cables so that they may not run beneath the drain hose.

⚠A drain hose must be clamped down with a hose clamp. There is a possibility that drain water overflows.

3. Connect VP-20(prepare on site) to drain hose. (adhesive must not be used.)
   ※ Use commercially available rigid PVC general pipe VP-20 for drain pipe.
4. Do not to make the up-down bending and trap in the mid-way while assuming that the drain pipes is downhill. (more than 1/100)
   ● Never set up air vent.
5. Insulate the drain pipe.
   ● Insulate the drain hose clamp with the heat insulation supplied as accessories.
   ● When the unit is installed in a humid place, consider precautions against dew condensation such as heat insulation for the drain pipe.

Drain test

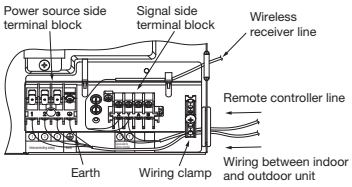
- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan.
- Do drain test even if installation of heating season.

⑧Wiring-out position and wiring connection

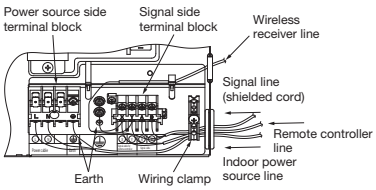
- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
  Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the electrical box (2 screws).
2. Hold each wiring inside the unit and connect to a terminal block surely.
3. Fix the wiring by clamps.
4. Install the removed parts back to original place.

Single split (PAC) series



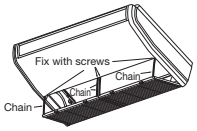
VRF(KX) series

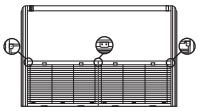


⑨Attaching the air return grille

- The air return grille must be attached when electrical cabling work is completed.

1. Fix the chains tied to the air return grille onto the indoor unit with screws supplied as accessories (4 pieces).
2. Close the air return grille.
   This completes the unit installtion work.





⑩Check list after installation

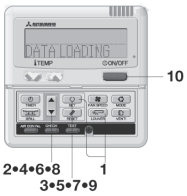
- Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

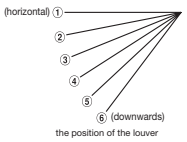
⑪How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.
Note:This function is not able to be set with wireless remote controller or simple remote controll (RCH-H3).

1. Stop the air conditioner and press SET button and LOUVER button simultaneously for three seconds or more.
   - The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step 4.
     "DATA LOADING"
     ↓
     "No.1"
   - The following is displayed if the number of the indoor units connected to the remote controller are more than one.
     "SELECT I/U"
     ↓
     "I/U000"



2. Press ▲or▼button.(selection of indoor unit) ●Select the indoor unit of which the louver is set.
   [EXAMPLE]
   "I/U000 ▲"⇔"I/U001 ⇕"⇔"I/U002 ⇕"⇔
   "I/U003 ⇕"
3. Press SET button.(determination of indoor unit) ●Selected indoor unit is fixed.
   [EXAMPLE]
   "I/U001" (displayed for two seconds)
   ↓
   "DATA LOADING"
   ↓
   "No.1 ▲"
4. Press▲or▼ button.(selection of louver No.) ●Select the louver No. to be set according to the right figure.
   [EXAMPLE]
   "No.1 ▲"⇔"No.2 ⇕"⇔"No.3 ⇕"⇔
   "No.4 ▼"
5. Press SET button.(Determination of louver No.)
   ●The louver No. to be set is confirmed and the display shows the upper limit of the movable range.
   [EXAMPLE] If No.1 louver is selected,
   "No.1 UPPER2 ⇕" ←current upper limit position
6. Press ▲or ▼button.(selection of upper limit position)
   - Select the upper limit of louver movable range.
     "position 1" is the most horizontal, and "position 6" is the most downward.
     "position --" is to return to the factory setting.
     If you need to change the setting to the default setting, use "position --".

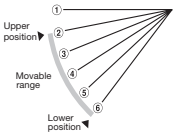


"No.1 UPPER1 ▼" (the most horizotal)
⇔"No.1 UPPER2 ⇕"
⇔"No.1 UPPER3 ⇕"
⇔"No.1 UPPER4 ⇕"
⇔"No.1 UPPER5 ⇕"
⇔"No.1 UPPER6 ⇕" (the most downwards)
⇔"No.1 UPPER-- ▲" (return to the default setting)

7. Press SET button.(Fixing of the upper limit position)
   ●The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.
   [EXAMPLE]
   No.1 UPPER2 (displayed for two seconds)
   ↓
   No.1 LOWER5 ⇕ (shows current setting)
8. Press ▲or ▼button.(Selection of lower limit position)
   ●Select the lower limit position of louver.
   "position 1" is the most horizontal, and "position 6 "is the most downwards.
   "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 ▼ (the most horizontal)
No.1 LOWER2 ⇕
No.1 LOWER3 ⇕
No.1 LOWER4 ⇕
No.1 LOWER5 ⇕
No.1 LOWER6 ⇕ (the most downwards)
No.1 LOWER-- ▲ (return to the default setting)

9. Press SET button.(Fixing of the lower limit position)
   ●Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.
   - After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)



[Example]
No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1 ▲

10.Press ON/OFF button.
   ●Louver adjusting mode ends and returns to the original display.

Caution
If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

ATTENTION
If you press RESET button during settings, the display will return to previous display.If you press ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

PJR012D319 A

(6) Duct connected-Low/Middle static pressure type (FDUM)

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached to a remote controller. For wireless kit installation, refer to the installation manual attached to a wireless kit. For electrical wiring work (Outdoor) and refrigerant pipe work installation for outdoor unit, refer to Page 91.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown on the right:
  ⃠ Never do it under any circumstances. ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠ WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **Check the density refered by the foumula (accordance with ISO5149).**
  If the density exceeds the limit density, please consult the dealer and installate the ventilation system.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠ CAUTION

- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  · Places where flammable gas could leak.
  · Places where carbon fiber, metal powder or any powder is floated.
  · Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  · Places exposed to oil mist or steam directly.
  · On vehicles and ships
  · Places where machinery which generates high harmonics is used.
  · Places where cosmetics or special sprays are frequently used.
  · Highly salted area such as beach.
  · Heavy snow area
  · Places where the system is affected by smoke from a chimney.
  · Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  · Locations with any obstacles which can prevent inlet and outlet air of the unit
  · Locations where vibration can be amplified due to insufficient strength of structure.
  · Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  · Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  · Locations where drainage cannot run off safely.
  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

○This model is middle static ducted type air conditioning unit. Therefore, do not use this model for direct blow type air conditioning unit.

①Before installation

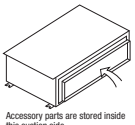
●Install correctly according to the installation manual.

●Confirm the following points:

○Unit type/Power supply specification ○Pipes/Wires/Small parts ○Accessory items

Accessory item

For refrigerant pipe			For drain pipe			
Pipe cover(big)	Pipe cover (small)	Strap	Pipe cover(big)	Pipe cover(small)	Drain hose	Hose clamp
1	1	4	1	1	1	1
For heat insulation of gas pipe	For heat insulation of liquid tube	For pipe cover fixing	For heat insulation of drain socket	For heat insulation of drain socket	For drain pipe connecting	For drain hose mounting



Accessory parts are stored inside this suction side.

②Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.

- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.
  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

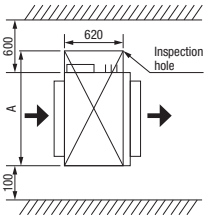
②Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

Space for installation and service

●Make installation altitude over 2.5m.

(Indoor Unit)

Installation Space



UNIT: mm

Multi type	22~56	71, 90	112, 140
Single type	50	60, 71	100~140
A	1100	1300	1720

③Preparation before installation

●If suspension bolt becomes longer, do reinforcement of earthquake resistant.

○For grid ceiling

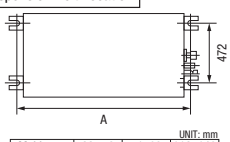
When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

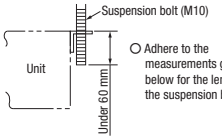
○In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.

When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.

●Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

Suspension Bolt Location





○ Adhere to the measurements given below for the length of the suspension bolts.

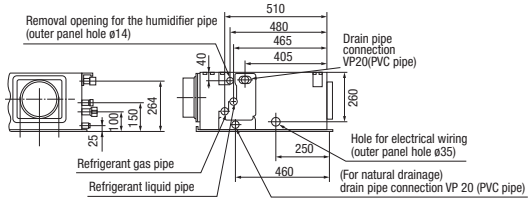
UNIT: mm

Multi type	22~56	71, 90	112, 140
Single type	50	60, 71	100~140
A	786	986	1406

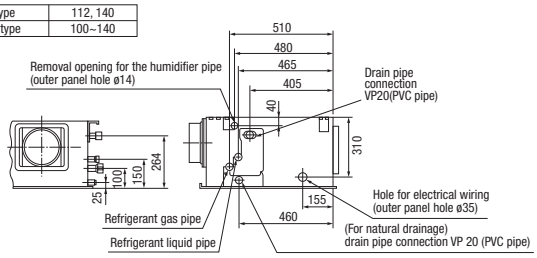
③Preparation before installation (continued)

Pipe locations UNIT: mm

Multi type	22~90
Single type	50~71



Multi type	112, 140
Single type	100~140

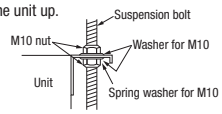


④Installation of indoor unit

Installation

[Hanging]

Hang the unit up.

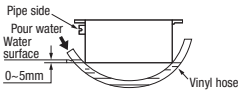


If the measurements between the unit and the ceiling hole do not match upon installation, it may be adjusted with the long holed installation tool.

Adjustment for horizontality

○Either use a level vial, or adjust the level according to the method below.

●Adjust so the bottom side of the unit will be leveled with the water surface as illustrated below.



Let the pipe side be slightly sloped.

○If the unit is not leveled, it may cause malfunctions or inoperation of the float switch.

⑤Duct Work

①A corrugated board (for preventing sputtering) is attached to the main body of the air conditioner (on the outlet port). Do not remove it until connecting the duct.

●An air filter can be provided on the main body of the air conditioner (on the inlet port). Remove it when connecting the duct on the inlet port.

②Blowout duct

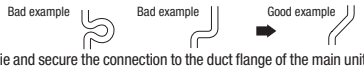
●Use according to the spot numbers shown in the table below with a 200 circular duct.

Multi type	22	36, 45, 56	71, 90	112, 140
Single type	–	50	56, 71	100~140
Spot numbers	1 spot	2 spots	3 or 2 spots	4 or 3 spots

●The difference of the duct lengths between each spot should be less than 2:1.

●The ducts should be at their minimum lengths.

●Keep the bends to a minimum. (The bending radius should be as large as possible.)



●Tie and secure the connection to the duct flange of the main unit/blowout hole with a band. Then, apply insulation materials to the secured part for dew condensation prevention.

●Use of the sound and heat insulated flexible duct is recommended for condensation prevention and soundproofing. (sold separately; 1m, 2m, 4m available)

●Conduct the duct work before ceiling attachment.

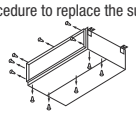
③Inlet port

●When shipped the inlet port lies on the back.

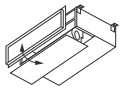
●When connecting the duct to the inlet port, remove the air filter if it is fitted to the inlet port.

⑤Duct Work (continued)

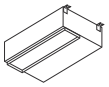
●When placing the inlet port to carry out suction from the bottom side, use the following procedure to replace the suction duct joint and the bottom plate.



●Remove the screws which fasten the bottom plate and the duct joint on the inlet port side of the unit.



●Replace the removed bottom plate and duct joint.



●Fit the duct join with a screw; fit the bottom plate.

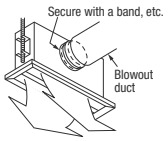
●Make sure to insulate the duct to prevent dewing on it.

④Install the specific blowout duct in a location where the air will circulate to the entire room.

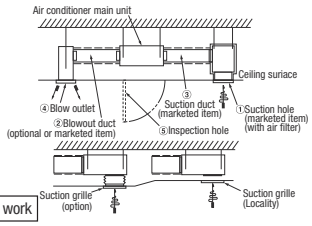
●The duct connection is specific to the 200 circular duct.

●Conduct the installation of the specific blowout hole and the connection of the duct before attaching them to the ceiling.

●Insulate the area where the duct is secured by a band for dew condensation prevention.



⑤Make sure provide an inspection hole on the ceiling. It is indispensable to service elecric equipment, motor, functional components and cleaning of heat exchanger.



Bad example of duct work

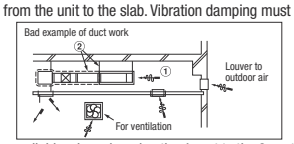
①If a duct is not provided at the suction side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the out door air louver, weather (rainy day) and others.

a)Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct. In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold the glass wool in place.)

b)It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35°C DB, suction air temperature is 27°C WB) and it could result in such troubles as compressor overload, etc..

c)There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fall to reach the drain pan but leak outside (Example: drip on to the ceiling) with consequential water leakage in the room.

②If vibration damping is not conducted between the unit and the duct, and between the unit and the slab, vibration will be transmitted to the duct and vibration noise may occur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed.

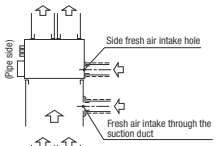


Notice

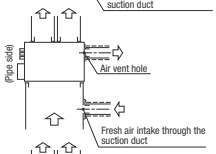
A specific cover plate is available when changing the 4 spot to the 3 spot, or when changing the 3 spot to the 2 spot.
Note: Do not change from 2 spot to 1 spot.

Connecting the air intake/vent ducts

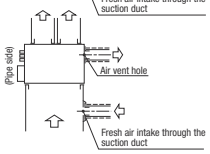
①Fresh Air Intake
[for air intake duct only]
○Use the side fresh air intake hole, or supply through a part of the suction duct.



[for simultaneous air intake/vent]
○Intake air through the suction duct.
(the side cannot be used)



②Air Vent
○Use the side air vent hole.
(always use together with the air intake)



○Use the duct flange for the air intake/vent (sold separately; for 125 circular duct connection), and connect the 125 circular duct (tighten with band).
○Insulate the duct to protect it from dew condensation.

⑥Refrigerant pipe

Caution

●Use the new refrigerant pipe.
When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
・Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
・Do not use thin-walled pipes.

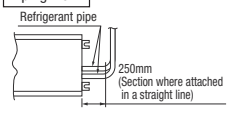
●Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.

●Do not use any refrigerant other than R410A.
Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.

●Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.

●Use special tools for R410 refrigerant.

Piping work

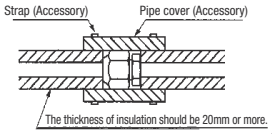


When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function)

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
● Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
※Do a flare connection as follows:
● Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
● When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
●Make sure to insulate both gas pipes and liquid pipes completely.
※Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Pipe diameter	Tightening torque N·m
ϕ 6.35	14 to 18
ϕ 9.52	34 to 42
ϕ 12.7	49 to 61
ϕ 15.88	68 to 82
ϕ 19.05	100 to 120



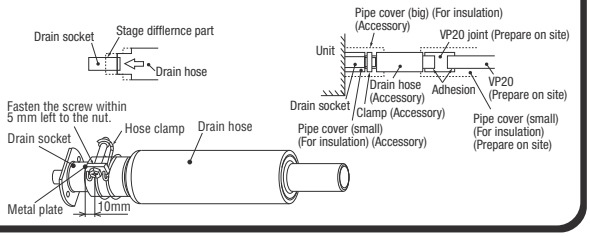
⑦Drain pipe

Caution

● Install the drain pipe according to the installation manual in order to drain properly.
Imperfection in draining may cause flood indoors and wetting the household goods, etc.
● Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
● Connect the pipe securely to avoid water leakage from the joint.
● Insulate the pipe properly to avoid condensation drop.
● Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
● Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

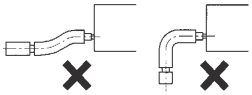
Work procedure

1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
●Do not apply adhesives on this end.
●Do not use acetone-based adhesives to connect to the drain socket.

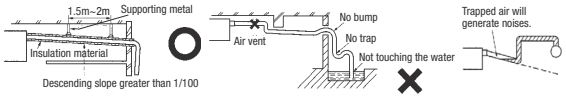


⑦Drain pipe (continued)

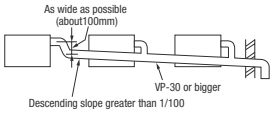
2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
   ※As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
   - Make sure that the adhesive will not get into the supplied drain hose.
     It may cause the flexible part broken after the adhesive is dried up and gets rigid.
   - The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
   - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
   - Do not set up air vent.



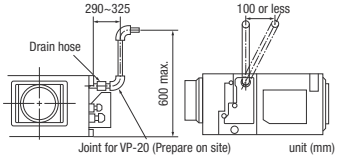
- When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



4. Insulate the drain pipe.
   - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
     ※ After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

- The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



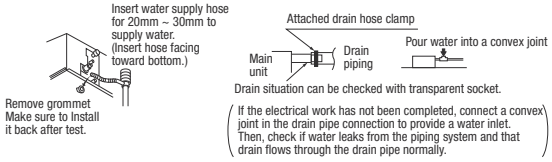
Otherwise, the construction point makes it same as drain pipe construction.

Drain test

1. Conduct a drain test after completion of the electrical work.
2. During the trail, make sure that drain flows properly through the piping and that no water leaks from connections.
3. In case of a new building, conduct the test before it is furnished with the ceiling.
4. Be sure to conduct this test even when the unit is installed in the heating season.

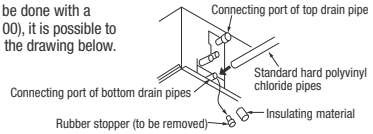
Procedures

1. Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.
2. Check the drain while cooling operation.



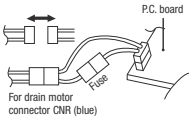
Outline of bottom drain piping work

- If the bottom drain piping can be done with a descending gradient (1/50-1/100), it is possible to connect the pipes as shown in the drawing below.



Uncoupling the drain motor connector

- Uncouple the connector CNR for the drain motor as illustrated in the drawing on the right.



(Note: If the unit is run with the connector coupled, drain water will be discharged from the upper drain pipe joint, causing a water leak.)

⑦Drain pipe (continued)

Drain pump operation

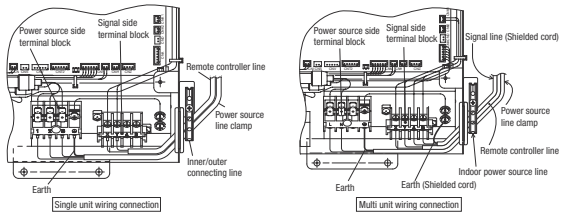
○In case electrical wiring work finished
Drain pump can be operated by remote controller (wired).
For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

○In case electrical wiring work not finished
Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (230VAC on the terminal block ① and ②) is turned ON. Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

⑧Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.
  Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the control box (2 screws).
2. Hold each wiring inside the unit and fasten them to terminal block securely.
3. Fix the wiring with clamps.
4. Install the removed parts back to original place.



⑨Check list after installation

- Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

⑩Tap selection on blower unit (when the high peformance filter is used)

Following table shows the maximum external static pressure for models adapted to the fan setting speed (Hi, UH). Select at site the fan setting speed according to the external static pressure.

50/60Hz

Multi type		22~56	71, 90, 140	112
Single type		50	60, 71, 125, 140	100
Fan Speed	Hi	60/60	60/60	60/60
	UH	85/90	85/100	90/100

Unit:Pa

⚠ CAUTION

- Taps should not be used under external static pressure mentioned above. Dew condensation may occur with the unit and wet the ceiling or furniture.
- Do not use under external static pressure of 60Pa or less. Water drops may be blown from the diffuser outlet of the unit and wet the ceiling or furniture.

10.2 Installation of outdoor unit

Models SRC40ZJX-S, 50ZJX-S, 60ZJX-S

Model 40·50·60
R410A REFRIGERANT USED

- **This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page from 63 to 90.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker for all pole correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows directly to an animal or plants. The outlet air can affect adversely to the plant etc.
  - Locations where vibration can be amplified and transmitted due to insufficient strength of structure.
  - Locations where vibration and operation sound generated by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 5m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
- **Do not clean up the unit with water.**

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

Accessories for outdoor unit		Q'ty
①	Grommet (Heat pump type only)	4
②	Drain elbow (Heat pump type only)	1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			
1	Plus headed driver	9	Wrench key (Hexagon) [4m/m]
2	Knife	10	Vacuum pump
3	Saw	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
4	Tape measure	12	Gauge manifold (Designed specifically for R410A)
5	Hammer	13	Charge hose (Designed specifically for R410A)
6	Spanner wrench	14	Flaring tool set (Designed specifically for R410A)
7	Torque wrench [14.0～62.0N·m (1.4～6.2kgf·m)]	15	Gas leak detector (Designed specifically for R410A)
8	Hole core drill (65mm in diameter)	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)

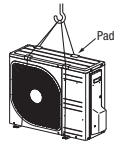
Notabilia as a unit designed for R410A

- Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of aconventional refrigerant.
  A cylinder containing R410A has a pink indication mark on the top.
- A unit designed for R410A has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake.
  The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure.
  Accordingly, you are required to arrange dedicated R410A tools listed in the table on the right before installing or servicing this unit.
- Do not use a charge cylinder. The use of acharge cylinder will cause the refrigerant composition to change, which results in performance degradation.
- In charging refrigerant, always take it out from a cylinder in the liquid phase.
- All indoor units must be models designed exclusively for R410A. Check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

1. HAULAGE AND INSTALLATION (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

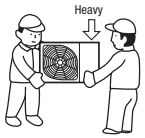
⚠CAUTION When a unit is hoisted with slings for haulage, take into consideration the offset of its gravity center position. If not properly balanced, the unit can be thrown off-balance and fall.

1) Delive ry



- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- When you have to unpack the unit for a compelling reason before you haul it to the installation point, hoist the unit with nylon slings or ropes and protection pads so that you may not damage the unit.

2) Portage



- The right hand side of the unit as viewed from the front (diffuserside) is heavier. A person carrying the right hand side must take heed of this fact. A person carrying the left hand side must hold with his right hand the handle provided on the frontpanel of the unit and with his left hand the corner column section.

3) Selection of installation location for the outdoor unit

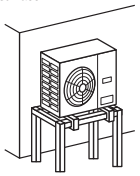
Be sure to select a suitable installation place in consideration of following conditions.

- ○ A place where it is horizontal, stable and can endure the unit weight and will not allow vibration transmittance of the unit.
- ○ A place where it can be free from possibility of bothering neighbors due to noise or exhaust air from the unit.
- ○ A place where the unit is not exposed to oil splashes.
- ○ A place where it can be free from danger of flammable gas leakage.
- ○ A place where drain water can be disposed without any trouble.
- ○ A place where the unit will not be affected by heat radiation from other heat source.
- ○ A place where snow will not accumulate.
- ○ A place where the unit can be kept away 5m or more from TV set and/or radio receiver in order to avoid any radio or TV interference.
- ○ A place where good air circulation can be secured, and enough service space can be secured for maintenance and service of the unit safely.
- ○ A place where the unit will not be affected by electromagnetic waves and/or high-harmonic waves generated by other equipment.
- ○ A place where chemical substances like sulfuric gas, chloric gas, acid and alkali (including ammonia), which can harm the unit, will not be generated and not remain.
- ○ If a operation is conducted when the outdoor air temperature is -5 lower, the outdoor unit should be installed at a place where it is not influenced by natural wind.
- ○ A place where strong wind will not blow against the outlet air blow of the unit.

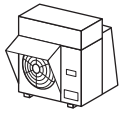
4) Caution about selection of installation location

(1) If the unit is installed in the area where the snow will accumulate, following measures are required.
The bottom plate of unit and intake, outlet may be blocked by snow.

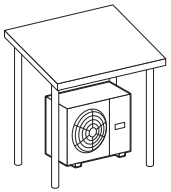
1 Install the unit on the base so that the bottom is higher than snow cover surface.



2 Provide a snow hood to the outdoor unit on site. Regarding outline of a snow hood, refer to our technical manual.



3 Install the unit under eaves or provide the roof on site.

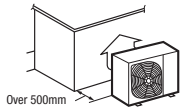


Since drain water generated by defrost control may freeze, following measures are required.

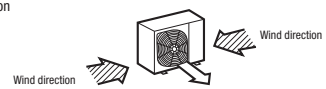
- Don't execute drain piping work by using a drain elbow and drain grommets (optional parts). [Refer to Drain piping work.]
- Recommend setting Defrost Control (SW3-1) and Snow Guard Fan Control (SW3-2). [Refer to Setting SW3-1, SW3-2.]

(2) If the unit can be affected by strong wind, following measures are required.
Strong wind can cause damage of fan (fanmotor), or can cause performance degradation, or can trigger anomalous stop of the unit due to rising of high pressure.

1.Install the outlet air blow side of the unit to face a wall of building, or provide a fence or a windbreak screen.



2.Install the outlet air blow side of the unit in a position perpendicular to the direction of wind.

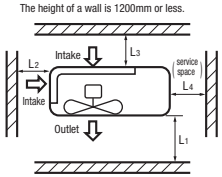


5) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- When more than one unit are installed side by side, provide a 250mm or wider interval between them as a service space. In order to facilitate servicing of controllers, please provide a sufficient space between units so that their top plates can be removed easily.
- Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- Where piling snow can bury the outdoor unit, provide proper snow guards.

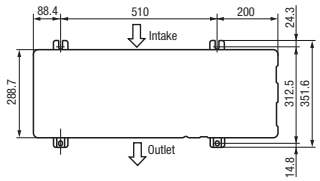
(mm)

Example installation / Size	Model 40, 50, 60			
	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

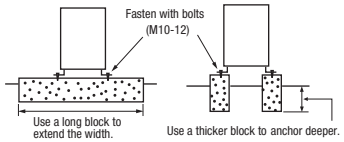


6) Installation

① Anchor bolt fixed position



② Notabilia for installation



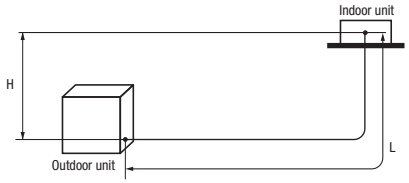
- In installing the unit, fix the unit's legs with bolts specified on the left.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping with in the unit and abnormal noise generation.

2. REFRIGERANT PIPING WORK

1) Restrictions on unit installation and use

- Check the following points in light of the indoor unit specifications and the installation site.
- Observe the following restrictions on unit installation and use. Improper installation can result in a compressor failure or performance degradation.

Restrictions		Dimensional restrictions	Marks appearing in the drawing on the right
Main pipe length		30m or less	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,	20m or less	H
	When the outdoor unit is positioned lower,	20m or less	H



⚠CAUTION
- The use restrictions appearing in the table above are applicable to the standard pipe size combinations shown in the table below. Where an existing pipe system is utilized, different one-waypipe length restrictions should apply depending on its pipe size. For more information, please see "5. UTILIZATION OF EXISTING PIPING."

2) Determination of pipe size

- Determine refrigerant pipe size pursuant to the following guidelines based on the indoor unit specifications.

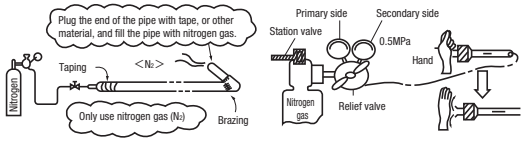
	Model 40, 50, 60	
	Gas pipe	Liquid pipe
Outdoor unit connected	ϕ12.7 Flare	ϕ6.35 Flare
Refrigerant piping (branch pipeL)	ϕ12.7	ϕ6.35
Indoor unit connected	ϕ12.7	ϕ6.35

When pipe is brazing.

About brazing

Brazing must be performed under a nitrogen gas flow.

Without nitrogen gas, a large quantity of foreign matters (oxidizedfilm) are created, causing a critical failure from capillary tube or expansion valve clogging.



3) Refrigerant pipe wall thickness and material

- Select refrigerant pipes of the table shown on the right wall thickness and material as specified for each pipe size.

NOTE ● Select pipes having a wall thickness larger than the specified minimum pipe thickness.

Pipe diameter [mm]	6.35	12.7
Minimum pipe wall thickness [mm]	0.8	0.8
Pipe material*	O-type pipe	O-type pipe

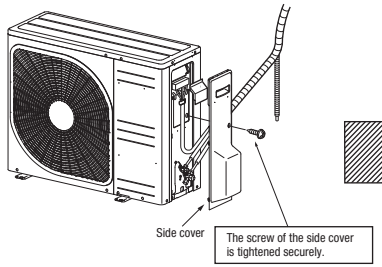
*Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

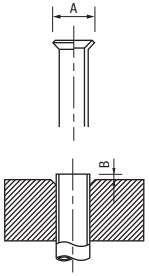
4) On-site piping work

⚠ IMPORTANT Take care so that installed pipes may not touch components within a unit. If touching with an internal component, it will generate abnormal sounds and/or vibrations.

How to remove the side cover Please remove the screw of a side cover and remove to the front.

- Carry out the on site piping work with the operation valve fully closed.
- Give sufficient protection to a pipe end (compressed and blazed, or with an adhesive tape) so that water or foreign matters may not enter the piping.
- Bend a pipe to a radius as large as practical.(R100~R150) Do not bend a pipe repeatedly to correct its form.
- Flare connection is used between the unit and refrigerant pipe. Flare a pipe after engaging a flare nut onto it. Flare dimensions for R410A are different from those for conventional R407C. Although we recommend the use of flaring tools designed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- The pipe should be anchored every 1.5m or less to isolate the vibration.
- Tighten a flare joint securely with a double spanner.





Flared pipe end : A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
ϕ6.35	9.1
ϕ12.7	16.6

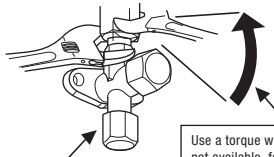
Copper pipe protrusion for flaring : B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ6.35	0~0.5	1.0~1.5
ϕ12.7		

⚠ CAUTION **Do not apply force beyond proper fastening torque in tightening the flare nut.**

Fix both liquid and gas operation valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

Operation valve size (mm)	Tightening torque (N·m)	Tightening angle (°)	Recommended length of a tool handle (mm)
ϕ6.35 (1/4")	14~18	45~60	150
ϕ12.7 (1/2")	49~61	30~45	250



Do not hold the valve cap area with a spanner.

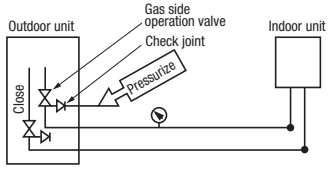
Use a torque wrench. If a torque wrench is not available, fasten the flare nut manually first and then tighten it further, using the left table as a guide.

5) Air tightness test

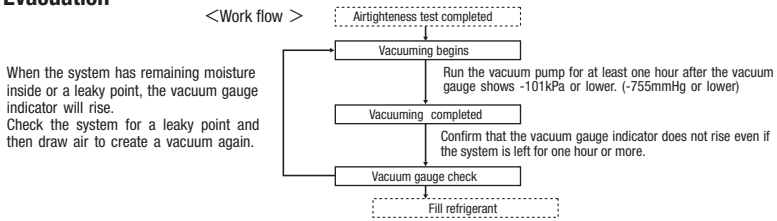
① Although outdoor and indoor units themselves have been tested for air tightness at the factory, check the connecting pipes after the installation work for air tightness from the operation valve's check joint equipped on the outdoor unit side. While conducting a test, keep the operation valve shut all the time.

a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) If no pressure drop is observed with an installation pressurized to the specified level and left for about one day, it is acceptable. When the ambient Temperature fall 1℃, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.

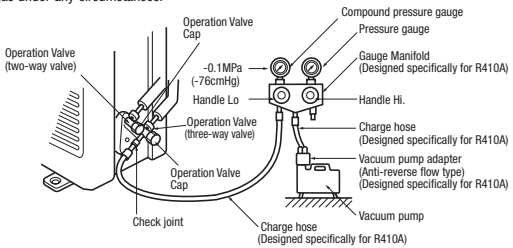
② In conducting an air-tightness test, use nitrogen gas and pressurize the system with nitrogen gas from the gas side. Do not use a medium other than nitrogen gas under any circumstances.



6) Evacuation



When the system has remaining moisture inside or a leaky point, the vacuum gauge indicator will rise.
Check the system for a leaky point and then draw air to create a vacuum again.



Pay attention to the following points in addition to the above for the R410A and compatible machines.

○To prevent a different oil from entering, assign dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).
○Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.

Securely tighten the operation valve cap and the check joint blind nut after adjustment.

Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
φ6.35 (1/4")	20～30	10～12
φ12.7 (1/2")	25～35	

7) Additional refrigerant charge

(1) Calculate a required refrigerant charge volume from the following table.

	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe φ6.35)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
Model 40, 50, 60	0.02	1.40	15

●This unit contains factory charged refrigerant covering 15m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 15m refrigerant piping.
When refrigerant piping exceeds 15m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 15m.
●If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size. For further information, please see "5. UTILIZATION OF EXISTING PIPING."

Formula to calculate the volume of additional refrigerant required

Additional charge volume (kg) = { Main length (m) – Factory charged volume 15 (m) } x 0.02 (kg/m)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.
● For an installation measuring 15 m or shorter in pipe length, please charge the refrigerant volume charged for shipment at the factory, when you recharge refrigerant after servicing etc.

(2) Charging refrigerant

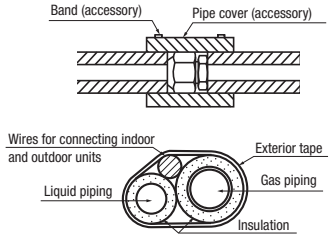
●Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
●Charge refrigerant always from the liquid side service port with the operation valve shut. When you find it difficult to charge a required amount, fully open the outdoor unit valves on both liquid and gas sides and charge refrigerant from the gas (suction) side service port, while running the unit in the cooling mode. In doing so, care must be taken so that refrigerant may be discharged from the cylinder in the liquid phase all the time. When the cylinder valve is throttled down or a dedicated conversion tool to change liquid-phase refrigerant into mist is used to protect the compressor, however, adjust charge conditions so that refrigerant will gasify upon entering the unit.
●In charging refrigerant, always charge a calculated volume by using a scale to measure the charge volume.
●When refrigerant is charged with the unit being run, complete a charge operation within 30 minutes. Running the unit with an insufficient quantity of refrigerant for a long time can cause a compressor failure.

NOTE Put down the refrigerant volume calculated from the pipe length onto the caution label attached on the back side of the service panel.

8) Heating and condensation prevention

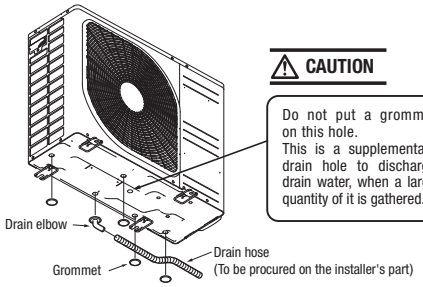
(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
・Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

(2) Use a heat insulating material that can withstand 120℃ or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.
・All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
・Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
・Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
・**Both gas and liquid pipes need to be dressed with 20 mm or thicker heat insulation materials above the ceiling where relative humidity exceeds 70%.**



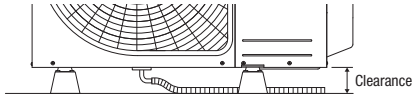
3. DRAIN PIPING WORK

- Execute drain piping by using a drain elbow and drain grommets supplied separately as optional parts, where water drained from the outdoor unit is a problem.
- Water may drip where there is a larger amount of drain water. Seal around the drain elbow and drain grommets with putty or adequate caulking material.
- Condensed water may flow out from vicinity of operation valve or connected pipes.
- Where you are likely to have several days of sub-zero temperatures in a row, do not use a drain elbow and drain grommets. (There is a risk of drain water freezing inside and blocking the drain.)



⚠ CAUTION

Do not put a grommet on this hole.
This is a supplementary drain hole to discharge drain water, when a large quantity of it is gathered.



- When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.

  Then, please secure space for the drain elbow and the drain hose.

4. ELECTRICAL WIRING WORK

For details of electrical cabling, refer to the indoor unit installation manual.

Electrical installation work must be performed by an electrical installation service provider qualified by a power provider of the country.
Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.

- Do not use any supply cord lighter than one specified in parentheses for each type below.
  - ・braided cord (code designation 60245 IEC 51),
  - ・ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
  - ・flat twin tinsel cord (code designation 60227 IEC 41);

  Use polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
- Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire.
  If impropery grounded, an electric shock or malfunction may result.
- A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
- The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an acccident such as an electric shock or a fire.
- Do not turn on the power until the electrical work is completeted .
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It dose not improve power factor, while it can cause an abnormal overheat accident)
- For power supply cables, use conduits.
- Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.
- Fasten cables so that may not touch the piping, etc.
- When cables are connected, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
- Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.

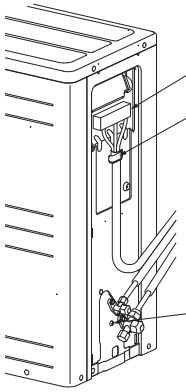
⚠ CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

H05RNR4G1.5 (Example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth. rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



Power supply terminal block

Cable clamp

- It holds cables in place and protect the terminal connection from external force.
- This clamp is for the cable in the outside diameter 9~15mm.
  Please adjust it when not suitable.

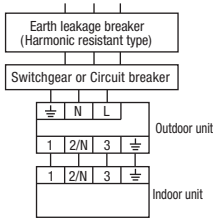
Cable clamp

- It holds cables in place and protect the terminal connection from external force.

Grounding terminal

- Please be sure to carry out D-type (type III) grounding work.

Power cable, indoor-outdoor connecting wires



- Always perform grounding system installation work with the power cord unplugged.
- Connect a pair bearing a common terminal number with an indoor-outdoor connecting wire.
- In cabling, fasten cables securely with cable clamps so that no external force may work on terminal connections.
- Grounding terminals are prorided in the control box.

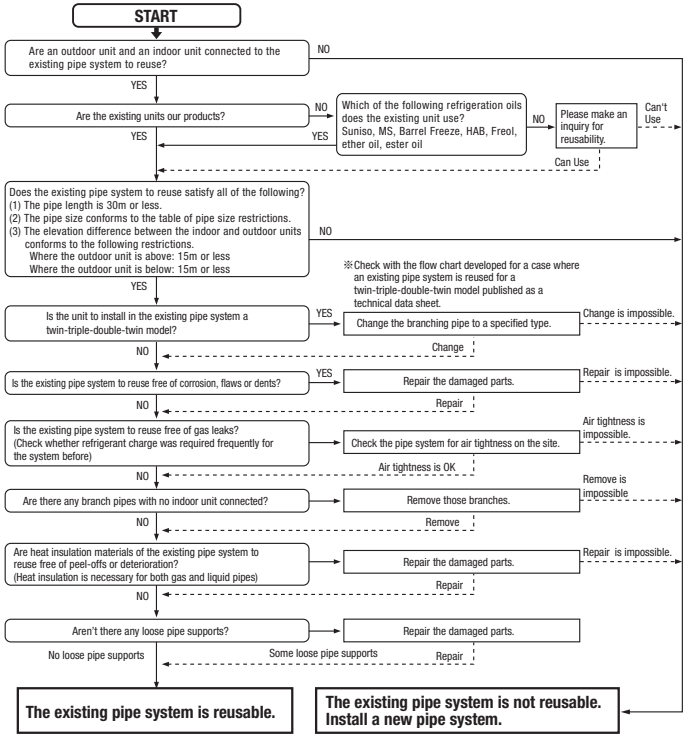
⚠ CAUTION Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.

Phase	Model	Earth leakage breaker	Switchgear or Circuit Breaker		Power souce (minimum)	Interconnecting and grounding wires (minimum)
			Switch breaker	Over current protector rated capacity		
Single-phase	40	15A,30mA, 0.1sec or less	30A	16A	$2.0mm^2$	1.5mm×4
	50					
	60					

- The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
- Switchgear or Circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
- The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, please follow the internal cabling regulations. Adapt it to the regulation in effect in each country.

5. UTILIZATION OF EXISTING PIPING

Check whether an existing pipe system is reusable or not by using the following flow chart.



<Table of pipe size restrictions>

◎:Standard pipe size ○:Usable △:Restricted to shorter pipe length limits

Additional charge volume per meter of pipe		0.02kg/m	0.06kg/m
Pipe size	Liquid pipe	ø6.35	ø9.52
	Gas pipe	ø12.7	ø12.7
40	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	5
50	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	15
60	Usability	◎	△
	Maximum one-way pipe length	30	10
	Length covered without additional charge	15	5

- **Please consult with our distributor in the area, if you need to recover refrigerant and charge it again.**
- Any combinations of pipe sizes not listed in the table are not usable.

Formula to calculate additional charge volume

Additional charge volume (kg) = {Main pipe length (m) – Length covered without additional charge shown in the table (m)} × Additional charge volume per meter of pipe shown in the table (kg/m)

※ If you obtain a negative figure as a result of calculation, no additional refrigerant needs to be charged.

Example) When an 60 is installed in a 10m long existing pipe system (liquid ϕ9.52, gas ϕ12.7), the quantity of refrigerant to charge additionally should be (10m-5m) x 0.06kg/m = 0.3 kg.

⚠ WARNING <Where the existing unit can be run for a cooling operation.>

Carry out the following steps with the excising unit (in the order of (1), (2), (3) and (4))

(1) Run the unit for 30 minutes for a cooling operation.
(2) Stop the indoor fan and run the unit for 3 minutes for a cooling operation (returning liquid)
(3) Close the liquid side operation valve of the outdoor unit and pump down (refrigerant recovery)
(4) Blow with nitrogen gas. ※ If discolored refrigeration oil or any foreign matters is discharged by the blow, wash the pipe system or install a new pipe system.

- For the flare nut, do not use the old one, but use the one supplied with the outdoor unit. Process a flare to the dimensions specified for R410A.

<Where the existing unit cannot be run for a cooling operation.>

Wash the pipe system or install a new pipe system.

- If you choose to wash the pipe system, please contact our distributor in the area.

INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turnig on the power. Conduct a test run again and ensure that the unit operates properly.
Explain to the customer how to use the unit and how to take care of the unit following the instruction manual.

After installation

- ☐ Power cables and connecting wires are securely fixed to the terminal block.
- ☐ The power supply voltage is correct as the rating.
- ☐ The drain hose is fixed securely.
- ☐ Operational valve is fully open.
- ☐ No gas leaks from the joints of the operational valve.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ The reverse flow check cap is attached.
- ☐ The cover of the pipe cover (A) faces downward to prevent rain from entering.
- ☐ Gaps are properly sealed between the pipe covers (A) (B) and the wall surface / pipes.
- ☐ The screw of the side cover is tightened securely.

10.3 Electric wiring work installation (FDT, FDTC, FDEN and FDUM sries only)

PSB012D966

Electrical wiring work must be performed by an electrician qualified by a local power provider according to the electrical installation technical standards and interior wiring regulations applicable to the installation site.

Security instructions

- **Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.**
- **The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .**
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- **The meanings of "Marks" used here are as shown on the right:**
  ⃠ Never do it under any circumstances. | ❗ Always do it according to the instruction.
- **Accord with following items. Otherwise, there will be the risks of electric shock and fire caused by overheating or short circuit.**

⚠WARNING

- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Use the genuine optional parts. And installation should be performed by a specialist.**
  If you install the unit by yourself, it could cause water leakage, electric shock and fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠CAUTION

- **Perform earth wiring surely.**
  Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock due to a short circuit.
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Make sure to install earth leakage breaker on power source line. (countermeasure thing to high harmonics.)**
  Absence of breaker could cause electric shock.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Use power source line of correct capacity.**
  Using incorrect capacity one could cause electric leak, abnormal heat generation and fire.
- **Do not mingle solid cord and stranded cord on power source and signal side terminal block.**
  In addition, do not mingle difference capacity solid or stranded cord.
  Inappropriate cord setting could cause loosing screw on terminal block, bad electrical contact, smoke and fire.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

①Electrical Wiring Connection

- Use three-core cable as wiring between indoor and outdoor unit. As for detail, refer to "INSTALLATION MANUAL" of outdoor Unit.
- Set earth of D-type.
- Keep "remote controller line" and "power source line" away from each other on constructing of unit outside.
- Run the lines (power source, remote controller and "between indoor and outdoor unit") upper ceiling through iron pipe or other tube protection to avoid the damage by mouse and so on.
- Do not add cord in the middle of line route (of power source, remote controller and "between indoor and outdoor unit") on outside of unit. If connecting point is flooded, it could cause problem as for electric or communication. (In the case that it is necessary to set connecting point on the way, perform thorough waterproof measurement.)
- Do not connect the power source line [220V/240V/380V/415V] to signal side terminal block. Otherwise, it could cause failure.
- Screw the line to terminal block without any looseness, certainly.
- Do not turn on the switch of power source, before all of line work is done.
- Connection of the line ("Between indoor and outdoor unit", Earth and Remote controller)

①Remove lid of control box before connect the above lines, and connect the lines to terminal block according to number pointed on label of terminal block.
In addition, pay enough attention to confirm the number to lines, because there is electrical polarity except earth line. Furthermore, connect earth line to earth position of terminal block of power source.

②Install earth leakage breaker on power source line. In addition, select the type of breaker for inverter circuit as earth leakage breaker.

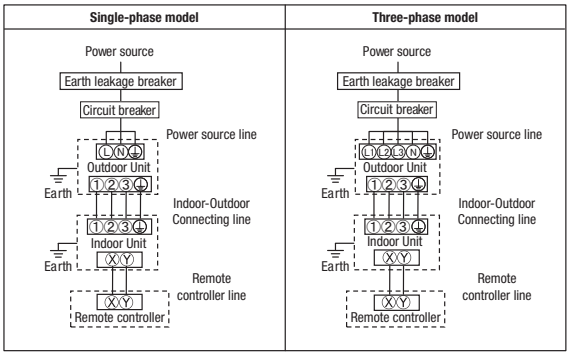
③If the function of selected earth leakage breaker is only for earth-fault protection, hand switch (switch itself and type "B" fuse) or circuit breaker is required in series with the earth leakage breaker.

④Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.
The isolator should be set in the box with key to prevent touching by another person when servicing.

Cable connection for single unit installation

①As for connecting method of power source, select from following connecting patterns. In principle, do not directly connect power souce line to inside unit.
※As for exceptional connecting method of power souce, discuss with the power provider of the country with referring to technical documents, and follow its instruction.

②For cable size and circuit breaker selection, refer to the outdoor unit installation manual.



Cable connection for a V multi configuration installation

①Connect the same pairs number of terminal block "①, ②, and ③"and " Ⓧ and Ⓨ " between master and slave indoor units.

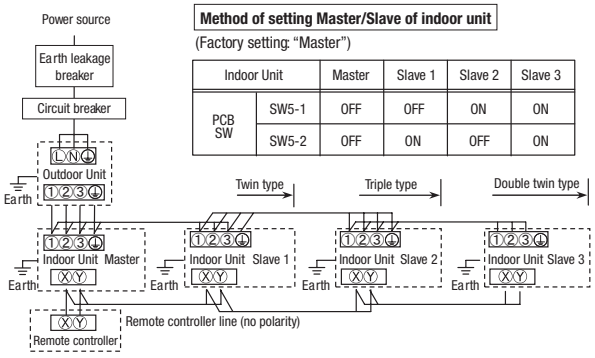
②Do the same address setting of all inside units belong to same refrigerant system by rotary switch SW2 on indoor unit's PCB (Printed circuit board).

③Set slave indoor unit as "slave 1" through "slave 3" by address switch SW5-1, 5-2 on PCB.

④When the AIR CON NO. button on the remote control unit is pressed after turning on the power, an indoor unit's address number will be displayed. Do not fail to confirm that the connected indoor unit's numbers are displayed on the remote control unit by pressing the ▲ or ▼ button.

Method of setting Master/Slave of indoor unit
(Factory setting: "Master")

Indoor Unit		Master	Slave 1	Slave 2	Slave 3
PCB SW	SW5-1	OFF	OFF	ON	ON
	SW5-2	OFF	ON	OFF	ON



②Remote Control, Wiring and functions

●DO NOT install it on the following places
①Places exposed to direct sunlight
②Places near heat devices
③High humidity places
④Hot surface or cold surface enough to generate condensation
⑤Places exposed to oil mist or steam directly.
⑥Uneven surface

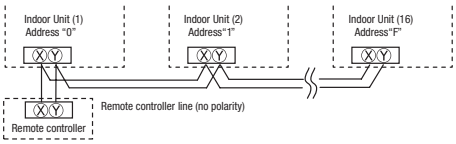
Installation and wiring of remote controller

①Install remote controller referring to the attached installation manual.
②Wiring of remote controller should use 0.3mm² ×2 core wires or cables.
The insulation thickness is 1mm or more. (on-site configuration)
③Maximum prolongation of remote control wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, wiring in the remote controller case should be under 0.5mm² . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.
100 - 200m ..... 0.5mm² × 2 cores
Under 300m ..... 0.75mm² × 2 cores
Under 400m ..... 1.25mm² × 2 cores
Under 600m ..... 2.0mm² × 2 cores
④Avoid using multi-core cables to prevent malfunction.
⑤Keep remote controller line away from earth (frame or any metal of building).
⑥Make sure to connect remote controller line to the remote controller and terminal block of indoor unit. (No polarity)

Control plural indoor units by a single remote controller.

①A remote controller can control plural indoor units (Up to 16).
In above setting, all plural indoor units will operate under same mode and temperature setting.
②Connect all indoor units with 2 core remote controller line.
③Set unique remote control communication address from "0" to "F" to each inside unit by the rotary switch SW2 on the indoor unit's PCB.

After a unit is energized, it is possible to display an indoor unit address by pressing AIR CON NO. button on the remote control unit. Press the ▲ or ▼ button to make sure that all indoor units connected are displayed in order.



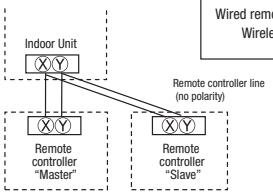
Confirming method of indoor units

When indoor unit address number is displayed on remote controller, pushing the (MODE) button to make the indoor unit with that number blow air (Display example:" I/U001 ≋ ")
Push the (MODE) button again to stop the operation.
However, this operation is invalid on the air-conditioning running.

Master/ slave setting when more than one remote control unit are used

A maximum of two remote control units can be connected to one indoor unit (or one group of indoor units.)
The air conditioner operation follows the last operation of the remote controller regardless of the master/slave setting of it.
Acceptable combination is "two (2) wired remote controllers", "one (1) wired remote controller and one (1) wireless kit" or "two (2) wireless kits".
Set SW1 (wired remote controller) or SW1-2 (wireless kit) to "Slave" for the slave remote control unit. It was factory set to "Master" for shipment.
Note:The setting "Remote control unit sensor enabled" is only selectable with the master remote control unit in the position where you want to check room temperature.

Switch	setting	contents
Wired remote controller: SW1 Wireless kit: SW1-2	M	Master remote controller
	S	Slave remote controller



③Trial operation

The method of trial cooling operation

Operate the remote control unit as follows.
1. Starting a cooling test run.
①Start the system by pressing the ON/OFF button.
②Select " (Cool)" with the (MODE) button.
③Press the TEST button for 3 seconds or longer.
The screen display will switch to: " TEST RUN ▼ "
④When the (SET) button is pressed while " TEST RUN ▼ " is indicated, a cooling test run will start.
The screen display will switch to " TEST RUN ".
2. Ending a cooling test run.
Pressing the ON/OFF button, the (TEMP) button or (MODE) button will end a cooling test run. (Cooling test run will end after 30 minutes pass.)
" TEST RUN " shown on the screen will go off.

Checking operation data

Operation data can be checked with remote control unit operation.
1. Press the CHECK button.
The display change " OPER DATA ▼ "
2. Press the (SET) button while " OPER DATA ▼ " is displayed.
3. When only one indoor unit is connected to remote controller, " DATA LOADING" is displayed (blinking indication during data loading).
Next, operation data of the indoor unit will be displayed. Skip to step 7.
4. When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.
[Example]:
"SELECT I/U" (blinking 1 seconds)→
"I/U000 ▲" blinking.
5. Select the indoor unit number you would like to have data displayed with the ▲ ▼ button.
6. Determine the indoor unit number with the (SET) button.
(The indoor unit number changes from blinking indication to continuous indication)
" I/U000 " (The address of selected indoor unit is blinking for 2 seconds.)
↓
" DATA LOADING " (A blinking indication appears while data loaded.)
Next, the operation data of the indoor unit is indicated.
7. Upon operation of the ▲ ▼ button, the current operation data is displayed in order from data number 01.
The items displayed are in the above table.
※Depending on models, the items that do not have corresponding data are not displayed.
8. To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.
9. Pressing the ON/OFF button will stop displaying data.
Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.
◎If two (2) remote controllers are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

Number	Data Item	
01		(Operation Mode)
02	SET TEMP ___℃	(Set Temperature)
03	RETURN AIR___℃	(Return Air Temperature)
04	SENSOR ___℃	(Remote Controller Thermistor Temperature)
05	THI-R1___℃	(Indoor Unit Heat Exchanger Thermistor / U Bend)
06	THI-R2___℃	(Indoor Unit Heat Exchanger Thermistor /Capillary)
07	THI-R3___℃	(Indoor Unit Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED___	(Indoor Unit Fan Speed)
09	DEMAND ___Hz	(Frequency Requirements)
10	ANSWER ___Hz	(Response Frequency)
11	I/U EEV____P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN___H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR___℃	(Outdoor Air Temperature)
22	THO-R1___℃	(Outdoor Unit Heat Exchanger Thermistor)
23	THO-R2___℃	(Outdoor Unit Heat Exchanger Thermistor)
24	COMP ___Hz	(Compressor Frequency)
25	HP ___MPa	(High Pressure)
26	LP ___MPa	(Low Pressure)
27	Td___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM___℃	(Comp Bottom Temperature)
29	CT___AMP	(Current)
30	TARGET SH___℃	(Target Super Heat)
31	SH___℃	(Super Heat)
32	TDSH___℃	(Discharge Pipe Super Heat)
33	PROTECTION No.__	(Protection State No. of The Compressor)
34	O/U FANSPEED____	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN___H	(Total Running Hours of The Compressor)
38	O/U EEV1____P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2____P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

※Depending on outdoor unit model, there are data not shown.

Trail operation of drain pump

Drain pump operation from remote control unit is possible. Operate a remote control unit by following the steps described below.
1. To start a forced drain pump operation.
①Press the TEST button for three seconds or longer.
The display will change " TEST RUN ▼ "
②Press the ▼ button once and cause " DRAIN PUMP " to be displayed.
③When the (SET) button is pressed, a drain pump operation will start.
Display: " TO STOP "
2. To cancel a drain pump operation.
①If either (SET) or ON/OFF button is pressed, a forced drain pump operation will stop. The air conditioning system will become OFF.

◎If two (2) remote controllers are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

④Function Setting by Remote Controller

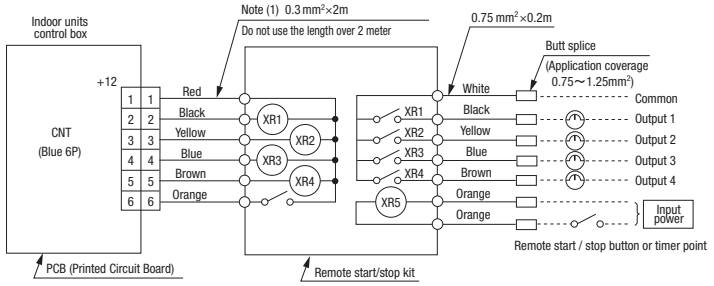
Refer to page 233.

⑤Control mode switching

●The control content of indoor units can be switched in following way. (▭ is the default setting)

Switch No.	Control Content	
SW2	Indoor unit address (0-Fh)	
SW5-1	Master/Slave Switching (plural /Slave unit Setting)	
SW5-2		
SW6-1～4	Model capacity setting	
SW7－1	ON	Operation check, Drain motor test run
	OFF	Normal operation

⑥Function of CNT connector of indoor printed circuit board



●CNT connector (local) vendor model

Connector : Made by molex 5264 - 06

Terminals : Made by molex 5263T

●Function

Output 1	Operation output (there is output when unit is in operation.)
Output 2	Heating output (there is output when operation MODE is HEATING.)
Output 3	Compressor ON output (there is output when compressor is in operation.)
Output 4	Inspection output (there is output when unit is stopped by error.)
Input 5	Remote operation input (Volt-free contact) (Inputted to operate unit)

⑦Troubleshooting

The operation data is saved when the situation of abnormal operation happen, and the data can be confirmed by remote controller.

[Operating procedure]

1. Press the CHECK button.
   The display change " OPER DATA ▼ "
2. Once, press the ▼ button, and the display change
   " ERROR DATA ♟ ".
3. Press the ○ (SET) button and abnormal operation data mode is started.
4. When only one indoor unit is connected to remote controller, following is displayed.
   ①The case that there is history of abnormal operation.
   →Error code and " DATA LOADING " is displayed.
   [Example]: [E8] (ERROR CODE)
   " DATA LOADING " is displayed (blinking indication during data loading).
   Next, the abnormal operation data of the indoor unit will be displayed.
   Skip to step 8.
   ②The case that there is not history of abnormal operation.
   →" NO ERROR " is displayed for 3 seconds and this mode is closed.
5. When plural indoor units is connected, following is displayed.
   ①The case that there is history of abnormal operation.
   →Error code and the smallest address number of indoor unit among all connected indoor unit is displayed.
   [Example]: [E8] (ERROR CODE)
   " I/UOOO ♟ " blinking
   ②The case that there is not history of abnormal operation.
   →Only address number is displayed.
6. Select the indoor unit number you would like to have data displayed with the ▲ ▼ button.
7. Determine the indoor unit number with the ○ (SET) button.
   [Example]: [E8] (ERROR CODE)
   " I/UOOO ♟ " (The address of selected indoor unit is blinking for 2 seconds.)
   ↓
   [E8] "DATA LOADING " (A blinking indication appears while data loaded.)
   Next, the abnormal operation data is indicated.
   If the indoor unit doing normal operation is selected, NO ERROR " is displayed for 3 seconds and address of indoor unit is displayed.
8. By the ▲ ▼ button, the abnormal operation data is displayed.
   Displayed data item is based on ③ Trial operation .
   ※Depending on models, the items that do not have corresponding data are not displayed.
9. To display the data of a different indoor unit, press the AIR CON No. button, which allows you to go back to the indoor unit slection screen.
10. Pressing the ⏻ON/OFF button will stop displaying data.

Pressing the ⊘ (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

◎If two (2) remote controllers are connected to one (1) indoor unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

Error Code of indoor unit

Display on remote controller	LED on indoor circuit board		Content
	red (checking)	green (normal)	
Off	Off	Continuous blinking	Normal
	Off	Off	Fault on power, indoor power off or lack phase
E1	Off	Continuous blinking	Fault on the transmission between indoor circuit board and remote control
	Not sure	Not sure	Indoor computer abnormal
E5	Blinking twice	Continuous blinking	Fault on outdoor-indoor transmission
E6	Blinking once	Continuous blinking	Indoor heat exchange sensor interrupted or short-circuit
E7	Blinking once	Continuous blinking	Indoor air inhaling sensor broken or short-circuit
E8	Blinking once	Continuous blinking	The temperature of heat exchange abnormal
E9	Blinking once	Continuous blinking	Float SW actions (only with FS)
E10	Off	Continuous blinking	Excess number of remote controller connections
E14	Blinking for three times	Continuous blinking	The communication fault for master/slave indoor units
E16	Blinking once	Continuous blinking	Fan motor abnormal
E19	Blinking once	Continuous blinking	Configuration fault on running checking model
E28	Off	Continuous blinking	Remote controller sensor interrupted
Over E30	Off	Continuous blinking	Outdoor unit checking (outdoor circuit board LED checking)

11.OUTLINE OF OPERATION CONTROL BY MICRCOMPUTER

11.1 SRK series

(1) Operation control function by remote controller

◆ **Operation section**

FAN SPEED button
Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button
This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button
These buttons sets the indoor temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button
This button selects ON TIMER operation.

SLEEP button
This button selects SLEEP operation.

CLEAN switch
This switch changes the CLEAN mode.

CANCEL button
This button cancels the ON timer, OFF timer, and SLEEP operation.

OPERATION MODE select button
Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button
Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button
This button changes the air flow (up/down) direction.

AIR FLOW (LEFT/RIGHT) button
This button changes the air flow (left/right) direction.

3D AUTO button
This button sets 3D AUTO operation.

OFF TIMER button
This button selects OFF TIMER operation

ACL switch
This switch is for resetting microcomputer and setting time.

ALLERGEN CLEAR button
This button selects ALLERGEN CLEAR operation.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

Unit indication section

Unit ON/OFF button
This button can be used for turning ON/OFF the unit when remote controller is not available.

Remote controller signal receiver

ON／OFF

RUN
TIMER
HI POWER
3D AUTO

RUN (HOT KEEP) light (green/blue)
- Illuminates during operation.
  green : except ECONO operation
  blue : ECONO operation
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.

HOT KEEP: 1.5 sec. ON / OFF / 0.5 sec.

CLEAN operation: 3 sec. ON / OFF / 1 sec.

3D AUTO light (green)
Illuminates during 3D AUTO operation

HI POWER light (green)
Illuminates during HIGH POWER operation.

TIMER light (yellow)
Illuminates during TIMER operation.

(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

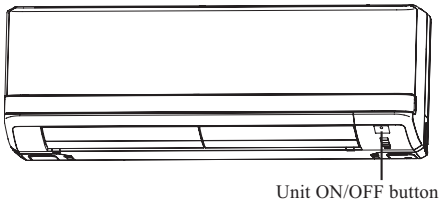
(a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from indoor temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / operation mode	Indoor temperature setting	Fan speed	Flap/Louver	Timer Switch
Cooling	About 24ºC	Auto	Auto	Continuous
Thermal dry	About 25ºC			
Heating	About 26ºC			



(3) Auto restart function

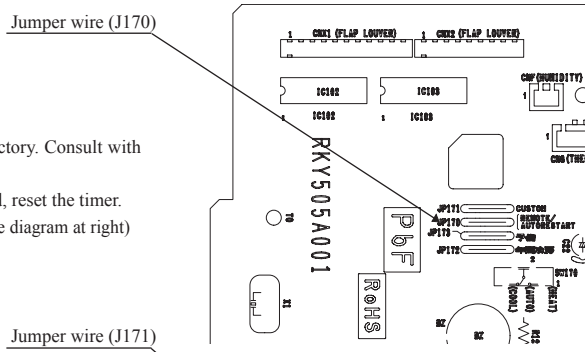
(a) Auto restart function records the operational status of the air-conditioner immediately prior to be switched off by a power cut, and then automatically resumes operations after the power has been restored.

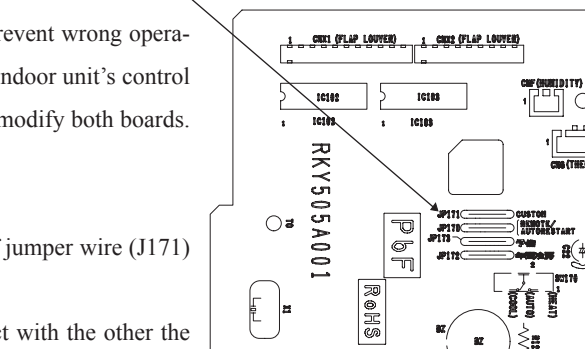
(b) The following settings will be cancelled:

1) Timer settings

2) HIGH POWER operations

Notes (1) Auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.
(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.
(3) If the jumper wire (J170) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)





(4) Custom cord switching procedure

If two wireless remote controller are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote controller using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(a) Modifying the indoor printed circuit board

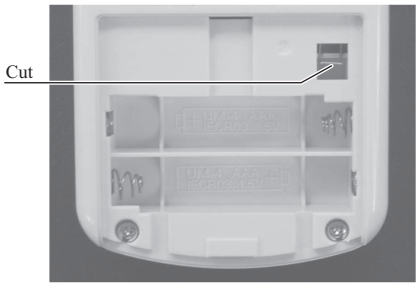
Take out the printed circuit board from the control box and cut off jumper wire (J171) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

(b) Modifying the wireless remote controller

1) Remove the battery.

2) Cut the jumper wire shown in the figure at right.

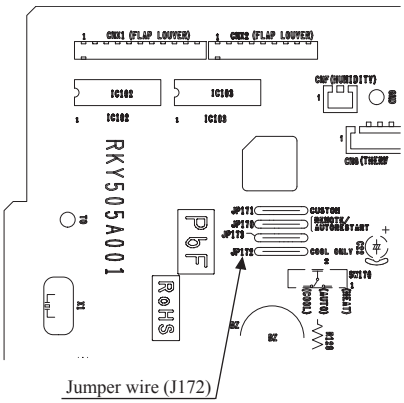


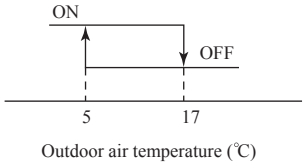
(5) Selection of the annual cooling function

(a) The annual cooling function can be enabled or disabled by means of the jumper wire (J172) on the indoor unit PCB and the dip switch (SW2-4) on the interface kit (optional) PCB.

Jumper wire (J172)	Interface kit (SC-BIKN-E) SW2-4	Function
Shorted	ON	Enabled
Shorted	OFF	Disabled
Open	ON	Disabled
Open	OFF	Disabled

Note: (1) Default states of the jumper wire (J172) and the interface kit at the shipping from factory – On the PCB, the dip switch (SW2-4) is set to enable the annual cooling function.
(2) To cancel the annual cooling setting, consult your dealer.





(b) Content of control

1) If the outdoor air temperature sensor (TH2) detects below 5°C, the indoor unit speed is switched to 7th step.

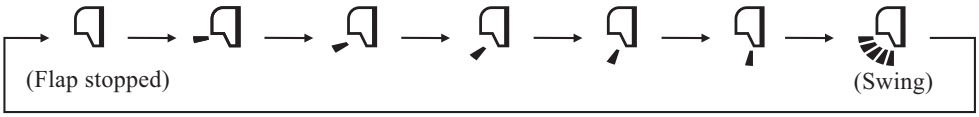
2) If the outdoor air temperature sensor (TH2) detects higher than 17°C, the indoor unit speed is changed to the normal control speed.

(6) Flap and louver control

Control the flap and louver by AIRFLOW ⬍ (UP/DOWN) and ◀▶ (LEFT/RIGHT) button on the wireless remote controller.

(a) Flap

Each time when you press the AIRFLOW ⬍ (UP/DOWN) button the mode changes as follows.

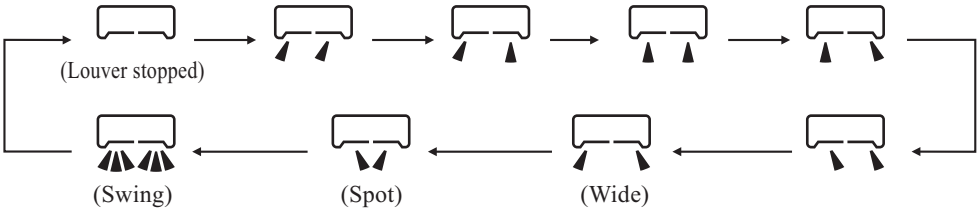


• Angle of Flap from Horizontal

Remote controller display					
COOL , DRY, FAN	Approx. 5°	Approx. 20°	Approx. 35°	Approx. 45°	Approx. 60°
HEAT	Approx. 20°	Approx. 35°	Approx. 45°	Approx. 60°	Approx. 75°

(b) Louver

Each time when you press the AIRFLOW ◀▶ (LEFT/RIGHT) button the mode changes as follows.



• Angle of Louver

Remote controller display					
Center installation	Left Approx. 50°	Left Approx. 20°	Center	Right Approx. 20°	Right Approx. 50°
Right end installation	Left Approx. 50°	Left Approx. 45°	Left Approx. 30°	Center	Right Approx. 20°
Left end installation	Left Approx. 20°	Center	Right Approx. 30°	Right Approx. 45°	Right Approx. 50°

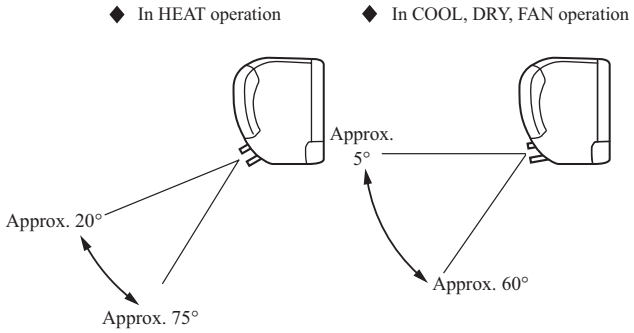
(c) Swing

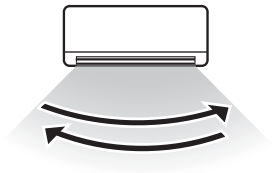
1) Swing flap

Flap moves in upward and downward directions continuously.

2) Swing louver

Louver moves in left and right directions continuously.





(d) Memory flap (Flap or Louver stopped)

When you press the AIRFLOW (UP/DOWN or LEFT/RIGHT) button once while the flap or louver is operating, it stops swinging at the position. Since this angle is memorized in the microcomputer, the flap or louver will automatically be set at this angle when the next operation is started.

(e) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

(7) 3D auto operation

Control the flap and louver by 3D AUTO button on the wireless remote controller.
Air flow selection and air flow direction are automatically controlled, allowing the entire indoor to efficiently conditioned.

(a) During Cooling and Heating (Including auto cooling and heating)

1) Air flow selection is determined according to indoor temperature and setting temperature.

Operation mode	Air flow selection				
	AUTO		HI	MED	LO
At cooling	Indoor temp. – Setting temp. >5°C	Indoor temp. – Setting temp. ≦ 5°C	HI	MED	LO
	HIGH POWER	AUTO			
At heating	Setting temp. – Indoor temp. >5°C	Setting temp. – Indoor temp.≦ 5°C			
	HIGH POWER	AUTO			

2) Air flow direction is controlled according to the indoor temperature and setting temperature.

a) When 3D auto operation starts

	Cooling	Heating
Flap	Up/down Swing	
Louver	Wide (fixed)	Center (fixed)

b) When Indoor temp. – Setting temp. is ≦ 5ºC during cooling and when Setting temp. – Indoor temp. is ≦ 5ºC during heating, the system switches to the following air flow direction control. After the louver swings left and right symmetrically for 3 cycles, control is switched to the control in c).

	Cooling	Heating
Flap	Horizontal blowing (Fixed)	Slant forwardl blowing (Fixed)
Louver	Left/right Swing	

c) After the flap swings for 5 cycles, control is switched to the control in d).

	Cooling	Heating
Flap	Up/down Swing	
Louver	Center (Fixed)	

d) For 5 minutes, the following air flow direction control is carried out.

	Cooling	Heating
Flap	Horizontal blowing (Fixed)	Slant forwardl blowing (Fixed)
Louver	Wide (Fixed)	

e) After 5 minutes have passed, the air flow direction is determined according to the indoor temperature and setting temperature.

Operation mode	Air flow direction contorol		
At cooling	Indoor temp. – Setting temp. ≦2°C	2°C < Indoor temp. – Setting temp. ≦5°C	Indoor temp. – Setting temp. > 5°C
	The control in 4) continues.	Control returns to the control in 2).	Control returns to the control in 1).
At heating	Setting temp. – Indoor temp. ≦2°C	2°C < Setting temp. – Indoor temp. ≦5°C	Setting temp. – Indoor temp. > 5°C
	The control in 4) continues.	Control returns to the control in 2).	Control returns to the control in 1).

(b) During DRY Operation (including auto DRY operation)

Air flow selection	According to DRY operation.
Flap	Horizontal blowing (Fixed)
Louver	Wide (Fixed)

(8) Timer operation

(a) Comfortable timer setting (ON timer)

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the indoor temperature at the setting time (temperature of room temperature sensor) and the setting temperature.

(b) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled with respect to the set temperature.

(c) OFF timer operation

The Off timer can be set at a specific time (in 10-minute units) within a 24-hour period.

(9) Installation location setting

When the indoor unit is installed at the end of a room, control the air flow direction so that it is not toward the side walls. If you set the remote controller installation position, keep it so that the air flow is within the range shown in the following figure.

(a) Setting

1) If the air conditioning unit is running, press the ON/OFF button to stop.

The installation location setting cannot be made while the unit is running.

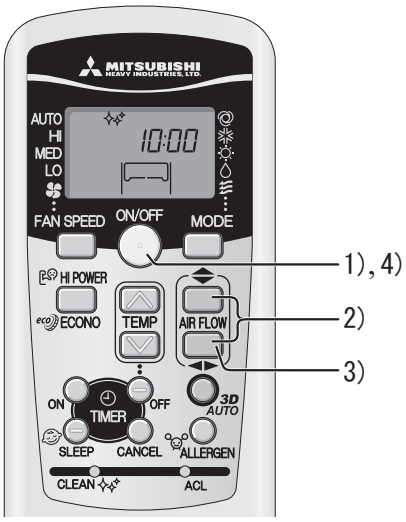
2) Press the AIR FLOW ⬍ (UP/DOWN) button and the AIRFLOW ◀▶ (LEFT/RIGHT) button together for 5 seconds or more.

The installation location display illuminates.

3) Setting the air-conditioning installation location.

Press the AIR FLOW ◀▶ (LEFT/RIGHT) button and adjust to the desired location.

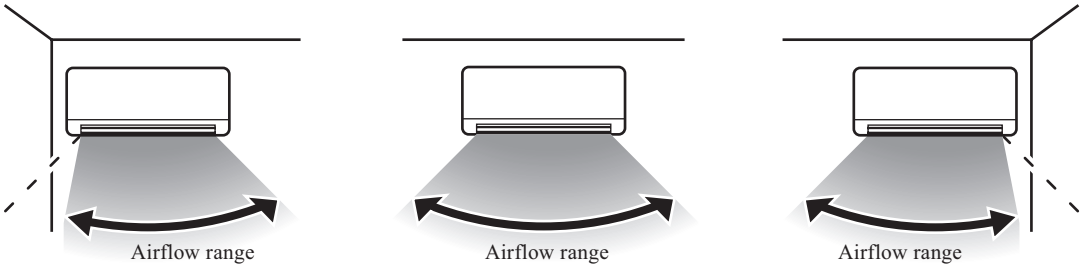
Each time the AIR FLOW ◀▶ (LEFT/RIGHT) button is pressed, the indicator is switched in the order of:



4) Press the ON/OFF button.

The air-conditioner's installation location is set.

Press within 60 seconds of setting the installation location (while the installation location setting display illuminates).



(Left End Installation) (Center Installation) (Right End Installation)

(10) Outline of heating operation

(a) Operation of major functional components in heating mode

	Heating		
	Thermostat ON	Thermostat OFF	Failure
Compressor	ON	OFF	OFF
Indoor fan motor	ON	ON(HOT KEEP)	OFF
Outdoor fan motor	ON	OFF (few minutes ON)	OFF
4-way valve	ON	ON	OFF (3 minutes ON)

(b) Details of control at each operation mode (pattern)

1) Fuzzy operation

Deviation between the indoor temperature setting correction temperature and the return air temperature is calculated in accordance with the fuzzy rule, and used for control of the air capacity and the compressor speed.

Model / Fan speed	SRK50ZJX-S1	SRK60ZJX-S1
Auto	12~106rps	12~120rps
HI	12~106rps	12~120rps
MED	12~74rps	12~90rps
LO	12~42rps	12~58rps

When the defrosting, protection device, etc. is actuated, operation is performed in the corresponding mode.

2) Hot keep operation

In hot keep operation, the indoor blower is controlled based on the temperature of the indoor heat exchanger (Th2) to prevent blowing of cool air during heating operation.

(c) Defrosting operation

1) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)

a) After start of heating operation

When it elapsed 35 minutes. (Accumulated compressor operation time)

b) After end of defrosting operation

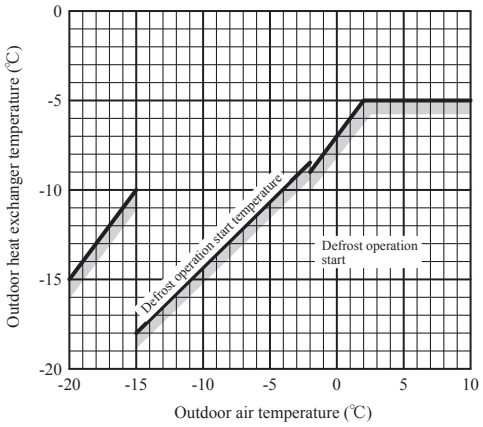
When it elapsed 35 minutes. (Accumulated compressor operation time)

c) Outdoor heat exchanger sensor (TH1) temperature

When the temperature has been below −5ºC for 3 minutes continuously.

d) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature

- The outdoor air temperature ≧ −2ºC : 7ºC or higher
- −15ºC ≦ The outdoor air temperature ＜ −2ºC : 4/15 × The outdoor air temperature + 7ºC or higher
- The outdoor air temperature ＜ −15ºC : −5ºC or higher



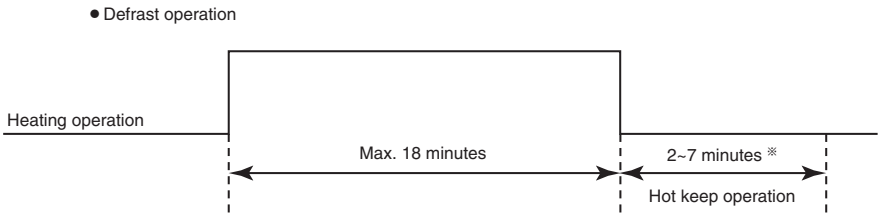
e) During continuous compressor operation

In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of a), b), c) and e) above and the outdoor air temperature is 3ºC or less are satisfied (note that when the temperature for outdoor heat exchanger sensor (TH1) is −5ºC or less: 62 rps or more, −4ºC or less: less than 62 rps), defrost operation is started.

2) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)

a) Outdoor heat exchanger sensor (TH1) temperature: 10ºC or higher

b) Continued operation time of defrosting → For more than 18 minutes.



※Depends on an operation condition, the time can be longer than 7 minutes.

(11) Outline of cooling operation

(a) Operation of major functional components in Cooling mode

	Cooling		
	Thermostat ON	**Thermostat OFF**	**Failure**
Compressor	ON	OFF	OFF
Indoor fan motor	ON	ON	OFF
Outdoor fan motor	ON	OFF (few minutes ON)	OFF (few minutes ON)
4-way valve	OFF	OFF	OFF

(b) Detail of control in each mode (Pattern)

1) Fuzzy operation

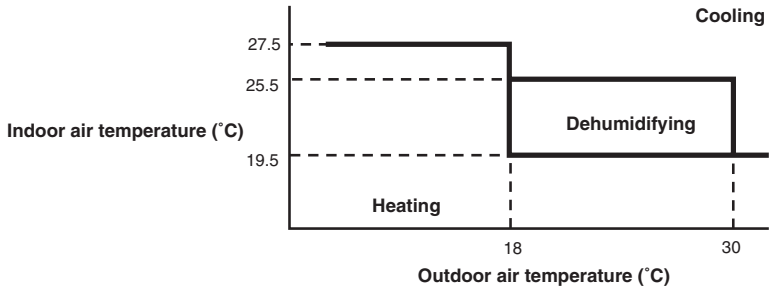
During the fuzzy operation, the air flow and the compressor speed are controlled by calculating the difference between the indoor temperature setting correction temperature and the return air temperature.

Fan speed \ Model	SRK50ZJX-S1	SRK60ZJX-S1
Auto	12~86rps	12~110rps
HI	12~86rps	12~110rps
MED	12~62rps	12~86rps
LO	12~34rps	12~48rps

(12) Outline of automatic operation

(a) Determination of operation mode

The unit checks the indoor air temperature and the outdoor air temperature, determines the operation mode, and then begins in the automatic operation.



(b) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.

(c) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

Unit : ºC

		Signals of wireless remote controller (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(e) When the unit is operated automatically with the wired remote controller connected,the cooling operation is controlled according to the display temperatures while the setting temperature is compensated by +1˚Cduring dehumidifying or by +2˚C during heating.

(13) Protection control function

(a) Dew prevention control I [Cooling]:Prevente dewing on the indoor unit.

(i) Operating conditions: When all of following conditions have been met.

1) It has elapsed 30 minutes after the start of operation

2) Indoor room temperature (Th1) is lower than 22ºC.

(ii) Contents of operation: It is operated with the upper limit of compressor's command speed as shown below.

Model	SRK50ZJX-S1	SRK60ZJX-S1
Upper limit of compressor's command speed (rps)	90	114

(b) Dew prevention control Ⅱ[Cooling]:Prevents dewing on the indoor unit.

i) Operating conditions:When the following conditions have been met for more than 30 minutes after starting operation

1) Compressor's command speed is 28 rps or higher.

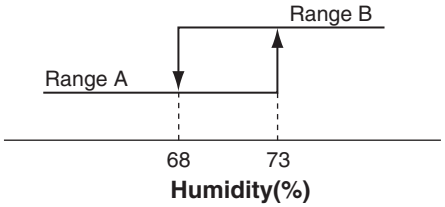
2) Detected value of humidity is 68% or higher.

ii) Contents of operation

1) Air capacity control

Item \ Model		SRK50ZJX-S1	SRK60ZJX-S1
Lo	Upper limit of compressor's command speed	RangeA: 50rps, RangeB: 30rps	
	Indoor fan	4th speed	
AUTO,Hi,MED	Upper limit of compressor's command speed	RangeA: 50rps, RangeB: 30rps	
	Indoor fan	Adaptable to compressor's command speed (2th to 8th speed)	

Note (1) Ranges A and B are as shown below.



2) When this control has continued for more than 30 minutes continuously,the following wind direction control is performed.

a) When the vertical wind direction is set at other than the vertical swing,the flaps change to the horizontal position.

b) When the horizontal wind direction is set at other than the horizontal swing,the louver changes to the vertical position.

iii) Resetting condition: When any of followings is metdirec

1) Compressor's command speed is less than 28 rps.

2) Detected value of humidity is less than 63%.

(c) Frost prevention control (During cooling or dehumidifying)

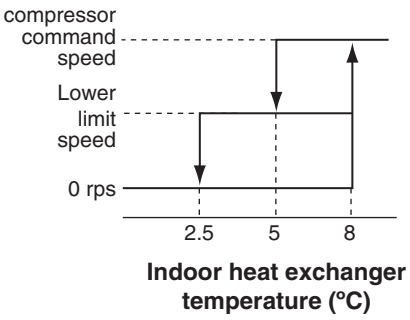
1) Operating conditions

a) Indoor heat exchanger temperature (Th2) is lower than 5ºC.

b) 5 minutes after reaching the compressor command speed except 0 rps.

2) Detail of anti-frost operation

Item \ Indoor heat exchanger temperature	5°C or lower	2.5°C or lower
Lower limit of compressor command speed	25rps	0 rps
Indoor fan	Depends on operation mode	Protects the fan tap just before frost prevention control
Outdoor fan	Depends on command speed	Depends on stop mode
4-way valve	OFF	



Notes (1) When the indoor heat exchanger temperature is in the range of 2.5~5ºC, the speed is reduced by 4 rps at each 20 seconds.
(2) When the temperature is lower than 2.5ºC, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of 5~8ºC, the compressor command speed is been maintained.

3) Reset conditions: When either of the following condition is satisfied.

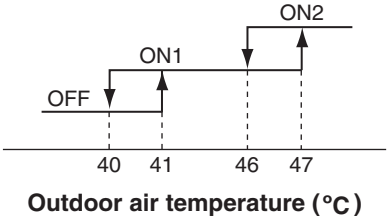
a) The indoor heat exchanger temperature (Th2) is 8ºC or higher.

b) The compressor command speed is 0 rps.

(d) Cooling overload protective control

1) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 41ºC or more, or 47ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Item \ Model	SRK50, 60ZJX-S1	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps



2) Detail of operation

The lower limit of compressor command speed is set to 30 or 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 or 40 rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature is lower than 40ºC.

b) The compressor command speed is 0 rps.

(e) Cooling high pressure control

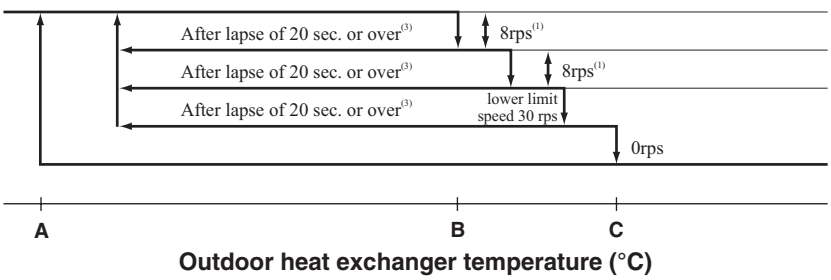
1) Purpose: Prevents anomalous high pressure operation during cooling.

2) Detector: Outdoor heat exchanger sensor (TH1)

3) Detail of operation:

Outdoor air temperature(TH2)	A	B	C
TH2 ≧ 32ºC	53	58	63
TH2 < 32ºC	51	53	56

(Example) Fuzzy



Notes (1) When the outdoor heat exchanger temperature is in the range of A~Cºc, the speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is 63ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A~Cºc, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(f) Cooling low outdoor temperature protective control

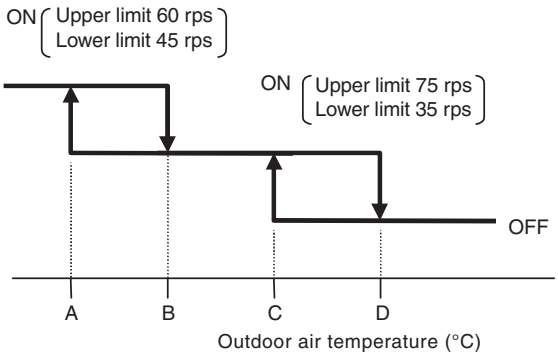
1) Operating conditions: When the outdoor air temperature (TH2) is 22ºC or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation:

a) The lower limit of the compressor command speed is set to 45 (35) rps and even if the speed becomes lower than 45 (35) rps, the speed is kept to 45 (35) rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

b) The upper limit of the compressor command speed is set to 60 (75) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 60 (75) rps.

Note (1) Values in ( ) are for outdoor air temperature is 22ºC or 25ºC



● Values of A, B, C, D

	Outdoor air temp. (˚C)			
	A	B	C	D
First time	9	11	22	25
Since the seconds times	16	19	25	28

3) Reset conditions: When either of the following condition is satisfied

a) The outdoor air temperature (TH2) is D ºC or higher.

b) The compressor command speed is 0 rps.

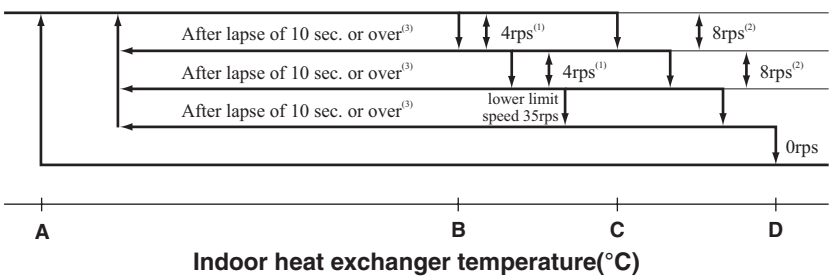
(g) Heating high pressure control

1) Purpose: Prevents anomalous high pressure operation during heating.

2) Detector: Indoor heat exchanger sensor (Th2)

3) Detail of operation:

(Example) Fuzzy



Notes (1) When the indoor heat exchanger temperature is in the range of B~C ºC, the speed is reduced by 4 rps at each 10seconds.
(2) When the indoor heat exchanger temperature is in the range of C~D ºC, the speed is reduced by 8 rps at each 10 seconds. When the temperature is D ºC or higher continues for 1 minute, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of A~B ºC, if the compressor command speed is been maintained and the operation has continued for more than 10 seconds at the same speed, it returns to the normal heating operation.
(4) Indoor blower retains the fan tap when it enters in the high pressure control. Outdoor blower is operated in accordance with the speed.

● **Temperature list**

Unit : ºC

	A	B	C	D
RPSmin < 50	45	52	54.5	61
50 ≦ RPSmin < 115	45	52	57	61
115 ≦ RPSmin < 120	45 ~ 43	52 ~ 50	57	61 ~ 59
120 ≦ RPSmin	43	50	55	59

Note (1) RPSmin: The lower one between the outdoor speed and the compressor command speed

(h) Heating overload protective control

1) Indoor unit side

a) Operating conditions : When the outdoor air temperature (TH2) is 17ºC or higher continues for 30 seconds while the compressor command speed other than 0 rps.

b) Detail of operation : The indoor fan is stepped up by 1 speed step.〔Upper limit 8th speed〕

c) Reset conditions : The outdoor air temperature (TH2) is lower than 16ºC.

2) Outdoor unit side

a) Operating conditions : When the outdoor air temperature (TH2) is 13ºC or 17ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

b) Detail of operation

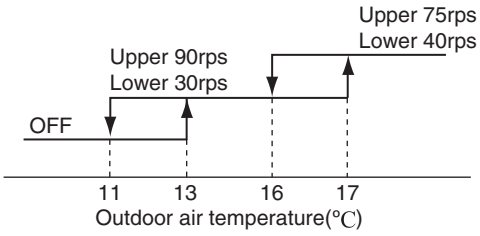
i) Taking the upper limit of compressor command speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

ii) The lower limit of compressor command speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calulation, the speed is kept to 30(40)rps. However, when the thermo becomes OFF, the speed is reduced to 0 prs

iii) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 30(40)rps.

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

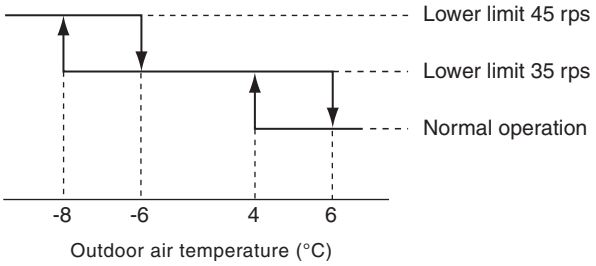
c) Reset conditions: The outdoor air temperature (TH2) is lower than 8ºC



(i) Heating low outdoor temperature protective control

1) Operating conditions: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature (TH2) is higher than 6ºC.

b) The compressor command speed is 0 rps.

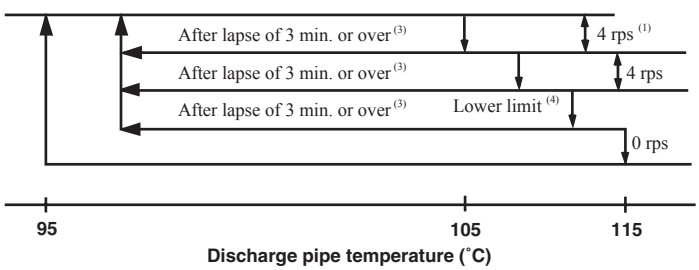
(j) Compressor overheat protection

1) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

2) Detail of operation

a) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105~115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95~105 even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95~105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

Model \ Item	Cooling	Heating
Lower Limit Speed	25 rps	32 rps

b) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(k) Current safe

1) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

2) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(l) Current cut

1) Purpose: Inverter is protected from overcurrent.

2) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(m) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item 1), 2) is satisfied. Once the unit is stopped by this function, it is not restarted.

1) When the input current is measured at 1 A or less for 3 continuous minutes or more.

2) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(n) Indoor fan motor protection

When the air conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

(o) Serial signal transmission error protection

1) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

2) Detail of operation: If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(p) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(q) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 rpm or under for more than 30 seconds, the compressor and fan motor are stopped.

(r) Outdoor fan control at low outdoor temperature

(i) Cooling

1) Operating conditions: When the outdoor air temperature (TH2) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor temperature > 10˚C	2nd speed
Outdoor temperature ≦ 10˚C	1st speed

a) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)

b) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 21ºC~ 38ºC, maintain outdoor fan speed.

c) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 3rd speed)

3) Reset conditions: When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 25ºC or higher.

b) The compressor command speed is 0 rps.

(ii) Heating

1) Operating conditions: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

3) Reset conditions: When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 6ºC or higher.

b) The compressor command speed is 0 rps.

(s) Refrigeration cycle system protection

1) Starting conditions

a) When 5 minutes have elapsed after the compressor ON or the completion of the defrost control

b) Other than the defrost control

c) When, after meeting the conditions of a) and b) above, the compressor speed, indoor air temperature (Th1) and indoor heat exchanger temperature (Th2) have met the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (Th1)	Indoor air temperature (Th1)/ Indoor heat exchanger temperature (Th2)
Cooling	40≦N	10≦Th1≦40	Th1−4<Th2
Heating	40≦N	0≦Th1≦40	Th2<Th1+6

2) Contents of control

a) When the conditions of 1) above are met, the compressor stops.

b) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

3) Resetting condition

When the compressor has been turned OFF

11.2 SRF series

(1) Operation control function by remote controller

Operation section

Model All models

FAN SPEED button
Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button
This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button
These buttons set the indoor temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button
This button selects ON TIMER operation.

SLEEP button
This button selects SLEEP operation.

CLEAN switch
This switch selects the CLEAN mode.

CANCEL button
This button cancels the ON timer, OFF timer, and SLEEP operation.

OPERATION MODE select button
Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button
Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button
This button changes the air flow (up/down) direction.

OFF TIMER button
This button selects OFF TIMER operation.

ACL switch
This switch is for resetting microcomputer and setting time.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

Unit display section

Model All models

Unit ON/OFF button
This button can be used for turning ON/OFF the unit when remote controller is not available.

HI POWER Light (green)
Illuminates during HIGH POWER operation.

AIR SELECTION button
Use this button to switch between the combination of upper and lower air outlets and upper air outlet.

AIR OUTLET SELECTION light (green)
Illuminates during upper air outlet operation.

Remote controller signal receiver

RUN (HOT KEEP) light (green)
- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.

HOT KEEP: ON 1.5 sec. / OFF 0.5 sec.

CLEAN operation: ON 3 sec. / OFF 1 sec.

TIMER light (yellow)
Illuminates during TIMER operation.

ECONO light (green)
Illuminates during ECONOMY operation.

(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

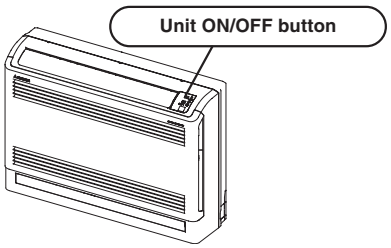
(a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from indoor temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / operation mode	Indoor temperature setting	Fan speed	Flap/Louver	Timer Switch
Cooling	About 24ºC	Auto	Auto	Continuous
Thermal dry	About 25ºC			
Heating	About 26ºC			



(3) Auto restart function

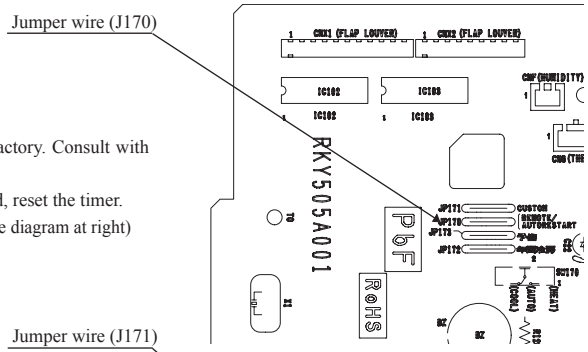
(a) Auto restart function records the operational status of the air-conditioner immediately prior to be switched off by a power cut, and then automatically resumes operations after the power has been restored.

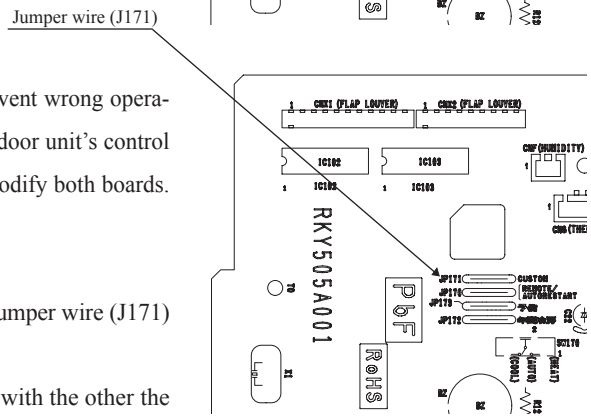
(b) The following settings will be cancelled:

1) Timer settings

2) HIGH POWER operations

Notes (1) Auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.
(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.
(3) If the jumper wire (J170) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)





(4) Custom cord switching procedure

If two wireless remote controller are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote controller using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(a) Modifying the indoor printed circuit board

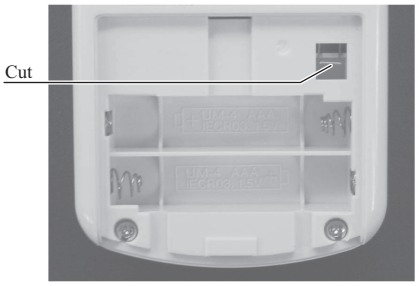
Take out the printed circuit board from the control box and cut off jumper wire (J171) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

(b) Modifying the wireless remote controller

1) Remove the battery.

2) Cut the jumper wire shown in the figure at right.

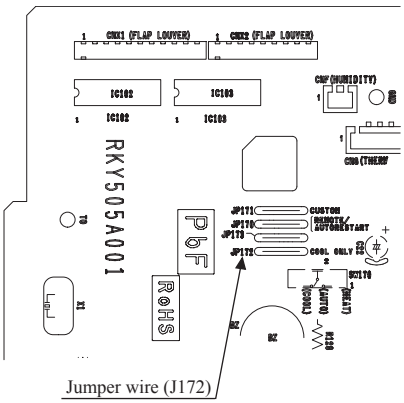


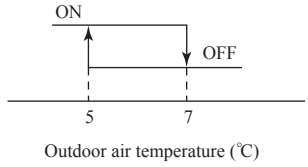
(5) Selection of the annual cooling function

(a) The annual cooling function can be enabled or disabled by means of the jumper wire (J172) on the indoor unit PCB and the dip switch (SW2-4) on the interface kit (optional) PCB.

Jumper wire (J172)	Interface kit (SC-BIKN-E) SW2-4	Function
Shorted	ON	Enabled
Shorted	OFF	Disabled
Open	ON	Disabled
Open	OFF	Disabled

Note: (1) Default states of the jumper wire (J172) and the interface kit at the shipping from factory – On the PCB, the dip switch (SW2-4) is set to enable the annual cooling function.
(2) To cancel the annual cooling setting, consult your dealer.





(b) Content of control

1) If the outdoor air temperature sensor (TH2) detects below 5°C, the indoor unit speed is switched to 8th step.

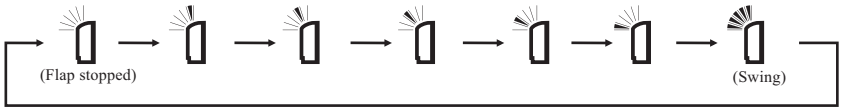
2) If the outdoor air temperature sensor (TH2) detects higher than 7°C, the indoor unit speed is changed to the normal control speed.

(6) Flap control

Control the flap by AIRFLOW ⬍ (UP/DOWN) button on the wireless remote controller.

(a) Flap

Each time when you press the AIRFLOW ⬍ (UP/DOWN) button the mode changes as follows.



• Angle of Flap from Horizontal

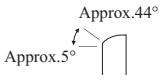
Remote controller display					
COOL , DRY, FAN	Approx. 60°	Approx. 50°	Approx. 38°	Approx. 21.5°	Approx. 12°
HEAT	Approx. 44°	Approx. 32°	Approx. 21.5°	Approx. 12°	Approx. 5°

(b) Swing

1) Swing flap

Flap moves in upward and downward directions continuously.

◆ In HEAT operation



◆ In COOL, DRY, FAN operation

(c) Memory flap (Flap stopped)

When you press the AIRFLOW button once while the flap is operating, it stops swinging at the position. Since this angle is memorized in the microcomputer, the flap will automatically be set at this angle when the next operation is started.

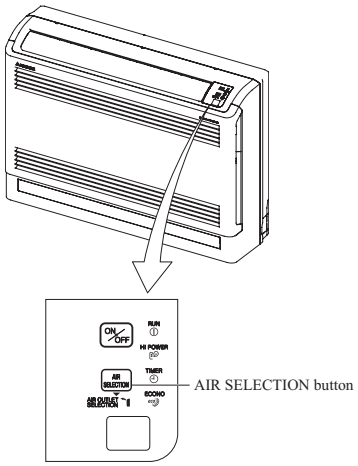
(d) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

(7) Air outlet selection

(a) AIR SELECTION button can switch between the combination of upper and lower air outlets and upper air outlet. Not operable while the air conditioner is OFF.

1) Each time the AIR SELECTION button is pressed. The combination of the upper and lower air outlets and the upper air outlet can be switched.
2) When the upper air outlet is selected, AIR OUTLET SELECTION light on the unit display area will light green.



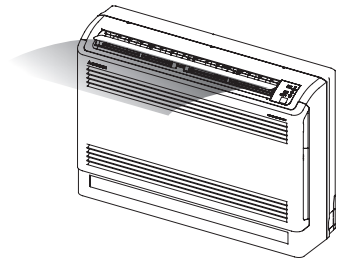
Upper and lower air outlets	→	Upper air outlet
AIR OUTLET SELECTION light : OFF		AIR OUTLET SELECTION light : ON

(b) Auto air outlet selection

1) COOL, DRY operation

a) In case both lower and upper outlets operation is selected in Cooling or Dry operation, both outlets will be kept for sixty minutes after the start or until indoor temperature is below the setting point. And then the air outlet will change to the upper outlet. That state will be maintained until switch is turned off.

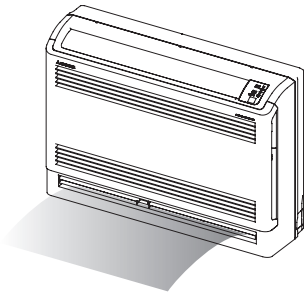
b) In case both outlets operation with Auto fan speed mode is selected, the upper outlet will be kept for ten minutes after the start or until indoor temperature is close to reaching the setting point . And then the air outlet will change to both outlets in order to spread comfort air to every corner.



2) HEAT operation

a) In case both lower and upper outlets operation with Auto fan speed mode is selected, the lower outlet will be kept for twenty minutes after the start or until indoor temperature is close to reaching the setting point . And then the air outlet will change to both outlets. That state will be maintained until the switch is turned off.

b) Automatic adjustment of lower air outlet direction prevents stirring up of warm air and keeps optimum comfort at floor level.



(8) Timer operation

(a) Comfortable timer setting (ON timer)

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the indoor temperature at the setting time (temperature of room temperature sensor) and the setting temperature.

(b) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled with respect to the set temperature.

(c) OFF timer operation

The Off timer can be set at a specific time (in 10-minute units) within a 24-hour period.

(9) Outline of heating operation

(a) Operation of major functional components in heating mode

	Heating		
	Thermostat ON	Thermostat OFF	Failure
Compressor	ON	OFF	OFF
Indoor fan motor	ON	ON(HOT KEEP)	OFF
Outdoor fan motor	ON	OFF (few minutes ON)	OFF
4-way valve	ON	ON	OFF (3 minutes ON)

(b) Details of control at each operation mode (pattern)

1) Fuzzy operation

Deviation between the indoor temperature setting correction temperature and the return air temperature is calculated in accordance with the fuzzy rule, and used for control of the air capacity and the compressor speed.

Fan speed \ Model	SRF50ZJX-S1
Auto	12~110rps
HI	12~110rps
MED	12~80rps
LO	12~60rps

When the defrosting, protection device, etc. is actuated, operation is performed in the corresponding mode.

2) Hot keep operation

In hot keep operation, the indoor blower is controlled based on the temperature of the indoor heat exchanger (Th2) to prevent blowing of cool air during heating operation.

(c) Defrosting operation

1) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)

a) After start of heating operation

When it elapsed 35 minutes. (Accumulated compressor operation time)

b) After end of defrosting operation

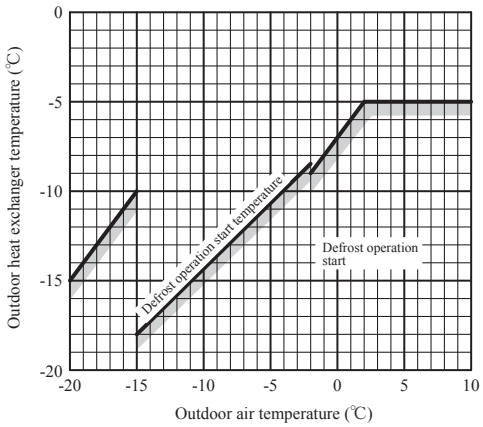
When it elapsed 35 minutes. (Accumulated compressor operation time)

c) Outdoor heat exchanger sensor (TH1) temperature

When the temperature has been below –5ºC for 3 minutes continuously.

d) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature

- The outdoor air temperature ≧ -2°C : 7°C or higher
- -15°C ≦ The outdoor air temperature ＜ -2°C : 4/15 × The outdoor air temperature + 7°C or higher
- The outdoor air temperature < -15°C : -5°C or higher



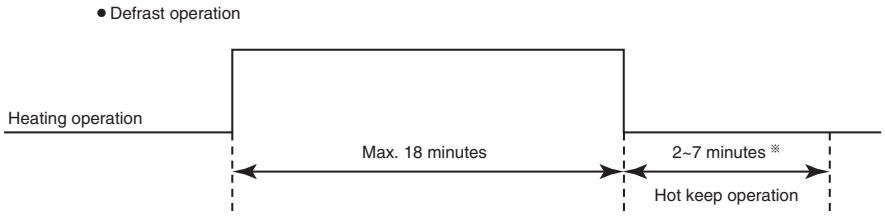
e) During continuous compressor operation

In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of a), b), c) and e) above and the outdoor air temperature is 3°C or less are satisfied (note that when the temperature for outdoor heat exchanger sensor (TH1) is -5°C or less: 62 rps or more, -4°C or less: less than 62 rps), defrost operation is started.

2) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)

a) Outdoor heat exchanger sensor (TH1) temperature: 10°C or higher

b) Continued operation time of defrosting → For more than18 minutes.



※Depends on an operation condition, the time can be longer than 7 minutes.

(10) Outline of cooling operation

(a) Operation of major functional components in Cooling mode

	Cooling		
	Thermostat ON	**Thermostat OFF**	**Failure**
Compressor	ON	OFF	OFF
Indoor fan motor	ON	ON	OFF
Outdoor fan motor	ON	OFF (few minutes ON)	OFF (few minutes ON)
4-way valve	OFF	OFF	OFF

(b) Detail of control in each mode (Pattern)

1) Fuzzy operation

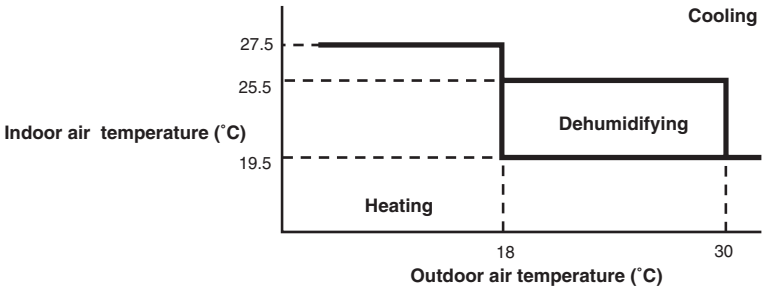
During the fuzzy operation, the air flow and the compressor speed are controlled by calculating the difference between the indoor temperature setting correction temperature and the retum air temperature.

Model / Fan speed	SRF50ZJX-S1
Auto	12~86rps
HI	12~86rps
MED	12~58rps
LO	12~38rps

(11) Outline of automatic operation

(a) Determination of operation mode

The unit checks the indoor air temperature and the outdoor air temperature, determines the operation mode, and then begins in the automatic operation.



(b) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.

(c) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature

Unit : ºC

		Signals of wireless remote controller (Display)												
		–6	**–5**	**–4**	**–3**	**–2**	**–1**	**±0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**
Setting temperature	**Cooling**	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(e) When the unit is operated automatically with the wired remote controller connected, the cooling operation is controlled according to the display temperatures while the setting temperature is compensated by +1˚C during dehumidifying or by +2˚C during heating.

(12) Protection control function

(a) Dew prevention control I [Cooling]: Prevente dewing on the indoor unit.

(i) Operating conditions: When all of following conditions have been met.

1) It has elapsed 30 minutes after the start of operation

2) Indoor room temperature (Th1) is lower than 22ºC.

(ii) Contents of operation: It is operated with the upper limit of compressor's command speed as shown below.

Model	SRF50ZJX-S1
Upper limit of compressor's command speed (rps)	90

(b) Dew prevention control Ⅱ[Cooling]: Prevents dewing on the indoor unit.

(i) Operating conditions:When the following conditions have been met for more than 30 minutes after starting operation

1) Compressor's command speed is 28 rps or higher.

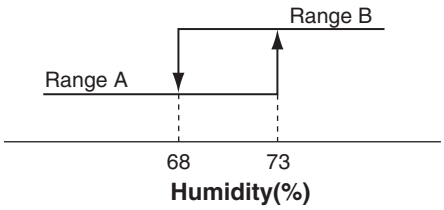
2) Detected value of humidity is 68% or higher.

(ii) Contents of operation

1) Air capacity control

Item \ Model		SRF50ZJX-S1
Lo	Upper limit of compressor's command speed	RangeA:50rps, RangeB:30rps
	Indoor fan	4th speed
AUTO, Hi, MED	Upper limit of compressor's command speed	RangeA:50rps, RangeB:30rps
	Indoor fan	Adaptable to compressor's command speed (2th to 8th speed)

Note(1)Ranges A and B are as shown below.



2) When this control has continued for more than 30 minutes continuously, the following wind direction control is performed.

a) When the vertical wind direction is set at other than the vertical swing, the flaps change to the horizontal position.

b) When the horizontal wind direction is set at other than the horizontal swing, the louver changes to the vertical position.

(iii) Resetting condition: When any of followings is metdirec.

1) Compressor's command speed is less than 28 rps.

2) Detected value of humidity is less than 63%.

(c) Frost prevention control (During cooling or dehumidifying)

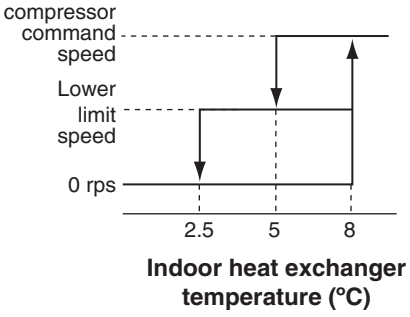
1) Operating conditions

a) Indoor heat exchanger temperature (Th2) is lower than 5ºC.

b) 5 minutes after reaching the compressor command speed except 0 rps.

2) Detail of anti-frost operation

Item \ Indoor heat exchanger temperature	5°C or lower	2.5°C or lower
Lower limit of compressor command speed	25rps	0 rps
Indoor fan	Depends on operation mode	Protects the fan tap just before frost prevention control
Outdoor fan	Depends on command speed	Depends on stop mode
4-way valve	OFF	



Notes (1) When the indoor heat exchanger temperature is in the range of 2.5~5ºC, the speed is reduced by 4 rps at each 20 seconds.
(2) When the temperature is lower than 2.5ºC, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of 5~8ºC, the compressor command speed is been maintained.

3) Reset conditions: When either of the following condition is satisfied.

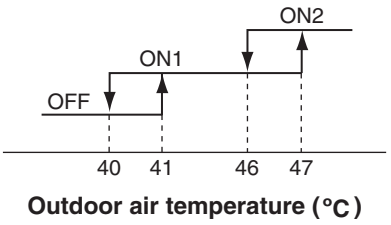
a) The indoor heat exchanger temperature (Th2) is 8ºC or higher.

b) The compressor command speed is 0 rps.

(d) Cooling overload protective control

1) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 41ºC or more, or 47ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Item \ Model	SRF50ZJX-S1	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps



2) Detail of operation

The lower limit of compressor command speed is set to 30 or 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 or 40 rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature is lower than 40ºC.

b) The compressor command speed is 0 rps.

(e) Cooling high pressure control

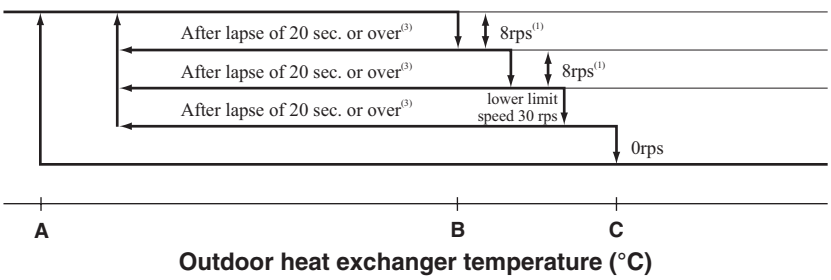
1) Purpose: Prevents anomalous high pressure operation during cooling.

2) Detector: Outdoor heat exchanger sensor (TH1)

3) Detail of operation:

Outdoor air temperature(TH2)	A	B	C
TH2 ≧ 32ºC	53	58	63
TH2 < 32ºC	51	53	56

(Example) Fuzzy



Notes (1) When the outdoor heat exchanger temperature is in the range of A~CºC, the speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is 63ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A~CºC, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(f) Cooling low outdoor temperature protective control

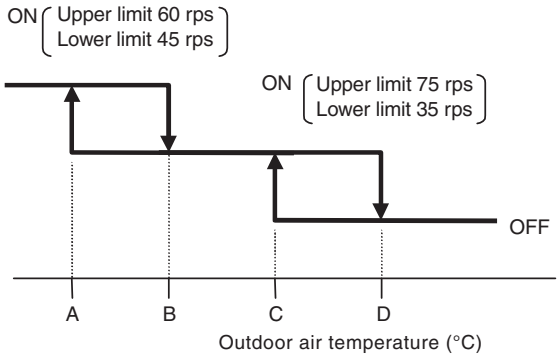
1) Operating conditions: When the outdoor air temperature (TH2) is 22ºC or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation:

a) The lower limit of the compressor command speed is set to 45 (35) rps and even if the speed becomes lower than 45 (35) rps, the speed is kept to 45 (35) rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

b) The upper limit of the compressor command speed is set to 60 (75) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 60 (75) rps.

Note (1) Values in ( ) are for outdoor air temperature is 22ºC or 25ºC



● Values of A, B, C, D

	Outdoor air temp. (˚C)			
	A	B	C	D
First time	9	11	22	25
Since the seconds times	16	19	25	28

3) Reset conditions: When either of the following condition is satisfied

a) The outdoor air temperature (TH2) is D ˚C or higher.

b) The compressor command speed is 0 rps.

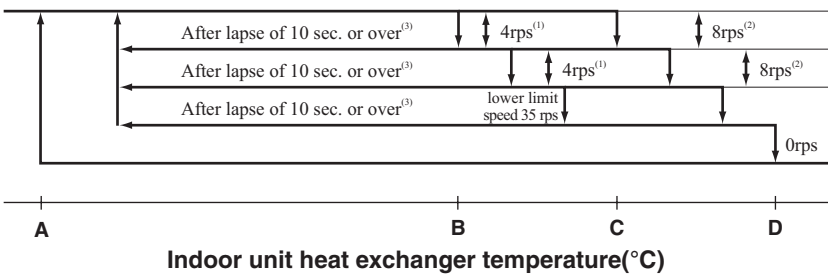
(g) Heating high pressure control

1) Purpose: Prevents anomalous high pressure operation during heating.

2) Detector: Indoor heat exchanger sensor (Th2)

3) Detail of operation:

(Example) Fuzzy



Notes (1) When the indoor heat exchanger temperature is in the range of B~C ºC, the speed is reduced by 4 rps at each 10 seconds.
(2) When the indoor heat exchanger temperature is in the range of C~D ºC, the speed is reduced by 8 rps at each 10 seconds. When the temperature is D ºC or higher continues for 1 minute, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of A~B ºC, if the compressor command speed is been maintained and the operation has continued for more than 10 seconds at the same speed, it returns to the normal heating operation.
(4) Indoor blower retains the fan tap when it enters in the high pressure control. Outdoor blower is operated in accordance with the speed.

● **Temperature list**

Unit : ºC

	A	B	C	D
RPSmin < 50	45	52	54.5	61
50 ≦ RPSmin < 115	45	52	57	61
115 ≦ RPSmin < 120	45 ~ 43	52 ~ 50	57	61 ~ 59
120 ≦ RPSmin	43	50	55	59

Note (1) RPSmin: The lower one between the outdoor speed and the compressor command speed

(h) Heating overload protective control

1) Indoor unit side

a) Operating conditions : When the outdoor air temperature (TH2) is 17ºC or higher continues for 30 seconds while the compressor command speed other than 0 rps.

b) Detail of operation : The indoor fan is stepped up by 1 speed step. [Upper limit 9th speed]

c) Reset conditions : The outdoor air temperature (TH2) is lower than 16ºC.

2) Outdoor unit side

a) Operating conditions : When the outdoor air temperature (TH2) is 13ºCor 17ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

b) Detail of operation

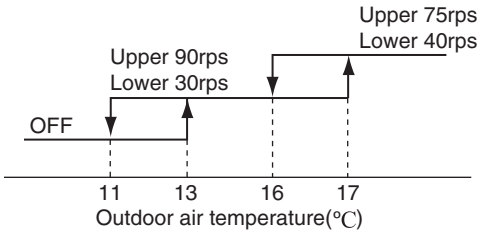
i) Taking the upper limit of compressor command speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

ii) The lower limit of compressor command speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calulation, the speed is kept to 30(40)rps. However, when the thermo becomes OFF, the speed is reduced to 0 prs

iii) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 30(40)rps.

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

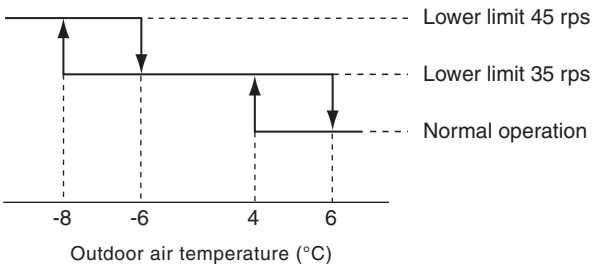
c) Reset conditions: The outdoor air temperature (TH2) is lower than 8ºC



(i) Heating low outdoor temperature protective control

1) Operating conditions: When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature (TH2) is higher than 6ºC.

b) The compressor command speed is 0 rps.

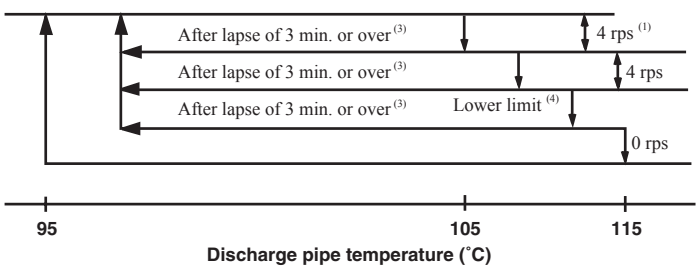
(j) Compressor overheat protection

1) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

2) Detail of operation

a) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105~115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95~105ºC even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95~105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

Model \ item	Cooling	Heating
Lower Limit Speed	25 rps	32 rps

b) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(k) Current safe

1) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

2) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(l) Current cut

1) Purpose: Inverter is protected from overcurrent.

2) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(m) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item 1), 2) is satisfied. Once the unit is stopped by this function, it is not restarted.

1) When the input current is measured at 1 A or less for 3 continuous minutes or more.

2) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(n) Indoor fan motor protection

When the air conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

(o) Serial signal transmission error protection

1) **Purpose:** Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

2) **Detail of operation:** If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.
After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(p) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(q) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 rpm or under for more than 30 seconds, the compressor and fan motor are stopped.

(r) Outdoor fan control at low outdoor temperature

(i) Cooling

1) **Operating conditions:** When the outdoor air temperature (TH2) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor temperature > 10˚C	2nd speed
Outdoor temperature ≦ 10˚C	1st speed

a) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)

b) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 21ºC~ 38ºC, maintain outdoor fan speed.

c) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 3rd speed)

3) **Reset conditions:** When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 25ºC or higher.

b) The compressor command speed is 0 rps.

(ii) Heating

1) **Operating conditions:** When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

3) **Reset conditions:** When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 6ºC or higher.

b) The compressor command speed is 0 rps.

(s) Refrigeration cycle system protection

1) Starting conditions

a) When 5 minutes have elapsed after the compressor ON or the completion of the defrost control

b) Other than the defrost control

c) When, after meeting the conditions of a) and b) above, the compressor speed, indoor air temperature (Th1) and indoor heat exchanger temperature (Th2) have met the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (Th1)	Indoor air temperature (Th1)/ Indoor heat exchanger temperature (Th2)
Cooling	40≦N	10≦Th1≦40	Th1−4<Th2
Heating	40≦N (TH2≧0℃) 60≦N (TH2<0℃)	0≦Th1≦40	Th2<Th1+6

2) Contents of control

a) When the conditions of 1) above are met, the compressor stops.

b) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

3) Resetting condition

When the compressor has been turned OFF

11.3 FDT, FDTC, FDEN and FDUM series

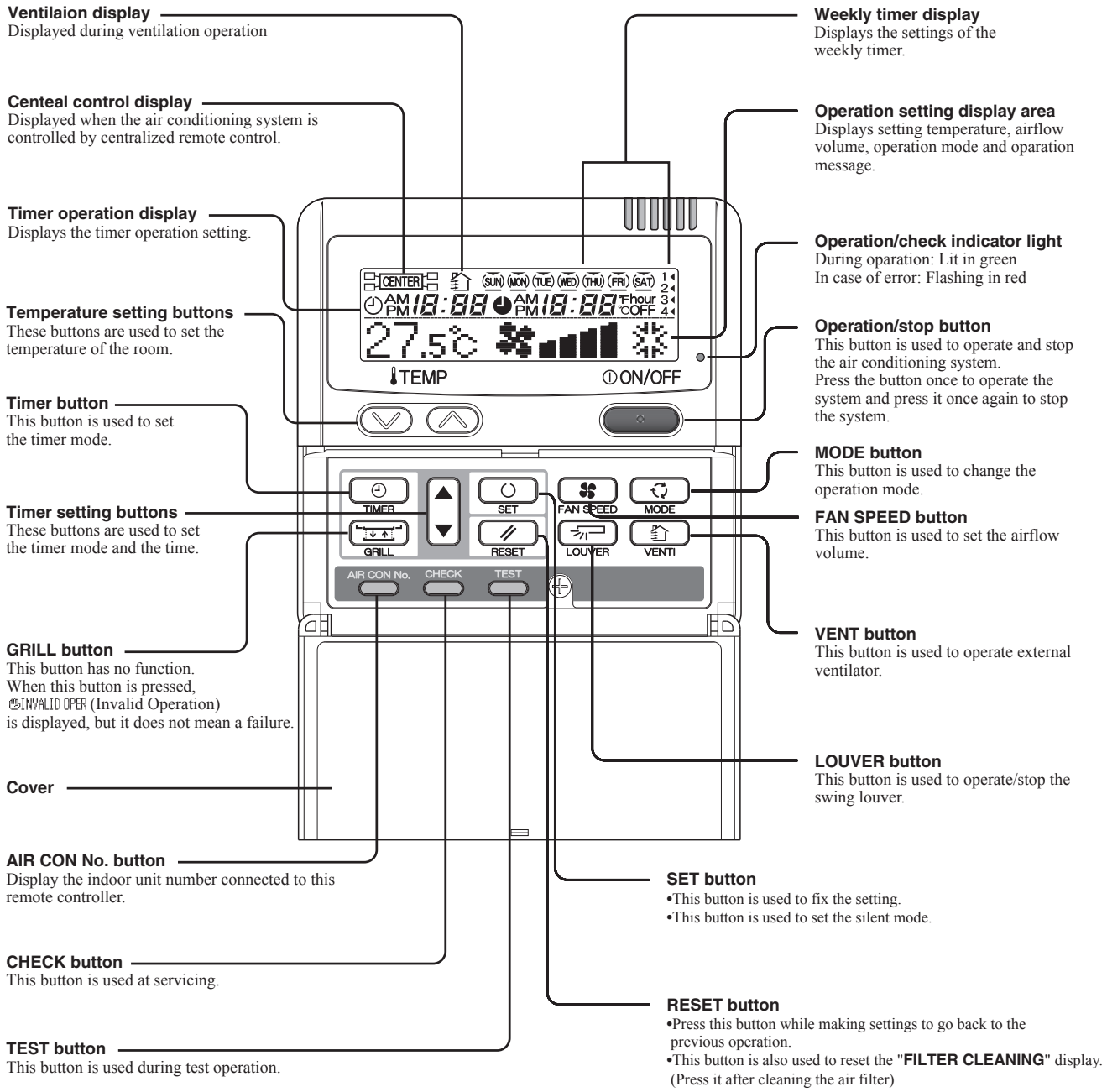
(1) Remote controller

(a) Wired remote controller

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation

Characters displayed with dots in the liquid crystal display area are abbreviated.

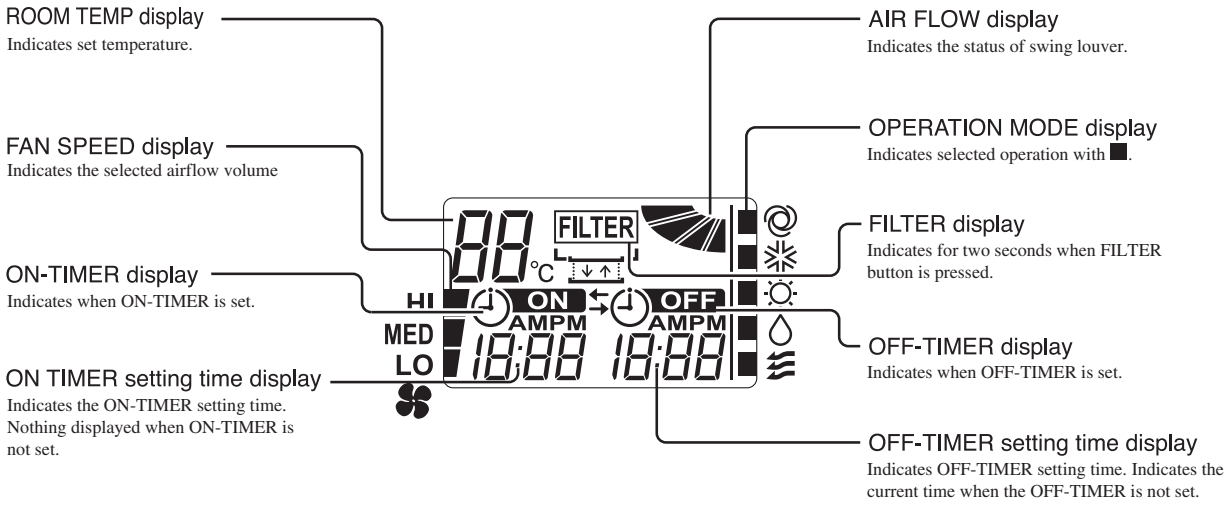
The figure below shows the remote control with the cover opened.



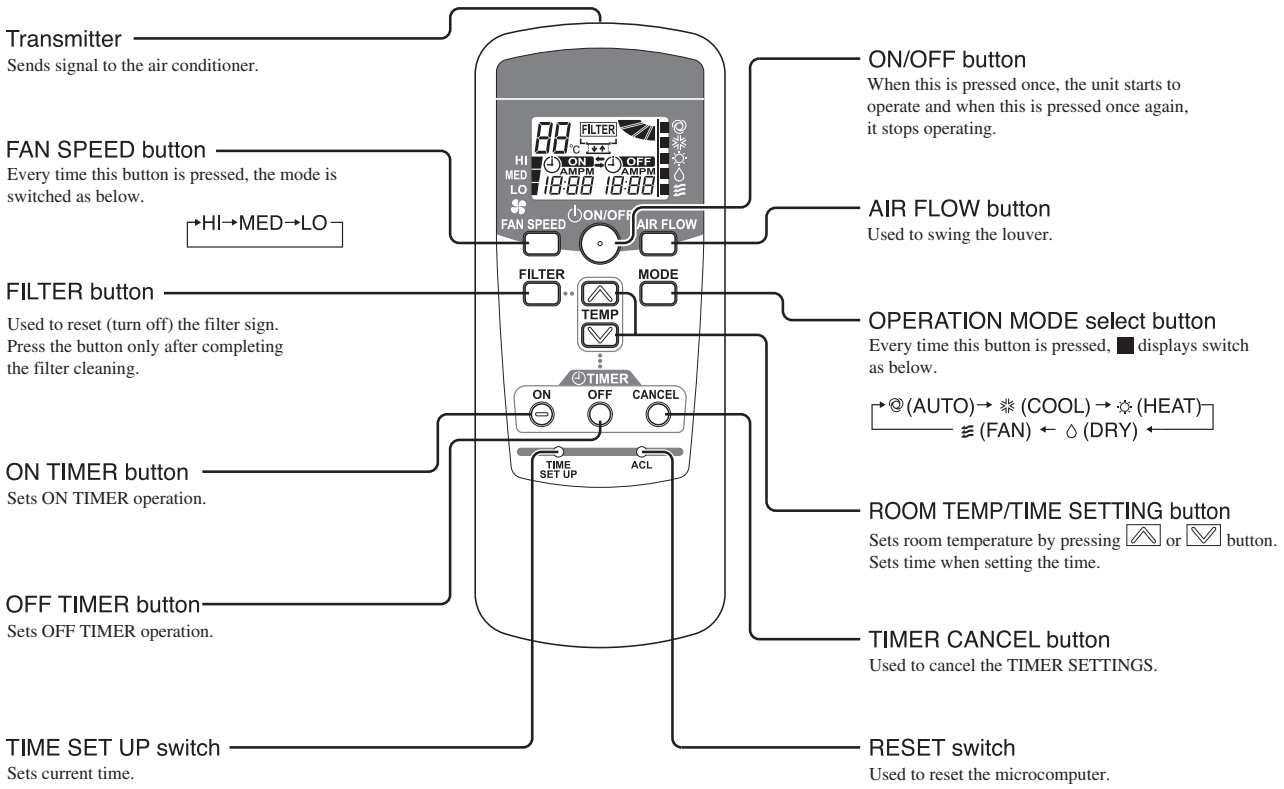
∗ All displays are described in the liguid crystal display for explanation.

(b) Wireless remote controller

Indication section



Operation section



* All displays are described in the liquid crystal display for explanation

(2) Operation control function by the wired remote controller

(a) Switching sequence of the operation mode switches of remote controller

(b) [CPU reset]

This functions when “CHECK” and “GRILL” buttons on the remote controller are pressed simultaneously. Operation is same as that of the power supply reset.

(c) [Power failure compensation function]...Electric power supply failure

- This becomes effective if “Power failure compensation effective” is selected with the setting of remote controller function.
- Since it memorizes always the condition of remote controller, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.
  After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.
- Content memorized with the power failure compensation are as follows.

Note (1) Items⑥, ⑦ and ⑧ are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.

① At power failure – Operating/stopped
If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)

② Operation mode

③ Airflow volume mode

④ Room temperature setting

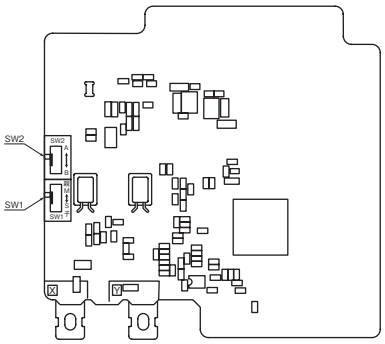
⑤ Louver auto swing/stop
However, the stop position (4-position) is cancelled so that it returns to Position (1).

⑥ “Remote controller function items” which have been set with the remote controller function setting (“Indoor function items” are saved in the memory of indoor unit.)

⑦ Upper limit value and lower limit value which have been set with the temperature setting control

⑧ Sleep timer and weekly timer settings (Other timer settings are not memorized.)

[Parts layout on remote controller PCB]

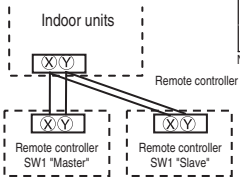


Master/ slave setting when more than one remote controllers are used

A maximum of two remote controllers can be connected to one indoor unit (or one group of indoor units.)

Switch	Setting	Contents
SW1	M	Master remote controller
	S	Slave remote controller

Note (1) Don't change SW2 because it is not used normally.



Caution

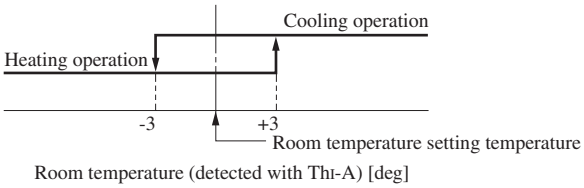
When using multiple remote controllers, the following dispiays or settings cannot be done with the slave remote controller. It is available only with the master remote controller.

①Louver position setting (set upper or lower limit of swinging range)
②Setting indoor unit functions
③Setting temperature range
④Operation data display
⑤Error data display
⑥Silent mode setting
⑦Test operation of drain pump
⑧Remote controller sensor setting

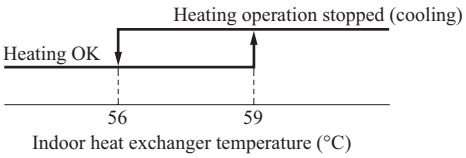
(3) Operation control function by the indoor controller

(a) Auto operation

If "Auto" mode is selected by the remote controller, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ heating mode takes place within 3 minutes, the compressor does not operate for 3 minutes by the control of 3-minute timer.) This will facilitate the cooling/heating switching operation in intermediate seasons and the adaptation to unmanned operation at stores, etc (ATM corner of bank).



Note (1) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF: ±1 deg)
(2) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not performed, regardless of the temperature shown at right.



(b) Operations of functional items during cooling/heating

Operation / Functional item	Cooling		Fan	Heating			Dehumidify
	Thermostat ON	Thermostat OFF		Thermostat ON	Thermostat OFF	Hot start (Defrost)	
Compressor	○	×	×	○	×	○	○/×
4-way valve	×	×	×	○	○	○(×)	×
Outdoor unit fan	○	×	×	○	×	○(×)	○/×
Indoor unit fan	○	○	○	○/×	○/×	○/×	○/×
Louver motor	○/×			○/×	○/×	○/×	○/×
Drain pump (3)	○	×(2)	×(2)	○/×(2)			Thermostat ON: ○ Thermostat OFF: ×(2)

Note (1) ○: Operation ×: Stop ○/×: Turned ON/OFF by the control other than the room temperature control.
(2) ON during the drain motor delay control.
(3) Drain pump ON setting may be selected with the indoor unit function setting of the wired remote controller.

(c) Dehumidifying operation

Return air temperature thermistor [Thi-A (by the remote controller when the remote controller thermistor is enabled)] controls the indoor temperature environment simultaneously.

1) Operation is started in the cooling mode. When the difference between the return air temperature and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor unit fan tap.
2) If the return air temperature exceeds the setting temperature by 3°C during defrosting operation, the indoor unit fan tap is raised. That tap is retained for 3 minutes after changing the indoor unit fan tap.
3) If the thermostat OFF is established during the above control, the indoor unit fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.
4) After stopping the cooling operation, the indoor unit continues to run at Lo for 15 seconds.

(d) Timer operation

1) Sleep timer

Set the duration of time from the present to the time to turn off the air-conditioner.

It can be selected from 10 steps in the range from "OFF 1 hour later" to "OFF 10 hours later". After the sleep timer setting, the remaining time is displayed with progress of time in the unit of hour.

2) OFF timer

Time to turn OFF the air-conditioner can be set in the unit of 10 minutes.

3) ON timer

Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.

4) Weekly timer

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

5) Timer operations which can be set in combination

Item \ Item	Sleep timer	OFF timer	ON timer	Weekly timer
Sleep timer		×	○	×
OFF timer	×		○	×
ON timer	○	○		×
Weekly timer	×	×	×	

Note (1) ○: Allowed × : Not

(2) Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the airconditioner are duplicated, the setting of the OFF timer has priority.

(e) Remote controller display during the operation stop

1) When the operation is stopped (the power supply is turned ON), it displays preferentially the "Room temperature", "Center/Remote", "Filter sign", "Inspection" and "Timer operation".

(f) Hot start (Cold draft prevention at heating)

(i) Operating conditions

When either one of following conditions is met, the hot start control is performed.

1) From stop to heating operation

2) From cooling to heating operation

3) Form heating thermostat OFF to ON

4) After completing the defrost control (only on units with thermostat ON)

(ii) Contents of operation

1) Indoor fan motor control at hot start

a) Within 7 minutes after starting heating operation, the fan mode is determined depending on the condition of thermostat (fan control with heating thermostat OFF).

i) Thermostat OFF

① Operates according to the fan control setting at heating thermostat OFF.

② Even if it changes from thermostat OFF to ON, the fan continues to operate with the fan control at thermostat OFF till the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.

③ When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

ii) Thermostat ON

① When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or lower, the fan is turned OFF and does not operate.

② When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or higher, the fan operates with the fan control at heating thermostat OFF.

③ When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

iii) If the fan control at heating thermostat OFF is set at the "Set airflow volume" (from the remote controller), the fan operates with the set airflow volume regardless of the thermostat ON/OFF.

b) Once the fan motor is changed from OFF to ON during the thermostat ON, the indoor fan motor is not turned OFF even if the heat exchanger thermistor detects lower than 25°C.

Note (1) When the defrost control signal is received, it complies with the fan control during defrosting.

c) Once the hot start is completed, it will not restart even if the temperature on the heat exchanger thermistor drops.

2) During the hot start, the louver horizontal control signal is transmitted.

3) When the fan motor is turned OFF for 7 minutes continuously after defrosting, the fan motor is turned ON regardless of the temperatures detected with the indoor heat exchanger thermistors (ThI-R1, R2).

(iii) Ending condition

1) If one of following conditions is met during the hot start control, this control is terminated, and the fan is operated with the set airflow volume.

a) Heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.

b) It has elapsed 7 minutes after starting the hot start control.

(g) Hot keep

Hot keep control is performed at the start of the defrost control.

1) Control

a) When the indoor heat exchanger temperature (detected with Thı-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.

b) During the hot keep, the louver horizontal control signal is transmitted.

2) Ending condition

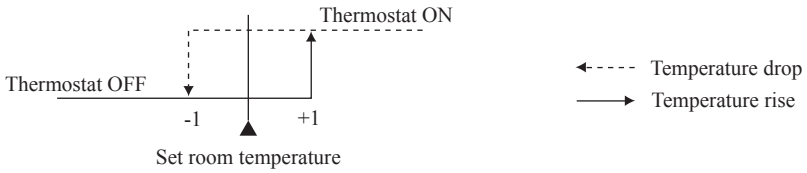
When the indoor fan is at the lower tap at each setting, it returns to the set airflow volume as the indoor heat exchanger temperature rises to 45°C or higher.

(h) Thermostat operation

(i) Cooling

1) Thermostat is operated with the room temperature control.

2) Thermostat is turned ON or OFF relative to the set room temperature as shown below.

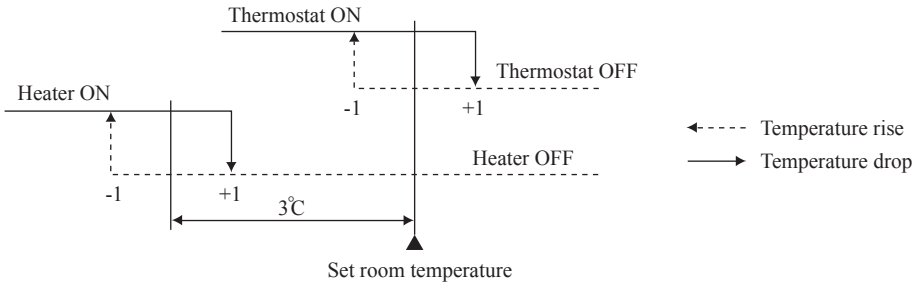


3) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from heating to cooling).

(ii) Heating

1) Thermostat is operated with the room temperature control.

2) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



3) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from cooling to heating).

(iii) Fan control during heating thermostat OFF

1) Following fan controls during the heating thermostat OFF can be selected with the indoor function setting of the wired remote controller.

① Low fan speed (Factory default), ② Set fan speed, ③ Intermittence, ④ Fan OFF

2) When the "Low fan speed (Factory default)" is selected, the following taps are used for the indoor fans.
- For AC motor : Lo tap
- For DC motor : ULo tap

3) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.

4) If the "Intermittence" is selected, following controls are performed:

a) If the thermostat is turned OFF during the heating operation, the indoor unit moves to the hot control and turns OFF the indoor fan if the heat exchanger thermistors (both ThI-R1 and R2) detect 25°C or lower.

b) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at Lo (AC motor) or ULo (DC motor) for 2 minutes. In the meantime the louver is controlled at level.

c) After operating at Lo (AC motor) or ULo (DC motor) for 2 minutes, the indoor fan moves to the state of a) above.

d) If the thermostat is turned ON, it moves to the hot start control.

e) When the heating thermostat is turned OFF, the remote controller displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from Lo (AC motor) or ULo (DC motor) to stop.
The remote controller uses the operation data display function to display temperatures and updates values of temperature even when the indoor fan is turned OFF.

f) When the defrosting starts while the heating thermostat is turned OFF or the thermostat is turned OFF during defrosting, the indoor fan is turned OFF. (Hot keep or hot start control takes priority.) However, the suction temperature is updated at every 7-minute.

g) When the heating thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.

5) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

(i) Filter sign

As the operation time (Total ON time of ON/OFF switch) accumulates to 180 hours (1), "FILTER CLEANING" is displayed on the remote controller. (This is displayed when the unit is in trouble and under the centralized control, regardless of ON/OFF)

Note (1) Time setting for the filter sign can be made as shown below using the indoor function of wired remote controller "FILTER SIGN SET". (It is set at 1 at the shipping from factory.)

Filter sign setting	Function
TYPE 1	Setting time: 180 hrs (Factory default)
TYPE 2	Setting time: 600 hrs
TYPE 3	Setting time: 1,000 hrs
TYPE 4	Setting time: 1,000 hrs (Unit stop) (2)

(2) After the setting time has elapsed, the "FILTER CLEANING" is displayed and, after operating for 24 hours further (counted also during the stop), the unit stops.

(j) Auto swing control [Applicable model: FDTC, FDT and FDEN]

1) Louver control

a) Press the "LOUVER" button to operate the swing louver when the air conditioner is operating.
"SWING" is displayed for 3 seconds and then the swing louver moves up and down continuously.

b) To fix the swing louver at a position, press one time the "LOUVER" button while the swing louver is moving so that four stop positions are displayed one after another per second.
When a desired stop position is displayed, press the "LOUVER" button again. The display stops, changes to show the "STOP 1" for 5 seconds and then the swing louver stops.

c) Louver operation at the power on with a unit having the louver 4-position control function
The louver swings one time automatically (without operating the remote controller) at the power on.
This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.

Note (1) If you press the "LOUVER" button, the swing motion is displayed on the louver position LCD for 10 second. The display changes to the "SWING" display 3 seconds later.

2) Automatic louver level setting during heating

At the hot start with the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (In order to prevent the cold start). The louver position display LCD continues to show the display which has been shown before entering this control.

3) Louver-free stop control

When the louver-free stop has been selected with the indoor function of wired remote controller "POSITION", the louver motor stops when it receives the stop signal from the remote controller. If the auto swing signal is received from the remote controller, the auto swing will start from the position where it was before the stop.

Note (1) When the indoor function of wired remote controller "POSITION" has been switched, switch also the remote control function "POSITION" in the same way.

(k) Compressor inching prevention control

1) 3-minute timer

When the compressor has been stopped by the thermostat, remote controller operation switch or anomalous condition, its restart will be inhibited for 3 minutes. However, the 3-minute timer is invalidated at the power on the electric power source for the unit.

2) 3-minute forced operation timer

- Compressor will not stop for 3 minutes after the compressor ON. However, it stops immediately when the unit is stopped by means of the ON/OFF switch or by when the thermister turned OFF the change of operation mode.
- If the thermostat is turned OFF during the forced operation control of heating compressor, the louver position (with the auto swing) is returned to the level position.

Note (1) The compressor stops when it has entered the protective control.

(l) Drain pump control [Applicable models:FDTC,FDT and FDUM]

1) This control is operated when the inverter frequency is other than 0 Hz during the cooling operation and automatic cooling and dehumidifying operations.
2) Drain pump ON condition continues for 5 minutes even when it enters the OFF range according to 1) above after turning the drain pump ON, and then stops. The 5-minute delay continues also in the event of anomalous stop.
3) The drain pump is operated with the 5-minute delay operation when the compressor is changed from ON to OFF.
4) Even in conditions other than the above (such as heating, fan, stop, cooling thermostat OFF), the drain pump control is performed by the drain detection.
5) Following settings can be made using the indoor function setting of the wired remote controller.

(i) : Drain pump is run during cooling and dry.

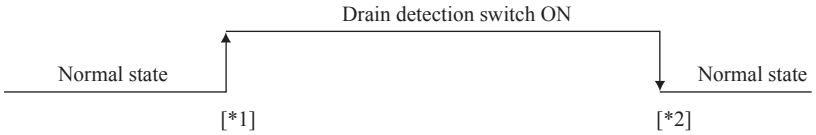
(ii) AND : Drain pump is run during cooling, dry and heating.

(iii) AND AND : Drain pump is run during cooling, dry, heating and fan.

(iv) AND : Drain pump is run during cooling, dry and fan.

(m) Drain motor (DM) control [Applicable model: FDTC, FDT and FDUM]

(i) Drain detection switch is turned ON or OFF with the float switch (FS) and the timer.



[∗1] Drain detection switch is turned "ON" when the float switch "Open" is detected for 3 seconds continuously in the drain detectable space.

[∗2] Drain detection switch is turned "OFF" when the float switch "Close" is detected for 10 seconds continuously.

1) It detects always from 30 seconds after turning the power ON.

a) There is no detection of anomalous draining for 10 seconds after turning the drain pump OFF.

b) Turning the drain detection switch "ON" causes to turn ON the drain pump forcibly.

c) Turning the drain detection switch "OFF" releases the forced drain pump ON condition.

(ii) Indoor unit performs the control A or B depending on each operating condition.

	Indoor unit operation mode				
	Stop (1)	Cooling	Dehumidifying	Fan (2)	Heating
Compressor ON		Control A			
Compressor OFF	Control B				

Note (1) Including the stop from the cooling, dehumidifying, fan and heating, and the anomalous stop
(2) Including the "Fan" operation according to the mismatch of operation modes

1) Control A

a) If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop (displays E9) and the drain pump starts. After detecting the anomalous condition, the drain motor continues to be ON.

b) It keeps operating while the float switch is detecting the anomalous condition.

2) Control B

If the float switch detects any anomalous drain condition, the drain motor is turned ON for 5 minutes, and at 10 seconds after the drain motor OFF it checks the float switch. If it is normal, the unit is stopped under the normal mode or, if there is any anomalous condition, E9 is displayed and the drain motor is turned ON. (The ON condition is maintained during the drain detection.)

(n) Operation check/drain pump test run operation mode

1) If the power is turned on by the dip switch (SW7-1) on the indoor PCB when electric power source is supplied, it enters the mode of operation check/drain pump test run. It is ineffective (prohibited) to change the switch after turning power on.

2) When the communication with the remote controller has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode. Unless the remote controller communication is established, it enters the drain pump test run mode.

Note (1) To select the drain pump test run mode, disconnect the remote controller connector (CNB) on the indoor PCB to shut down the remote controller communication.

3) Operation check mode

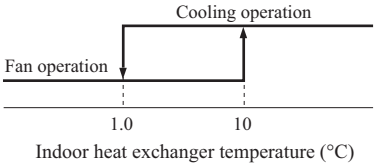
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

4) Drain pump test run mode

As the drain pump test run is established, the drain pump only operates and during the operation protective functions by the microcomputer of indoor unit become ineffective.

(o) Cooling, dehumidifying frost protection

1) To prevent frosting during cooling mode or dehumidifying mode operation, the of compressor speed is reduced if the indoor heat exchanger temperature (detected with Thi-R) drops to 1.0 °C or lower at 4 minutes after the start of compressor operation. If the indoor unit heat exchanger temperature is 1.0 °C or lower after 1 minutes, the compressor speed is reduced further. If it becomes 2.5 °C or higher, the control terminates. When the indoor heat exchanger temperature has become as show below after reducing the compressor speed, it is switched to the fan operation. For the selection of indoor fan speed, refer to item 2).



2) Selection of indoor fan speed

If it enters the frost prevention control during cooling operation (excluding dehumidifying), the indoor unit fan speed is switched.

(a) In cases of, FDUM, and FDEN

i) When the indoor unit return air temperature (detected with Thi-A) is 23°C or lower, this control is invalidated and, as 2 hours elapse after starting the frost prevention control, it is terminated.

ii) If it is detected again within 15 minutes from the start of frost prevention control, the indoor fan speed is raised by 1 tap to increase the indoor unit fan speed. If it is detected within further 15 minutes, the indoor unit fan speed is raised by 1 tap more.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

iii) "FAN SPEED SW VALID/INVALID" of this control is selectable with the function setting of remote controller.

b) In the case of FDTand FDFC

i) When the indoor return air detection temperature (detected with Thi-A) is 23°C or higher and the indoor heat exchanger temperature (detected with Thi-R) detects the compressor frequency drop start temperature A°C+1°C, of indoor unit fan speed is increased by 20rpm.

ii) If the phenomenon of i) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20rpm.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

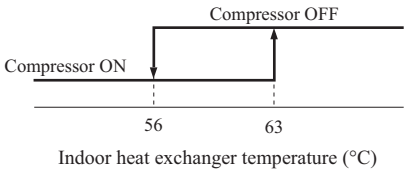
• Compressor frequency drop start temperature

Item \ Symbol	A
Temperature - Low (Factory default)	1.0
Temperature - High	2.5

Note (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote controller.

(p) Heating overload protection

1) If the indoor heat exchanger temperature (detected with Thi-R) at 63°C or higher is detected for 2 seconds continuously, the compressor stops. When the compressor is restarted after a 3-minute delay, if a temperature at 63°C or higher is detected for 2 seconds continuously within 60 minutes after initial detection and if this is detected 5 times consecutively, the compressor stops with the anomalous stop (E8). Anomalous stop occurs also when the indoor heat exchanger temperature at 63°C or higher is detected for 6 minutes continuously.



2) Indoor unit fan speed selection

If, after second detection of heating overload protection up to fourth, the indoor fan is set at Me and Lo taps when the compressor is turned ON, the indoor fan speed is increased by 1 tap.

(q) Anomalous fan motor [In case of FDT, FDTC only]

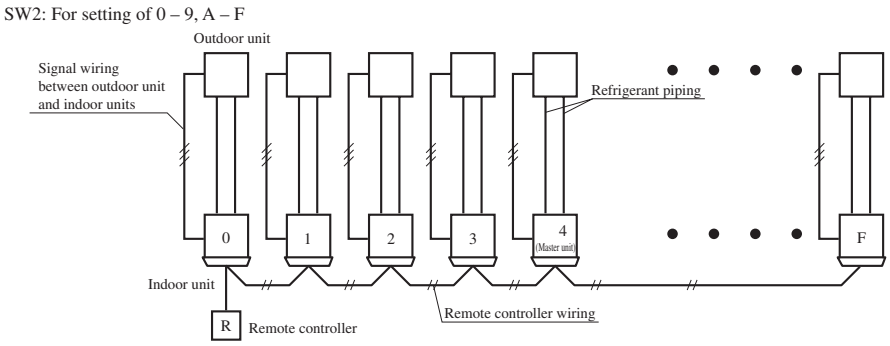
After starting the fan motor, if the fan motor speed is 200rpm or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).

(r) Plural unit control – Control of 16 units group by one remote controller

1) Function

One remote controller switch can control a group of multiple number of unit (Max. 16 indoor units). "Operation mode" which is set by the remote controller switch can operate or stop all units in the group one after another in the order of unit No.(1). Thermostat and protective function of each unit function independently.

Note (1) Unit No. is set by SW2 on the indoor unit control PCB. Unit No. setting by SW2 is necessary for the indoor unit only.



(2) Unit No. may be set at random unless duplicated, it should be better to set orderly like 0, 1, 2…, F to avoid mistake.

2) Display to the remote controller
   a) Center or each remote controller basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the center mode unless the remote mode is available) is displayed.
   b) Inspection display, filter sign: Any of unit that starts initially is displayed.
   c) Confirmation of connected units
      Pressing "AIR CON No." button on the remote controller displays the indoor unit address. If "▲" "▼" button is pressed at the next, it is displayed orderly starting from the unit of youngest No.
   d) In case of anomaly
      i) If any anomaly occurs on a unit in a group (a protective function operates), that unit stops with the anomalous stop but any other normal units continue to run as they are.
      ii) Signal wiring procedure
         Signal wiring between indoor and outdoor units should be made on each unit same as the normal wiring. For the group control, lay connect with sires wiring between rooms using terminal blocks (X, Y) of remote controller.
         Connect the remote controller communication wire separately from the power supply wire or wires of other electric devices (AC220V or higher).

(s) High ceiling control

In the case of indoor unit installed in a higher ceiling room, the airflow volume mode control can be changed with the wired remote controller indoor unit function "FAN SPEED SET".

Fan tap		Indoor unit airflow setting			
		- - -	- - -	- -	-
FAN SPEED SET	STANDARD	PHi - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1, 2	PHi - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi

Note (1) Factory default is Standard.
(2) At the hot-start and heating thermostat OFF, or other, the indoor unit fan is operated at the low speed tap of each setting.
(3) This function is not able to be set with wireless remote controls or simple remote control (RCH-E3)

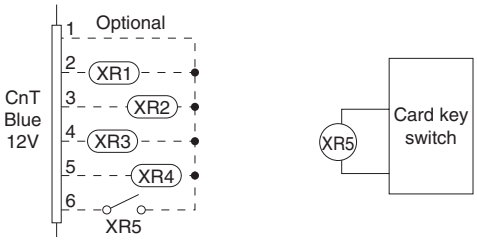
(t) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

1) Broken wire detection
   When the return air temperature thermistor detects -20°C or lower or the heat exchanger temperature thermistor detect -40°C or lower for 5 seconds continuously, the compressor stops. After a 3-minute delay, the compressor restarts but, if it is detected again within 60 minutes after the initial detection for 6 minutes continuously, stops again (the return air temperature thermistor: E7, the heat exchanger temperature thermistor: E6).
2) Short-circuit detection
   If the heat exchanger temperature thermistor detects 70°C or higher for 5 seconds continuously at 2 minutes and 20 seconds after the compressor ON during cooling operation, the compressor stops (E6).

(u) Operation permission/prohibition

(In case of adopting card key switches or commercially available timers)

When the indoor function setting of wired remote controller for "Operation permission/prohibition" is changed from "Invalid (Factory default)" to " Valid", following control becomes effective.



	Normal operation (Factory default)		Operation permission/prohibition mode "Valid" (Local setting)	
CnT-6	ON	OFF	ON	OFF
	Operation	Stop	Operation permission*1	Operation prohibition (Unit stops)

*1 **Only the "LEVEL INPUT" is acceptable for external input**, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote controller, operation status will be changed as follows.

In case of "Level input" setting	In case of "Pulse input" setting
Unit operation from the wired remote controller becomes available*(1)	Unit starts operation *(2)

*(1) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Level input (Factory default)";

① When card key switch is ON (CnT-6 ON: Operation permission), start/stop operation of the unit from the wired remote controller becomes available.

② When card key switch is OFF (CnT-6 OFF: Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote controller becomes not available.

*(2) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Pulse input (Local setting)";

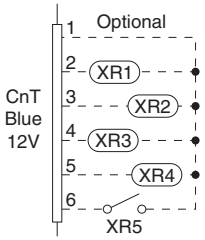
① When card key switch is ON (Operation permission), the unit starts operation in conjunction with ON signal. and also start/stop operation of the unit from the wired remote controller becomes available.

② When card key switch is OFF (Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote controller becomes not available.

(3) This function is invalid only at "Center mode" setting done by central controller.

(v) External input/output control (CnT)

Be sure to connect the wired remote controller to the indoor unit. Without wired remote controller remote operation by CnT is not possible to perform.



①Operation output	(CnT-2: XR1)
②Heating output	(CnT-3: XR2)
③Thermostat ON output	(CnT-4: XR3)
④Error output	(CnT-5: XR4)
⑤Remote operation input	(CnT-6: No-voltage contactor)

1) Output for external control (remote display)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

① **Operation output:** Outputs DC12V signal for driving relay during operation

② **Heating output:** Outputs DC12V signal for driving relay during heating operation

③ **Thermostat ON output:** Outputs DC12V signal for driving relay when compressor is operating.

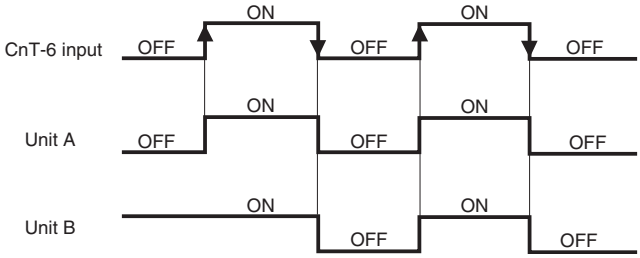
④ **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

2) Remote operation input

Remote operation input connector (CnT-6) is provided on the indoor control PCB.
However remote operation by CnT-6 is not effective, when "Center mode" is selected by center controller.
In case of plural unit (twin, triple, double twin), remote operation input to CnT-6 on the slave indoor unit is invalid.
Only the "LEVEL INPUT" is acceptable for external input, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote controller, operation status will be changed as follows.

a) In case of "Level input" setting (Factory default)

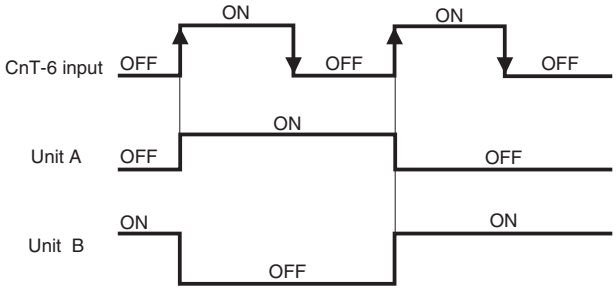
Input signal to CnT-6 is OFF→ON …… unit ON
Input signal to CnT-6 is ON→OFF …… unit OFF
Operation is not inverted.



Note: The latest operation has priority
It is available to operate/stop by remote controller or center controller

b) In case of "Pulse input" setting (Local setting)

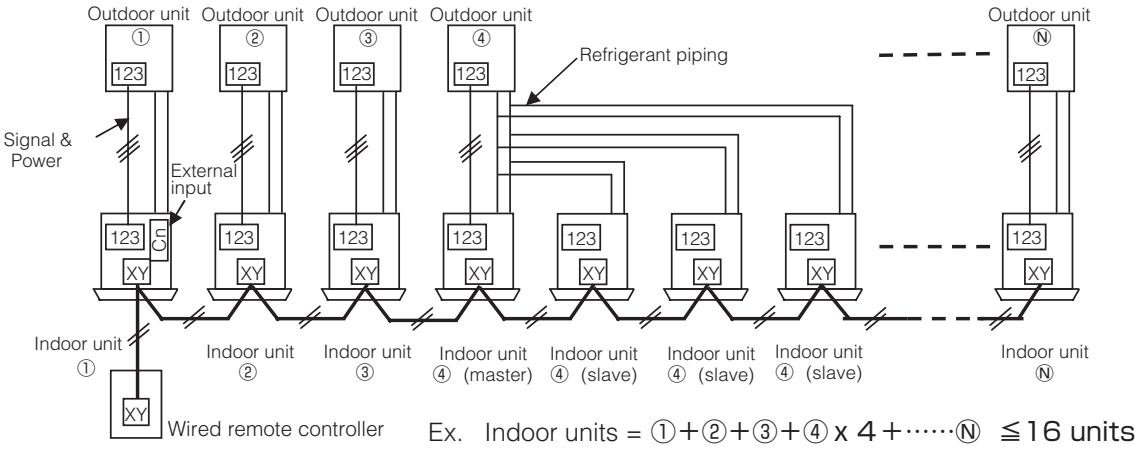
It is effective only when the input signal to CnT-6 is changed OFF→ON, and at that time unit operation [ON/OFF] is inverted.



3) Remote operation

a) In case of multiple units (Max. 16 indoor units group) are connected to one wired remote controller

When the indoor function setting of wired remote controller for "External control set" is changed from "Individual (Factory default)" to " For all units", all units connected in one wired remote controller system can be controlled by external operation input.



	Individual operation (Factory default)		All units operation (Local setting)	
CnT-6	ON	OFF	ON	OFF
	Only the unit directly connected to the remote controller can be operated.	Only the unit directly connected to the remote controller can be stopped opeartion.	All units in one remote controller system can be operated.	All units in one remote controller system can be stopped operation.
	Unit ① only	Unit ① only	Units ① – Ⓝ	Units ① – Ⓝ

When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote controller system:

(1) With the factory default, external input to CnT-6 is effective for only the unit ①.

(2) When setting "For all unit" (Local setting), all units in one remote controller system can be controlled by external input to CnT-6 on the indoor unit ①.

(3) External input to CnT-6 on the other indoor unit than the unit ① is not effective.

(w) Fan control at heating startup (Applicable model: FDTC and FDT)

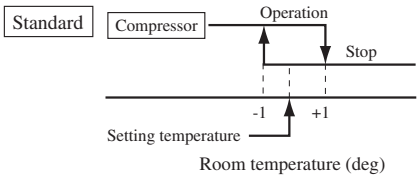
1) Start conditions
At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

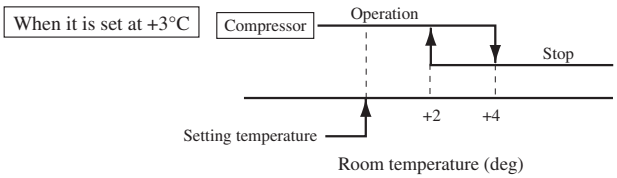
2) Contents of control
   a) Sampling is made at each minute and, when the indoor unit heat exchanger temperature (detected with Thı-R) is 37°C or higher, present number of revolutions of indoor unit fan speed is increased by $10min^{-1}$.
   b) If the indoor unit heat exchanger temperature drops below 37°C at next sampling, present number of revolutions of indoor unit fan speed is reduced by $10min^{-1}$.

3) End conditions
Indoor fan speed is reduced to the setting airflow volume when the compressor OFF is established and at 30 minutes after the start of heating operation.

(x) Room temperature detection temperature compensation during heating

With the standard specification, the compressor is turned ON/OFF with the thermostat setting temperature. When the thermostat is likely to turn OFF earlier because the unit is installed at the ceiling where warm air tends to accumulate, the setting can be changed with the wired remote controller indoor unit function "☼SP OFFSET". The compressor and the heater are turned ON/OFF at one of the setting temperature +3, +2 or +1°C in order to improve the feeling of heating. The setting temperature, however, has the upper limit of 30°C.





(y) Return air temperature compensation

This is the function to compensate the deviation between the detection temperature by the return air temperature thermistor and the measured temperature after installing the unit.

1) It is adjustable in the unit of 0.5°C with the wired remote controller indoor unit function "RETURN AIR TEMP".
   • +1.0°C, +1.5°C, +2.0°C • -1.0°C, -1.5°C, -2.0°C

2) Compensated temperature is transmitted to the remote controller and the compressor to control them.

Note (1) The detection temperature compensation is effective on the indoor unit thermistor only.

(4) Operation control function by the outdoor controller

(a) Defrosting operation

1) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)

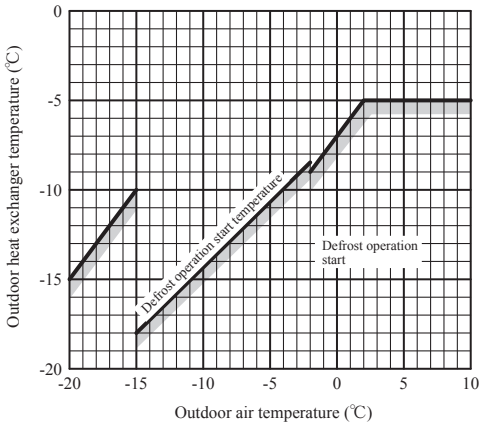
a) After start of heating operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

b) After end of defrosting operation
When it elapsed 35 minutes. (Accumulated compressor operation time)

c) Outdoor heat exchanger sensor (TH1) temperature
When the temperature has been below −5ºC for 3 minutes continuously.

d) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature

- The outdoor air temperature ≧ −2ºC : 7ºC or higher
- −15ºC ≦ The outdoor air temperature ＜ −2ºC : 4/15 × The outdoor air temperature + 7ºC or higher
- The outdoor air temperature ＜ −15ºC : −5ºC or higher

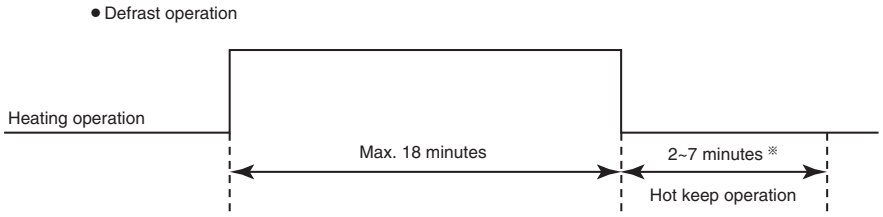


e) During continuous compressor operation
In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of a), b), c) and e) above and the outdoor air temperature is 3ºC or less are satisfied (note that when the temperature for outdoor heat exchanger sensor (TH1) is −5ºC or less: 62 rps or more, −4ºC or less: less than 62 rps), defrost operation is started.

2) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)

a) Outdoor heat exchanger sensor (TH1) temperature: 10ºC or higher

b) Continued operation time of defrosting → For more than 18 minutes.

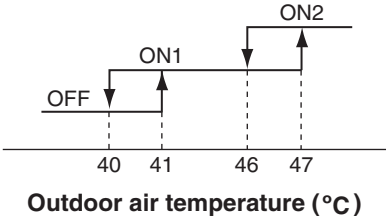


※Depends on an operation condition, the time can be longer than 7 minutes.

(b) Cooling overload protective control

1) Operating conditions: When the outdoor air temperature (TH2) has become continuously for 30 seconds at 41ºC or more, or 47ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Item \ Model	SRC40~60ZJX-S	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps



2) Detail of operation

The lower limit of compressor command speed is set to 30 or 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 or 40 rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature is lower than 40ºC.

b) The compressor command speed is 0 rps.

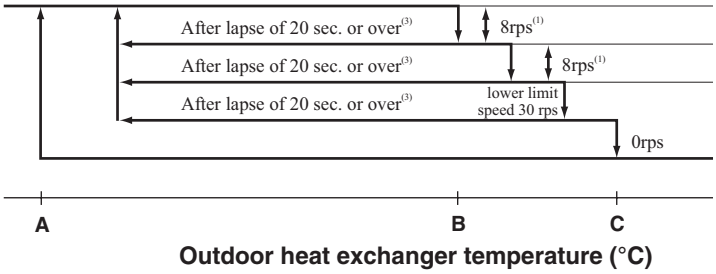
(c) Cooling high pressure control

(a) Purpose: Prevents anomalous high pressure operation during cooling.

(b) Detector: Outdoor heat exchanger sensor (Th1)

(c) Detail of operation:

(Example) Fuzzy



Outdoor air temperature(TH2)	A	B	C
TH2 ≧ 32ºC	53	58	63
TH2 < 32ºC	51	53	56

Notes (1) When the outdoor heat exchanger temperature is in the range of A ~ C ºC, the compressor command speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is C ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A ~ C ºC, if the compressor command speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(d) Cooling low outdoor temperature protective control

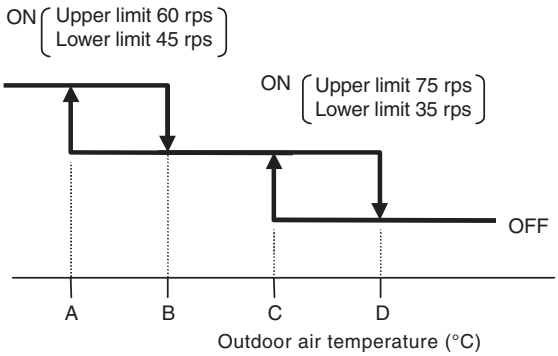
1) Operating conditions: When the outdoor air temperature (TH2) is 22ºC or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation:

a) The lower limit of the compressor command speed is set to 45 (35) rps and even if the speed becomes lower than 45 (35) rps, the speed is kept to 45 (35) rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

b) The upper limit of the compressor command speed is set to 60 (75) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 60 (75) rps.

Note (1) Values in ( ) are for outdoor air temperature is 22ºC or 25ºC



● Values of A, B, C, D

	Outdoor air temp. (˚C)			
	A	B	C	D
First time	9	11	22	25
Since the second time	16	19	25	28

3) **Reset conditions:** When either of the following condition is satisfied

a) The outdoor air temperature (TH2) is D ºC or higher.

b) The compressor command speed is 0 rps.

(e) Heating high pressure control

1) **Start condition:** When the indoor heat exchanger temperature (ThI-R) has risen to a specified temperature while the compressor is turned on.

2) **Compressor command speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.**

	ThI-R < P1	P1 ≦ ThI-R < P2	P2 ≦ ThI-R < P3	P3 ≦ ThI-R
Protection control speed (NP)	Normal	Retention	NP−4rps	NP−8rps
Sampling time (s)	Normal	10	10	10

Unit: °C

NP \ ThI-R	P1	P2	P3
10 ≦ NP < 50	45	52	54.5
50 ≦ NP < 115	45	52	57
115 ≦ NP < 120	45 ~ 43	52 ~ 50	57 ~ 55
120 ≦ NP	43	50	55

(f) Heating overload protective control

1) **Operating conditions :** When the outdoor air temperature (TH2) is 13ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation**

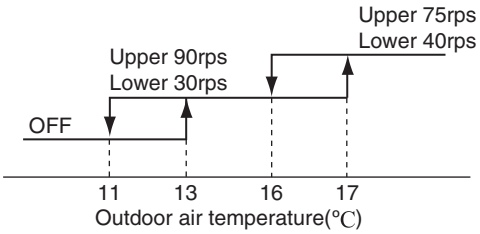
a) Taking the upper limit of compressor command speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

b) The lower limit of compressor command speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30(40)rps. However, when the thermo becomes OFF, the speed is reduced to 0 prs.

c) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 30(40)rps.

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

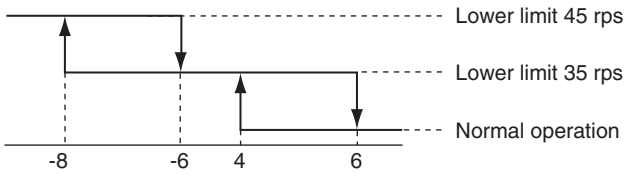
3) **Reset conditions:** The outdoor air temperature (TH2) is lower than 11ºC



(g) Heating low outdoor temperature protective control

1) **Operating conditions:** When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** The lower limit compressor command speed is change as shown in the figure below.



3) Reset conditions: When either of the following condition is satisfied.

a) The outdoor air temperature (TH2) is higher than 6ºC

b) The compressor command speed is 0 rps.

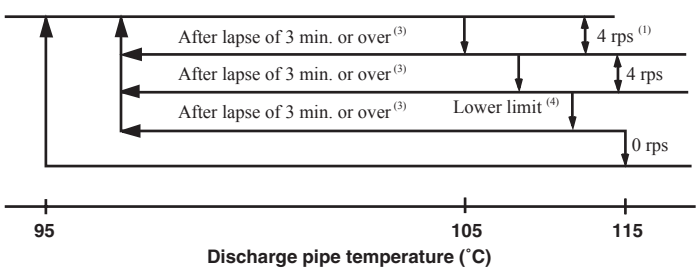
(h) Compressor overheat protection

1) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

2) Detail of operation

a) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105~115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95~105ºC even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95~105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

Model \ Item	Cooling	Heating
Lower Limit Speed	25 rps	32 rps

b) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(i) Current safe

1) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

2) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(j) Current cut

1) Purpose: Inverter is protected from overcurrent.

2) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(k) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item 1), 2) is satisfied. Once the unit is stopped by this function, it is not restarted.

1) When the input current is measured at 1 A or less for 3 continuous minutes or more.

2) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(l) Serial signal transmission error protection

1) **Purpose:** Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

2) **Detail of operation:** If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.
After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(m) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(n) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 rpm or under for more than 30 seconds, the compressor and fan motor are stopped.

(o) Outdoor fan control at low outdoor temperature

(i) Cooling

1) **Operating conditions:** When the outdoor air temperature (TH2) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor temperature > 10˚C	2nd speed
Outdoor temperature ≦ 10˚C	1st speed

a) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)

b) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 21ºC~ 38ºC, maintain outdoor fan speed.

c) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 3rd speed)

3) **Reset conditions:** When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 25ºC or higher.

b) The compressor command speed is 0 rps.

(ii) Heating

1) **Operating conditions:** When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

2) **Detail of operation:** The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

3) **Reset conditions:** When either of the following conditions is satisfied

a) The outdoor air temperature (TH2) is 6ºC or higher.

b) The compressor command speed is 0 rps.

(q) Refrigeration cycle system protection

1) Starting conditions

a) When 5 minutes have elapsed after the compressor ON or the completion of the defrost control

b) Other than the defrost control

c) When, after meeting the conditions of a) and b) above, the compressor speed, indoor air temperature (ThI-A) and indoor heat exchanger temperature (ThI-R) have met the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (ThI-A)	Indoor air temperature (ThI-A)/ Indoor heat exchanger temperature (ThI-R)
Cooling	40≦N	10≦ThI-A≦40	ThI-A−4<ThI-R
Heating	40≦N	10≦ThI-A≦40	ThI-R<ThI-A+4

2) Contents of control

a) When the conditions of 1) above are met, the compressor stops.

b) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

3) Resetting condition

When the compressor has been turned OFF

12. MAINTENANCE DATA

12.1 SRK and SRF series

(1) Cautions

(a) If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).

(b) When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

(c) When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(2) Items to check before troubleshooting

(a) Have you thoroughly investigated the details of the trouble which the customer is complaining about?

(b) Is the air conditioner running? Is it displaying any self-diagnosis information?

(c) Is a power supply with the correct voltage connected?

(d) Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

(e) Is the outdoor unit's service valve open?

(3) Troubleshooting procedure (If the air conditioner does not run at all)

If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (4).

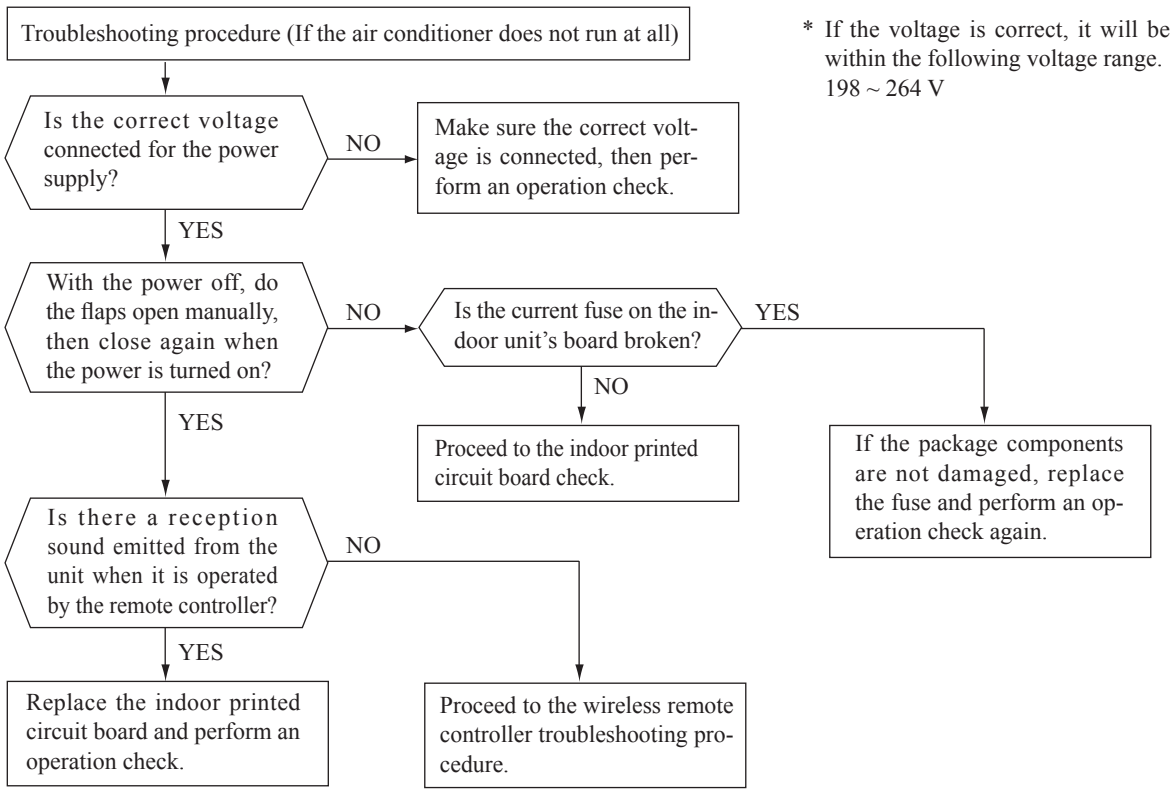
Important When all the following conditions are met, we say that the air conditioner will not run at all.

(a) The RUN light does not light up.

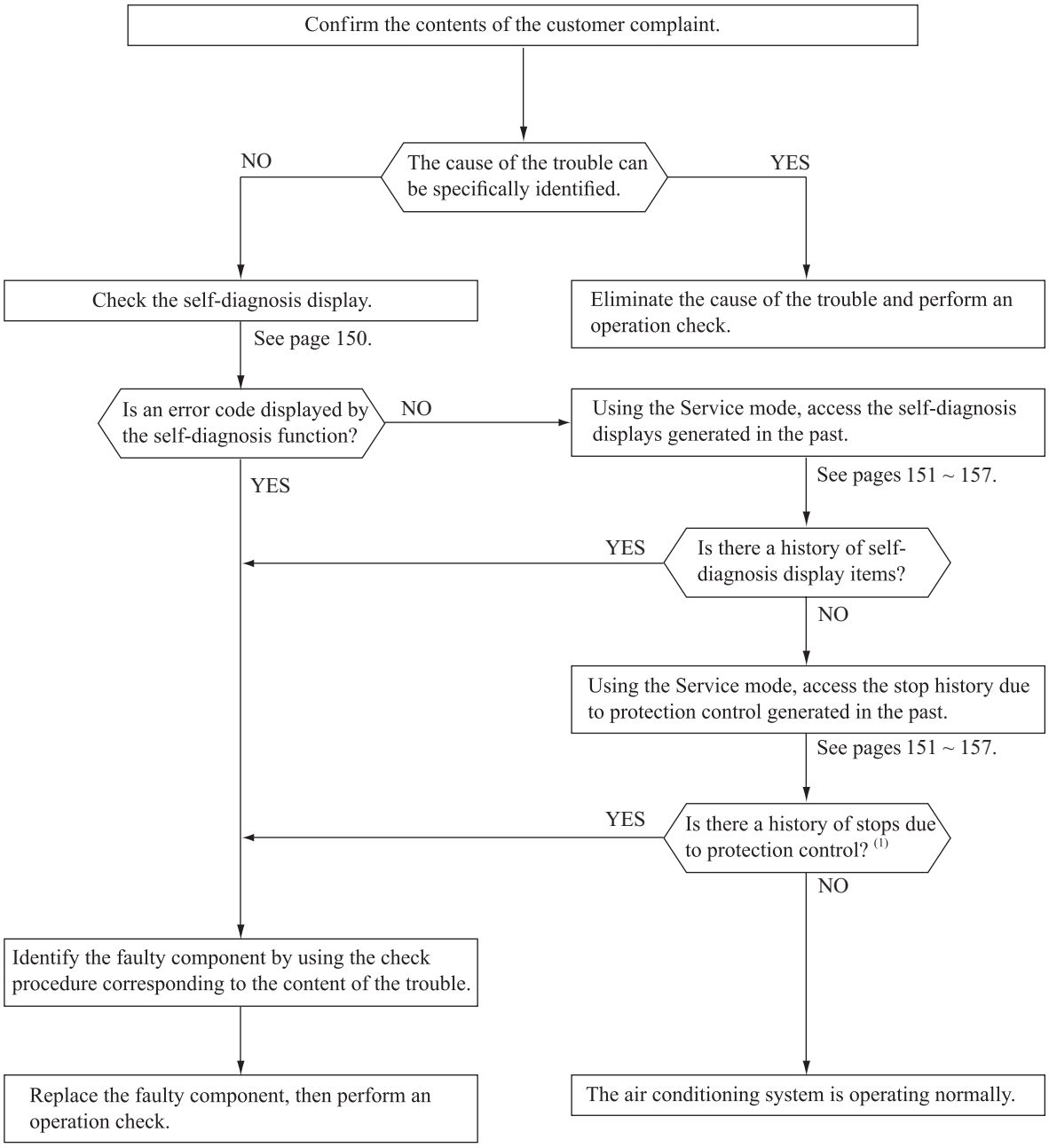
(b) The flaps do not open.

(c) The indoor unit fan motors do not run.

(d) The self-diagnosis display does not function.



(4) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(5) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote controller 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. [1]

Indoor unit display panel		Outdoor control PCB Red LED	Wired [2] remote controller display	Description of trouble	Cause	Display (flashing) condition
RUN light	TIMER light					
1 time flash	ON	–	–	Heat exchanger sensor 1 error	• Broken heat exchanger sensor 1 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 1 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 times flash	ON	–	–	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection • Indoor PCB is faulty	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –45ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
3 times flash	ON	–	–	Heat exchanger sensor 2 error	• Broken heat exchanger sensor 2 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 2 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.)(Not displayed during operation.)
6 times flash	ON	–	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 (SRF : 150) rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
Keeps flashing	1 time flash	8 times flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection • Outdoor PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	2 times flash	8 times flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Outdoor PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	4 times flash	8 times flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection • Outdoor PCB is faulty	–25ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature.(The compressor is stopped.)
ON	1 time flash	1 time flash	E 42	Current cut	• Compressor locking, open phase on compressor output, short circuit on power transistor, service valve is closed	The compressor output current exceeds the set value during compressor start. (The air conditioner stops.)
ON	2 times flash	2 times flash	E 59	Trouble of outdoor unit	• Broken compressor wire • Compressor blockage	When there is an emergency stop caused by trouble in the outdoor unit, or the input current value is found to be lower than the set value.(The air conditioner stops.)
ON	3 times flash	3 times flash	E 58	Current safe stop	• Overload operation • Overcharge • Compressor locking	When the compressor command speed is lower than the set value and the current safe has operated. (the compressor stops)
ON	4 times flash	1 time flash	E 51	Power transistor error	• Broken power transistor	When the power transistor is judged breakdown while compressor starts. (The compressor is stopped.)
ON	5 times flash	5 times flash	E 36	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, service valve is closed	When the value of the discharge pipe sensor exceeds the set value.(The air conditioner stops.)
ON	6 times flash	6 times flash	E 5	Error of signal transmission	• Defective power supply, Broken signal wire, defective indoor/outdoor PCB	When there is no signal between the indoor PCB and outdoor PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 7 minute 35 seconds or longer (during operation)(the compressor is stopped).
ON	7 times flash	Keeps flashing	E 48	Outdoor fan motor error	• Defective fan motor, poor connector connection	When the outdoor unit's fan motor speed continues for 30 seconds or longer at 75 rpm or lower. (3 times) (The air conditioner stops.)
ON	Keeps flashing	2 times flash	E 35	Cooling high pressure protecton	• Overload operation, overcharge • Broken outdoor heat exchange sensor wire • Service valve is closed	When the value of the outdoor heat exchanger sensor exceeds the set value.
2 times flash	2 times flash	7 times flash	E 60	Rotor lock	• Defective compressor • Open phase on compressor • Defective outdoor PCB	If the compressor motor's magnetic pole positions cannot be correctly detected when the compressor starts. (The air conditioner stops.)
5 times flash	ON	2 times flash	E 47	Active filter voltage error	• Defective active filter	When the wrong voltage connected for the power supply. When the outdoor PCB is faulty.
7 times flash	ON	2 times flash	E 57	Refrigeration cycle system protective control	• Service valve is closed. • Refrigerant is insufficient	When refrigeration cycle system protective control operates.
–	–	–	E 1	Error of wired remote controller wiring	• Broken wired remote controller wire, defective indoor PCB	The wired remote controller wire Y is open. The wired remote controller wires X and Y are reversely connected. Noise is penetrating the wired remote controller lines.The wired remote controller or indoor PCB is faulty. (The communications circuit is faulty.)
Stays OFF	Keeps flashing	–	–	Limit switch error	• Defective limit switch • Defective suction panel set • Defective indoor control PCB	Actuation of limit switch

Notes (1)The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.
(2)The wired remote controller is optional parts.

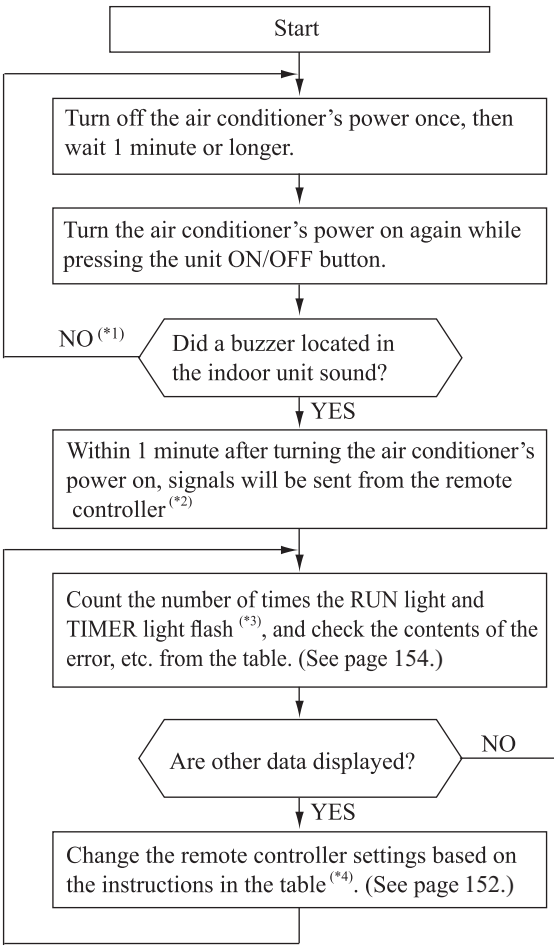
(6) Service mode (Trouble mode access function)

This air conditioner is capable of recording error displays and protective stops (service data) which have occurred in the past. If self-diagnosis displays cannot be confirmed, it is possible to get a grasp of the conditions at the time trouble occurred by checking these service data.

(a) Explanation of terms

Term	Explanation
Service mode	The service mode is the mode where service data are displayed by flashing of the display lights when the operations in item (b) below are performed with the indoor controller.
Service data	These are the contents of error displays and protective stops which occurred in the past in the air conditioner system. Error display contents and protective stop data from past anomalous operations of the air conditioner system are saved in the indoor unit controller's non-volatile memory (memory which is not erased when the power goes off). There are two types of data, self-diagnosis data and stop data, described below.
Self-diagnosis data	These are the data which display the reason why a stop occurred when an error display(self-diagnosis display) occurred in an indoor unit. Data are recorded for up to 5 previous occurrences. Data which are older than the 5th previous occurrence are erased. In addition, data on the temperature of each sensor (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor air temperature, discharge pipe), remote controller information (operation switching, fan speed switching) are recorded when trouble occurs, so more detailed information can be checked.
Stop data	These are the data which display the reason by a stop occurred when the air conditioning system performed protective stops, etc. in the past. Even if stop data alone are generated, the system restarts automatically. (After executing the stop mode while the display is normal, the system restarts automatically.) Data for up to 10 previous occasions are stored. Data older than the 10th previous occasion are erased. (Important) In cases where transient stop data only are generated, the air conditioner system may still be normal. However, if the same protective stop occurs frequently (3 or more times), it could lead to customer complaints.

(b) Service mode display procedure



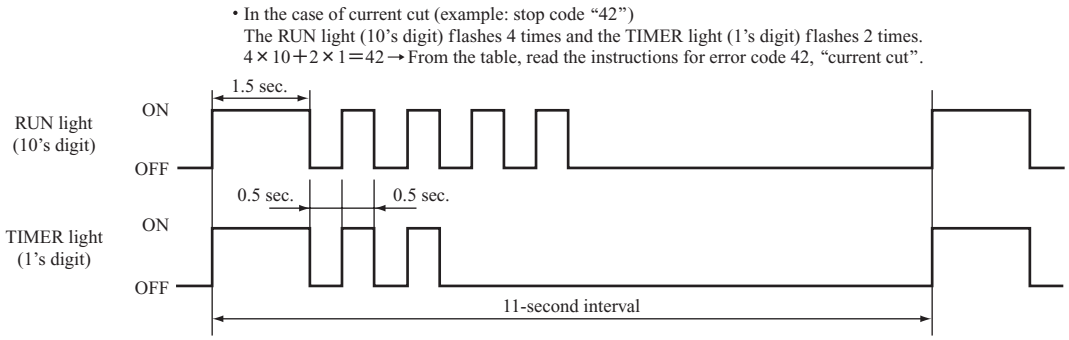
When the optional wired remote control is used:
When the service mode is effective and the optional wired remote controller is used, the signal from the wired remote controller won't be received. Use the self diagnostic function with the wireless remote controller.

*1: If the buzzer does not sound no matter how many times you repeat the operation, the unit ON/OFF button may be faulty.

*2: Set the remote controller settings on "Cooling Operation," "Fan Speed: MED" and "Set Temperature: 21ºC."

Turn off the air conditioner's power to terminate the service mode. If you are going to turn the power on again, wait 1 minute or longer after turning it off.

*3: To count the number of flashes in the service mode, count the number of flashes after the light lights up for 1.5 second initially (start signal). (The time that the light lights up for 1.5 second (start signal) is not counted in the number of flashes.)



*4: When in the service mode, when the remote controller settings (operation switching, fan speed switching, temperature setting) are set as shown in the following table and sent to the air conditioner unit, the unit switches to display of service data.

1) Self-diagnosis data

What are Self-diagnosis Data? .....These are control data (reasons for stops, temperature at each sensor, remote controller information) from the time when there were error displays (abnormal stops) in the indoor unit in the past.

Data from up to 5 previous occasions are stored in memory. Data older than the 5th previous occasion are erased.

The temperature setting indicates how many occasions previous to the present setting the error display data are and the operation switching and fan speed switching data show the type of data.

Remote controller setting		Contents of output data
Operation switching	Fan speed switching	
Cooling	MED	Displays the reason for stopping display in the past (error code).
	HI	Displays the room temperature sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the indoor heat exchanger sensor temperature at the time the error code was displayed in the past.
Heating	LO	Displays the remote controller information at the time the error code was displayed in the past.
	MED	Displays the outdoor air temperature sensor temperature at the time the error code was displayed in the past.
	HI	Displays the outdoor heat exchanger sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the discharge pipe sensor temperature at the time the error code was displayed in the past.

Remote controller setting	Indicates the number of occasions previous to the present the error display data are from.
Temperature setting	
21ºC	1 time previous (previous time)
22ºC	2 times previous
23ºC	3 times previous
24ºC	4 times previous
25ºC	5 times previous

Only for indoor heat exchanger sensor 2

Remote controller setting	Indicates the number of occasions previous to the present the error display data are from.
Temperature setting	
26ºC	1 time previous (previous time)
27ºC	2 times previous
28ºC	3 times previous
29ºC	4 times previous
30ºC	5 times previous

(Example)

Remote controller setting			Displayed data
Operation switching	Fan speed switching	Temperature setting	
Cooling	MED	21ºC	Displays the reason for the stop (error code) the previous time an error was displayed.
		22ºC	Displays the reason for the stop (error code) 2 times previous when an error was displayed.
		23ºC	Displays the reason for the stop (error code) 3 times previous when an error was displayed.
		24ºC	Displays the reason for the stop (error code) 4 times previous when an error was displayed.
		25ºC	Displays the reason for the stop (error code) 5 times previous when an error was displayed.

2) Stop data

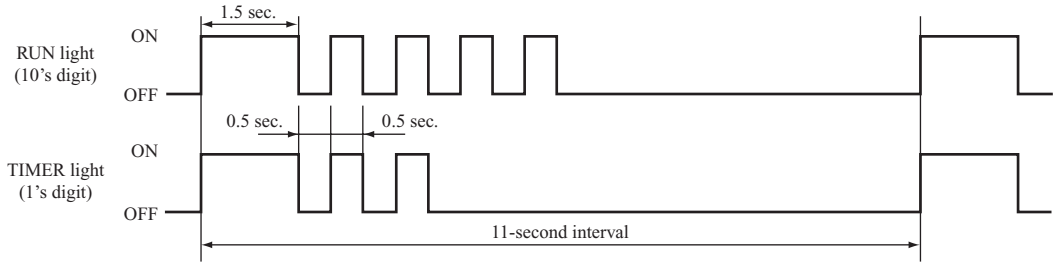
Remote controller setting			Displayed data
Operation switching	Fan speed switching	Temperature setting	
Cooling	LO	21ºC	Displays the reason for the stop (stop code) the previous time when the air conditioner was stopped by protective stop control.
		22ºC	Displays the reason for the stop (stop code) 2 times previous when the air conditioner was stopped by protective stop control.
		23ºC	Displays the reason for the stop (stop code) 3 times previous when the air conditioner was stopped by protective stop control.
		24ºC	Displays the reason for the stop (stop code) 4 times previous when the air conditioner was stopped by protective stop control.
		25ºC	Displays the reason for the stop (stop code) 5 times previous when the air conditioner was stopped by protective stop control.
		26ºC	Displays the reason for the stop (stop code) 6 times previous when the air conditioner was stopped by protective stop control.
		27ºC	Displays the reason for the stop (stop code) 7 times previous when the air conditioner was stopped by protective stop control.
		28ºC	Displays the reason for the stop (stop code) 8 times previous when the air conditioner was stopped by protective stop control.
		29ºC	Displays the reason for the stop (stop code) 9 times previous when the air conditioner was stopped by protective stop control.
		30ºC	Displays the reason for the stop (stop code) 10 times previous when the air conditioner was stopped by protective stop control.

(c) Error code, stop code table (Assignment of error codes and stop codes is done in common for all models.)

Number of flashes when in service mode		Stop coad or Error coad	Error content	Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)						
OFF	OFF	0	Normal	—	—	—	—
	5 times flash	05	Can not receive signals for 35 seconds (if communications have recovered)	Power supply is faulty. Power supply cables and signal lines are improperly wired. Indoor or outdoor PCB are faulty.	When 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—
3 times flash	5 times flash	35	Cooling high pressure control	Cooling overload operation. Outdoor unit fan speed drops. Outdoor heat exchanger sensor is short circuit.	When the outdoor heat exchanger sensor's value exceeds the set value.	○ (5 times)	○
	6 times flash	36	Compressoroverheat115°C	Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.	When the discharge pipe sensor's value exceeds the set value.	○ (2 times)	○
	7 times flash	37	Outdoor heat exchanger sensor is abnormal	Outdoor heat exchanger sensor wire is disconnected. Connector connections are poor. Outdoor PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	8 times flash	38	Outdoor air temperature sensor is abnormal	Outdoor air temperature sensor wire is disconnected. Connector connections are poor. Outdoor PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	9 times flash	39	Discharge pipe sensor is abnormal (anomalous stop)	Discharge pipe sensor wire is disconnected. Connector connections are poor. Outdoor PCB is faulty.	–25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature.	○ (3 times)	○
4 times flash	2 times flash	42	Current cut	Compressor lock. Compressor wiring short circuit. Compressor output is open phase. Outdoor PCB is faulty. Service valve is closed. Electronic expansion valve is faulty. Compressor is faulty.	Compressor start fails 42 times in succession and the reason for the final failure is current cut.	○ (2 times)	○
	7 times flash	47	Active filter voltage error	Defective active filter	When the wrong voltage connected for the power supply. When the outdoor PCB is faulty.	○	—
	8 times flash	48	Outdoor unit's fan motor is abnormal	Outdoor fan motor is faulty. Connector connections are poor. Outdoor PCB is faulty.	When a fan speed of 75 rpm or lower continues for 30 seconds or longer.	○ (3 times)	○
5 times flash	1 time flash	51	Short circuit in the power transistor (high side) Current cut circuit breakdown	Outdoor PCB is faulty. Power transistor is damaged.	When it is judged that the power transistor was damaged at the time the compressor started.	○	—
	7 times flash	57	Refrigeration cycle system protective control	Service valve is closed. Refrigerant is insufficient.	When refrigeration cycle system protective control operates.	○ (3 times)	○
	8 times flash	58	Current safe	Refrigerant is overcharge. Compressor lock. Overload operation.	When there is a current safe stop during operation.	—	○
	9 times flash	59	Compressor wiring is unconnection Voltage drop Low speed protective control	Compressor wiring is disconnected. Power transistor is damaged. Power supply construction is defective. Outdoor PCB is faulty. Compressor is faulty.	When the current is 1A or less at the time the compressor started. When the power supply voltage drops during operation. When the compressor command speed is 1ower than 32 rps for 60 minutes.	○	○
6 times flash	OFF	60	Rotor lock	Compressor is faulty. Compressor output is open phase. Electronic expansion valve is faulty. Overload operation. Outdoor PCB is faulty.	After the compressor starts, when the compressor stops due to rotor lock.	○ (2 times)	○
	1 time flash	61	Connection lines between the indoor and outdoor units are faulty	Connection lines are faulty. Indoor or outdoor PCB are faulty.	When 10 seconds passes after the power is turned on without communications signals from the indoor or outdoor unit being detected correctly.	○	—
	2 times flash	62	Serial transmission error	Indoor or outdoor PCB are faulty. Noise is causing faulty operation.	When 7 minute 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—
8 times flash	OFF	80	Indoor unit's fan motor is abnormal	Indoor fan motor is faulty. Connector connections are poor. Indoor PCB is faulty.	When the indoor unit's fan motor is detected to be running at 300 (SRF : 150) rpm or lower speed with the fan motor in the ON condition while the air conditioner is running.	○	—
	2 times flash	82	Indoor heat exchanger sensor is abnormal (anomalous stop)	Indoor heat exchanger sensor wire is disconnected. Connector connections are poor.	When a temperature of –28°C or lower is sensed continuously for 40 minutes during heating operation. (the compressor stops).	○	—
	4 times flash	84	Anti-condensation control	High humidity condition. Humidity sensor is faulty.	Anti-condensation prevention control is operating.	—	○
	5 times flash	85	Anti-frost control	Indoor unit fan speed drops. Indoor heat exchanger sensor is broken wire.	When the anti-frost control operates and the compressor stops during cooling operation.	—	○
	6 times flash	86	Heating high pressure control	Heating overload operation. Indoor unit fan speed drops. Indoor heat exchanger sensor is short circuit.	When high pressure control operates during heating operation and the compressor stops.	—	○

Note (1) The number of flashes when in the Service Mode do not include the 1.5 second period when the lights light up at first (starting signal). (See the example shown below.)

• In the case of current cut (example: stop code "42")
The RUN light (10's digit) flashes 4 times and the TIMER light (1's digit) flashes 2 times.
4×10+2×1=42→From the table, read the instructions for error code 42, "current cut".



(2) Error display: – Is not displayed. (automatic recovery only)
○ Displayed.
If there is a ( ) displayed, the error display shows the number of times that an auto recovery occurred for the same reason has reached the number of times in ( ).
If no ( ) is displayed, the error display shows that the trouble has occurred once.

(3) Auto Recovery: – Does not occur
○ Auto recovery occurs.

(d) Remote controller information tables

1) Operation switching

Display pattern when in service mode RUN light (Operation switching)	Operation switching when there is an abnormal stop
0	AUTO
1	DRY
2	COOL
3	FAN
4	HEAT

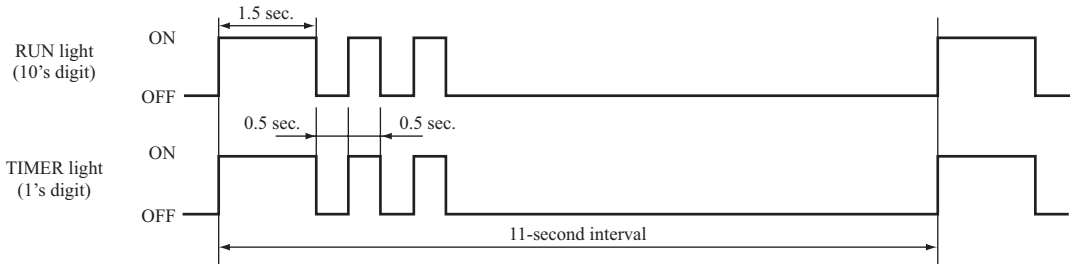
2) Fan speed switching

Display pattern when in service mode TIMER light (Fan speed switching)	Fan speed switching when there is an abnormal stop
0	AUTO
2	HI
3	MED
4	LO
6	HI POWER
7	ECONO

* If no data are recorded (error code is normal), the information display in the remote controller becomes as follows.

Remote controller setting	Display when error code is normal.
Operation switching	AUTO
Fan speed switching	AUTO

(Example): Operation switching, fan speed switching, cooling HI



(e) Room temperature sensor, indoor heat exchanger sensor, outdoor air temperature sensor, outdoor heat exchanger sensor table

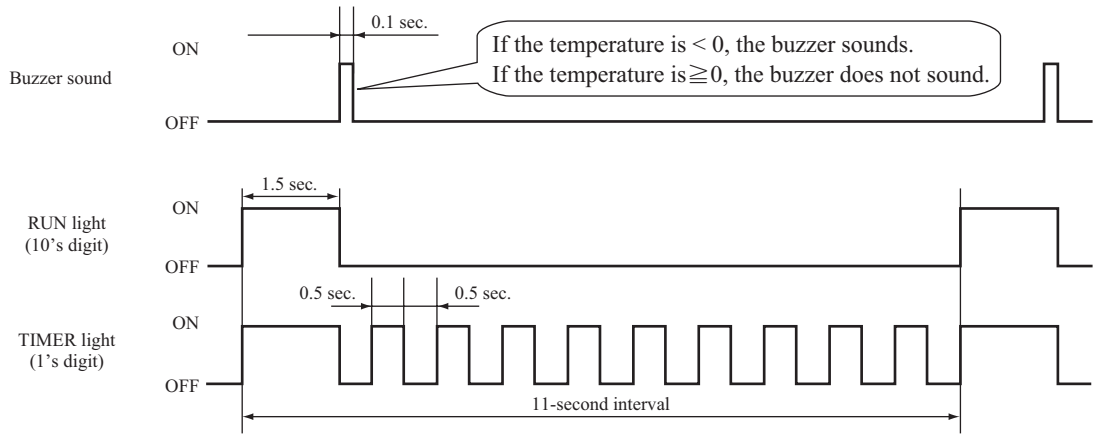
Units: °C

Buzzer sound	RUN light (10's digit) \ TIMER light (1's digit)	0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	6	-60	-61	-62	-63	-64					
	5	-50	-51	-52	-53	-54	-55	-56	-57	-58	-59
	4	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49
	3	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39
	2	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29
	1	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19
	0		-1	-2	-3	-4	-5	-6	-7	-8	-9
No (does not sound)	0	0	1	2	3	4	5	6	7	8	9
	1	10	11	12	13	14	15	16	17	18	19
	2	20	21	22	23	24	25	26	27	28	29
	3	30	31	32	33	34	35	36	37	38	39
	4	40	41	42	43	44	45	46	47	48	49
	5	50	51	52	53	54	55	56	57	58	59
	6	60	61	62	63	64	65	66	67	68	69
	7	70	71	72	73	74	75	76	77	78	79
	8	80	81	82	83	84	85	86	87	88	89
	9	90	91	92	93	94	95	96	97	98	99

* If no data are recorded (error code is normal), the display for each sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Room temperature sensor	-64ºC
Indoor heat exchanger sensor	-64ºC
Outdoor air temperature sensor	-64ºC
Outdoor heat exchanger sensor	-64ºC

(Example) Room temperature, indoor heat exchanger, outdoor air temperature, outdoor heat exchanger: "-9ºC"



(f) Discharge pipe sensor table

Units: °C

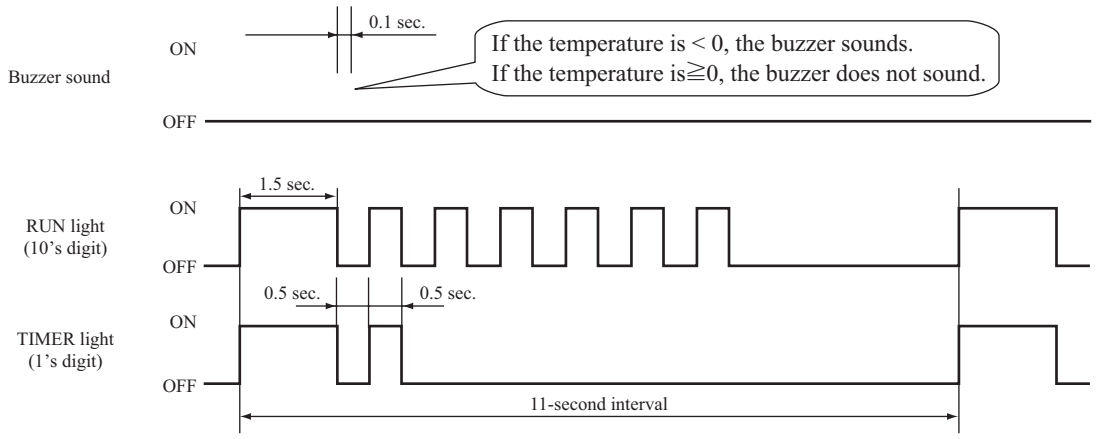
Buzzer sound	RUN light (10's digit) \ TIMER light (1's digit)	0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	3	-60	-62	-64							
	2	-40	-42	-44	-46	-48	-50	-52	-54	-56	-58
	1	-20	-22	-24	-26	-28	-30	-32	-34	-36	-38
	0		-2	-4	-6	-8	-10	-12	-14	-16	-18
No (does not sound)	0	0	2	4	6	8	10	12	14	16	18
	1	20	22	24	26	28	30	32	34	36	38
	2	40	42	44	46	48	50	52	54	56	58
	3	60	62	64	66	68	70	72	74	76	78
	4	80	82	84	86	88	90	92	94	96	98
	5	100	102	104	106	108	110	112	114	116	118
	6	120	122	124	126	128	130	132	134	136	138
	7	140	142	144	146	148	150				

* If no data are recorded (error code is normal), the display for each sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Discharge pipe sensor	-64ºC

(Example) Discharge pipe temperature: "122ºC"

* In the case of discharge pipe data, multiply the reading value by 2. (Below, 61 x 2 = "122ºC")



Service data record form

Customer		Model	
Date of investigation			
Machine name			
Content of complaint			

Remote controller settings			Content of displayed data	Display results			Display content
Temperature setting	Operation switching	Fan speed switching		Buzzer (Yes/No.)	RUN light (Times)	TIMER light (Times)	
21	Cooling	MED	Error code on previous occasion.				
		HI	Room temperature sensor on previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on previous occasion.				
	Heating	LO	Remote controller information on previous occasion.				
		MED	Outdoor air temperature sensor on previous occasion.				
		HI	Outdoor heat exchanger sensor on previous occasion.				
		AUTO	Discharge pipe sensor on previous occasion.				
26	Cooling	AUTO	Indoor heat exchanger sensor 2 on previous occasion.				
22	Cooling	MED	Error code on second previous occasion.				
		HI	Room temperature sensor on second previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on second previous occasion.				
	Heating	LO	Remote controller information on second previous occasion.				
		MED	Outdoor air temperature sensor on second previous occasion.				
		HI	Outdoor heat exchanger sensor on second previous occasion.				
		AUTO	Discharge pipe sensor on second previous occasion.				
27	Cooling	AUTO	Indoor heat exchanger sensor 2 on second occasion.				
23	Cooling	MED	Error code on third previous occasion.				
		HI	Room temperature sensor on third previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on third previous occasion.				
	Heating	LO	Remote controller information on third previous occasion.				
		MED	Outdoor air temperature sensor on third previous occasion.				
		HI	Outdoor heat exchanger sensor on third previous occasion.				
		AUTO	Discharge pipe sensor on third previous occasion.				
28	Cooling	AUTO	Indoor heat exchanger sensor 2 on third occasion.				
24	Cooling	MED	Error code on fourth previous occasion.				
		HI	Room temperature sensor on fourth previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on fourth previous occasion.				
	Heating	LO	Remote controller information on fourth previous occasion.				
		MED	Outdoor air temperature sensor on fourth previous occasion.				
		HI	Outdoor heat exchanger sensor on fourth previous occasion.				
		AUTO	Discharge pipe sensor on fourth previous occasion.				
29	Cooling	AUTO	Indoor heat exchanger sensor 2 on fouth occasion.				
25	Cooling	MED	Error code on fifth previous occasion.				
		HI	Room temperature sensor on fifth previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on fifth previous occasion.				
	Heating	LO	Remote controller information on fifth previous occasion.				
		MED	Outdoor air temperature sensor on fifth previous occasion.				
		HI	Outdoor heat exchanger sensor on fifth previous occasion.				
		AUTO	Discharge pipe sensor on fifth previous occasion.				
30	Cooling	AUTO	Indoor heat exchanger sensor 2 on fifth occasion.				
21	Cooling	Lo	Stop code on previous occasion.				
22			Stop code on second previous occasion.				
23			Stop code on third previous occasion.				
24			Stop code on fourth previous occasion.				
25			Stop code on fifth previous occasion.				
26			Stop code on sixth previous occasion.				
27			Stop code on seventh previous occasion.				
28			Stop code on eighth previous occasion.				
29			Stop code on ninth previous occasion.				
30			Stop code on tenth previous occasion.				

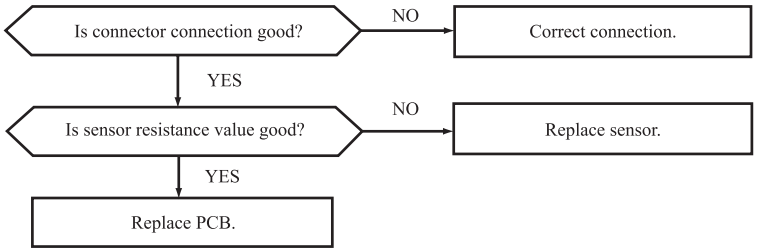
Judgment		Examiner	
Remarks			

Note (1) In the case of indoor heat exchanger sensor 2, match from 26 to 30 the temperature setting of remote controller. (Refor to page 152)

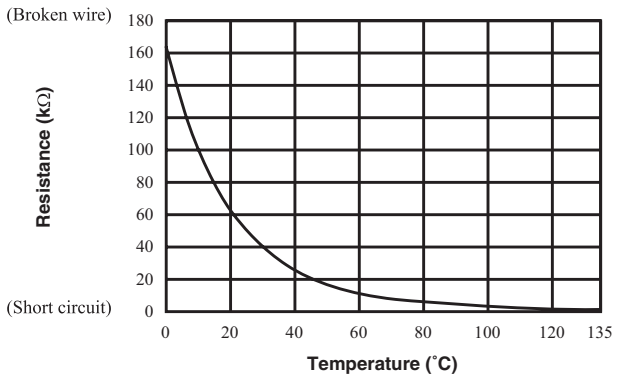
(7) Inspection procedures corresponding to detail of trouble

Sensor error

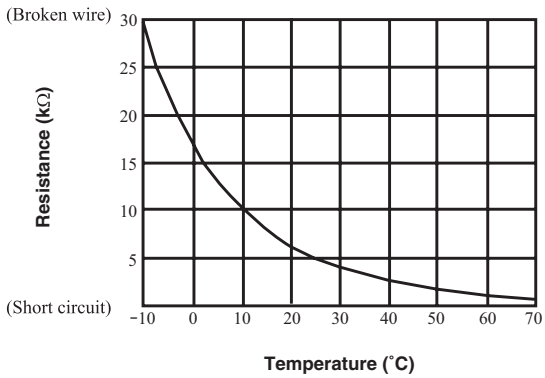
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe sensor temperature characteristics**

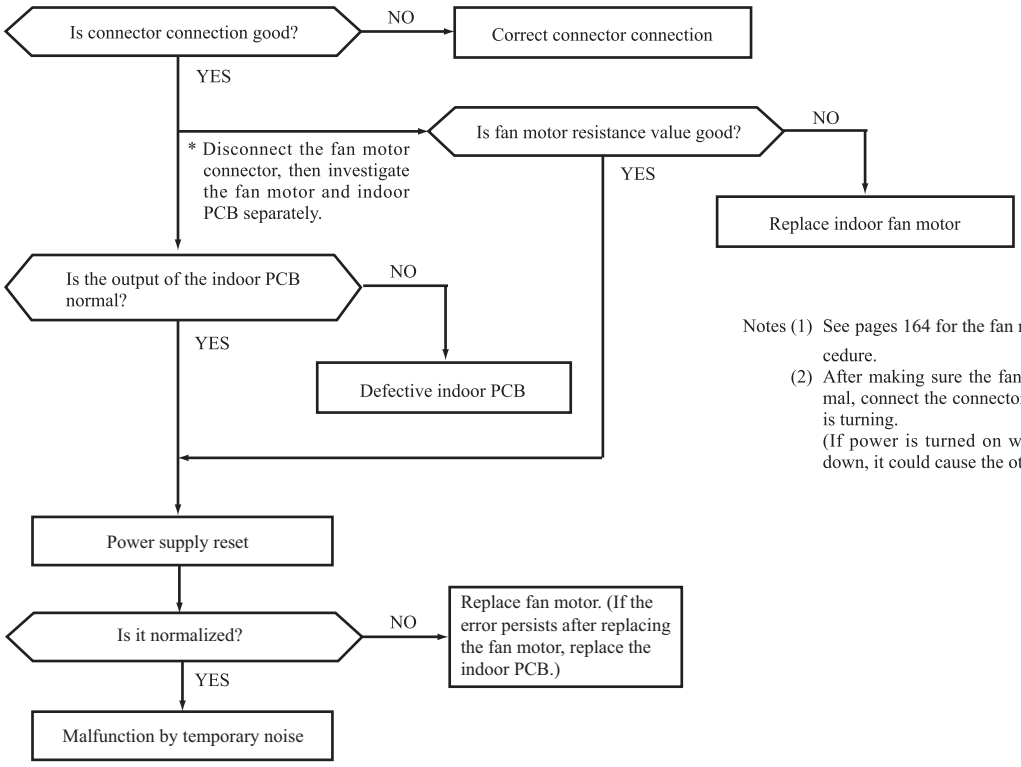


◆ **Sensor temperature characteristics (Room temp., indoor heat exchanger temp., outdoor heat exchanger temp., outdoor air temp.)**



Indoor fan motor error

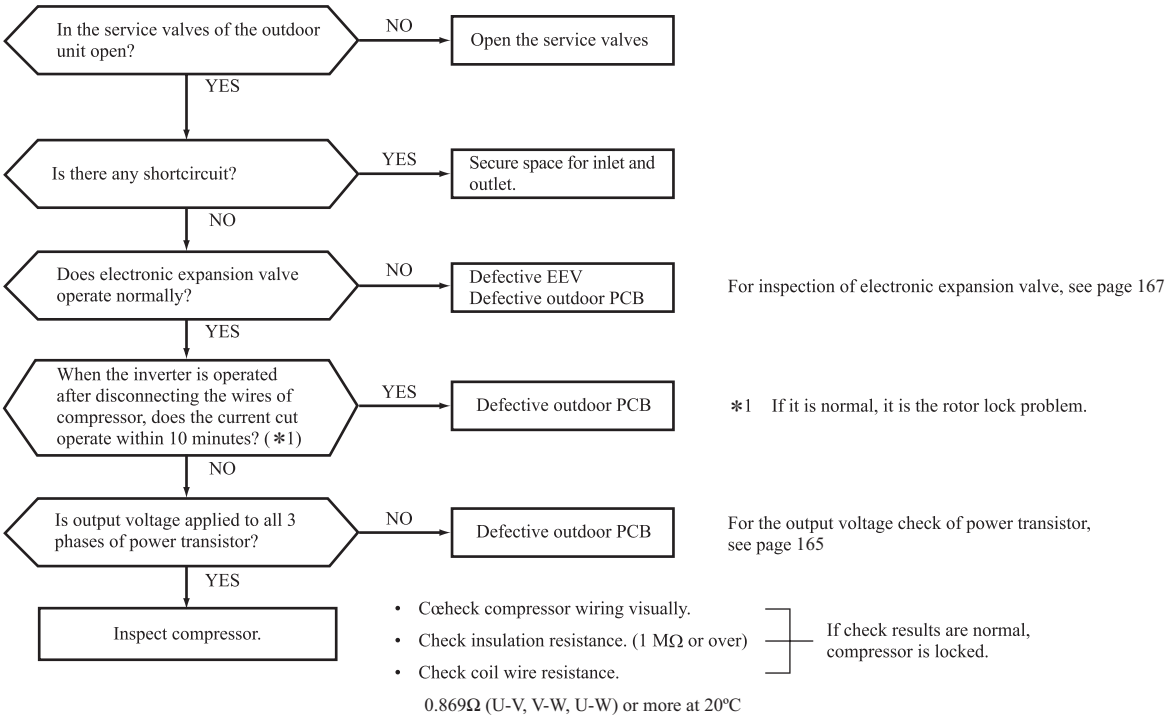
[Defective fan motor, connector poor connection, defective indoor PCB]



Notes (1) See pages 164 for the fan motor and indoor PCB check procedure.
(2) After making sure the fan motor and indoor PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

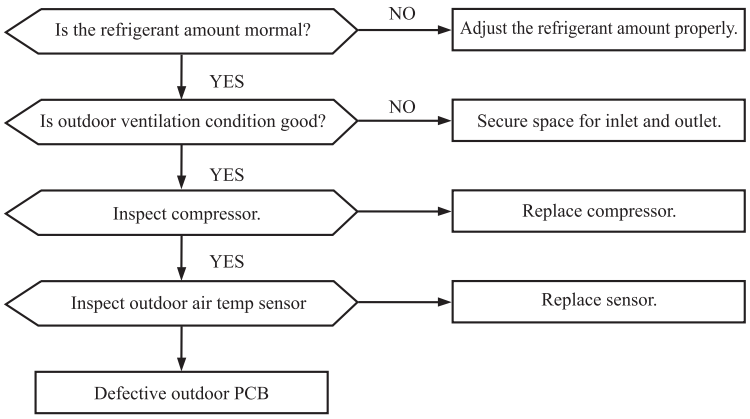
Current cut

[Compressor lock, Compressor wiring short circuit, Compressor output is open phase, Outdoor PCB is faulty, Service valve is closed, EEV is faulty, Compressor faulty.]



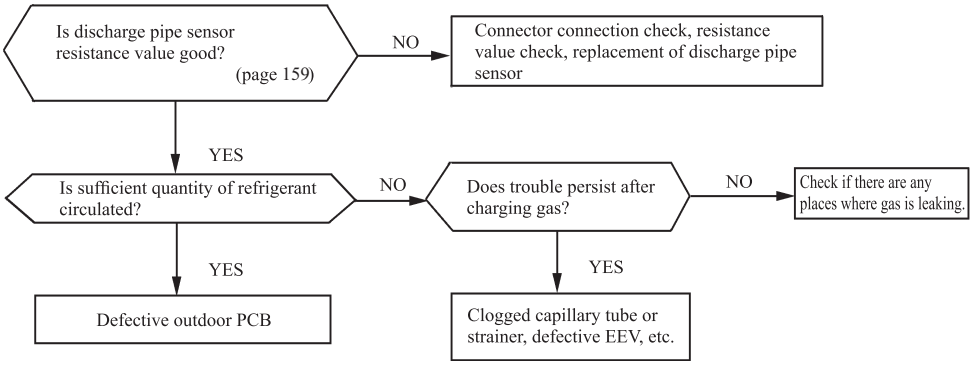
Current safe stop

[Overload operation, compressor lock, overcharge]



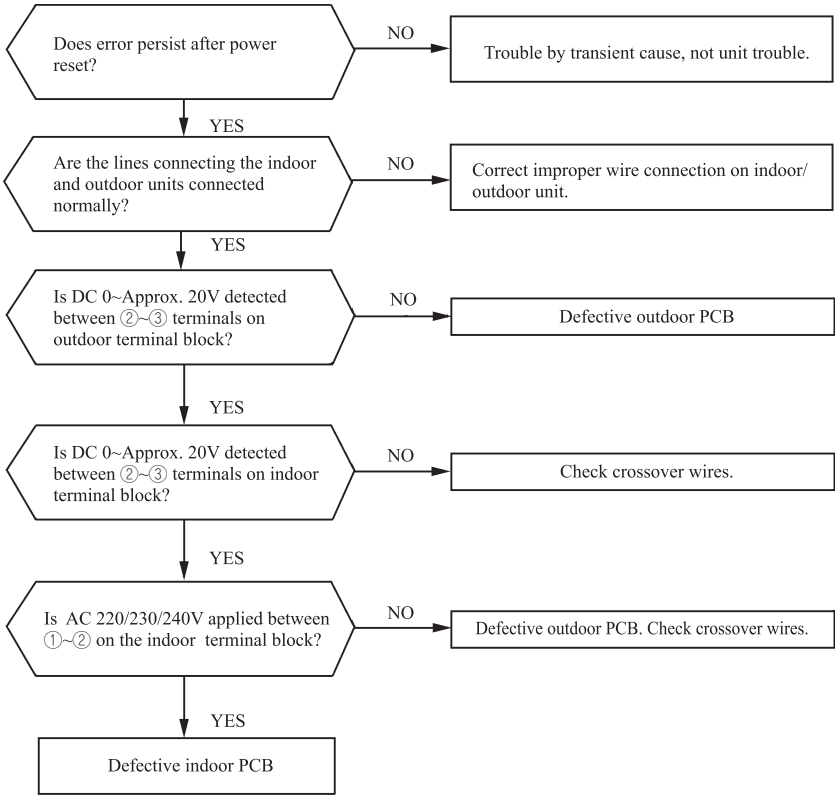
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



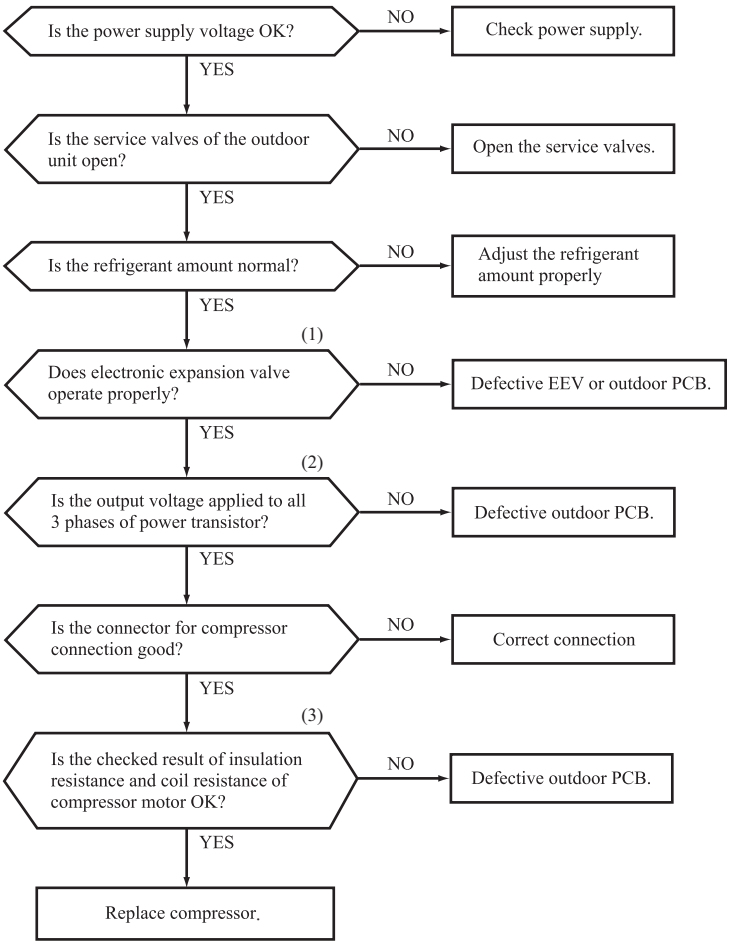
Error of signal transmission

[Wiring error including power cable, defective indoor/outdoor PCB]



Trouble of outdoor unit

[Insufficient refregerant amount, Faulty power transistor, Broken compressor wire
Service valve close, Defective EEV, Defective outdoor PCB]



Proper power supply voltages are as follows.
(At the power supply outlet)
220V : 198~242V
230V : 207~253V
240V : 216~264V

◆ Judgment of refrigerant quantity
(1) Phenomenon of insufficient refrigerant
(a) Loss of capacity
(b) Poor defrosting
(Frost is not removed completely.)
(c) Longer time of hot keep
(5 minute or more)
(Normal time: Approx. 1 – 1 minute and 30 seconds)

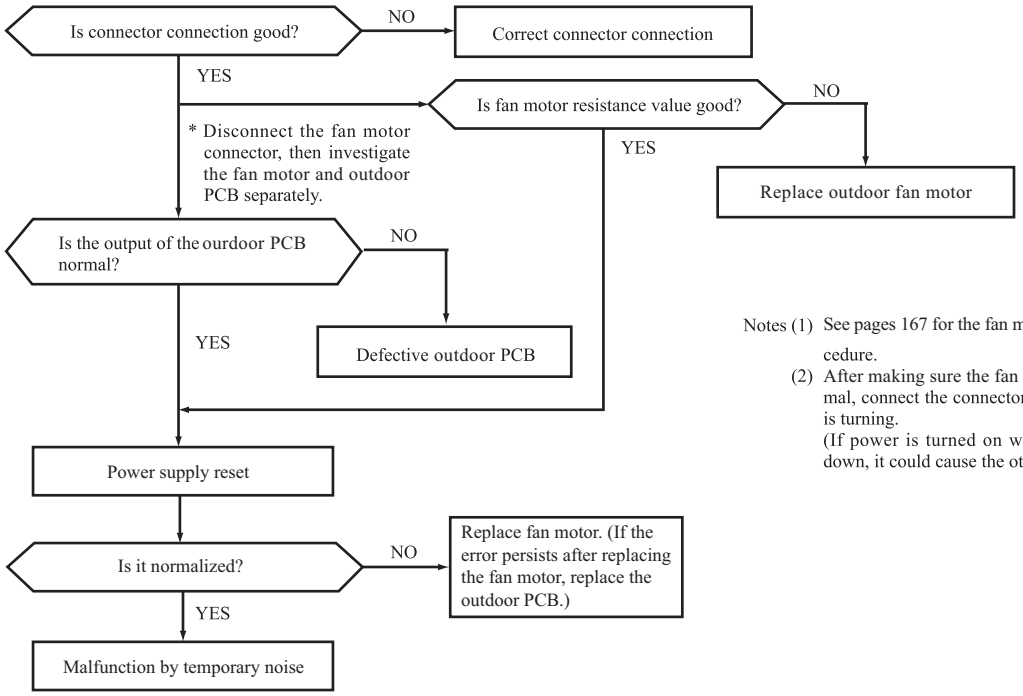
Notes (1) For inspection of electronic expansion valve, see page 167

(2) For the output voltage check of power transistor, see page 165

(3) Check coil resistance, see page 160.

Outdoor fan motor error

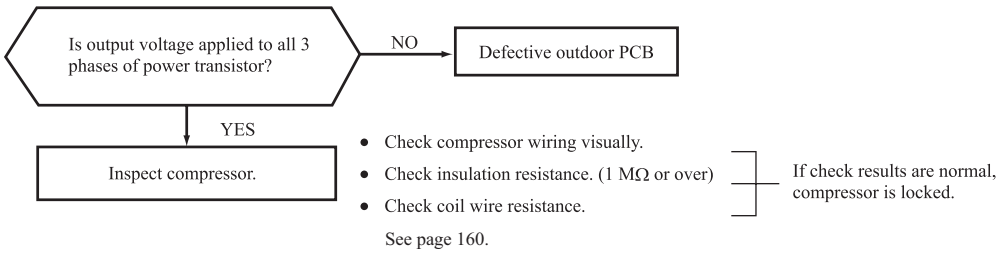
[Defective fan motor, connector poor connection, defective outdoor PCB]



Notes (1) See pages 167 for the fan motor and outdoor PCB check procedure.
(2) After making sure the fan motor and outdoor PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

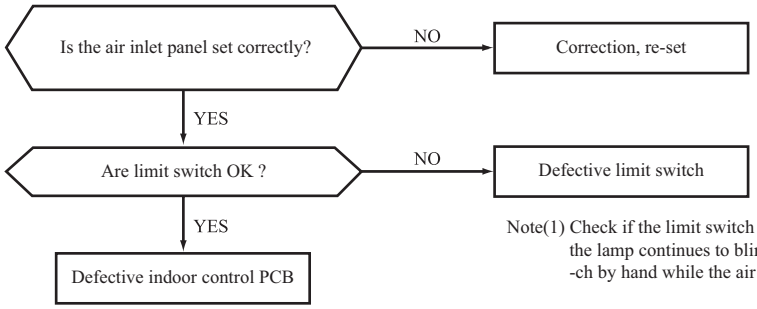
Rotor lock

[Defective compressor, defective outdoor PCB]



Limit switch anomaly

[Defective limit switch, defective indoor control PCB, Defective air inlet panel set]



Note(1) Check if the limit switch functions properly or not by seeing whether the lamp continues to blink or can be reset by pressing the limit swit--ch by hand while the air inlet panel is removed.

(8) Phenomenon observed after shortcircuit, wire breakage on sensor

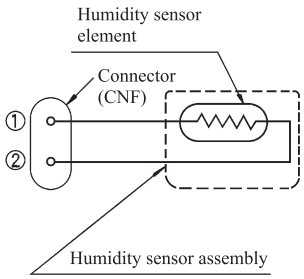
(a) Indoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Disconnected wire
Room temperature sensor	Cooling	Release of continuous compressor operation command.	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command.
Heat exchanger sensor	Cooling	System can be operated normally.	Continiuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode (Compressor stop command)	Hot keep (Indoor fan stop)
Humidity sensor	Cooling	Refer to the table below.	Refer to the table below.
	Heating	Normal system operation is possible.	

■ Humidity sensor operation

Failure mode		Control input circuit resding	Air conditioning system operation
Disconnected wire	① Disconnected wire	Humidity reading is 0%	Anti-condensation control is not done.
	② Disconnected wire		
	①② Disconnected wire		
Short Circuit	① and ② are shot circuited	Humidity reading is 100%	Anti-condensation control keep doing.

Remark: Do not perform a continuity check of the humidity sensor with a tester. If DC current is applied, it could damage the sensor.

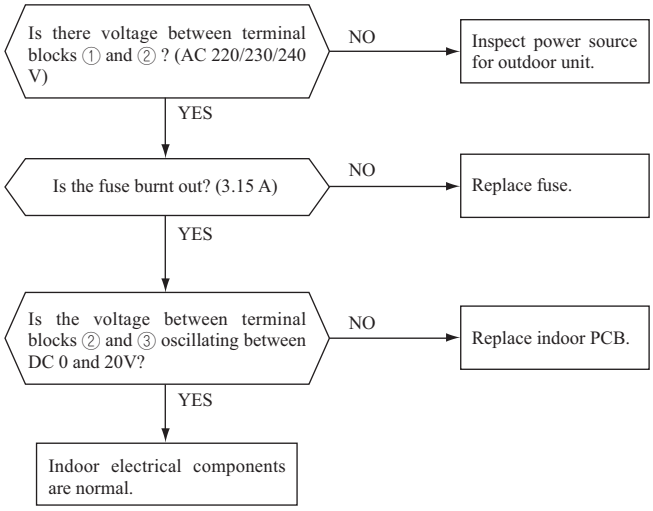


(b) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Disconnected wire
Heat exchanger sensor	Cooling	System can be operated normally.	Compressor stop.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Ourdoor air temperature sensor	Cooling	System can be operated normally.	Compressor stop.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Discharge pipe sensor	All models	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(9) Checking the indoor electrical equipment

(a) Indoor PCB check procedure



(b) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the indoor PCB is broken down.

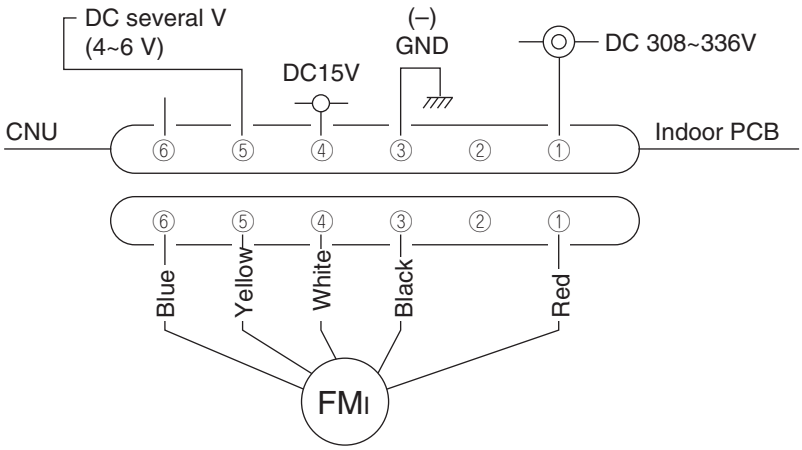
1) Indoor PCB output check

a) Turn off the power.

b) Remove the front panel, then disconnect the fan motor lead wire connector.

c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the indoor PCB is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor PCB has failed and the fan motor is normal.



Measuring point	Resistance when normal
① - ③	DC 308~336V
④ - ③	DC 15V
⑤ - ③	DC several V (4~6V)
⑥ - ③	DC several V (4~6V)

2) Fan motor resistance check

Measuring point	Resistance when normal
① - ③ (Red - Black)	20 MΩ or higher
④ - ③ (White - Black)	20 kΩ or higher

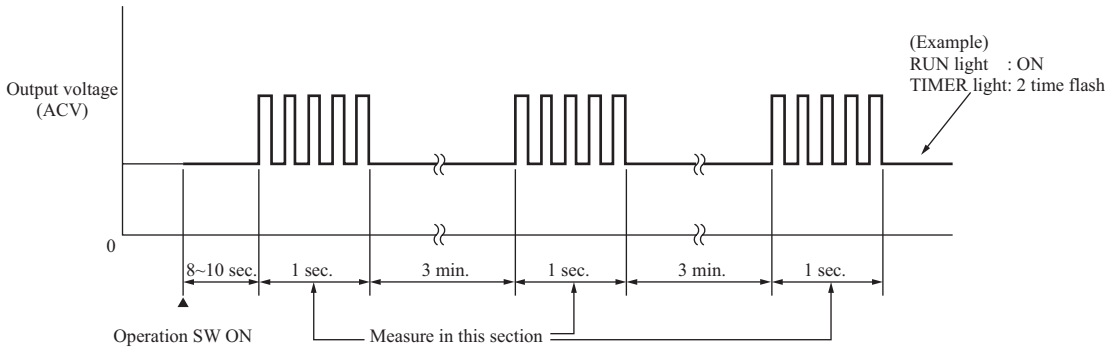
Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(C) Power transistor inspection procedure

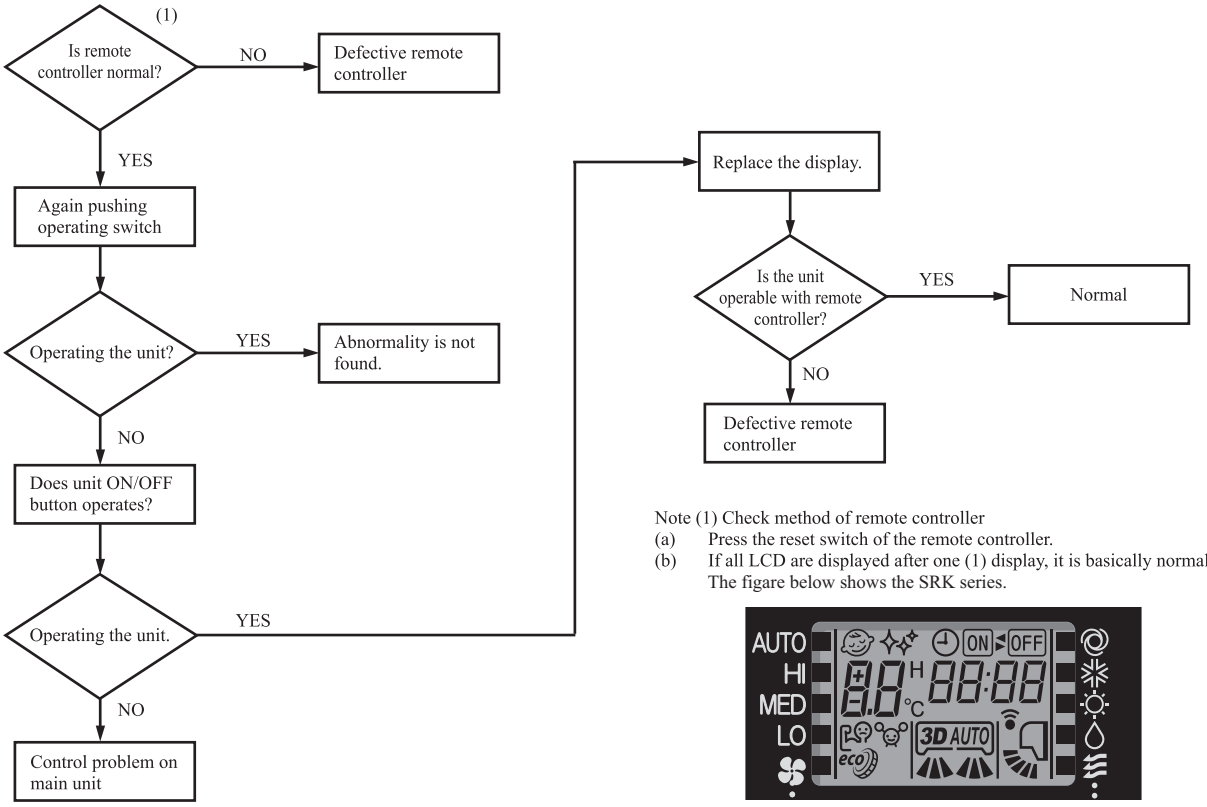
[Use a tester with a needle indicator for the inspection. (Do not use a digital tester. Check in the AC 300 volt range.)]

(1) If there is a self-diagnosis display, inspect the compressor system (burns, wiring mistakes, etc.) If no problems are found, check the output of the power transistor.

(2) Output inspection procedure
Disconnect the terminals for the compresseor.
If an output such as the one shown in the figure on the below can be measured, the power transistor and the circuit board for the outdoor unit are normal.



(10) How to make sure of wireless remote controller



Note (1) Check method of remote controller
(a) Press the reset switch of the remote controller.
(b) If all LCD are displayed after one (1) display, it is basically normal.
The figare below shows the SRK series.

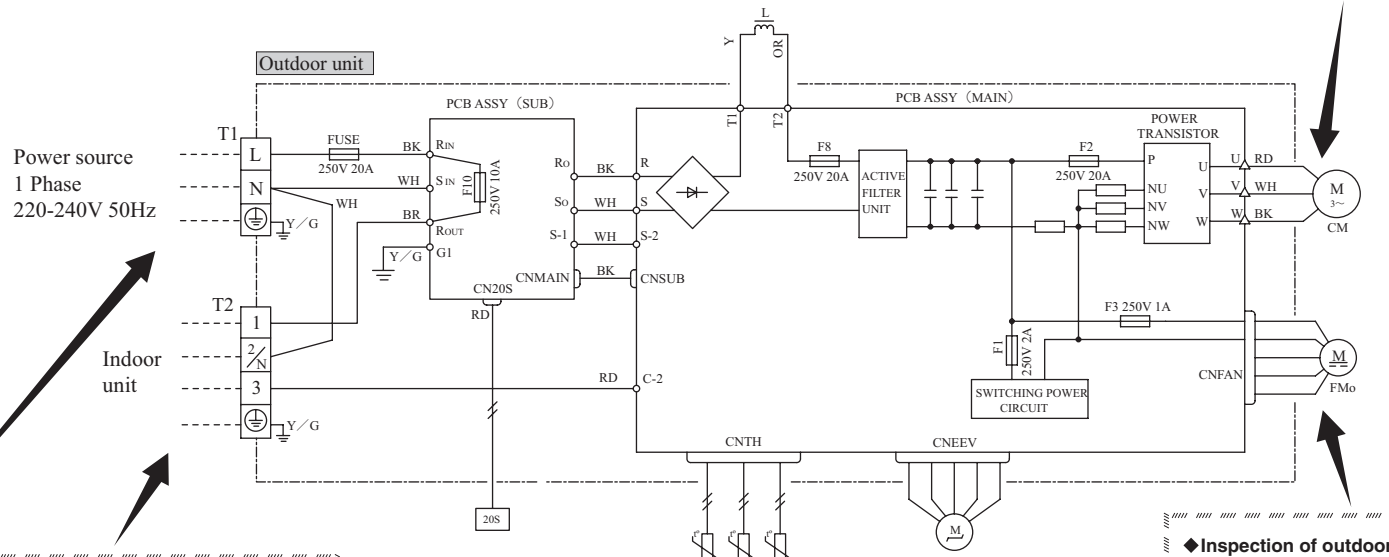
◆ **Check point of outdoor unit**

⚠CAUTION- HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

Color symbol

BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green



◆**Inspection power transistor**
Remove the fasten terminal and test output voltage

◆**Inspection of outdoor fan motor**
See page 167.

◆ **Power source and serial signal inspection**
Ⓛ to Ⓝ: AC 220/230/240V
Ⓘ to 2/N: AC 220/230/240V
2/N to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

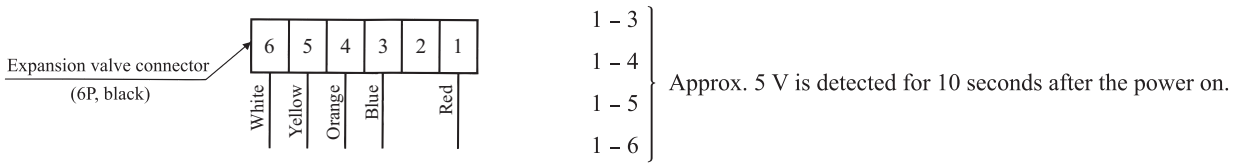
◆**Inspection of electronic expansion valve**
See page 167.

◆**Inspection of resistance value of sensor**
Remove the connector and check the resistance value.
See the section of sensor characteristics on page 159.

(a) Inspection of electronic expansion valve

Electronic expansion valve operates for approx. 10 seconds after the power on, in order to determine its aperture. Check the operating sound and voltage during the period of time. (Voltage cannot be checked during operation in which only the aperture change occurs.)

1) If it is heard the sound of operating electronic expansion valve, it is almost normal.
2) If the operating sound is not heard, check the output voltage.



3) If voltage is detected, the outdoor PCB is normal.
4) If the expansion valve does not operate (no operating sound) while voltage is detected, the expansion valve is defective.

• Inspection of electronic expansion valve as a separate unit

Measure the resistance between terminals with an analog tester.

Measuring point	Resistance when normal
1 – 6	46 ± 4Ω (at 20ºC)
1 – 4	
1 – 3	
1 – 5	

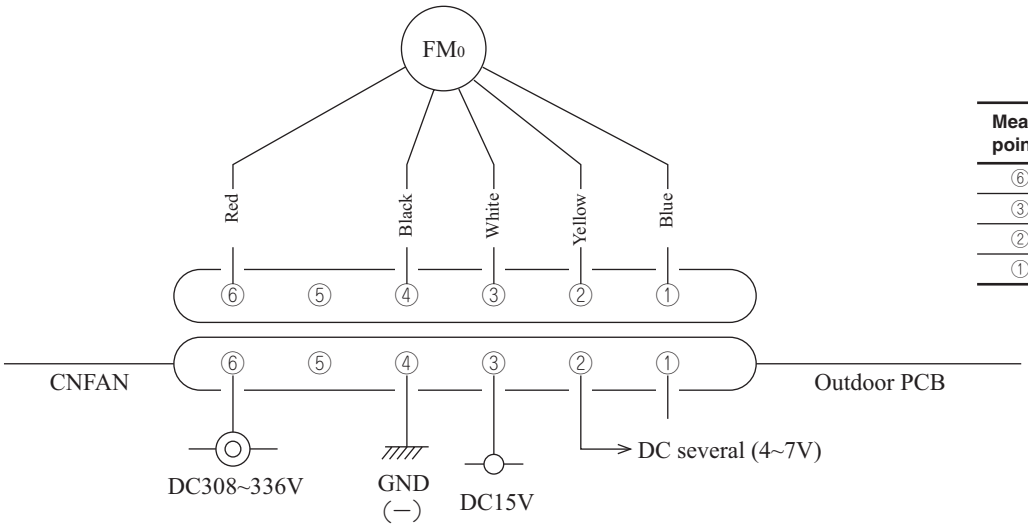
(b) Outdoor unit fan motor check procedure

• When the outdoor unit fan motor error is detected, diagnose which of the outdoor unit fan motor or outdoor PCB is defective.
• Diagnose this only after confirming that the indoor unit is normal.

(1) Outdoor PCB output check

1) Turn off the power.
2) Disconnect the outdoor unit fan motor connector CNFAN.
3) When the indoor unit is operated by inserting the power supply plug and pressing (ON) the backup switch for more than 5 seconds, if the voltage of pin No. ② in the following figure is output for 30 seconds at 20 seconds after turning "ON" the backup switch, the outdoor PCB is normal but the fan motor is defective.
If the voltage is not detected, the outdoor PCB is defective but the fan motor is normal.

Note (1) The voltage is output 3 times repeatedly. If it is not detected, the indoor unit displays the error message.



Measuring point	Resistance when normal
⑥ - ④	DC 308~336V
③ - ④	DC 15V
② - ④	DC several V (4~7V)
① - ④	DC several V (4~7V)

2) Fan motor resistance check

Measuring point	Resistance when normal
⑥ - ④ (Red - Black)	20 MΩ or higher
③ - ④ (White - Black)	20 kΩ or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

12.2 FDT, FDTC, FDEN and FDUM series

12.2.1 Diagnosing of microcomputer circuit

(1) Selfdiagnosis function

(a) Check indicator table

Whether a failure exists or not on the indoor unit can be know by the contents of remote controller error code, indoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote controller		Indoor control PCB		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)				
No-indication	Stays OFF	Stays OFF	Keeps flashing	—	**• Normal operation**	—	—
		Stays OFF	Stays OFF	Indoor unit power supply	• Power OFF, broken wire/blown fuse, broken transformer wire	Repair	188
		* 3 times flash	Keeps flashing	Remote controller wires	• Poor connection, breakage of remote controller wire * For wire breaking at power ON, the LED is OFF.	Repair	189
				Remote controller	• Defective remote controller PCB	Replacement of remote controller	
WAIT or INSPECT I/U		Stays OFF	Keeps flashing	Indoor-outdoor units connection wire	• Poor connection, breakage of indoor-outdoor units connection wire	Repair	190 ～ 194
				Remote controller	• Improper setting of master and slave by remote controller		
E1	Keeps flashing	Stays OFF	* Keeps flashing	Remote controller wires (Noise)	**• Poor connection of remote controller signal wire (White)** * For wire breaking at power ON, the LED is OFF **• Intrusion of noise in remote controller wire**	Repair	195
				Remote controller indoor control PCB	*• Defective remote controller or indoor control PCB (defective communication circuit)?	Replacement of remote controller or PCB	
E5		2 times flash	Keeps flashing	Indoor-outdoor units connection wire	**• Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection)** **• Anomalous communication between indoor-outdoor units by noise, etc.**	Repair	196
		2 times flash	Keeps flashing	(Noise)	**• CPU-runaway on outdoor control PCB**	Power reset or Repair	
				Outdoor control PCB	*• Occurrence of defective outdoor control PCB on the way of power supply (defective communication circuit)?	Replacement of PCB	
		2 times flash	Keeps flashing	Outdoor control PCB	**• Defective outdoor control PCB on the way of power supply**	Replacement	
				Fuse	**• Blown fuse**		
E6		1 time flash	Keeps flashing	Indoor heat exchanger temperature thermistor	**• Defective indoor heat exchanger temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	197
				Indoor control PCB	***• Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E7		1 time flash	Keeps flashing	Indoor return air temperature thermistor	**• Defective indoor return air temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	198
				Indoor control PCB	***• Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E8		1 time flash	Keeps flashing	Installation or operating condition	**• Heating over-load** (Anomalously high indoor heat exchanger temperature)	Repair	199
				Indoor heat exchanger temperature thermistor	**• Defective indoor heat exchanger temperature thermistor (short-circuit)**	Replacement of temperature thermistor	
				Indoor control PCB	***• Defective indoor control PCB** (Defective temperature thermistor input circuit)?	Replacement of PCB	
E9		1 time flash	Keeps flashing	Drain trouble	**• Defective drain pump (DM), broken drain pump wire**, disconnected connector	Replacement, repair of DM	200
				Float switch	**• Anomalous float switch operation** (malfunction)	Repair	
				Indoor control PCB	***• Defective indoor control PCB** (Defective float switch input circuit) ***• Defective indoor control PCB** (Defective DM drive output circuit)?	Replacement of PCB	
				Option	**• Defective optional parts** (At optional anomalous input setting)	Repair	
E10		Stays OFF	Keeps flashing	Number of connected indoor units	**• When multi-unit control by remote controller is performed, the number of units is over**	Repair	201
E16		1 time flash	Keeps flashing	Fan motor	**• Defective fan motor** (In case of FDTC, FDT)	Replacement, repair	202
				Indoor power PCB	**• Defective indoor power PCB**	Replacement	
E19		1 time flash	Keeps flashing	Indoor control PCB	**• Improper operation mode setting**	Repair	203
E20		1 time flash	Keeps flashing	Fan motor	**• Defective by rotation speed of fan motor** (In case of FDTC, FDT)	Replacement, repair	204
				Indoor power PCB	**• Defective indoor power PCB**	Replacement	
E28		Stays OFF	Keeps flashing	Remote controller temperature thermistor	• Broken wire of remote controller temperature thermistor	Repair	205

Note (1) **Normal indicator lamp (Indoor unit: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing in any trouble other than anomalous CPU.**

(2) * mark in the Description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(ii) Outdoor unit

Remote controller		Indoor control PCB		Outdoor control PCB	Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED	Red LED				
E35	Keeps flashing	Stays OFF	Keeps flashing	2 times flash	Installation, operation status	• Higher outdoor heat exchanger temperature	Repair	206
					Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	5 times flash	Installation, operation status	• Higher discharge temperature	Repair	207
					Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	8 times flash	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	208
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	8 times flash	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	209
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	8 times flash	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	210
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E42		Stays OFF	Keeps flashing	1 time flash	Outdoor control PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	211・212
					Installation, operation status	• Service valve closing operation	Repair	
E47		Stays OFF	Keeps flashing	2 times flash	Outdoor control PCB	• Defective active filter	Repair PCB replacement	213
E48		Stays OFF	Keeps flashing	Keeps flashing	Fan motor	• Defective fan motor	Replacement	214
					Outdoor control PCB	• Defective outdoor control PCB		
E51		Stays OFF	Keeps flashing	1 time flash	Power transistor error (outdoor control PCB)	• Power transistor error	Replacement of PCB	215
E57		Stays OFF	Keeps flashing	2 times flash	Operation status	• Shortage in refrigerant quantity	Repair	216
					Installation status	• Service valve closing operation	Service valve opening check	
E58		Stays OFF	Keeps flashing	3 times flash	• Overload operation • Overcharge • Compressor locking	• Current safe stop	Replacement	217
E59		Stays OFF	Keeps flashing	2 times flash	Compressor, outdoor control PCB	• Anomalous compressor startup	Replacement	218
E60		Stays OFF	Keeps flashing	7 times flash	Compressor	• Anomalous compressor rotor lock	Replacement	219

Note (1) * mark in the Description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(iv) Display sequence of error codes or inspection indicator lamps

■ **Occurrence of one kind of error**

Displays are shown respectively according to errors.

■ **Occurrence of plural kinds of error**

Section	Category of display
Error code on remote controller	• Displays the error of higher priority (When plural errors are persisting) E1 E5 ·····E10>E35>·····Eb0 • Displays the present errors. (When a new error has occurred after the former error was reset.)
Red LED on indoor control PCB	
Red LED on outdoor control PCB	

■ **Error detecting timing**

Section	Error description	Error code	Error detecting timing
Indoor	Drain trouble (Float switch activated)	E9	Whenever float switch is activated after 30 second had past since power ON.
	Communication error at initial operation	"WAIT"	No communication between indoor and outdoor units is established at initial operation.
	Remote controller communication circuit error	E1	Communication between indoor unit and remote controller is interrupted for mote than 2 minutes continuously after initial communication was established.
	Communication error during operation	E5	Communication between indoor and outdoor units is interrupted for mote than 2 minutes continuously after initial communication was established.
	Excessive number of connected indoor units by controlling with one remote controller	E10	Whenever excessively connected indoor units is detected after power ON.
	Return air temperature thermistor anomaly	E7	-20°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature.
	Indoor heat exchanger temperature thermistor anomaly	E6	-40°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature. Or 70°C or higher is detected for 5 seconds continuously.
Outdoor	Outdoor air temperature sensor anomaly	E38	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or higher is detected for 5 seconds continuously within 20 seconds after power ON.
	Outdoor heat exchanger temperature sensor anomaly	E37	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or lower is detected for 5 seconds continuously within 20 seconds after power ON.
	Discharge pipe temperature sensor anomaly	E39	-25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.

■ **Error log and reset**

Error indicator	Memorized error log	Reset
Remote controller display	• Higher priority error is memorized.	• Stop the unit by pressing the ON/OFF switch of remote controller. • If the unit has recovered from anomaly, it can be operated.
Red LED on indoor control PCB	• Not memorized.	
Red LED on outdoor control PCB	• Memorizes a mode of higher priority.	

■ **Resetting the error log**

- Resetting the memorized error log in the remote controller
  Holding down "CHECK" button, press "TIMER" button to reset the error log memorized in the remote controller.
- Resetting the memorized error log
  The remote controller transmits error log erase command to the indoor unit when "VENTI" button is pressed while holding down "CHECK" button.
  Receiving the command, the indoor unit erase the log and answer the status of no error.

(2) Troubleshooting procedure

When any trouble has occurred, inspect as follows. Details of respective inspection method will be described on later pages.

Trouble → Confirmation of power supply (Indoor/ outdoor unit) → Confirmation of remote controller and LEDs on the PCB of indoor unit and outdoor unit (Indoor/ outdoor unit, remote controller) → Check of the anomalous operation data on the remote controller → Inspection of the unit/ controller → Replacement/ repair of faulty part, test run, adjustment

(3) Troubleshooting at the indoor unit

With the troubleshooting, find out any defective part by checking the voltage (AC, DC), resistance, etc. at respective connectors at around the indoor PCB, according to the inspection display or operation status of unit (the compressor does not run, fan does not run, the 4-way valve does not switch, etc.), and replace or repair in the unit of following part.

(a) Replacement part related to indoor PCB's

Control PCB, power supply PCB, temperature thermistor (return air, indoor heat exchanger), remote controller switch and fuse

Note (1) With regard to parts of high voltage circuits and refrigeration cycle, judge it according to ordinary inspection methods.

(b) Instruction of how to replace indoor control PCB

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the replacement in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, WARNING and CAUTION.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.

⚠ WARNING	Wrong installation would cause serious consequences such as injuries or death.
⚠ CAUTION	Wrong installation might cause serious consequences depending on circumstances.

- After completing the replacement, do commissioning to confirm there are no anomaly.

⚠ WARNING

- Replacement should be performed by the specialist.
  If you replace the PCB by yourself, it may lead to serious trouble such as electric shock or fire.
- Replace the PCB correctly according to these instructions.
  Improper replacement may cause electric shock or fire.
- Shut off the power before electrical wiring work.
  Replacement during the applying the current would cause the electric shock, unit failure or improper running.
  It would cause the damage of connected equipment such as fan motor,etc.
- Fasten the wiring to the terminal securely, and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connections or hold could result in abnormal heat generation or fire.
- Check the connection of wiring to PCB correctly before turning on the power, after replacement.
  Defectiveness of replacement may cause electric shock or fire.

⚠ CAUTION

- In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction.
- Insert connecter securely, and hook stopper. It may cause fire or improper running.
- Bundle the cables together so as not to be pinched or be tensioned. It may cause malfunction or electric shock for disconnection or deformation.

◆ Model: FDT, FDTC series

PSB012D931F

• Control PCB

Replace and set up the PCB according to this instruction.

① Set to an appropriate address and function using switch on PCB.

Select the same setting with the removed PCB.

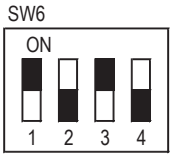
item	switch	Content of control	
Address	SW2	Plural indoor units control by 1 remote controller	
Test run	SW7-1	—	Normal
		○	Operation check/drain motor test run

○:ON —:OFF

② Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
40V	○	○	—	—
50V	○	—	○	—
60V	○	○	○	—



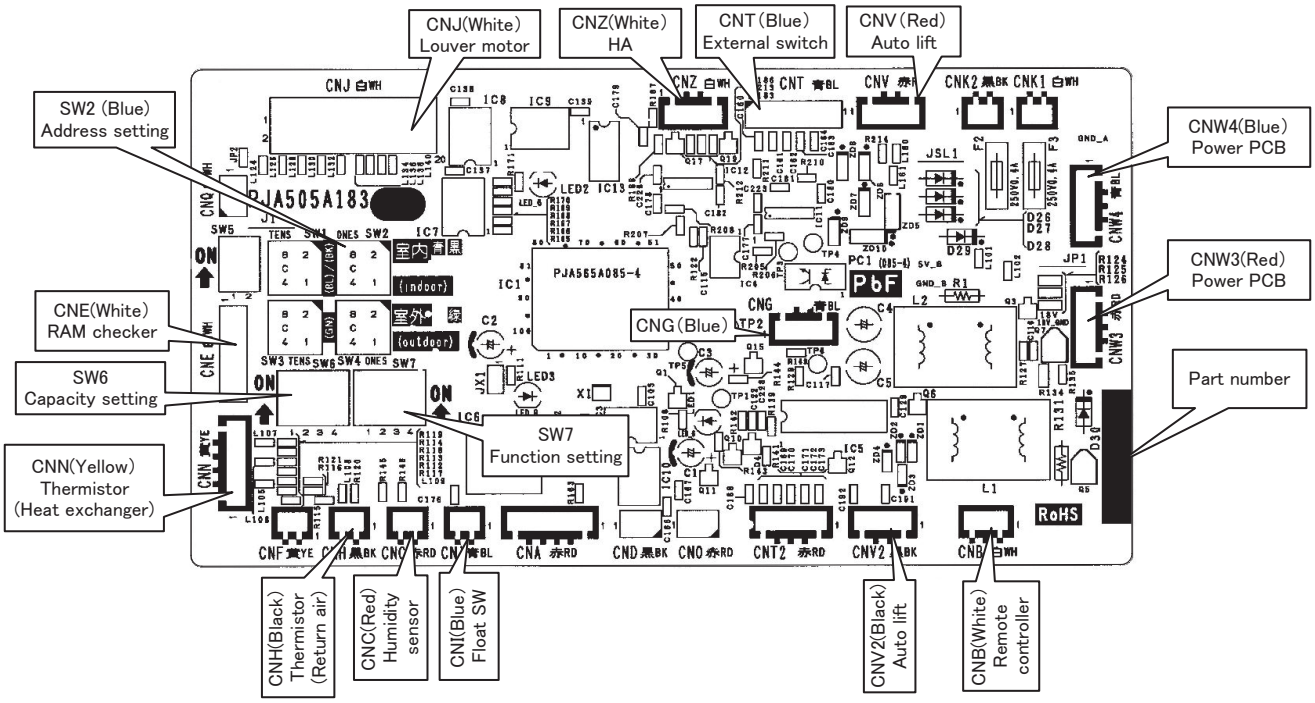
Example setting for 50V

③ Replace the PCB

1. Fix the PCB so as not to pitch the cords.
2. Connect connectors to the PCB. Connect a cable connector with the PCB connector of the same color.
3. Do not pass CPU surrounding about wirings.

④ Control PCB

Parts mounting are different by the kind of PCB.



- Power PCB

PSB012D953A

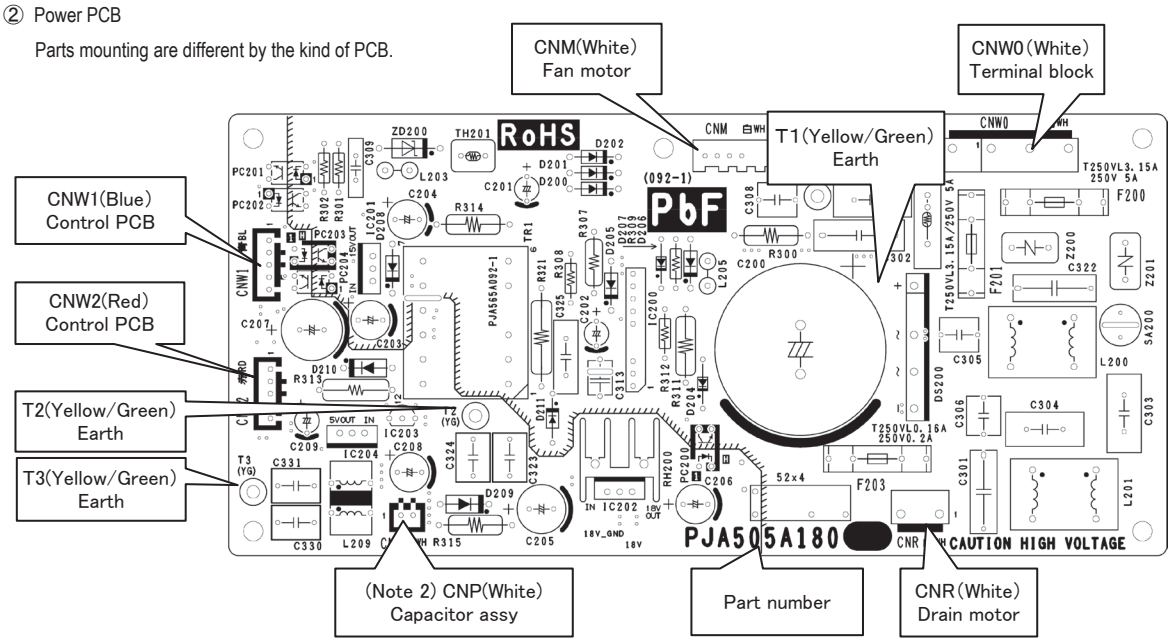
This PCB is a general PCB. Replace the PCB according to this instruction.

① Replace the PCB (refer to right dwg.)

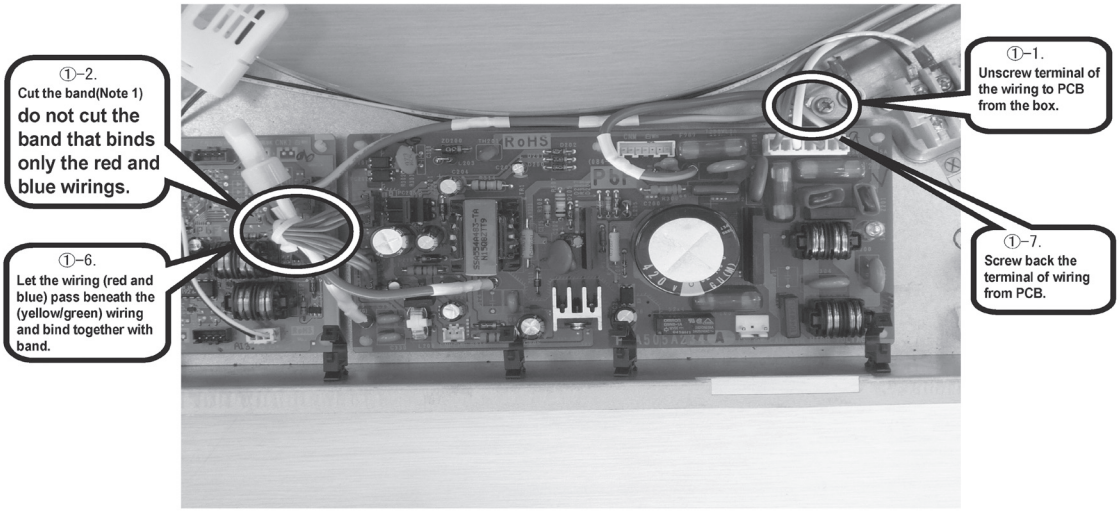
1. Unscrew terminal of the wiring(yellow/green) soldered to PCB from the box.
2. Cut the band that binds the wiring (red and blue) from connector CNW1 and CNW2, and the wiring (yellow/green) from PCB (T2/T3) . (Note 1)
   (However, do not cut the band that binds only the red and blue wirings.)
3. Replace the PCB only after all the wirings connected to the connector are removed.
4. Fix the board such that it will not pinch any of the wires.
5. Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB. (Note 2)
6. Let the wiring (red and blue) pass beneath the (yellow/green) wiring and bind together with band.
7. Screw back the terminal of wiring (yellow/green) from PCB(T1, T2/T3), that was removed in 1.
   In that case, do not place the crimping part of the wiring under the PCB.
   (Note 1): It might not be applicable on some models.
   (Note 2): After replacing PCB, connection between capacitor assy and connector CNP is no longer needed.

② Power PCB

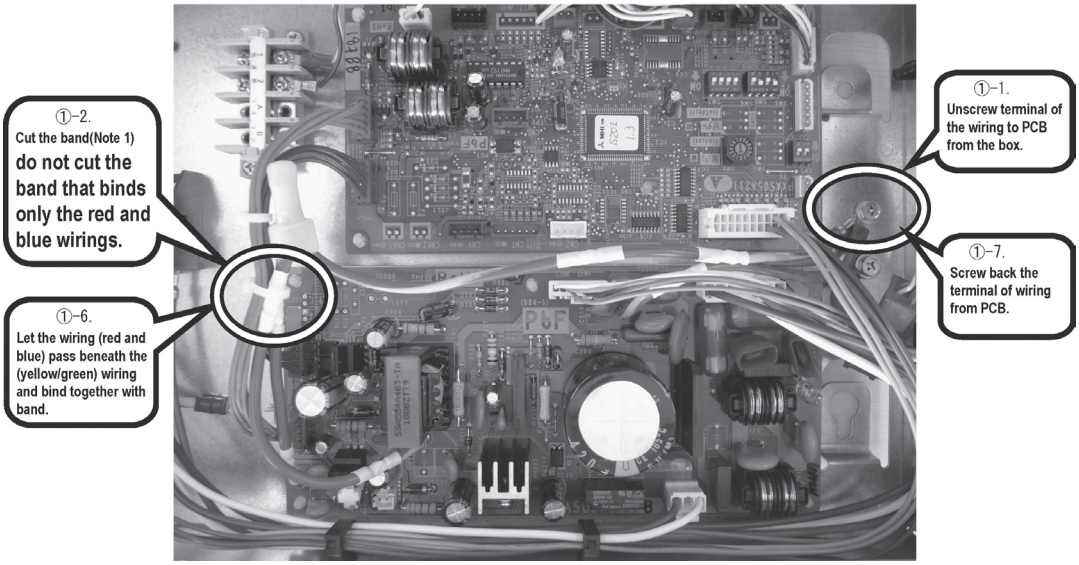
Parts mounting are different by the kind of PCB.



for FDT



for FDTC


①-2.
Cut the band(Note 1)
do not cut the band that binds only the red and blue wirings.
①-6.
Let the wiring (red and blue) pass beneath the (yellow/green) wiring and bind together with band.
①-1.
Unscrew terminal of the wiring to PCB from the box.
①-7.
Screw back the terminal of wiring from PCB.

◆ Model: FDUM, FDEN series

PSB012D933D

① Set to an appropriate address and function using switch on PCB.

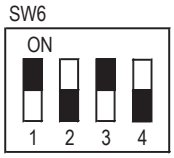
1. There is a unit having plural applicable PCB depending on a model.
2. Set the function setting corresponding the spare PCB and the applicable model.

item	switch	Content of control	
Address	SW2	Plural indoor units control by 1 remote controller	
Test run	SW7-1	—	Normal
		○	Operation check/drain motor test run

○:ON —:OFF

② Set to an appropriate capacity using the model selector switch(SW6).
Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
40V	○	○	—	—
50V	○	—	○	—
60V	○	○	○	—



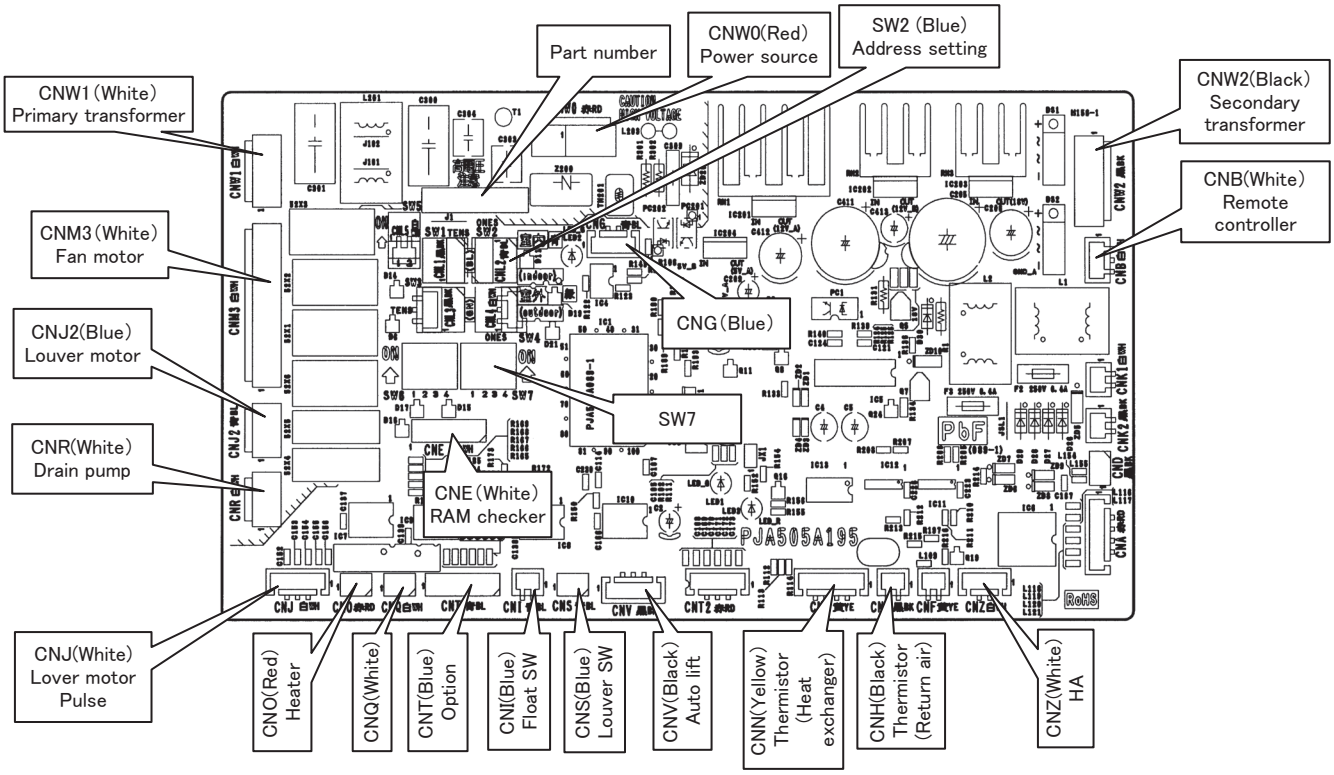
Example setting for 50V

③ Replace the PCB

1. Fix the PCB so as not to pitch the cords.
2. Connect connectors to the PCB. Connect a cable connector with the PCB connector of the same color.
3. Do not pass CPU surrounding about wirings.

④ Control PCB

Parts mounting are different by the kind of PCB.



●DIP switch setting list

Switches	Description		Default setting		Remarks
SW2	Address No. setting at plural indoor units control by 1 R/C		0		0-F
SW6-1	Model selection		As per model		See table 1
SW6-2					
SW6-3					
SW6-4					
SW7-1	Test run, Drain motor	Normal*/Test run	OFF	Normal	
SW7-2	Reserved		OFF		keep OFF
SW7-3	Powerful mode	Valid*/Invalid	ON	Valid	
SW7-4	Reserved		OFF		keep OFF
JSL1	Superlink terminal spare	Normal*/switch to spare	With		

* Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

0: OFF 1:ON

	40V	50V	60V
SW6-1	1	1	1
SW6-2	1	0	1
SW6-3	0	1	1
SW6-4	0	0	0

(4) Check of anomalous operation data with the remote controller

Operation data can be checked with remote control unit operation.

① Press the CHECK button.
The display change " OPER DATA ▼ "

② Press the (SET) button while " OPER DATA ▼ " is displayed.

③ When only one indoor unit is connected to remote controller, " DATA LOADING " is displayed (blinking indication during data loading).
Next, operation data of the indoor unit will be displayed. Skip to step ⑦.

④ When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.
[Example]:
" SELECT I/U " (blinking 1 seconds) → " I/U000 ▲ " blinking.

⑤ Select the indoor unit number you would like to have data displayed with the ▲ ▼ button.

⑥ Determine the indoor unit number with the (SET) button.
(The indoor unit number changes from blinking indication to continuous indication)
" I/U000 " (The address of selected indoor unit is blinking for 2 seconds.)
↓
" DATA LOADING " (A blinking indication appears while data loaded.)
Next, the operation data of the indoor unit is indicated.

⑦ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from data number 01.
The items displayed are in the above table.
*Depending on models, the items that do not have corresponding data are not displayed.

Number	Data Item	
01		(Operation Mode)
02	SET TEMP ___℃	(Set Temperature)
03	RETURN AIR ___℃	(Return Air Temperature)
04	SENSOR ___℃	(Remote Controller Thermistor Tempeature)
05	THI-R1 ___℃	(Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2 ___℃	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3 ___℃	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED ___	(Indoor Unit Fan Speed)
09	DEMAND ___Hz	(Frequency Requirements)
10	ANSWER ___Hz	(Response Frequency)
11	I/U EEV ___P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN ___H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR ___℃	(Outdoor Air Temperature)
22	THO-R1 ___℃	(Outdoor Heat Exchanger Thermistor)
23	THO-R2 ___℃	(Outdoor Heat Exchanger Thermistor)
24	COMP ___Hz	(Compressor Frequency)
25	HP ___MPa	(High Pressure)
26	LP ___MPa	(Low Pressure)
27	Td ___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM ___℃	(Comp Bottom Temperature)
29	CT ___AMP	(Current)
30	TARGET SH ___℃	(Target Super Heat)
31	SH ___℃	(Super Heat)
32	TDSH ___℃	(Discharge Pipe Super Heat)
33	PROTECTION No. ___	(Protection State No. of The Compressor)
34	O/U FANSPEED ___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN ___H	(Total Running Hours of The Compressor)
38	O/U EEV1 ___P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2 ___P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

⑧ To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.

⑨ Pressing the ⏻ON/OFF button will stop displaying data.
Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.
⊙If two (2) remote controllers are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

(5) Inverter checker for diagnosis of inverter output

●Checking method

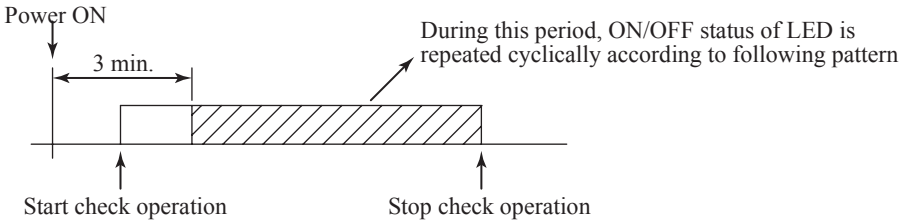
(a) Setup procedure of checker.

1) Power OFF (Turn off the breaker).
2) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.
3) Connect the wires U (Red) , V (White) and W (Black) of the checker to the terminal of disconnected wires (U, V, W) from compressor respectively.

(b) Operation for judgment.

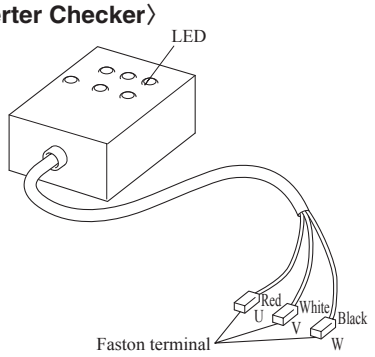
1) Power ON and start check operation on cooling or heating mode.
2) Check ON/OFF status of 6 LED's on the checker.
3) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Outdoor PCB	Normal	Anomalous



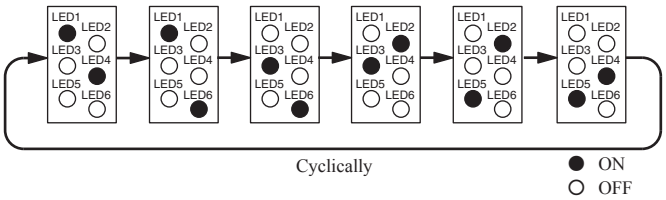
4) Stop check operation within about 2minutes after starting check operation.

〈Inverter Checker〉



Connect to the terminal of the wires which are disconnected from compressor.

LED ON/OFF pattern



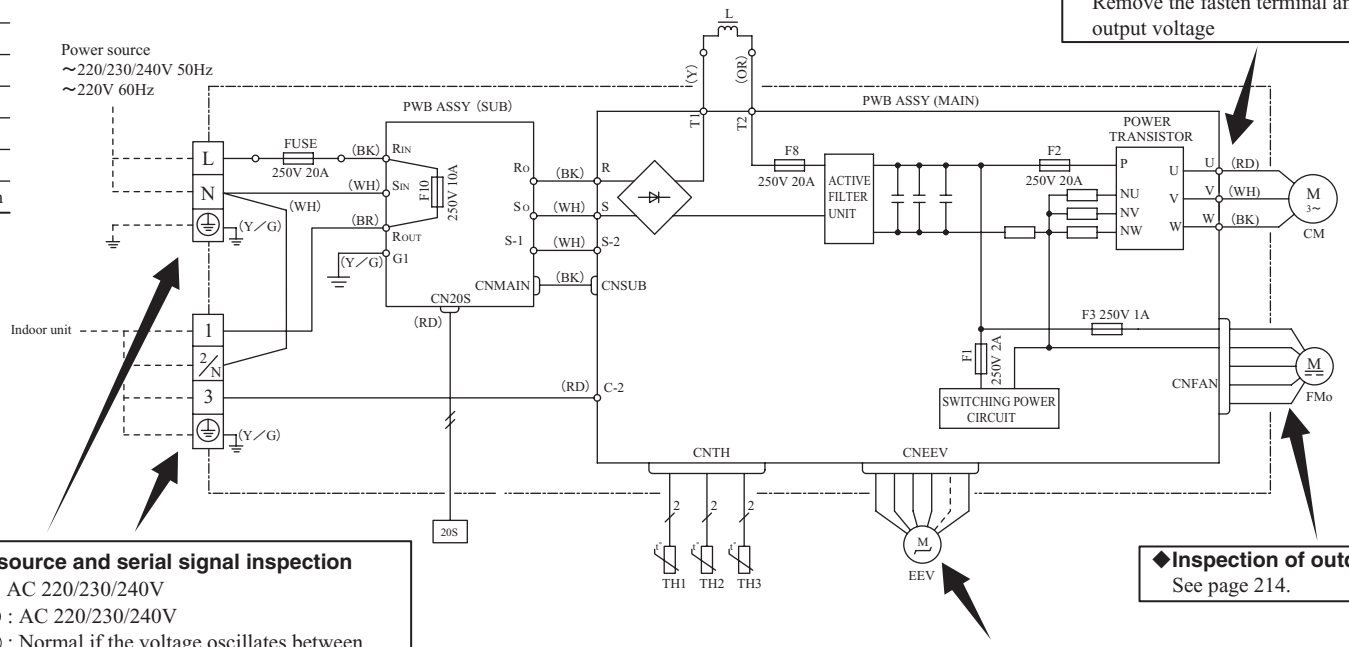
(6) Outdoor unit controller failure diagnosis circuit diagram

⚠ CAUTION– HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

Color symbol

Mark	Color
BK	Black
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y／G	Yellow／Green



◆Inspection power transistor
Remove the fasten terminal and test output voltage

◆Power source and serial signal inspection
Ⓛ to Ⓝ : AC 220/230/240V
① to (2/N) : AC 220/230/240V
(2/N) to ③ : Normal if the voltage oscillates between DC 0 (and approx. 20V

◆Inspection of outdoor fan motor
See page 214.

◆Inspection of electronicexpansion valve
See page 167.

12.2.2 Troubleshooting flow

(1) List of troubles

Remote controller display	Description of trouble	Reference page
None	Operates but does not cool.	181
None	Operates but does not heat.	182
None	Earth leakage breaker activated	183
None	Excessive noise/vibration (1/3)	184
None	Excessive noise/vibration (2/3)	185
None	Excessive noise/vibration (3/3)	186
None	Louver motor failure (FDT, FDTC and FDEN series)	187
None	Power supply system error (Power supply to indoor control PCB)	188
None	Power supply system error (Power supply to remote controller)	189
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controllers are connected)	190
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controllers)	191
☸WAIT☸	Communication error at initial operation	192~194
E1	Remote controller communication circuit error	195
E5	Communication error during operation	196
E6	Indoor heat exchanger temperature thermistor anomaly	197
E7	Return air temperature thermistor anomaly	198
E8	Heating overload operation	199
E9	Drain trouble (FDT, FDTC and FDUM series)	200
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote controller	201
E16	Indoor fan motor anomaly (FDT and FDTC series)	202
E19	Indoor unit operation check, drain motor check setting error	203
E20	Indoor fan motor rotation speed anomaly (FDT and FDTC series)	204
E28	Remote controller temperature thermistor anomaly	205
E35	Cooling overload operation	206
E36	Discharge pipe temperature error	207
E37	Outdoor heat exchanger temperature sensor anomaly	208
E38	Outdoor air temperature sensor anomaly	209
E39	Discharge pipe temperature sensor anomaly	210
E42	Current cut	211,212
E47	Active filter voltage error	213
E48	Outdoor fan motor anomaly	214
E51	Power transistor anomaly	215
E57	Insufficient refrigerant amount or detection of service valve closure	216
E58	Current safe stop	217
E59	Compressor startup failure	218
E60	Compressor rotor lock error	219

(2) Troubleshooting

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Operates but does not cool

1. Applicable model

All models

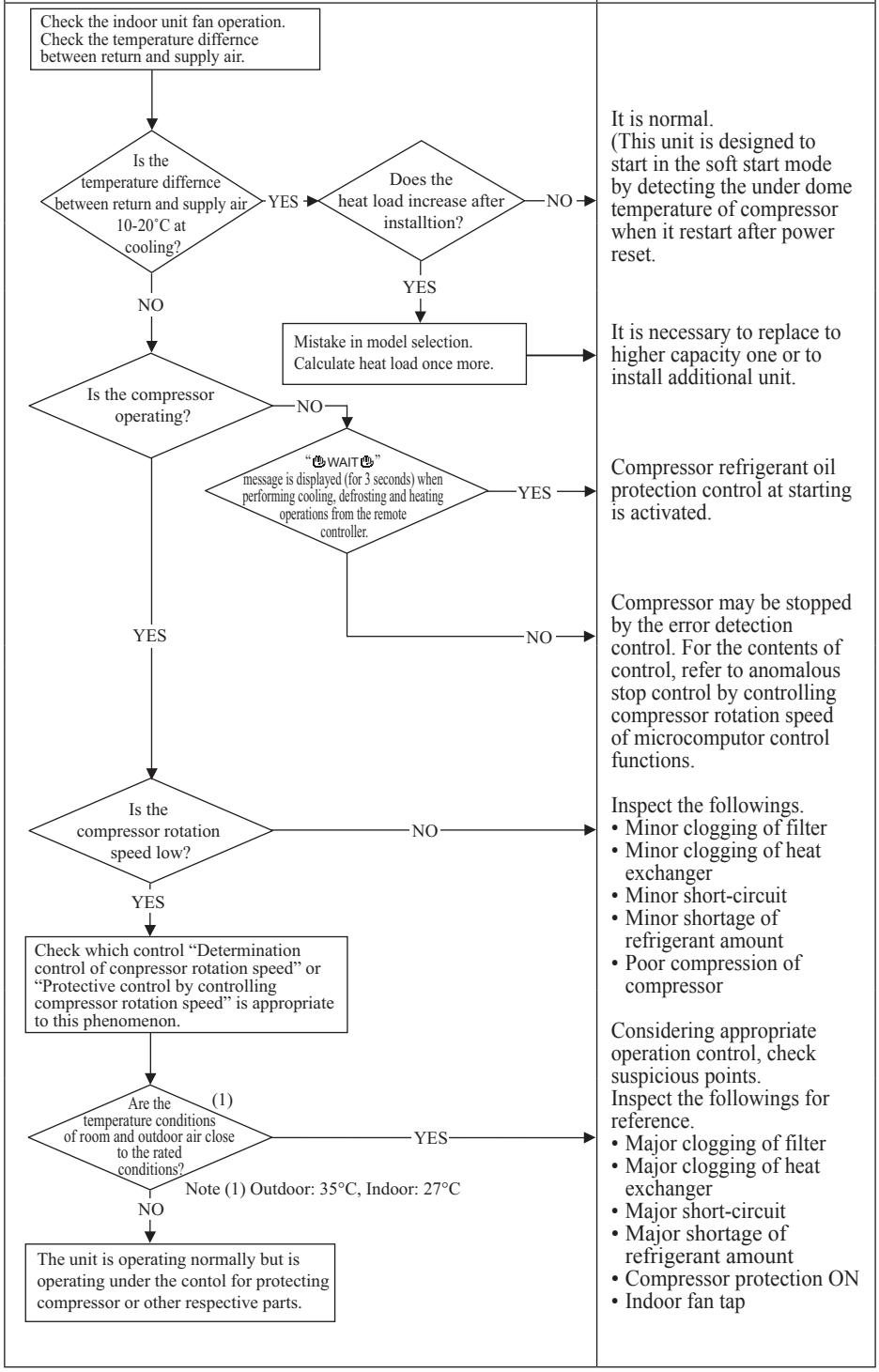
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Operates but does not heat

1. Applicable model

All models

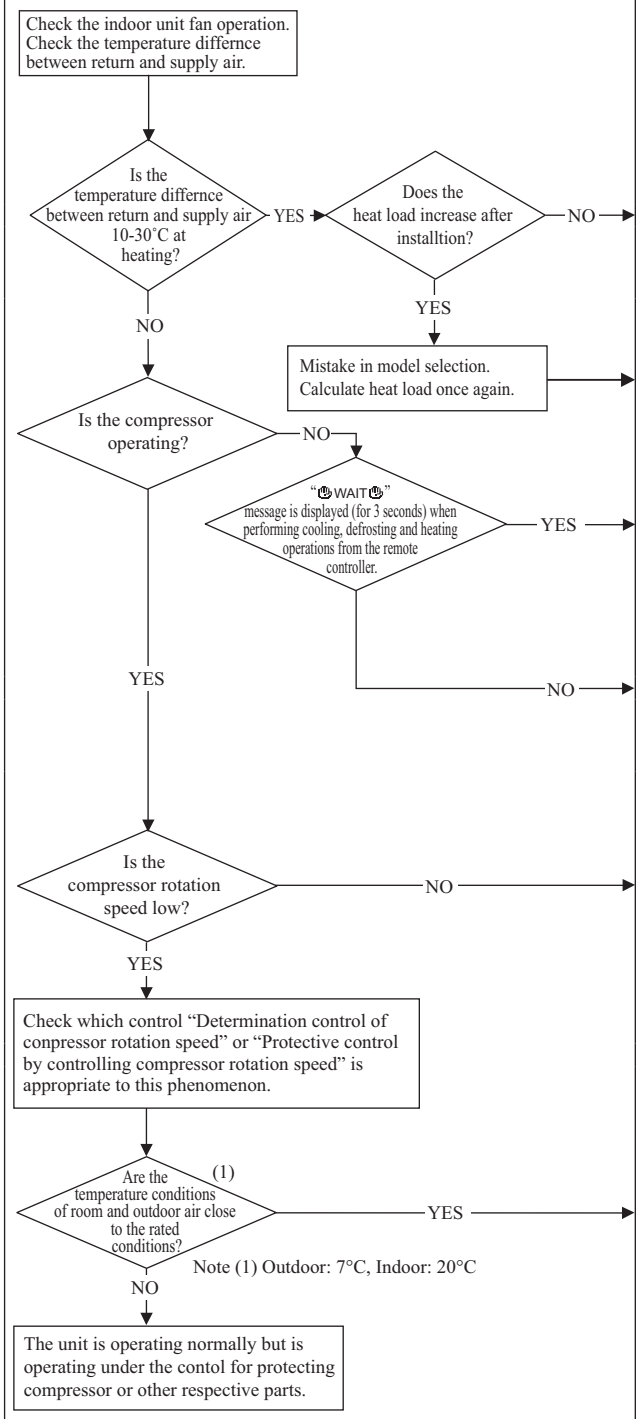
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Faulty 4-way valve operation
- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Stays OFF	Stays OFF	Earth leakage breaker activated

1. Applicable model

All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Defective compressor
- Noise

5. Troubleshooting

Diagnosis	Countermeasure
Are OK the insulation resistance and coil resistance of compressor? — NO →	Replace compressor.*
YES ↓ Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc? — NO →	Secure insulation resistance.
YES ↓ Check the outdoor unit grounding wire/earth leakage breaker.	

Check of the outdoor unit grounding wire/earth leakage breaker

① Run an independent grounding wire from the grounding screw of outdoor unit to the grounding terminal on the distribution panel. (Do not connect to another grounding wire.)
② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic regulation.

* Insulation resistance of compressor
- Immediately after installation or when the unit has been left for long time without power supply, the insulation resistance may drop to a few MΩ because of refrigerant migrated in the compressor.
  When the earth breaker is activated at lower insulation resistance, check the following points.

① Check if the earth leakage breaker is conformed to higher harmonic regulation or not.
Since the unit is equipped with inverter, it is necessary to use components conformed to higher harmonic regulation in order to prevent malfunction of earth leakage breaker.

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	–	–	Excessive noise/vibration (1/3)

1.Applicable model

All models

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

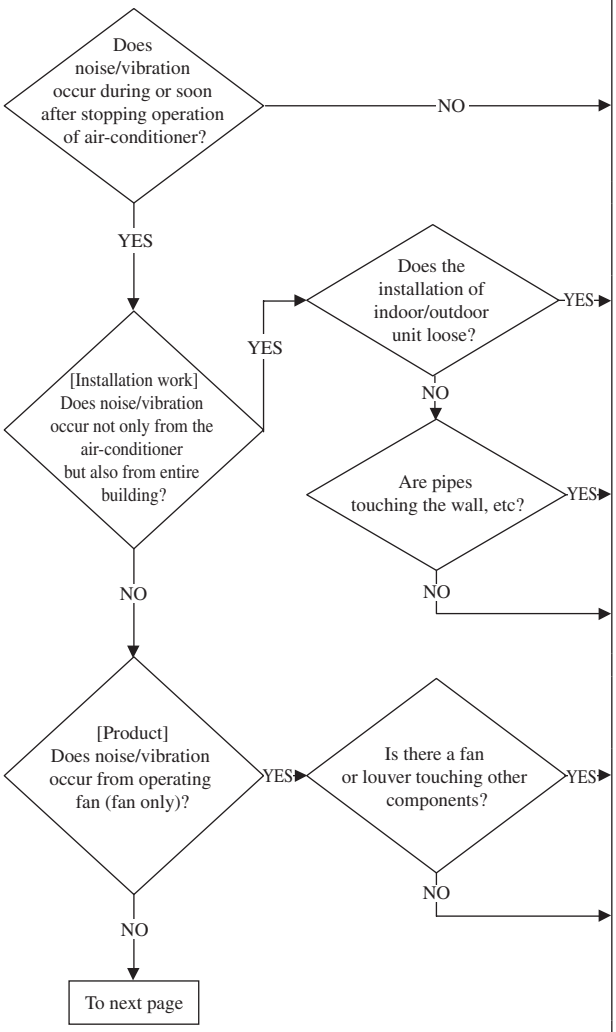
① Improper installation work
- Improper anti-vibration work at instllation
- Insufficient strength of mounting face

② Defective product
- Before/after shipping from factory

③ Improper adjustment during commissioning
- Excess/shortage of refrigerant, etc.

5.Troubleshooting

Diagnosis



Countermeasure

If excessive noise/vibration persists when sufficient time has elapsed after stopping the unit, it is considered that the air-conditioner is not the source.

Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.

Prevent the vibration from transmitting to wall and etc by fixing pipes on the wall or wrapping rubber cushion around the pipe which goes through the hole in the wall or applying other appropriate means.

Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.

Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it.

When the heat exchanger or filter is clogged, clean them. In case that the unit is installed at the site where background noise is very low, small noise from indoor unit can be heard, but it is normal. Before installation, check for background noise. If backgound nois is very low, convince client prior to installation.

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	–	–	Excessive noise/vibration (2/3)

1. Applicable model

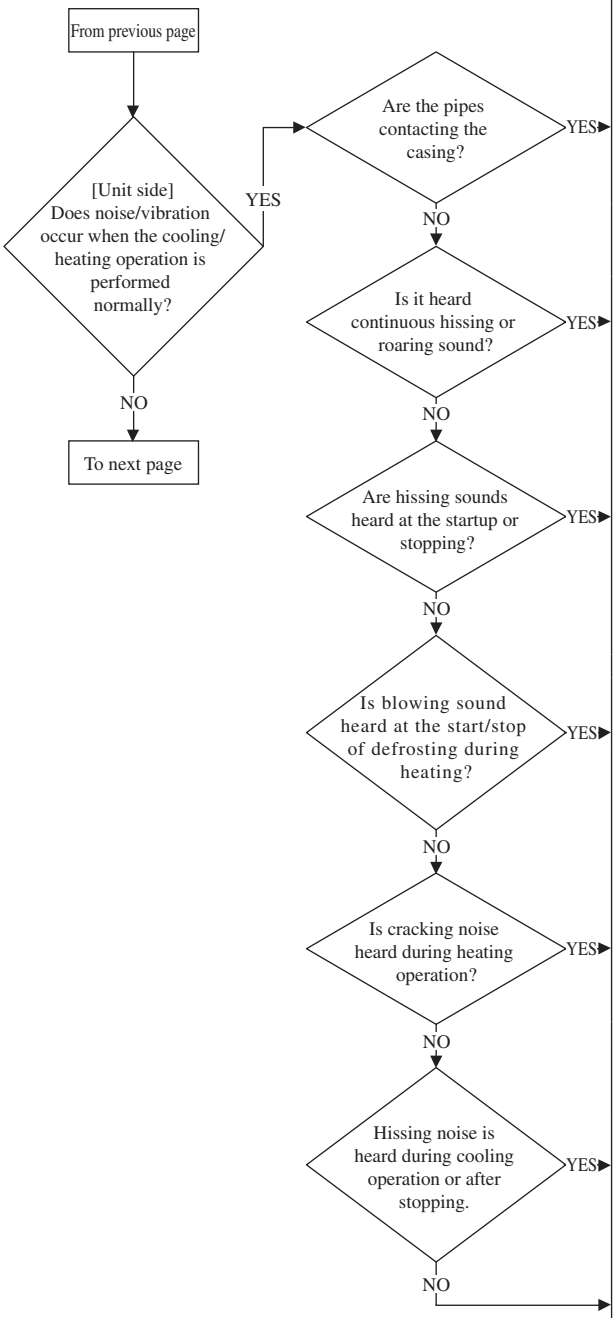
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
	

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	–	–	Excessive noise/vibration (3/3)

1. Applicable model

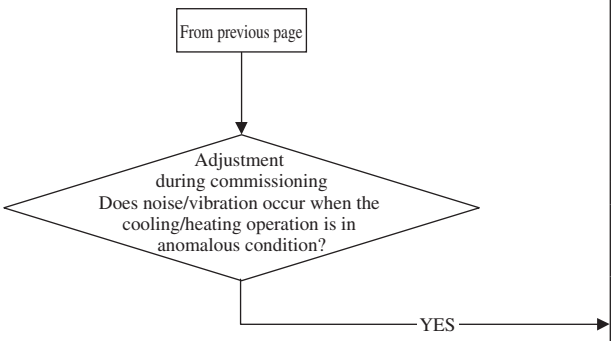
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
	If insufficient cooling/ heating problem happens due to anomalous operating conditions at cooling/ heating, followings are suspicious. • Overcharge of refrigerant • Insufficient charge of refrigerant • Intrusion of air, nitrogen, etc. In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant. * Since there could be many causes of noise/ vibration, the above do not cover all. In such case, check the conditions when, where, how the noise/vibration occurs according to following check point. • Indoor/outdoor unit • Cooling/heating/fan mode • Startup/stop/during operation • Operating condition (Indoor/outdoor temperatures, pressure) • Time it occurred • Operation data retained by the remote controller such as compressor rotation speed, heat exchanger temperature, EEV opening degree, etc. • Tone (If available, record the noise) • Any other anomalies

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure (FDT, FDTC and FDEN series)

1. Applicable model

FDT, FDTC and FDEN series only

2. Error detection method

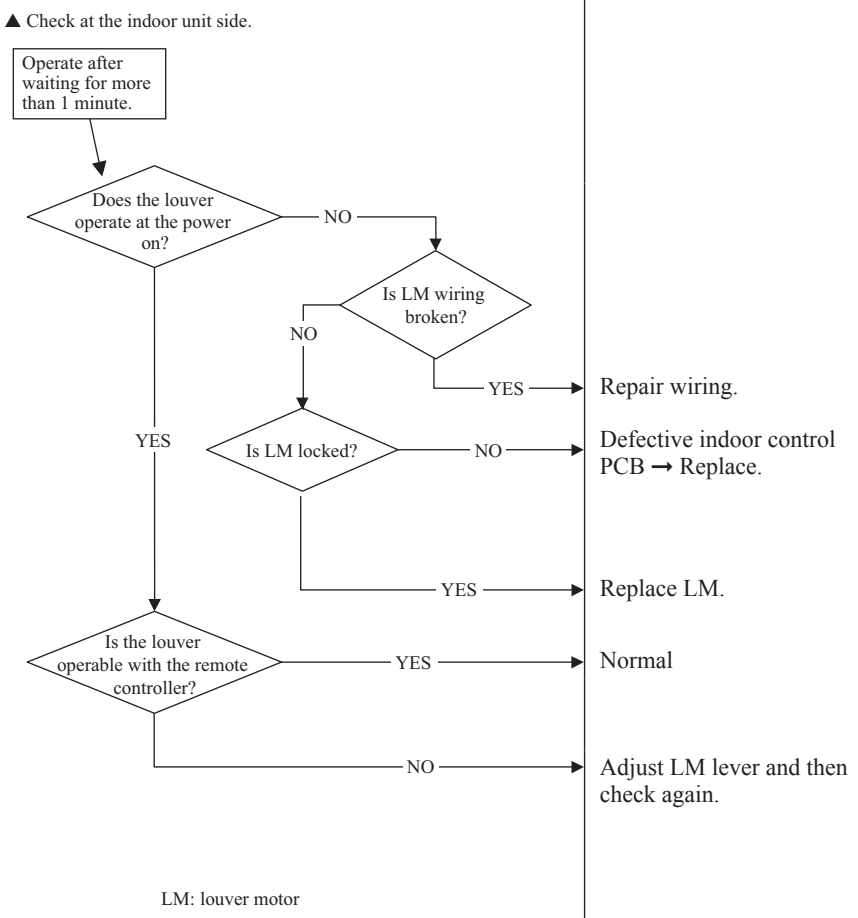
3. Condition of Error displayed

4. Presumable cause

- Defective LM
- LM wire breakage
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure



Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Stays OFF	Stays OFF	Power supply system error (Power supply to indoor control PCB)

1. Applicable model

All models

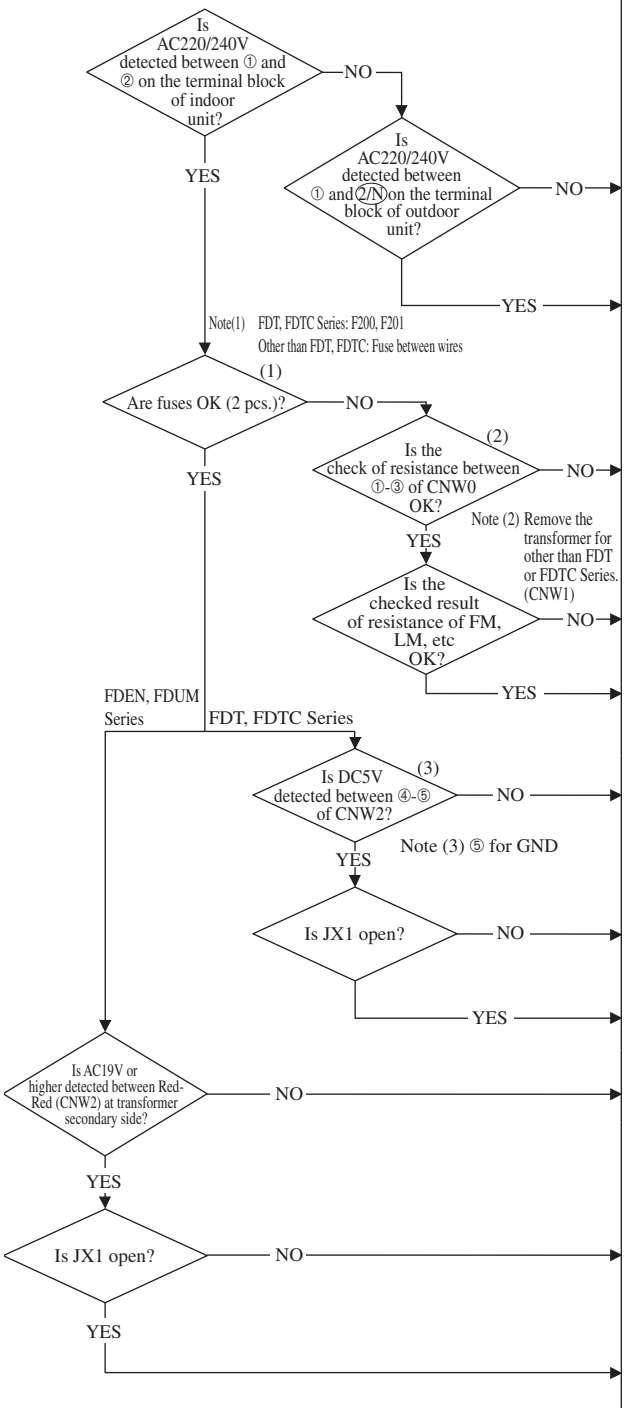
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Misconnection or breakage of connecting wires
- Blown fuse
- Faulty transformer
- Faulty indoor control or power PCB
- Broken harness
- Faulty outdoor control PCB (Noise filter)

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Power supply system error (Power supply to remote controller)

1. Applicable model

All models

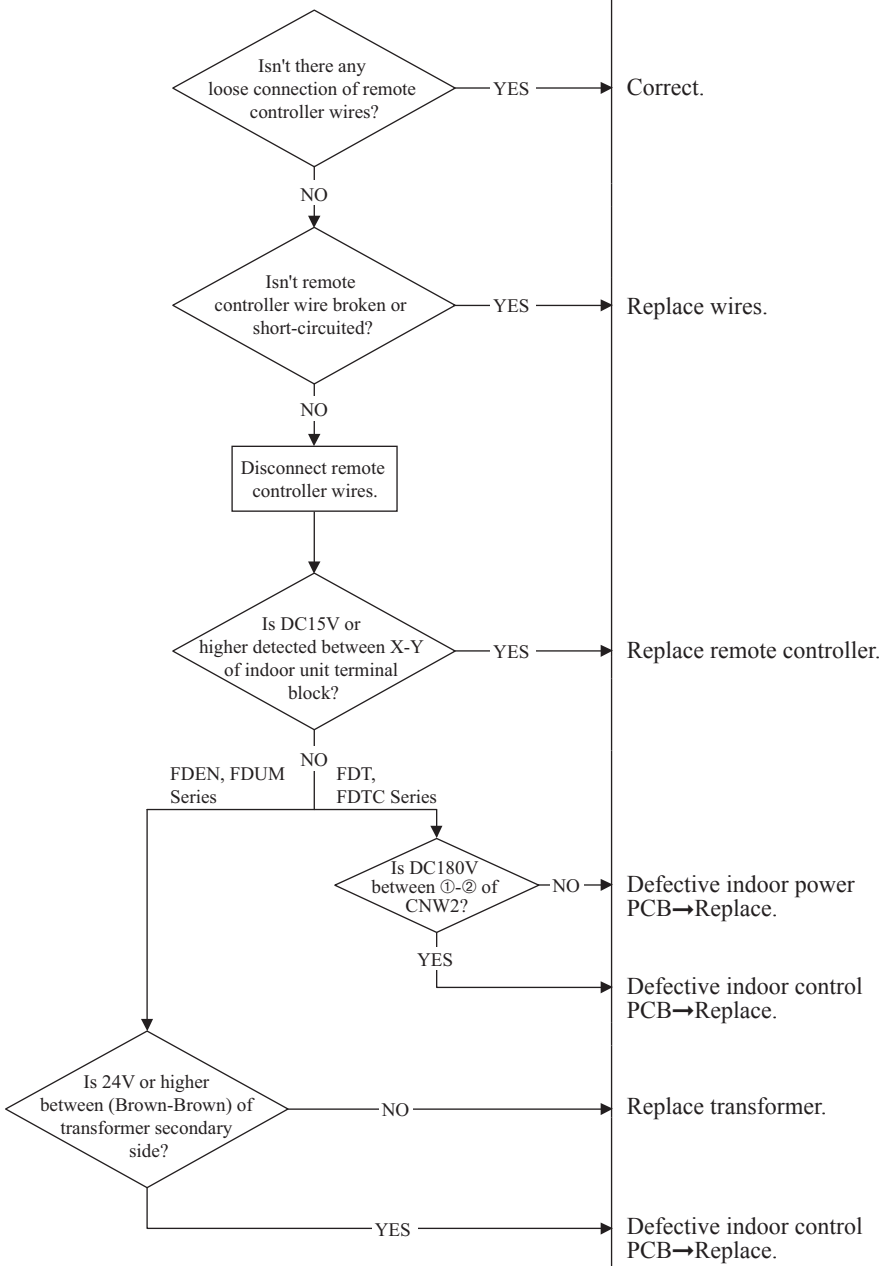
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Remote controller wire breakage/short-circuit
- Defective remote controller
- Malfunction by noise
- Faulty indoor power PCB
- Broken harness
- Faulty indoor control PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (When 1 or 2 remote controllers are connected)

1. Applicable model

All models

2. Error detection method

Communication between indoor unit and remote controller is disabled for more than 30 minutes after the power on.

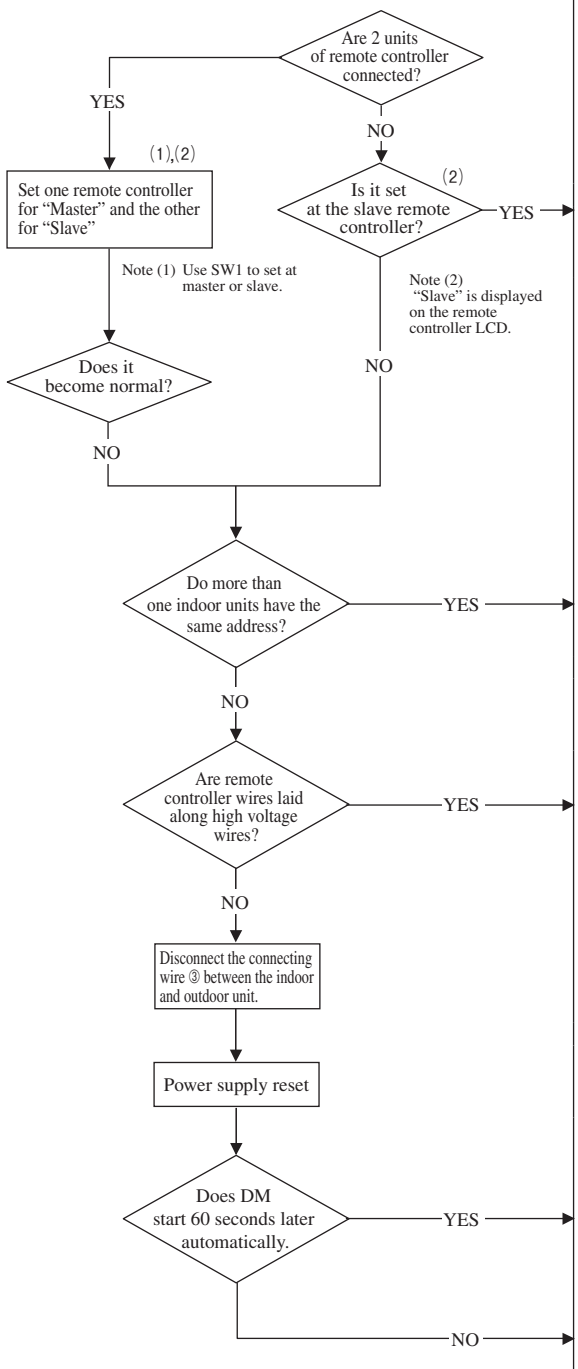
3. Condition of Error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote controller communication circuit
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
	

Note: If any error is detected 30 minutes after displaying "✋WAIT✋" on the remote controller, the display changes to "INSPECT I/U".

Error code	LED	Green	Red	Content
Remote controller: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (Connection of 3 units or more remote controller)

1. Applicable model

All models

2. Error detection method

Indoor unit cannot communicate for more than 30 minutes after the power on with remote controller.

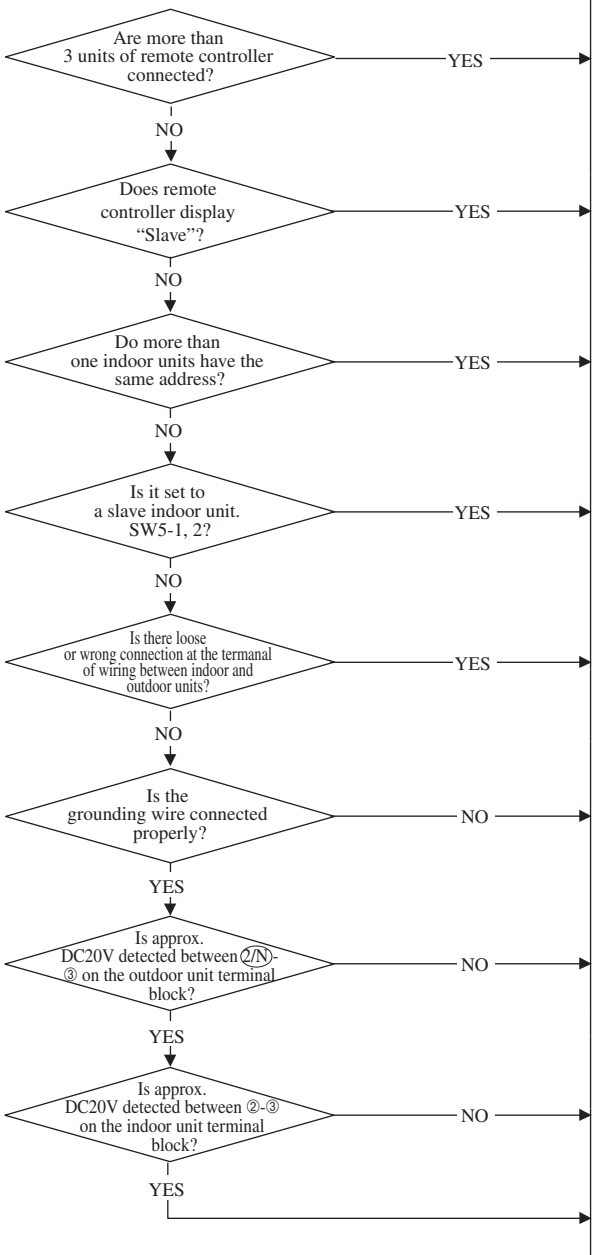
3. Condition of Error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote controller communication circuit
- Faulty indoor control or power PCB
- Faulty outdoor control PCB

5. Troubleshooting



Note: If any error is detected 30 minutes after displaying "✋WAIT✋" on the remote controller, the display changes to "INSPECT I/U".

Error code	LED	Green	Red	Content
Remote controller: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/3)

1. Applicable model

All models

When the remote controller LCD displays "✋WAIT✋" 2 minutes after the power on.

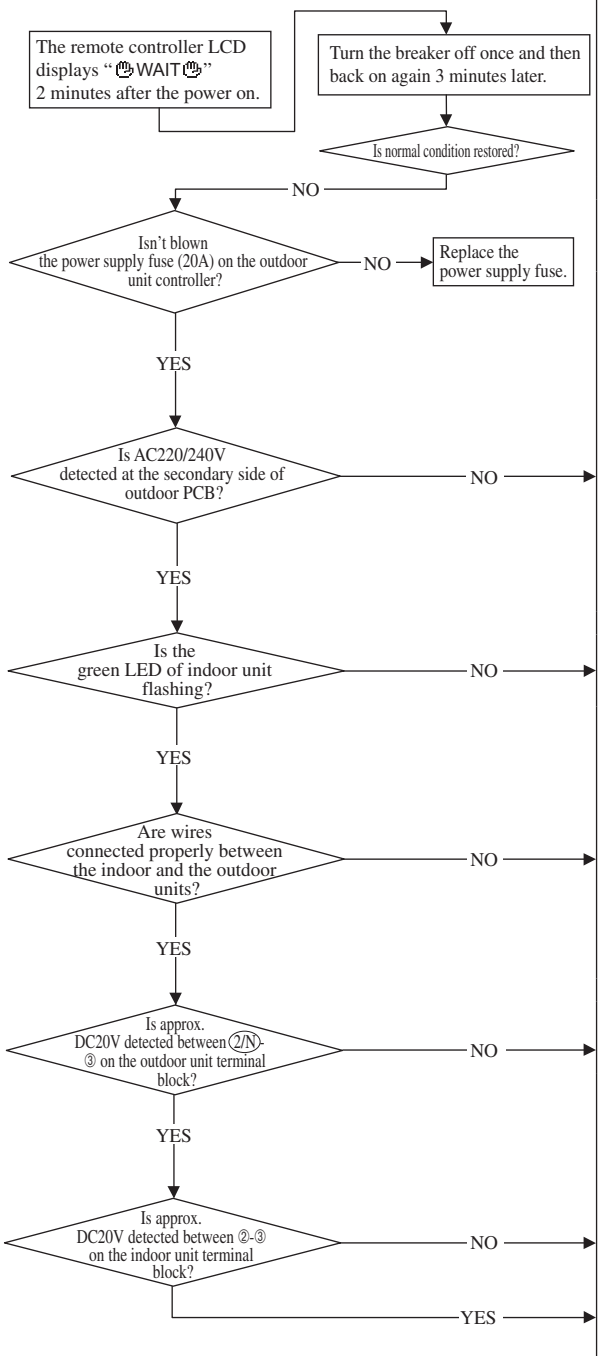
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor PCB
- Connection between PCB's
- Faulty indoor control PCB
- Defective remote controller
- Broken remote controller wire

5. Troubleshooting



Diagnosis	Countermeasure
Isn't blown the power supply fuse (20A) on the outdoor unit controller? NO	See next page.
Is AC220/240V detected at the secondary side of outdoor PCB? NO	Defective outdoor PCB→Replace.
Is the green LED of indoor unit flashing? NO	Defective indoor control PCB→Replace.
Are wires connected properly between the indoor and the outdoor units? NO	Replace indoor control PCB. Correct connection wires between indoor and outdoor units.
Is approx. DC20V detected between ②/N-③ on the outdoor unit terminal block? NO	Defective outdoor PCB→Replace.
Is approx. DC20V detected between ②-③ on the indoor unit terminal block? NO	Defective connection wire (broken wire) Noise
YES	Defective indoor control PCB→Replace.

Note: If any anomaly is detected during communication, the error code E5 is displayed. Inspection procedure is same as above. (Excluding matters related to connection) When the power supply is reset after the occurrence of E5, the LED will display "✋WAIT✋" if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), "✋WAIT✋" may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

Error code	LED	Green	Red	Content
Remote controller: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3)

1. Applicable model

All models

When the fuse is blown, the method to inspect outdoor PCB before replacing the power supply fuse

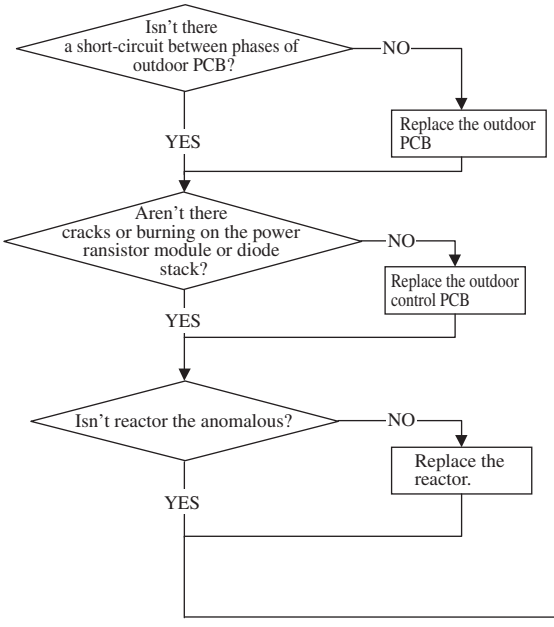
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor PCB
- Faulty reactor

5. Troubleshooting

Diagnosis	Countermeasure
	Replace fuse.

Note:

Error code	LED	Green	Red	Content
Remote controller: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (3/3)

1. Applicable model

All models

When the remote controller display is extinguished after the power on.

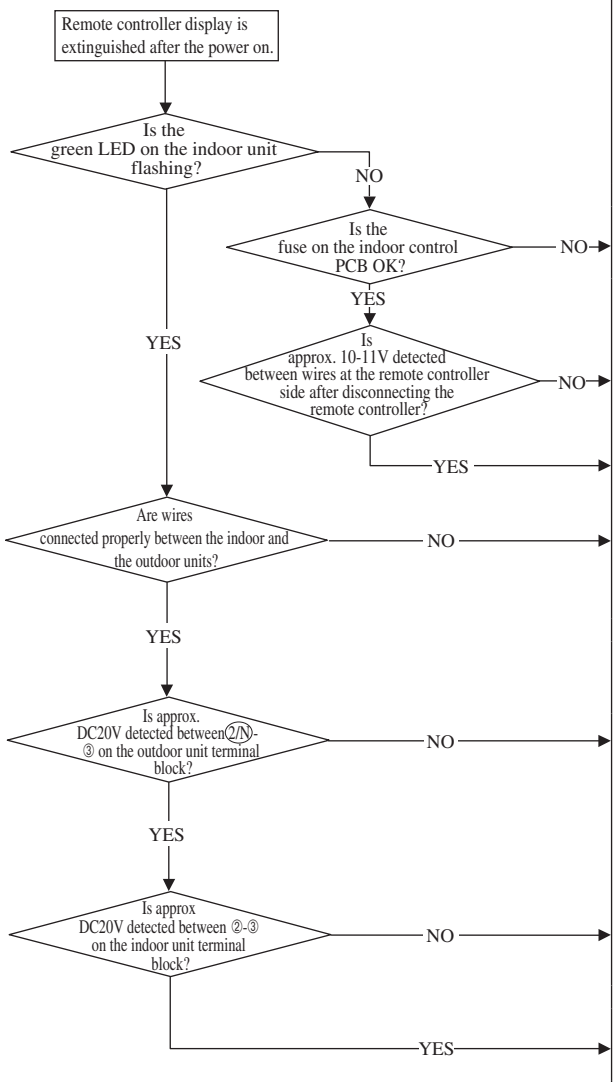
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor control PCB
- Defective remote controller
- Wire breakage on remote controller
- Faulty outdoor PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E1	Indoor	Keeps flashing	Stays OFF	Remote controller communication circuit error

1. Applicable model

All models

2. Error detection method

When normal communication between the remote controller and the indoor unit is interrupted for more than 2 minutes. (Detectable only with the remote controller)

3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective communication circuit between remote controller-indoor unit
- Noise
- Defective remote controller
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is it possible to reset normally by the power reset? → YES	Malfunction by noise Check peripheral environment.
NO → Turn SW7-1 to OFF. → ON Remove the wire ③ connecting between indoor/outdoor units. → Power reset → Does the drain pump restart automatically 1 minute later? → YES	Defective indoor control PCB → Replace.
NO → Note (2) Does the remote controller still display "WAIT" even after 3 minutes?	Defective remote controller → Replace.

Note: If the indoor unit cannot communicate normally with the remote controller for 180 seconds, the indoor unit PCB starts to reset automatically.

Error code	LED	Green	Red	Content
Remote controller: E5	Indoor	Keeps flashing	2 times flash	Communication error during operation

1. Applicable model

All models

2. Error detection method

When normal communication between indoor and outdoor unit is interrupted for more than 2 minutes.

3. Condition of Error displayed

Same as above is detected during operation.

4. Presumable cause

- Unit No. setting error
- Broken remote controller wire
- Faulty remote controller wire connection
- Faulty outdoor PCB

5. Troubleshooting

Diagnosis	Countermeasure
Note (1) Inspect faulty connections (disconnection, looseness) on the outdoor unit terminal block. Is the connection of signal wires at the outdoor unit side OK?	
NO →	Repair signal wires.
YES ↓ Note (2) Check for faulty connection or breakage of signal wires between indoor-outdoor units. Is the connection of signal wires between indoor-outdoor units OK?	
NO →	Repair signal wires.
YES ↓ Power reset ↓ Has the remote controller LCD returned to normal state?	
NO →	Defective outdoor PCB (Defective network communication circuit) → Replace.
YES →	Unit is normal. (Malfunction by temporary noise, etc.)

Note:

Error code	LED	Green	Red	Content
Remote controller: E6	Indoor	Keeps flashing	1 time flash	Indoor heat exchanger temperature thermistor anomaly

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected on the indoor heat exchanger thermistor (ThI-R1, R2 or R3).

3. Condition of Error displayed

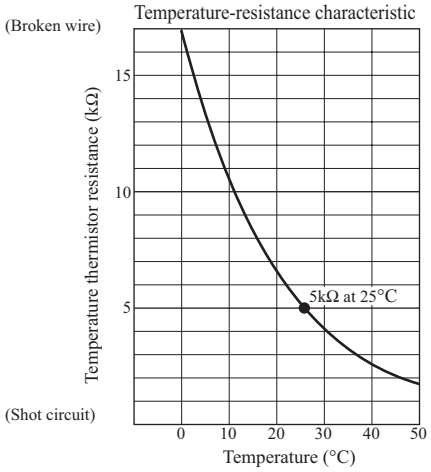
- When the temperature thermistor detects -40°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.
- Or if 70°C or higher is detected for 5 seconds continuously.

4. Presumable cause

- Defective indoor heat exchanger thermistor connector
- Indoor heat exchanger temperature thermistor anomaly
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of indoor heat exchanger temperature thermistor connector OK? — NO →	Correct. → Insert connector securely.
YES ↓ Are characteristics of indoor heat exchanger temperature thermistor OK? — NO →	Defective indoor heat exchanger temperature thermistor → Replace.
YES →	Defective indoor control PCB → Replace. (Defective indoor unit heat exchanger temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E7	Indoor	Keeps flashing	1 time flash	Return air temperature thermistor anomaly

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected by indoor return air temperature thermistor (Thi-A)

3. Condition of Error displayed

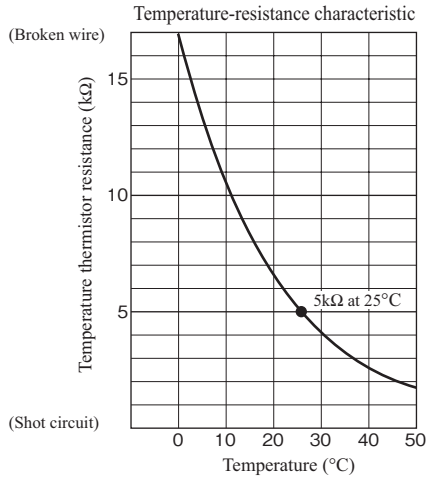
- When the temperature thermistor detects -20°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Defective return air temperature thermistor connector
- Defective return air temperature thermistor
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of return air temperature thermistor connector OK? — NO →	Correct. → Connect connector.
YES ↓	
Are the characteristics of return air temperature thermistor OK? — NO →	Defective return air temperature thermistor → Replace.
YES →	Defective indoor control PCB → Replace. (Defective return air temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E8	Indoor	Keeps flashing	1 time flash	Heating overload operation

1. Applicable model

All models

2. Error detection method

Indoor heat exchanger temperature thermistor (ThI-R1, R2, R3)

3. Condition of Error displayed

When it is detected 5 times within 60 minutes from initial detection or when the overload condition is detected for 6 minutes continuously.

4. Presumable cause

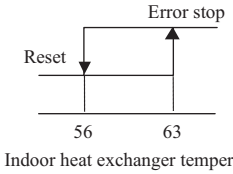
- Clogged air filter
- Defective indoor heat exchanger temperature thermistor connector
- Defective indoor heat exchanger temperature thermistor
- Anomalous refrigerant system

5. Troubleshooting

Diagnosis	Countermeasure
Is the air filter clogged? — YES →	Wash.
Is the indoor heat exchanger temperature thermistor connection OK? — NO →	Defective indoor heat exchanger temperature thermistor connector→ Correct.
Are the characteristics of indoor heat exchanger temperature thermistor OK? (2) — NO → (* For the characteristics of indoor heat exchanger temperature, refer to E6.)	Defective indoor heat exchanger temperature thermistor.
Check the error data with the remote controller.	
Is the unit operating in the state of heating overload? — NO →	Check refrigerant system.
YES →	Adjust

Note (1) Judge if it is in the state of overload or not as follows.
- ▲ Is there any short-circuit of air?
- ▲ Isn't there any fouling or clogging on the indoor heat exchanger?
- ▲ Is the outdoor fan control normal?
- ▲ Isn't the indoor and outdoor air temperature too high?

Note (2) For characteristics of indoor heat exchanger temperature thermistor, see the error display E6.



Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (ThI-R) in order to control high pressure.

Error code	LED	Green	Red	Content
Remote controller: E9	Indoor	Keeps flashing	1 time flash	Drain trouble (FDT, FDTC and FDUM series)

1. Applicable model

FDT, FDTC and FDUM series only

2. Error detection method

Float switch is activated

3. Condition of Error displayed

If the float switch OPEN is detected for 3 seconds continuously or if float switch connector or wire is disconnected.

4. Presumable cause

- Defective indoor control or power PCB
- Float switch setting error
- Humidifier DM interlock setting error
- Optional equipment setting error
- Drain piping error
- Defective drain motor
- Disconnection of drain motor wiring

5. Troubleshooting

Diagnosis	Countermeasure
Check the error data in the remote controller.	
Is there any overflow? — NO → Note(1) FDUM only.	
(1) Is DC 12V at CNI connector. — YES →	Check float switch.
(1) Is DC 12V at CNI connector. — NO → Is the CNI connected firmly? — NO →	Defective indoor control PCB → Replace.
Is the CNI connected firmly? — YES → Is there any anomaly on the optional equipment? — NO →	Defective indoor control PCB → Replace.
Is there any anomaly on the optional equipment? — YES →	Check optional equipment
Is there any overflow? — YES → Is the humidifier connected? — YES → Is the humidifier Drain Motor interlocked by the indoor unit function setting of remote controller? — NO →	Correct setting to "Humidifier DM interlock".
Is the humidifier Drain Motor interlocked by the indoor unit function setting of remote controller? — YES → Drain motor ON from the remote controller	
Does DM operate? — NO → Is AC220/240V detected at CNR connector? — NO →	Defective indoor control PCB → Replace. (Replace power PCB on FDT and FDTC Series.) Check wiring of Drain motor
Is AC220/240V detected at CNR connector? — YES →	Defective indoor control PCB → Replace. (Replace power PCB on FDT and FDTC Series.) Check wiring of Drain motor
Does DM operate? — YES → Is the drain piping unclogged? Is the drain pipe slop OK? — NO →	Correct.
Is the drain piping unclogged? Is the drain pipe slop OK? — YES →	Check drain motor.

Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

Error code	LED	Green	Red	Content
Remote controller: E10	Indoor	Keeps flashing	Stays OFF	Excessive number of connected indoor units (more than 17 units) by controlling with one remoto controller

1. Applicable model

All models

2. Error detection method

When it detects more than 17 of indoor units connected to one remote contorller

3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive number of indoor units connected
- Defective remote controller

5. Troubleshooting

Diagnosis	Countermeasure
Aren't more than 17 indoor units connected to one remote controller? → NO	Defective remote controller → Replace.
Aren't more than 17 indoor units connected to one remote controller? → YES	Reduce to 16 or less units.

Note:

Error code	LED	Green	Red	Content
Remote controller: E16	Indoor	Keeps flashing	1 time flash	Indoor fan motor anomaly (FDT and FDTC series)

1. Applicable model

FDT, FDTC series only

2. Error detection method

Detected by rotation speed of indoor fan motor

3. Condition of Error displayed

When actual rotation speed of indoor fan motor drops to lower than 200rpm for 30 seconds continuously, the compressor and the indoor fan motor stop. After 2-seconds, it starts again automatically, but if this error occurs 4 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective indoor power PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting

Diagnosis	Countermeasure
Does any foreign material intervene in rotational area of fan propeller? — YES →	Remove foreign material.
NO ↓ Does the fan rotate smoothly when turned by hand? — NO →	Replace the fan motor.
YES ↓ Is DC280V detected between ①-④ of fan motor connector CNM? (1) Note (1) ④ for GND — NO → Is the fuse F202 blown? — NO →	Check power voltage.
Is the fuse F202 blown? — YES →	Replace faulty fan motor and power PCB.
YES ↓ Power supply reset ↓ Is it normalized? — NO →	Replace fan motor. (If the error persists after replacing the fan motor, replace the indoor control PCB.)
Is it normalized? — YES →	Malfunction by temporary noise

Note:

Error code	LED	Green	Red	Content
Remote controller: E19	Indoor	Keeps flashing	1 time flash	Indoor unit operation check, drain motor check setting error (FDT,FDTC and FDUM series)

1. Applicable model

FDT,FDTC and FDUM series only

2. Error detection method

After indoor operation check, when the communication between indoor and outdoor unit is established and SW7-1 is still kept ON.

3. Condition of Error displayed

Same as above

4. Presumable cause

Mistake in SW7-1 setting (Due to forgetting to turn OFF SW7-1 after indoor operation check)

5. Troubleshooting

Diagnosis	Countermeasure
E19 occurs when the power ON → Is SW7-1 on the indoor control PCB ON ?	
NO →	Defective indoor control PCB (Defective SW7) →Replace
YES →	Turn SW7-1 on the indoor control PCB OFF and reset the power

Note:

Error code	LED	Green	Red	Content
Remote controller: E20	Indoor	Keeps flashing	1 time flash	Indoor fan motor rotation speed anomaly (FDT and FDTC series)

1. Applicable model

FDT, FDTC series only

2. Error detection method

Detected by rotation speed of indoor fan motor

3. Condition of Error displayed

When the actual fan rotation speed does not reach to the speed of [required speed -50rpm] after 2 minutes have been elapsed since the fan motor rotation speed command was output, the unit stops by detecting indoor fan motor anomaly.

4. Presumable cause

- Defective indoor power PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting

Diagnosis	Countermeasure
Does any foreign material intervene in rotational area of fan propeller? — YES →	Remove foreign material.
NO ↓ Does the fan rotate smoothly when turned by hand? — NO →	Replace the fan motor.
YES ↓ Is DC280V detected between ①-④ of fan motor connector CNM? (1) Note (1) ④ for GND — NO ↓ Is the fuse F202 blown? — NO →	Check power voltage.
Is the fuse F202 blown? — YES →	Replace faulty fan motor and power PCB.
YES ↓ Power supply reset ↓ Is it normalized? — NO →	Replace fan motor. (If the error persists after replacing the fan motor, replace the indoor control PCB.)
Is it normalized? — YES →	Malfunction by temporary noise

Note:

Error code	LED	Green	Red	Content
Remote controller: E28	Indoor	Keeps flashing	Stays OFF	Remote controller temperature thermistor anomaly

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) of remote controller temperature thermistor (Thc)

3. Condition of Error displayed

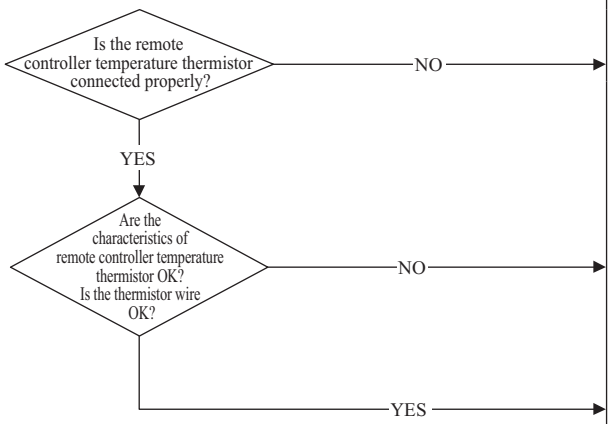
When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Faulty connection of remote controller temperature thermistor
- Defective remote controller temperature thermistor
- Defective remote controller PCB

5. Troubleshooting

Diagnosis	Countermeasure



Resistance-temperature characteristics of remote controller temperature thermistor (ThC)

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
0	65	30	16
1	62	32	15
2	59	34	14
4	53	36	13
6	48	38	12
8	44	40	11
10	40	42	9.9
12	36	44	9.2
14	33	46	8.5
16	30	48	7.8
18	27	50	7.3
20	25	52	6.7
22	23	54	6.3
24	21	56	5.8
26	19	58	5.4
28	18	60	5.0

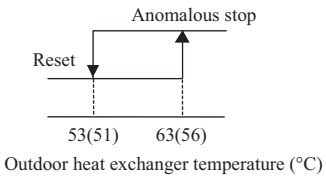
Note: After 10 seconds has passed since remote controller thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote controller thermistor to indoor return air temperature thermistor. Even though the remote controller thermistor is set to be Effective, the return air temperature displayed on remote controller for checking still shows the value detected by indoor return air temperature thermistor, not by remote controller temperature thermistor.

Error code	LED	Green	Red	Content
Remote controller: E35	Indoor	Keeps flashing	Stays OFF	Cooling overload operation
	Outdoor	–	2 times flash	

1. Applicable model

All models

2. Error detection method



Note (1) Values in ( ) are applicable when outdoor temperature (TH2) is lower than 32 °C

3. Condition of Error displayed

When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 63(56)°C or higher continues for 10 minutes, including the compressor stop.

4. Presumable cause

- Defective outdoor heat exchanger temperature sensor
- Defective outdoor PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
Are normal the characteristics of outdoor heat exchanger temperature sensor normal? (* For the characteristics of outdoor heat exchanger temperature sensor, refer to E37.) — NO →	Replace outdoor heat exchanger temperature sensor.
YES ↓ Is the unit operating in the state of cooling overload? — YES →	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger?
NO ↓ Is the high pressure control normal — NO →	Control operation check*
YES ↓ Is the temperature (measured actually) at direction of error correct? — NO →	Defective outdoor PCB→Replace.
YES →	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

Note:

Error code	LED	Green	Red	Content
Remote controller: E36	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature error
	Outdoor	—	5 times flash	

1. Applicable model

All models

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

3. Condition of Error displayed

When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.

4. Presumable cause

- Defective outdoor PCB
- Defective discharge pipe temperature sensor
- Clogged filter
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger

5. Troubleshooting

Diagnosis	Countermeasure
Are the characteristics of discharge pipe temperature sensor normal? (* For the characteristics of discharge pipe temperature, refer to E39.) — NO →	Replace discharge pipe temperature sensor.
YES ↓ Is the discharge pipe temperature error persisted during cooling operation? — YES →	Insufficient refrigerant amount : Recharge refrigerant by weighing proper amount on a scale.
NO ↓ Is the discharge pipe temperature control normal? — NO →	Control operation check *
YES ↓ Is the temperature (measured actually) at detection of error correct? — NO →	Defective outdoor PCB→Replace.
YES →	Check unit side: • Isn't filter clogged? • Are adequate indoor, outdoor unit installation spaces? • Isn't there any short-circuit of air? • Isn't there any fouling, clogging on indoor heat exchanger?

* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

Note:

Error code	LED	Green	Red	Content
Remote controller: E37	Indoor	Keeps flashing	Stays OFF	Outdoor heat exchanger temperature sensor anomaly
	Outdoor	—	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the outdoor heat exchanger temperature sensor

3. Condition of Error displayed

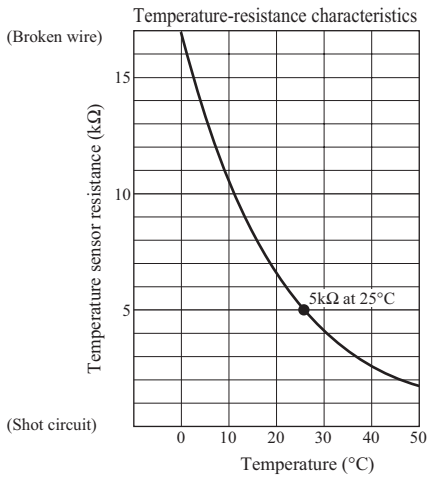
- When the temperature sensor detects -55 °C or lower for 20 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

4. Presumable cause

- Defective outdoor PCB
- Broken sensor harness or temperature sensing section
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor heat exchanger temperature sensor connector connected properly? — NO →	Correct connector.
YES ↓	
For the characteristics of outdoor heat exchanger temperature sensor, see the following graph.	
Are the characteristics of outdoor heat exchanger temperature sensor OK? — NO →	Defective outdoor heat exchanger temperature sensor→Replace.
YES →	Defective outdoor PCB→Replace. (Defective outdoor heat exchanger temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E38	Indoor	Keeps flashing	Stays OFF	Outdoor air temperature sensor anomaly
	Outdoor	—	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on outdoor air temperature sensor

3. Condition of Error displayed

- When the temperature sensor detects -55 °C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

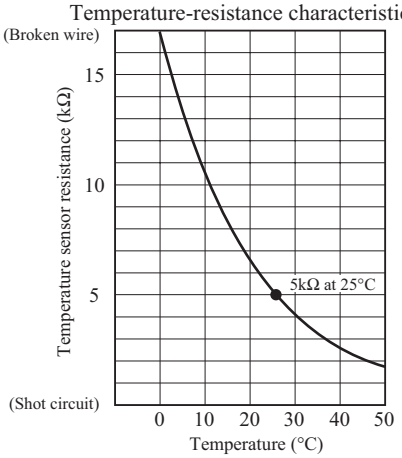
4. Presumable cause

- Defective outdoor PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor air temperature sensor connector connected properly? — NO →	Correct connector.
YES ↓	
Is the characteristics of the outdoor air temperature sensor OK? (For the characteristics of outdoor air temperature sensor, see the following graph.) — NO →	Defective outdoor air temperature sensor→ Replace.
YES →	Defective outdoor PCB→Replace. (Defective outdoor air temperature sensor input circuit)

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red	Content
Remote controller: E39	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature sensor anomaly
	Outdoor	—	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the discharge pipe temperature sensor

3. Condition of Error displayed

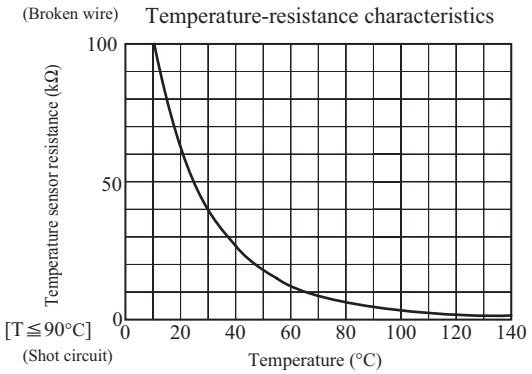
When the temperature sensor detects -25 °C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.

4. Presumable cause

- Defective outdoor PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the discharge pipe temperature sensor connector connected properly? → NO	Correct connector.
YES → Are the characteristics of discharge pipe temperature sensor OK? (For the characteristics of discharge pipe temperature sensor, see the following graph.) → NO	Defective discharge pipe temperature sensor→ Replace.
YES	Defective outdoor PCB→Replace. (Defective temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E42	Indoor	Keeps flashing	Stays OFF	Current cut (1/2)
	Outdoor	—	1 time flash	

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- The valves closed
- Faulty power supply
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
Is the Power supply voltage OK? — NO →	Check power supply.
YES ↓	
Are the service valves opened? — NO →	Open the valves.
YES ↓	
Is the high pressure during operation OK? — NO →	Check refrigerant amount and refregerant circuit *In case of transitional increase of high pressure and/or test run, several times restarting may recover it, because liquid refrigerant (migrated) in the compresser is discharged from the compressor.
YES ↓	
Is the checked result of insulation resistance and coil resistance (1) of compressor motor OK? — NO →	Replace compressor.
(1) 0.869Ω (U-V, V-W, U-W) or more at 20°C	
YES ↓	
Continues to next page.	

Note:

Error code	LED	Green	Red	Content
Remote controller: E42	Indoor	Keeps flashing	Stays OFF	Current cut (2/2)
	Outdoor	–	1 time flash	

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- Defective outdoor PCB
- Faulty power supply
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
Continue from previous page ↓ Is the checked result of power transistor module OK? — NO →	• Defective outdoor PCB→Replace.
YES ↓ • Is the space for installation of indoor and/or outdoor unit enough? • Is there any short circuit of air on indoor and/or outdoor unit? • At cooling, does the outdoor fan motor run? Are the service valves fully opened? Is the filter clogged? • At heating, does the indoor fan motor run? Are the service valves fully opened? Is the filter clogged? • Is there any liquid flooding? Is the superheat within normal range? • Is there any anoumalous sound on the compressor?	
YES ↓ After resetting power for several times does it become normal? — NO →	• Defective outdoor PCB→Replace.
YES ↓ Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.	

Note:

Error code	LED	Green	Red	Content
Remote controller: E47	Indoor	Keeps flashing	Stays OFF	Active filter voltage error
	Outdoor	—	2 times flash	

1. Applicable model

All models

2. Error detection method

Error is displayed if the converter voltage exceeds DC340V (3 times within 20 minutes). Remote controller may be set after 3 minutes delay.

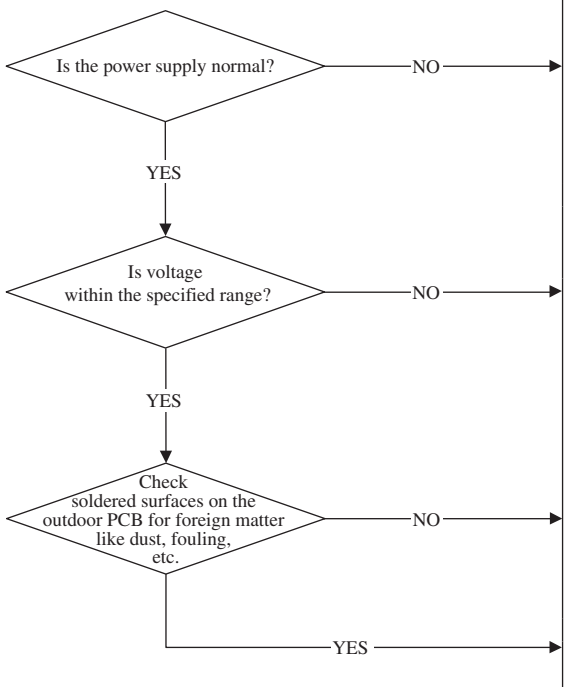
3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective outdoor PCB
- Dust on outdoor PCB
- Anomalous power supply

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly
	Outdoor	—	Keeps flashing	

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of outdoor fan motor

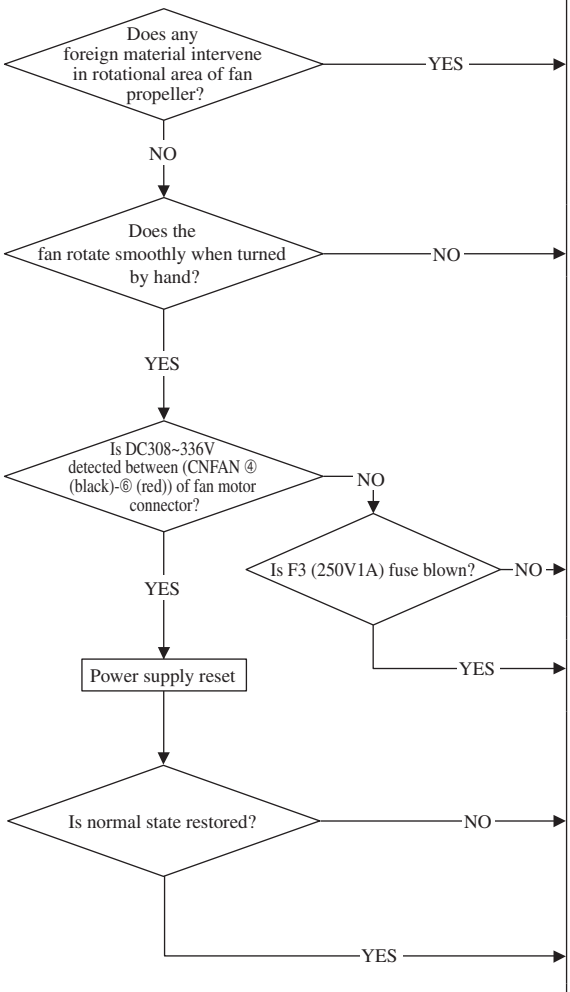
3. Condition of Error displayed

When actual rotation speed of outdoor fan motor drops to 75min^{-1} or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective outdoor PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor PCB
- Blown F3 fuse

5. Troubleshooting



Note: When E48 error occurs, in almost cases F3 fuse (1A) on the outdoor PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor PCB (or fuse) is replaced,, another trouble could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.
After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)

Error code	LED	Green	Red	Content
Remote controller: E51	Indoor	Keeps flashing	Stays OFF	Power transistor anomaly
	Outdoor	–	1 time flash	

1. Applicable model

All models

2. Error detection method

Power transistor primary current

3. Condition of Error displayed

If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.

4. Presumable cause

- Faulty outdoor control PCB
- Dust on outdoor control PCB
- Blown F2 fuse

5. Troubleshooting

Diagnosis	Countermeasure
Check soldered surfaces on the outdoor control PCB for foreign matter like dust, fouling,etc. → NO	Remove foreign matter like dust, fouling, etc.
↓ YES	
Isn't F2 fuse (250V, 20A)blown? → YES	Replace fuse.
→ NO	Defective outdoor control PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote controller: E57	Indoor	Keeps flashing	Stays OFF	Insufficient refrigerant amount or detection of service valve closure
	Outdoor	—	2 times flash	

1. Applicable model

All models

2. Error detection method

- Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (ThI-R) and indoor return air (ThI-A).

3. Condition of Error displayed

When the insufficient refrigerant amount is detected 3 times within 60 minutes.

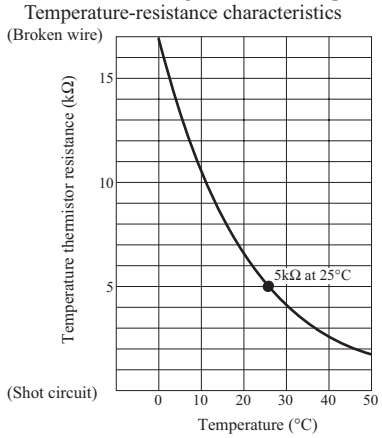
4. Presumable cause

- Defective indoor heat exchanger temperature thermistor
- Defective indoor return air temperature thermistor
- Defective indoor control PCB
- Insufficient refregerant amount

5. Troubleshooting

Diagnosis	Countermeasure
Is the service valve fully opened? — NO →	Open fully.
YES ↓	
Are the connections of indoor heat exchanger and/or return air temperature thermistor connectors OK? — NO →	Correct indoor heat exchanger, return air temperature thermistor connector connections.
YES ↓	
Are the characteristics of indoor heat exchanger and/or return air temperature thermistor OK? — NO →	Defective indoor heat exchanger, return air temperature thermistor → Replace.
YES ↓	
Is the low pressure during operation normal? — NO →	Charge refrigerant.
YES →	Defective indoor control PCB→Replace. (Defective indoor heat exchanger, return air temperature thermistor input circuits)

Indoor heat exchanger, return air temperature thermistor
Temperature-resistance characteristics



Note: When the compressor speed is 50 rps or under at 5 minutes after the start of compressor or the completion of defrosting, the low refrigerant protection control judges, by detecting the difference between the indoor heat exchanger temperature (ThI-R) and the indoor return air temperature (ThI-A), that it is in the state of gas low, and stops the compressor.
Cooling: Indoor return air temperature (ThI-A) – Indoor heat exchanger temperature (ThI-R) ≧ 4 deg
Heating: Indoor heat exchanger temperature (ThI-R) – Indoor return air temperature (ThI-A) ≦ 6 deg

Error code	LED	Green	Red	Content
Remote controller: E58	Indoor	Keeps flashing	Stays OFF	Current safe stop
	Outdoor	–	3 times flash	

1. Applicable model

All models

2. Error detection method

When the current safe control has operated at the compressor speed of 30 rps or under:

3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive refrigerant amount
- Indoor,outdoor unit installation spaces
- Faulty compressor
- Defective outdor air temp. sensor
- Defective outdoor PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the refrigerant amount nomal ?	
NO →	Adjust the refrigerant amount properly.
YES ↓	
Is outdoor ventilation condition good ?	
NO →	Secure space for inlet and outlet.
YES ↓	
Inspect compressor	
NO →	Replace compressor.
YES ↓	
Inspect outdor air temp. sensor	
NO →	Replace sensor.
YES →	Defective outdoor PCB→Replace. (Defective outdor air temp. sensor input circuit)

Note:

Error code	LED	Green	Red	Content
Remote controller: E59	Indoor	Keeps flashing	Stays OFF	Compressor startup failure
	Outdoor	–	2 times flash	

1. Applicable model

All models

2. Error detection method

If it fails to change over to the rotor detection operation of compressor motor

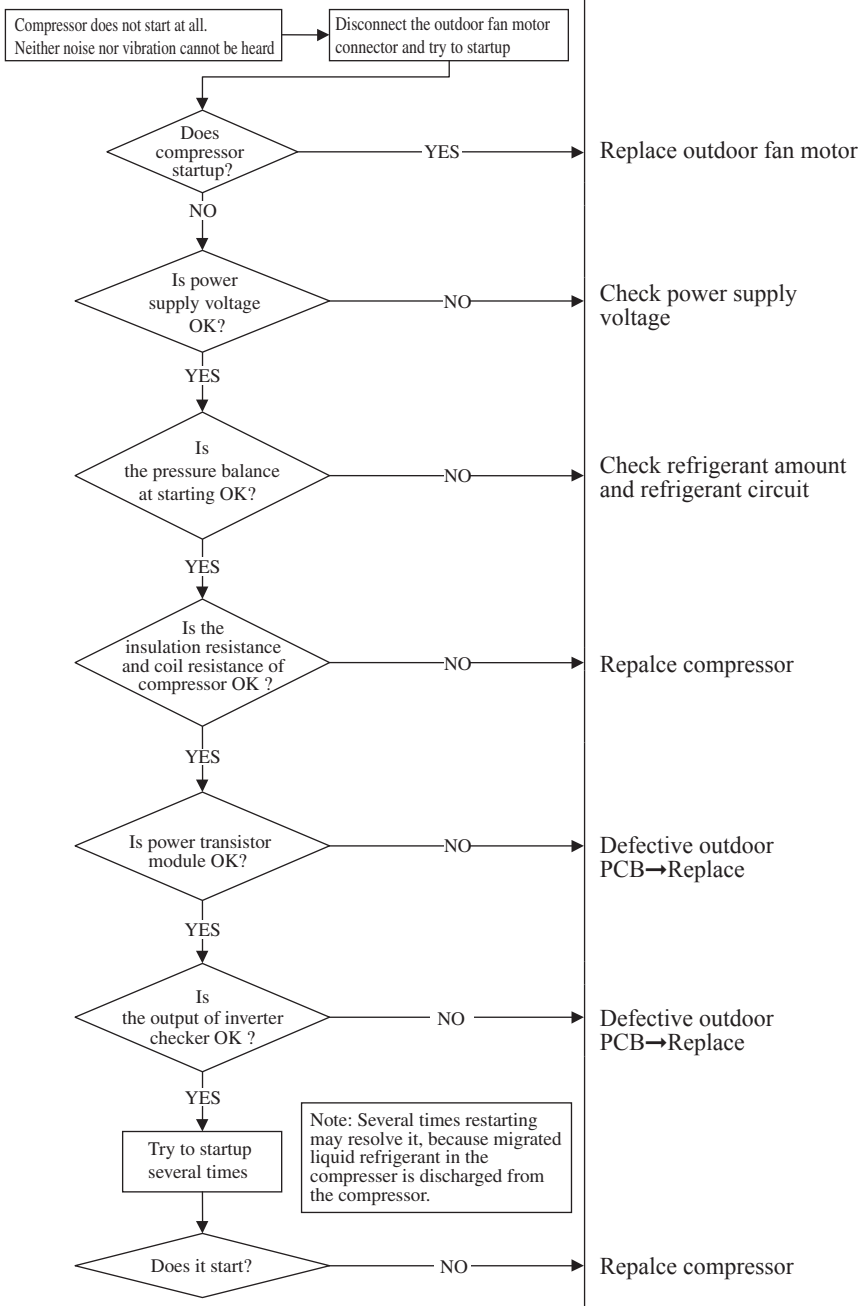
3. Condition of Error displayed

If compressor fails to startup for 42 times

4. Presumable cause

- Faulty outdoor fan motor
- Faulty outdoor PCB
- Anomalous power supply voltage
- Improper refrigerant amount and refrigerant circuit
- Faulty compressor (Motor bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power supply or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
  (By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breake conforms to high-hermonic specifications
  (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

Error code	LED	Green	Red	Content
Remote controller: E60	Indoor	Keeps flashing	Stays OFF	Compressor rotor lock error
	Outdoor	—	7 times flash	

1. Applicable model

All models

2. Error detection method

Compressor rotor position

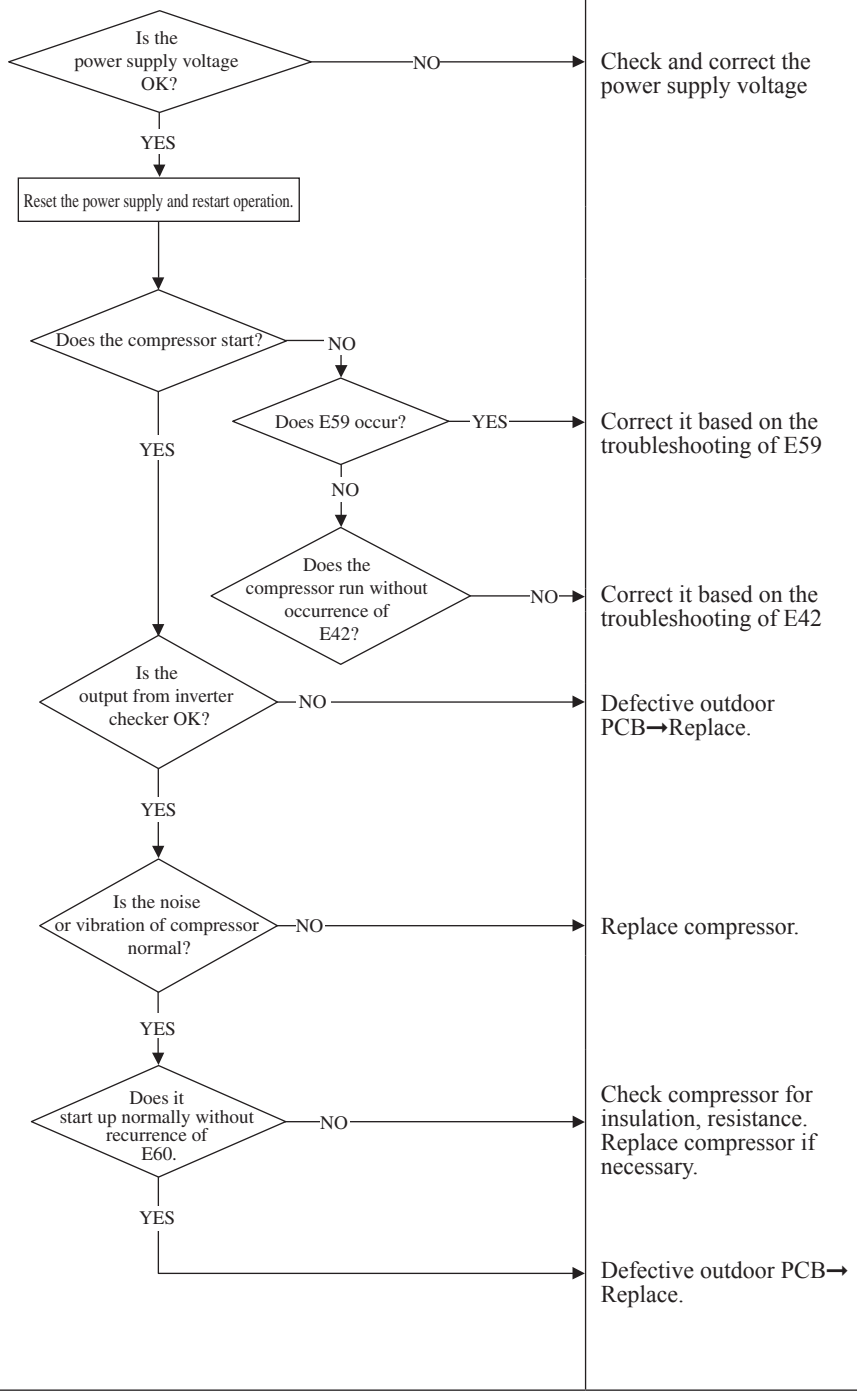
3. Condition of Error displayed

If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.

4. Presumable cause

- Defective outdoor fan motor
- Defective outdoor PCB
- Anomalous power supply voltage
- Improper refrigerant amount and refrigerant circuit
- Defective compressor (motor, bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power supply or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
  (By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated)
  ② Check whether the electric leakage breake conforms to high-hermonic specifications
  (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

13. OPTIONAL PARTS

13.1 Wireles kit

13.1.1 FDT Series (RCN-T-36W-E)

Notes:
Following functions of FDT Type -D indoor unit series are not able to be set with this wireless remote controller (RCN-T-36W-E).
1. Individual flap control system
2. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

PJF012D010 ⚠a

⚠ WARNING

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power supply is turned off when electric wiring work.
  Otherwise, electric shock, malfunction and improper running may occur.

⚠ CAUTION

- DO NOT install the wireless kit at the following places in order to avoid malfunction.
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
  (7) Places affected by the direct airflow of the AC unit.
  (8) Places where the receiver is influenced by the fluorescent lamp (especially inverter type) or sunlight.
  (9) Places where the receiver is affected by infrared rays of any other communication devices
  (10) Places where some object may obstruct the communication with the remote controller
- DO NOT leave the wireless kit without the cover.
  In case the cover needs to be detached, protect the receiver with a packaging box or bag in order to keep it away from water and dust.

Attention

- Instruct the customer how to operate it correctly referring to the instruction manual.
- For the installation method of the air conditioner itself, refer to the installation manual enclosed in the package.

① Accessories

Please make sure that you have all of the following accessories.

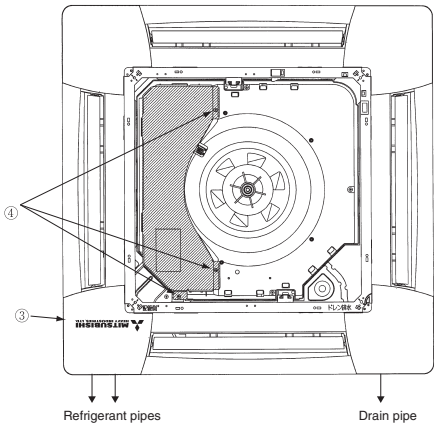
Receiver		1	Remote controller holder		1
Wireless remote controller		1	Wood screw for holder		2
Parts set		1	AAA dry cell battery (RO3)		2

② How to install the receiver

The receiver can be installed by replacing with a corner panel on the applicable decorative panel.

Preparation before installation

① Attach the decorative panel onto the air conditioner according to the installation manual for the panel.
② Remove the air return grille.
③ Remove a corner panel located on the refrigerant pipes side.
④ Remove three screws and detach the cover (indicated as shadowed area) from the control box of the air conditioner.



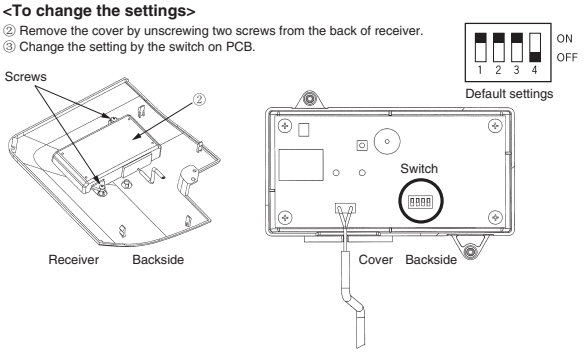
Setting on site

① PCB on the receiver has the following switches to set the functions. Default setting is shown with ▭ mark.

S W 1	Customized signal setting to avoid mixed communication	ON : Normal OFF : Remote
S W 2	Receiver master/slave setting	ON : Master OFF : Slave
S W 3	Buzzer valid/Invalid	ON : Valid OFF : Invalid
S W 4	Auto restart	ON : Valid OFF : Invalid

<To change the settings>

② Remove the cover by unscrewing two screws from the back of receiver.
③ Change the setting by the switch on PCB.



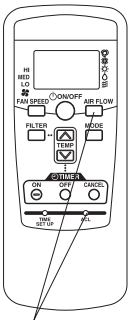
④ When SW1 is turned to OFF position, change the corresponding remote controller setting as follows:
How to change the remote controller setting
Pressing ACL and AIR FLOW button at the same time or inserting the batteries with pressing AIR FLOW button will customize the signal.

Note

※ When the batteries are removed, the setting will return to the default setting.
Please make sure to reset it when the batteries are replaced.

Caution

Instruct the customer to set the mentioned above when replacing the batteries.
(How to set is also mentioned in the user's manual attached on the air conditioner.)

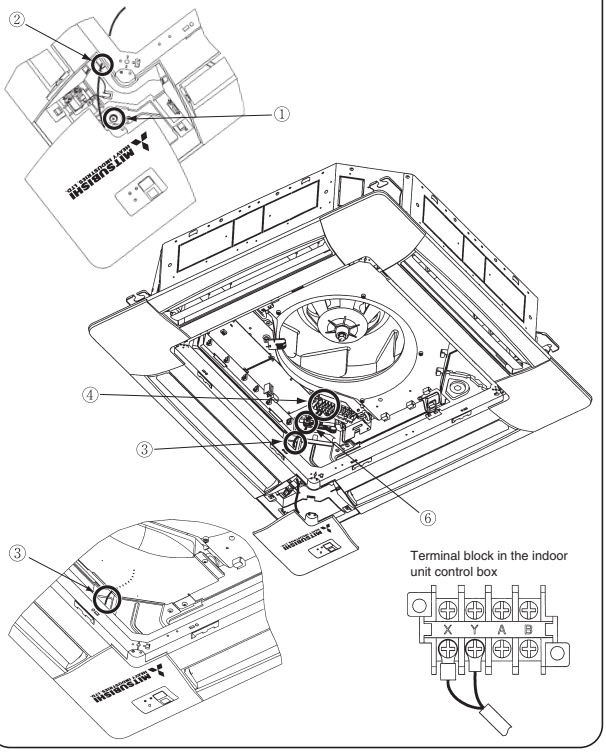


Radio interference prevention mode

Installation of the receiver

① Loosen the bolts which fix the panel and make a gap between the panel and the indoor unit
② Put the wiring of the receiver through the opening.
③ Put the wiring on the notch on the control box so as not to be pinched by the control box and lid as shown below.
④ Connect the wiring to the terminal block provided in the control box. (Non- polarized)
⑤ Attach the receiver to the panel according to the panel installation manual.
⑥ Fix the wiring with the clamp so that the wiring do not contact the edge of control box's metal sheet.
⑦ Reattach the control box lid with 3 screws removed.

※ Note: Make sure the wires not to be pinched by any other parts like panel, control box and indoor unit.

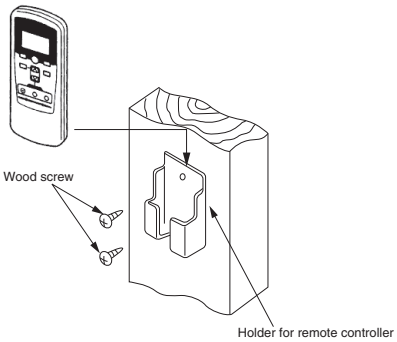


③ Remote controller

Installation of the controller holder

Caution

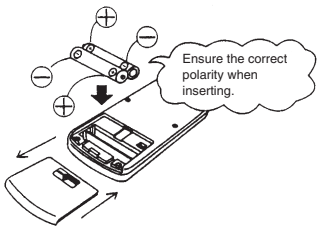
DO NOT install it on the following places
1. Places exposed to direct sunlight
2. Places near heat devices
3. High humidity places
4. Hot surface or cold surface enough to generate condensation
5. Places exposed to oil mist or steam directly.
6. Uneven surface



Installation tips for the remote controller holder
- Adjust and keep the holder upright
- Tighten the screw to the end to avoid scratching the remote controller.
- DO NOT attach the holder on plaster wall.

How to insert batteries

① Detach the back lid.
② Insert the batteries. (two AAA batteries)
③ Reattach the back lid.

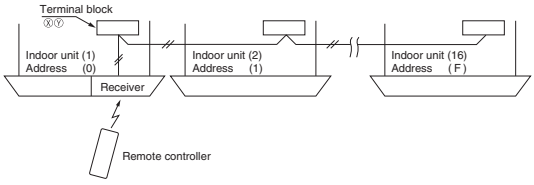


Control plural indoor units with one remote controller

Up to 16 indoor units can be connected.
① Connect the XY terminal with 2-core wire. As for the size, refer to the following note.
② For Packaged air conditioner series, set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

Restrictions on the thickness and length of wire
(Maximun total extension 600m.)

Standard	Within 100m x 0.3 mm^2
	Within 200m x 0.5 mm^2
	Within 300m x 0.75mm^2
	Within 400m x 1.25mm^2
	Within 600m x 2.0 mm^2



③ For VRF series, set the indoor unit address with SW1, SW2 and SW5-2 on the indoor unit PCB from [000] to [127] so as not to duplicate.

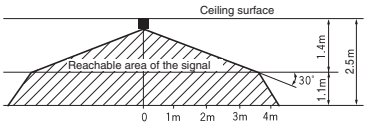
Master/Slave setting when using plural remote controllers

Up to two receivers can be installed in one indoor unit group.
When two receivers are used, it is necessary for a receiver to turn OFF SW2 on the receiver PCB to set it as slave.

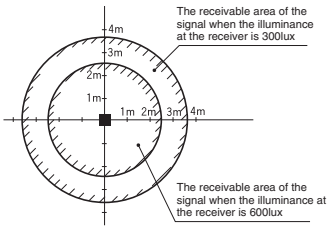
(For the method of switching, please see **Setting on site** in the section of **② How to install the receiver** in this manual.)

Wireless remote controller's operable area

① Standard reachable area of the signal
[condition] Illuminance at the receiver: 300lux
(when no lighting is installed within 1m of the receiver in an ordinary office.)



② Correlation between illuminance at the receiver and reachable area of the signal in a plain view.
The drawing in the right shows the correlation between the reachable area of the signal and illuminance at the receiver when the remote controller is operated at 1.1m high under the condition of ceiling height of 2.5m.
When the illuminance becomes double, the area is narrowed down to two thirds.



③ Installation tips when several receivers are installed close
Minimum distance between the indoor units which can avoid cross communication is 5m under the condition of 300lux of illuminance at the receiver.
(When no lighting is installed within 1m of the receiver in an ordinary office)

④ How to disable the Auto mode operation

VRF system (except heat recovery 3-pipe systems) cannot be operated in Auto mode.
Make sure to set the remote controller for the models so as not to be able to choose Auto mode.

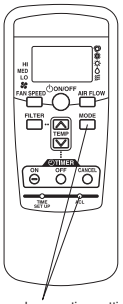
Pushing ACL and MODE button at the same time or inserting the batteries with pressing MODE button will make auto mode operation.

Attention

※ When the batteries are removed, the setting will return to the default setting (Auto mode is valid).

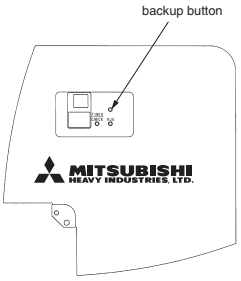
Caution

Instruct the customer to set the mentioned above when replacing the batteries. (How to set is also mentioned in the user's manual attached on the air conditioner.)



⑤ Backup button

A Backup button is provided on the receiver.
Even when the operation from the wireless remote controller is not possible (due to flat batteries, controller lost, or controller failure), still it possible to operate as temporary means. Press the button directly when operating it.
(1) The air conditioner starts the operation with the condition of Auto mode, 23˚C of set point, High fan speed and horizontal louver position.
(2) The air conditioner stops the operation when the button is pressed when in operation.



⑥ Cooling test run operation

- After safety confirmation, turn on the power.
- Transmit a cooling operation command with wireless remote controller, while the backup button on the receiver is pressed.
- If the backup button on the receiver is pressed during a test run, it will end the test run.
- If you cannot operate the unit properly during a test run, please check by consulting with inspection guides on the wiring diagram of outdoor units.

⑦ How to read the two-digit display

On the receiver of a wireless kit, a two-digit (7-segment) display is provided.
(1) An indication will be displayed for one hour after power on.
(2) An indication will be displayed for 3.5 seconds after transmitting a "STOP" command from the wireless remote controller or the operation of the backup button to stop the unit.
(3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.
(4) When there are no error records to indicate, addresses of all the connected units are displayed.
(5) When there are some error records remaining, the error records are displayed.
(6) Error records can be cleared by transmitting a "STOP" command from the wireless remote controller, while the backup button is pressed.

13.1.2 FDTC Series (RCN-TC-24W-ER)

PJA012D758 A

Notes:
Following functions of FDTC Type -D indoor unit series are not able to be set with this wireless remote controller (RCN-TC-24W-ER).
1.Individual flap control system
2. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

⚠ WARNING

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power supply is turned off when electric wiring work.
  Otherwise, electric shock, malfunction and improper running may occur.

⚠ CAUTION

- DO NOT install the wireless kit at the following places in order to avoid malfunction.
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
  (7) Places affected by the direct airflow of the AC unit.
  (8) Places where the receiver is influenced by the fluorescent lamp (especially inverter type) or sunlight.
  (9) Places where the receiver is affected by infrared rays of any other communication devices
  (10)Places where some object may obstruct the communication with the remote controller
- DO NOT leave the wireless kit without the cover.
  In case the cover needs to be detached, protect the receiver with a packaging box or bag in order to keep it away from water and dust.

Note

- Instruct the customer how to operate it correctly referring to the instruction manual.
- For the installation method of the air conditioner itself, refer to the installation manual enclosed in the package.

① Accessories

Please make sure that you have all of the following accessories.

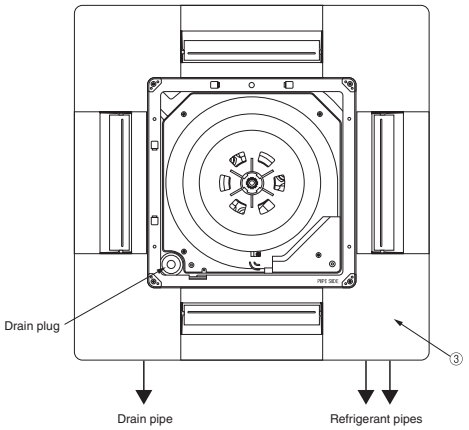
Receiver		1	Remote controller holder		1
Wireless remote controller		1	Wood screw for holder		2
Parts set		1	AAA dry cell battery (RO3)		2

② How to install the receiver

The receiver can be installed by replacing with a corner panel on the applicable decorative panel.

Preparation before installation

① Attach the decorative panel onto the air conditioner according to the installation manual for the panel.
② Remove the air return grille.
③ Remove a corner panel located on the refrigerant pipes side.
④ Remove two screws and detach the lid from the control box of the air conditioner.



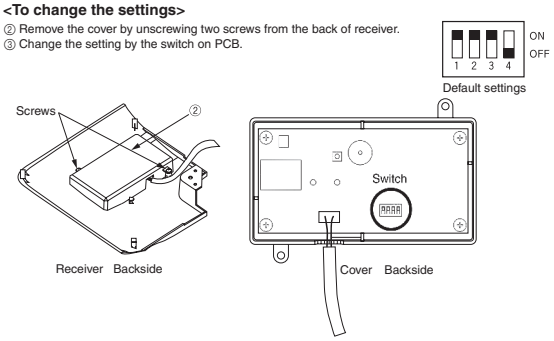
Setting on site

① PCB on the receiver has the following switches to set the functions. Default setting is shown with ▭ mark.

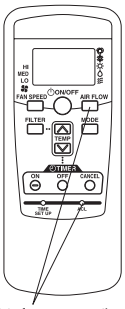
S W 1	Customized signal setting to avoid mixed communication	ON : Normal OFF : Remote
S W 2	Receiver master/slave setting	ON : Master OFF : Slave
S W 3	Buzzer valid/Invalid	ON : Valid OFF : Invalid
S W 4	Auto restart	ON : Valid OFF : Invalid

<To change the settings>

② Remove the cover by unscrewing two screws from the back of receiver.
③ Change the setting by the switch on PCB.



④ When SW1 is turned to OFF position, change the remote controller setting as follows:
How to change the remote controller setting
Pressing ACL switch with AIR FLOW button kept pressing or inserting the batteries with pressing AIR FLOW button will customize the signal.



Note

※ When the batteries are removed, the setting will return to the default setting.
Please make sure to reset it when the batteries are replaced.

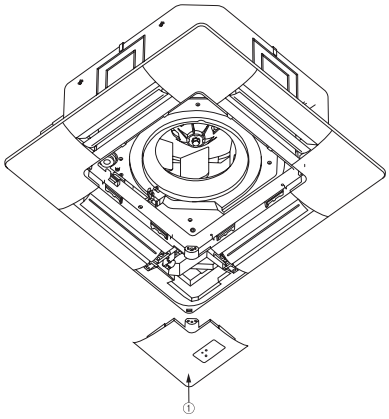
Caution

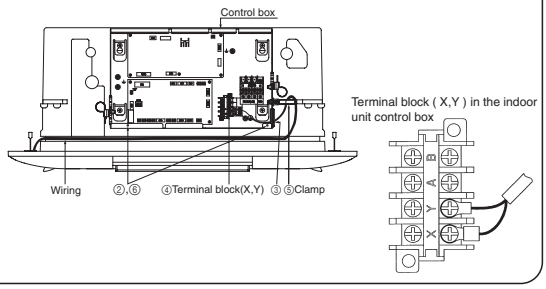
Instruct the customer to set the mentioned above when replacing the batteries.
(How to set is also mentioned in the user's manual attached on the air conditioner.)

Installation of the receiver

① Attach the receiver to the panel according to the panel installation manual.
② Remove two screws and detach the lid from the control box.
③ Put the wiring in the control box with other wiring as shown below.
④ Connect the wiring to the terminal block (X,Y) provided in the control box.(Non-polarized)
⑤ Fix the wiring with the clamp as shown below.
⑥ Reattach the control box lid with 2 screws removed.

※ Note: Make sure wires not to be pinched by any other parts like panel and control box.



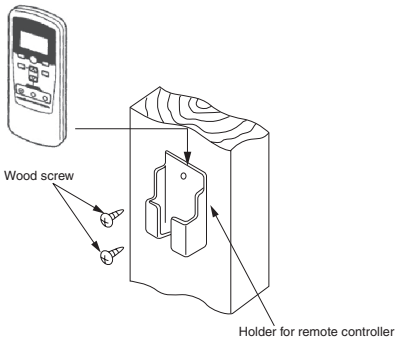


③ Remote controller

Installation of the controller holder

Caution

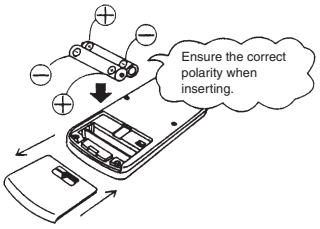
DO NOT install it on the following places
1. Places exposed to direct sunlight
2. Places near heat devices
3. High humidity places
4. Hot surface or cold surface enough to generate condensation
5. Places exposed to oil mist or steam directly.
6. Uneven surface



Installation tips for the remote controller holder
- Adjust and keep the holder upright
- Tighten the screw to the end to avoid scratching the remote controller.
- DO NOT attach the holder on plaster wall.

How to insert batteries

① Detach the back lid.
② Insert the batteries. (two AAA batteries)
③ Reattach the back lid.

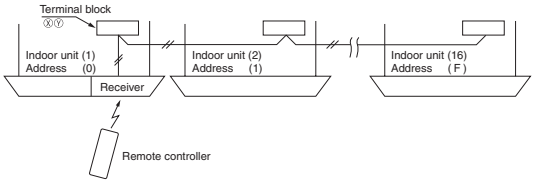


Control plural indoor units with one remote controller

Up to 16 indoor units can be connected.
① Connect the XY terminal with 2-core wire. As for the size, refer to the following note.
② For Single packaged air conditioner series, set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

Restrictions on the thickness and length of wire
(Maximun total extension 600m.)

Standard	Within 100m x 0.3 mm^2
	Within 200m x 0.5 mm^2
	Within 300m x 0.75mm^2
	Within 400m x 1.25mm^2
	Within 600m x 2.0 mm^2



③ For VRF series, set the indoor unit address with SW1, SW2 and SW5-2 on the indoor unit PCB from [000] to [127] so as not to duplicate.

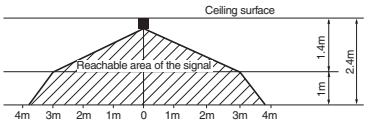
Master/Slave setting when using plural remote controllers

Up to two receivers can be installed in one indoor unit group.
When two receivers are used, it is necessary for a receiver to turn OFF SW2 on the receiver PCB to set it as slave.

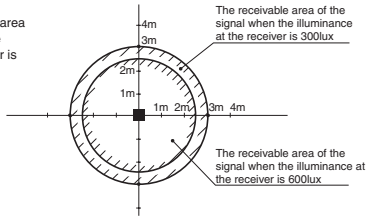
(For the method of switching, please see **Setting on site** in the section of **② How to install the receiver** in this manual.)

Wireless remote controller's operable area

① Standard reachable area of the signal
[condition] Illuminance at the receiver: 300lux
(when no lighting is installed within 1m of the receiver in an ordinary office.)



② Correlation between illuminance at the receiver and reachable area of the signal in a plain view.
The drawing in the right shows the correlation between the reachable area of the signal and illuminance at the receiver when the remote controller is operated at 1m high under the condition of ceiling height of 2.4m.



③ Installation tips when several receivers are installed close
Minimum distance between the indoor units which can avoid cross communication is 5m under the condition of 300lux of illuminance at the receiver.
(When no lighting is installed within 1m of the receiver in an ordinary office)

④ How to disable the Auto mode operation

VRF series (except heat recovery 3-pipe systems) cannot be operated in Auto mode.
Make sure to set the remote controller for the models so as not to be able to choose Auto mode.

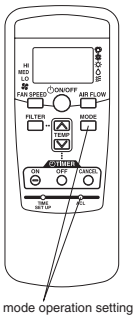
Pressing ACL switch with MODE button kept pressing or inserting the batteries with pressing MODE button will make auto mode operation.

Note

※ When the batteries are removed, the setting will return to the default setting (Auto mode is valid).

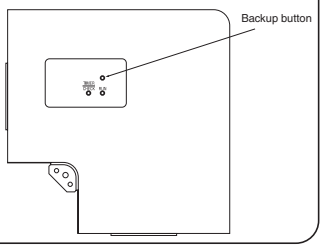
Caution

Instruct the customer to set the mentioned above when replacing the batteries. (How to set is also mentioned in the user's manual attached on the air conditioner.)



⑤ Backup button

A Backup button is provided on the receiver. Even when the operation from the wireless remote controller is not possible (due to flat batteries, controller lost, or controller failure), still it possible to operate as temporary means. Press the button directly when operating it.
(1) The air conditioner starts the operation with the condition of Auto mode, 23˚C of set point, High fan speed and horizontal louver position.
(2) The air conditioner stops the operation when the button is pressed when in operation.



⑥ Cooling test run operation

- After safety confirmation, turn on the power.
- Transmit a cooling operation command with wireless remote controller, while the backup button on the receiver is pressed.
- If the backup button on the receiver is pressed during a test run, it will end the test run.
- If you cannot operate the unit properly during a test run, please check by consulting with inspection guides on the wiring diagram of outdoor units.

⑦ How to read the two-digit display

On the receiver of a wireless kit, a two-digit (7-segment) display is provided.
(1) An indication will be displayed for one hour after power on.
(2) An indication will be displayed for 3.5 seconds after transmitting a "STOP" command from the wireless remote controller or the operation of the backup button to stop the unit.
(3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.
(4) When there are no error records to indicate, addresses of all the connected units are displayed.
(5) When there are some error records remaining, the error records are displayed.
(6) Error records can be cleared by transmitting a "STOP" command from the wireless remote controller, while the backup button is pressed.

13.1.3 FDEN Series (RCN-E1R)

PFA012D620 ⚠a

Notes:
Following functions of FDEN Type -D indoor unit series are not able to be set with this wireless remote controller (RCN-E1R).
1. Flap control system
2. 4-fan speed setting (PHi/Hi/Me/Lo) → 3-fan speed setting (Hi/Me/Lo)

⚠ WARNING

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal. Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power supply is turned off when electric wiring work. Otherwise, electric shock, malfunction and improper running may occur.

⚠ CAUTION

- Install a receiver unit where it is not exposed to direct sunrays or intense light from lighting fixtures.

① Accessories

Please make sure that you have all of the following accessories.

Remoto controller holder	AAA dry cell battery (RO3)	Wood screw for holder	Wireless remote controller
1	2	2	1

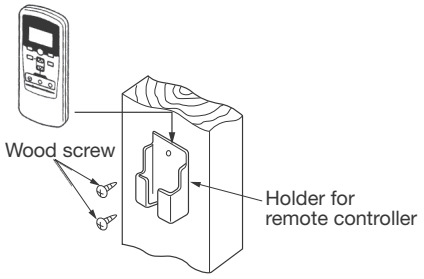
② Installation of the controller holder

⚠CAUTION DO NOT install it on the following places.

1. Places exposed to direct sunlight
2. Hot surface or cold surface enough to generate condensation
3. Places near heat devices
4. Places exposed to oil mist or steam directly.
5. High humidity places
6. Uneven surface

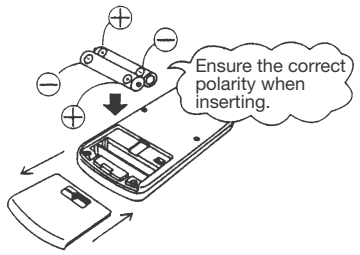
Installation tips for the remote controller holder

- Adjust and keep the holder up right.
- Tighten the screw to the end to avoid scratching the remote controller.
- DO NOT attach the holder on plaster wall.



How to insert batteries

① Detach the back lid.
② Insert the batteries. (two AAA batteries)
③ Reattach the back lid.



③ FDEN

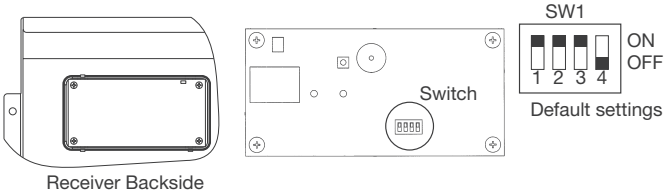
Setting on site

PCB on the receiver has the following switches to set the function.
Default setting is shown with ☐ mark.

SW1	Prevents interference during plural setting	ON : Normal (1ch) OFF : Customized (2ch)
SW2	Receiver master/slave setting	ON : Master OFF : Slave
SW3	Buzzer valid/Invalid	ON : Valid OFF : Invalid
SW4	Auto restart	ON : Valid OFF : Invalid

To change setting

1. Remove the front panel.
2. Remove four screws located on the back of the receiver and detach the board.
3. Change the setting by the switch on PCB.



4. When switch 1 is turned to off position, change the wireless remote controller setting. (For the method of changing the setting, refer to Setting to avoid mixed communication on page 4)
Refer to Wireless remote controller unit operation distance of ⑥ FDEN in case of plural setting.

Master/Slave setting when using plural remote controllers

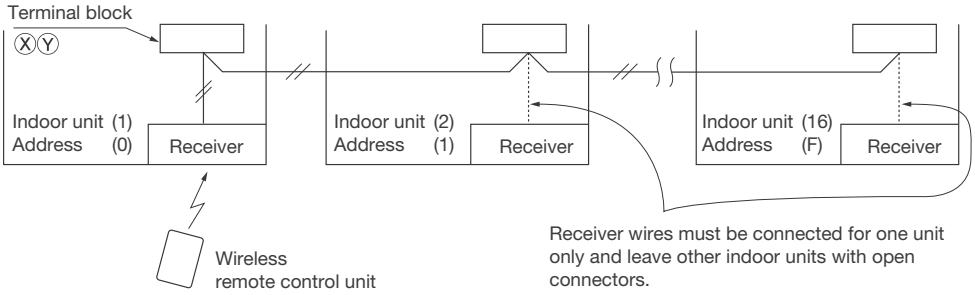
Up to two receiver or wired remote controller can be installed in one indoor unit group.
When two receivers or wired remote controller are used, it is necessary to change SW on the PCB to set it as slave.

Control plural indoor units with one remote controller

Up to 16 indoor units can be connected.
① Connect indoor units with each other with 2-core wires. As for size, refer to the following note.
② The receiver wires must be connected only with the indoor unit that will be operated by the remote controller directly.
③ Set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

Restrictions on the thickness and length of wire
(Maximun total extension 600m.)

Standard	Within 100m x 0.3 mm^2
	Within 200m x 0.5 mm^2
	Within 300m x 0.75 mm^2
	Within 400m x 1.25 mm^2
	Within 600m x 2.0 mm^2



※ATTENTION

In a system configured as shown above, up to two receivers are usable. If two receivers are used, it is necessary to designate one of them as a slave by setting SW2. (For the method of changing the setting, refer to Setting on site .) Since other receivers are not usable, do not couple the connectors for them. (Unless the connector is coupled for a receiver, the LED will not be able to make any indication)

③ FDEN (continued)

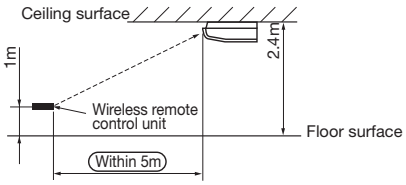
Wireless remote controller unit operation distance

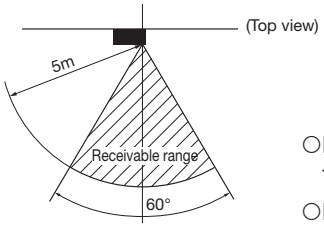
① Standard signal receiving range

[Condition]

Illuminance at the receiver area: 360 lux.

(When no lighting fixture is located within 1m of indoor unit in an ordinary office)





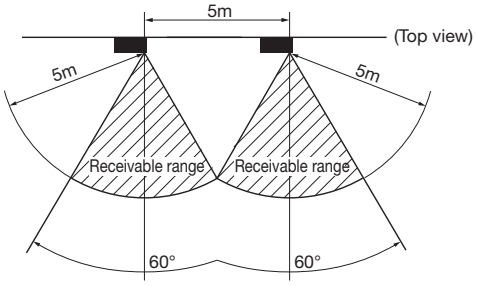
② Points for attention in connecting a plural number of indoor units

[Condition]

Illuminance at the receiver area: 360 lux.

(When no lighting fixture is located within 1m of indoor unit in an ordinary office)

When the remote control unit is used with the aforementioned interference-prevention setting, a minimum distance guaranteeing the prevention of unintended unit responses is 5m.



○Please operate remote control unit switches with the unit faced correctly toward the indoor unit's receiver section.

○Effective operation distance can vary with the luminance around the receiver and the reflection from walls of the room.

○When the receiver is exposed to intensive light such as from the direct sun or a strong light, it may become operable only from a short distance or unable to receive signals at all.

Backup button

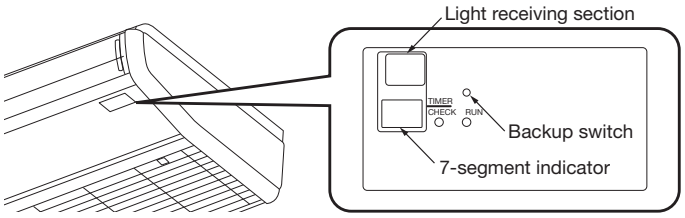
A backup switch is provided on the receiver section of the panel surface.

When operation from the wireless remote control unit is not possible (due to flat batteries, a mislaid unit, a unit failure), you can use it as an emergency means. You should operate this switch manually.

(1) If pressed while the air conditioner is in a halt, it will cause the air conditioner to start operation in the automatic mode.

Wind speed: Hi fan, Temperature setting: 23°C, Louver: horizontal

(2) If pressed while the air conditioner is in operation, it will stop the air conditioner.



Cooling test run operation

- After safety confirmation, turn on the power.
- Transmit a cooling operation command with the wireless remote control unit, while the backup switch on the receiver is depressed.
- If the backup switch on the receiver is pressed during a test run, it will end the test run.

※If you cannot operate the unit properly during a test run, please check wiring by consulting with inspection guides.

③ FDEN (continued)

How to read the two-digit display

A two-digit indicator (7-segment indicator) is provided on the receiver section.

(1) An indication will be displayed for one hour after power on.
(2) An indication appears for 3.5 seconds when a “Stop” command is sent from the wireless remote control unit while the air conditioner is not running.
(3) An indication appearing in (1) or (2) above will go off as soon as the unit starts operation.
(4) When there are no error records to indicate, addresses are displayed for all of the connected units.
(5) When there are some error records remaining, the error records are displayed.
(6) Error records can be cleared by transmitting a “Stop” command from the wireless remote control unit, while the backup switch is depressed.

④ Remote controller

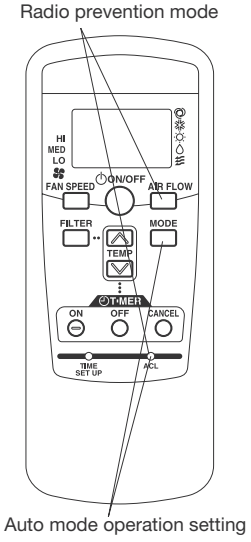
Setting to avoid mixed communication

Pressing ACL and AIR FLOW button at the same time or inserting the batteries with pressing AIR FLOW button will customize the signal.

Setting to disable the Auto mode operation

VRF system (except heat recovery 3-pipe system) cannot be operated in Auto mode.
Make sure to set the remote controller for the models so as not to be able to choose Auto mode.

Pushing ACL and MODE button at the same time or inserting the batteries with pressing MODE button will make auto mode operation.



※**ATTENTION**

When the batteries are removed, the setting will return to the default setting.
Please make sure to reset it when the batteries are replaced.

⚠**Caution**

Instruct the customer to set the mentioned above when replacing the batteries.
(How to set is also mentioned in the user’s manual attached on the air conditioner.)

13.1.4 FDUM Series (RCN-KIT3-E)

Notes:
Following functions of FDUM Type -D indoor unit series are not able to be set with this wireess remote controller (RCN-KIT3-E).
1. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo)

Read this manual together with the installation manual attached to the air conditioner. PJZ012D060 a

⚠ WARNING

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal. Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power supply is turned off when electric wiring work. Otherwise, electric shock, malfunction and improper running may occur.

⚠ CAUTION

- DO NOT install the wireless kit at the following places in order to avoid malfunction.
  (1)Places exposed to direct sunlight
  (2)Places near heat devices
  (3)High humidity places
  (4)Hot surface or cold surface enough to generate condensation
  (5)Places exposed to oil mist or steam directly
  (6)Uneven surface
  (7)Places affected by the direct airflow of the AC unit.
  (8)Places where the receiver is influenced by the fluorescent lamp (especially in verter type) or sunlight.
  (9)Places where the receiver is affected by infrared rays of any other communication devices.
  (10)Places where some object may obstruct the communication with the remote controller
- DO NOT leave the wireless kit without the cover. In case the cover needs to be detached, protect the receiver with a packaging box or bag in order to keep it away from water and dust.

Attention

- Instruct the customer how to operate it correctly referring to the instruction manual.
- User's manual of a wireless remote controller is attached to a indoor unit or a outside unit.
- Read this together with a manual attached to this kit.

① Accessories

Please make sure that you have all of the following accessories.

① Receiver	1
② Wiring (3m)	1
③ Parts set (A)	1
④ Parts set (B)	1
⑤ Parts set (C)	1
⑥ Wireless remote controller	1
⑦ User's manual	1

① Remote controller holder	1
② Screw for holder	2
③ AAA dry cell battery (R03)	2

① Screw for receiver	2
② Fixing band	1
③ Clamp	5
④ Screw for clamp	5

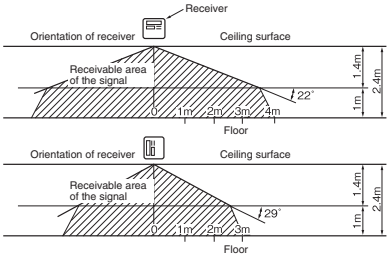
① Receiver installation bracket	1
② Screw for the bracket	2
③ Installation fitting	2

② Wireless remote controller's operable area

(1) When installed on ceiling

① Standard reachable area of the signal

condition Illuminance at the receiver : **300lux** (when no lighting is installed within 1m of the receiver in an ordinary of ce.)

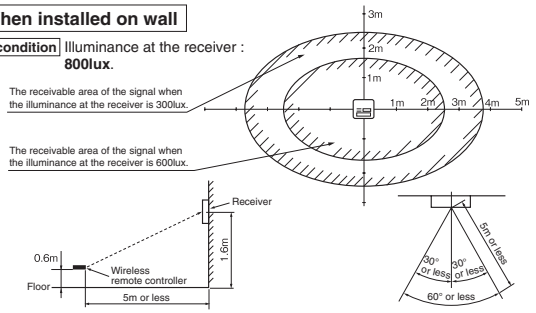


② Correlation between illuminance at the receiver and reachable area of the signal in a plain view.

condition Correlation between the reachable area of the signal and illuminance at the receiver when the remote controller is operated at 1.1m high under the condition of ceiling height of 2.5m.
When the illuminance becomes double, the area is narrowed down to two third.

(2) When installed on wall

condition Illuminance at the receiver : **800lux**.



③ How to install the receiver

The following two methods can be used to install the receiver onto a ceiling or a wall. Select a method according to the installation position.

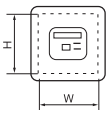
<Installation position>

(A) Direct installation onto the ceiling with wood screws.
(B) Installation with accessory's bracket

(1) Drilling of the ceiling (ceiling opening)

Drill the receiver installation holes with the following dimensions at the ceiling position where wires can be connected.

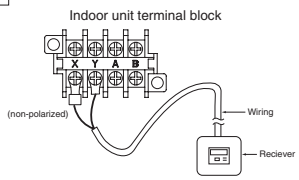
(A) Direct installation onto the ceiling with wood screws.	88mm(H)×101mm(W)
(B) Installation with enclosed bracket.	108mm(H)×108mm(W)



(2) Wiring connection of receiver

Caution

Do not connect the wiring to the power source of the terminal block. If it is connected, printed board will be damaged.

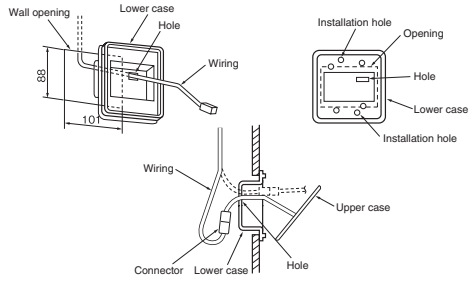


(3) Installation of the receiver

Remove the screw on the side of the receiver and sprit it into the upper case and lower case.Install the receiver with one of the two installation methods (A) or (B) shown below.

(A) Direct installation onto the ceiling with screws

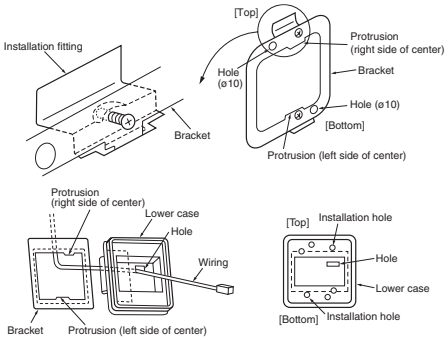
Use this installation method when the ceiling is wooden, and there is no problem for strength in installing directly with wood screws.



①Put through the wiring from the back side to the hole of the lower case.
②Fit the lower case into the ceiling opening. Make sure that the clearance between the convex part of the back of the lower case and the ceiling opening must be as equal as possible on both sides.
③Using the two installation holes shown above, fix the lower case onto the ceiling with the enclosed wood screws. (The other four holes are not used.)
④Connect the wiring with the wiring from the upper case by the connector.
⑤Take out the connector to the backside from the hole of the lower case putting through the wiring at ①.
⑥Fit the upper case and the lower case, and tighten the screws.

(B) Installation with enclosed bracket

Use this method when installaing onto a gypsum board (7 to 18mm), etc.



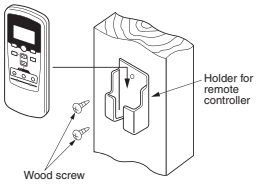
①Catch the two protrusion of the enclosed bracket onto the tting as shown above, and temporarily fix with the screws. (The bracket has an up/down and front/back orientation. Con rm the top/bottom protrusion positions and the positional relation of the ø 10 holes on the bracket and the installation hole on the lower case with the above drawing.)
②Insert the end of the installation tting into the back of the ceiling from the opening, and tighten the screws to fix the bracket onto the ceiling.
③Pass the wiring from the rear side through the hole on the lower case.
④Fit the lower case onto the bracket, and fix the lower case to the bracket using the two installation holes shown above. (The other four holes are not used.)
⑤Follow step ① to ⑥ for (A) to complete the installation.

④ Remotecontroller

Installation of the controller holder

Caution

DO NOT install it on the following places
1) Places exposed to direct sunlight
2) Places near heat devices
3) High humidity places
4) Hot surface or cold surface enough to generate condensation
5) Places exposed to oil mist or steam directly
6) Uneven surface



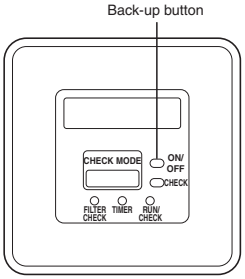
Installation tips for the remote controller holder
- Adjust and keep the holder upright.
- Tighten the screw to the end to avoid scratching the remote controller.
- DO NOT attach the holder to plaster wall.

How to insert batteries

① Detach the back lid.
② Insert the batteries. (two AAA batteries)
③ Reattach the back lid.

⑤ Cooling test run operation

- After safety con rmation, turn on the power.
- Transmit a cooling operation command with wireless remote controller, while the backup button on the receiver is pressed.
- If the backup button on the receiver is pressed during a test run, it will end the test run.
- If you cannot operate the unit properly during a test run, please check by consulting with inspection guides on the wiring diagram of outdoor units.



⑥ Setting of wireless remote controller and receiver

(A) Methods of avoiding the malfunction due to the mixed communication

Do both procedures ① and ②.

This setting is to avoid the mixed communication with other household electric appliances or the mixed communication when two receivers are located closely.

①**Setting change of the wireless remote controller**

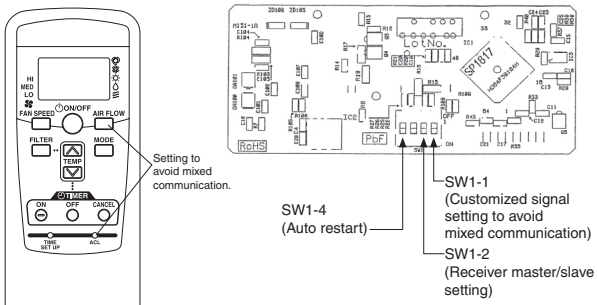
Pressing ACL and AIRFLOW button at the same time or inserting the batteries with pressing AIRFLOW button will customize the signal.

Note ***When the batteries are removed, the setting will return to the default setting. Make sure to reset it when the batteries are replaced.**

②**Setting the PCB of the receiver**

Turn SW1-1 off.

† ●**Wireless remote controller** † ●**PCB of the receiver**



SW1-1	Customized signal setting to avoid mixed communication	ON : Normal OFF : Remote
SW1-2	Receiver master/slave setting	ON : Master OFF : Slave
SW1-4	Auto restart	ON : Valid OFF : Invalid

▭ : Default setting

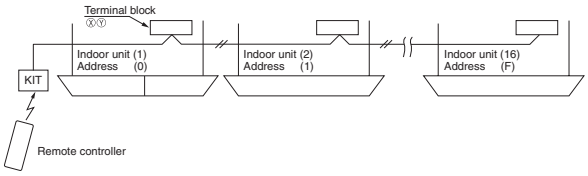
(B) Control plural indoor units with one remote controller

Up to 16 indoor units can be connected.

①Connect the XY terminal with 2-core wire. As for the size, refer to the following note.

②For Packaged air conditioner series, set the indoor unit address with SW2 on the indoor unit PCB from [0] to [F] so as not to duplicate.

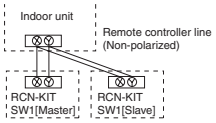
Restrictions on the thickness and length of wire (Maximun total extension 600m.)	
Standard	Within 100m x 0.3 mm²
	Within 200m x 0.5 mm²
	Within 300m x 0.75mm²
	Within 400m x 1.25mm²
	Within 600m x 2.0 mm²



③For VRF series, set the indoor unit address with SW1, SW2 and SW5-2 on the indoor unit PCB from [000] to [127] so as not to duplicate.

(C) Master/Slave setting when using plural remote controller

Up to two receivers can be installed in one indoor unit group.



Switch	Setting	Function
SW1-2	ON	Master
	OFF	Slave

(D) Change setting of auto mode operation

Auto mode operation is prohibited to be selected for KX models (except for KXR models).
Therefore be sure to change setting of remote controller to disable the auto mode operation for these models according to the following procedure.
While pressing the MODE button, press the ACL switch, or while pressing the MODE button, insert the batteries to the remote controller. Then the auto mode can be invalid.
Attention
When the batteries are removed, it is returned to initial setting (Auto mode becomes valid).
Accordingly when replacing the batteries, be sure to perform the above operation once again.

(E) Change setting of fan speed

While pressing the FAN SPEED button, press the ACL switch, or while pressing the FAN SPEED button, insert the batteries to the remote controller. Then the fan speed can be changed from 2-speed setting to 3-speed setting.
When changing fan speed setting of remote controller, be sure to perform the same fan speed setting as that of the indoor unit model to be used.
Attention
When the batteries are removed, it is returned to initial setting (Fan speed setting is 2-speed).
Accordingly when replacing the batteries, be sure to perform the above operation once again.

13.2 Instullation of wired remote controller (RC-E4)

PJA012D729A A

Read together with indoor unit's installation manual.

⚠WARNING

- Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connection or hold will cause abnormal heat generation or fire.
- Make sure the power supply is turned off when electric wiring work.
  Otherwise, electric shock, malfunction and improper running may occur.

⚠CAUTION

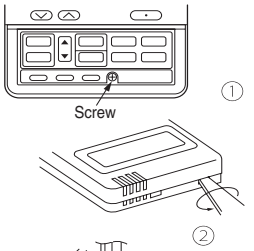
- DO NOT install the remote controller at the following places in order to avoid malfunction.
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
- DO NOT leave the remote controller without the upper case.
  In case the upper cace needs to be detached, protect the remote controller with a packaging box or bag in order to keep it away from water and dust.

Accessories	Remote controller, wood screw (ø3.5×16) 2 pieces
Prepare on site	Remote controller cord (2 cores) the insulated thickness in 1mm or more. [In case of embedding cord] Erectrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

Installation procedure

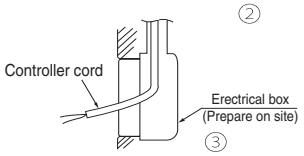
① Open the cover of remote controller , and remove the screw under the buttons without fail.

② Remove the upper case of remote controller.
Insert a flat-blade screwdriver into the dented part of the upper part of the remote controller, and wrench slightly.

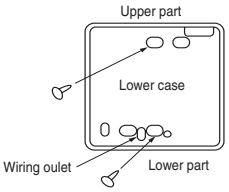


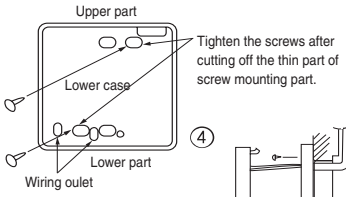
[In case of embedding cord]

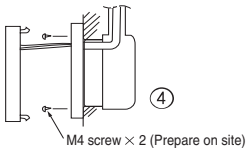
③ Embed the erectrical box and remote controller cord beforehand.



④ Prepare two M4 screws (recommended length is 12-16mm) on site, and install the lower case to erectrical box.
Choose either of the following two positions in fixing it with screws.







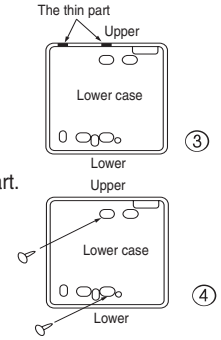
⑤ Connect the remote controller cord to the terminal block.
Connect the terminal of remote controller (X,Y) with the terminal of indoor unit (X,Y). (X and Y are no polarity)

⑥ Install the upper case as before so as not to catch up the remote controller cord, and tighten with the screws.

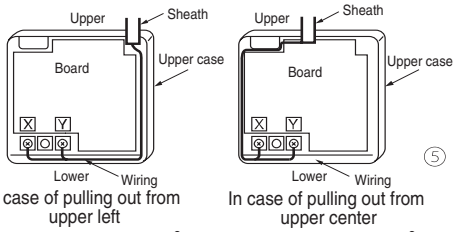
[In case of exposing cord]

③ You can pull out the remote controller cord from left upper part or center upper part.
Cut off the upper thin part of remote controller lower case with a nipper or knife, and grind burrs with a file etc.

④ Install the lower case to the flat wall with attached two wooden screws.



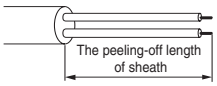
⑤ Connect the remote controller cord to the terminal block.
Connect the terminal of remote controller (X,Y) with the terminal of indoor unit (X,Y).
(X and Y are no polarity)
Wiring route is as shown in the right diagram depending on the pulling out direction.



In case of pulling out from upper left
In case of pulling out from upper center

The wiring inside the remote controller case should be within 0.3mm^2 (recommended) to 0.5mm^2.
The sheath should be peeled off inside the remote controller case.
The peeling-off length of each wire is as below.

Pulling out from upper left	Pulling out from upper center
X wiring : 215mm Y wiring : 195mm	X wiring : 170mm Y wiring : 190mm



⑥ Install the upper case as before so as not to catch up the remote controller cord, and tighten with the screws.
⑦ In case of exposing cord, fix the cord on the wall with cord clamp so as not to slack.

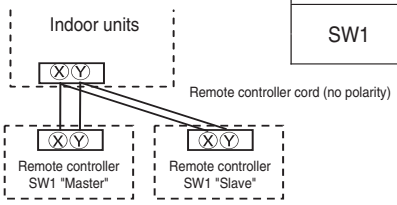
Installation and wiring of remote controller

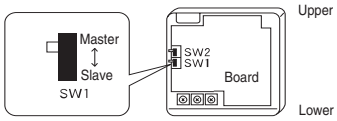
① Wiring of remote controller should use 0.3mm^2 × 2 core wires or cables. (on-site configuration)
② Maximum prolongation of remote controller wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, wiring in the remote controller case should be under 0.5mm^2 . Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire connecting section. Be careful about contact failure.
100 - 200m·····0.5mm^2 × 2 cores
Under 300m·····0.75mm^2 × 2 cores
Under 400m·····1.25mm^2 × 2 cores
Under 600m·····2.0mm^2 × 2 cores

Master/ slave setting when more than one remote controllers are used

A maximum of two remote controllers can be connected to one indoor unit (or one group of indoor units.)

Switch	Setting	Contents
SW1	M	Master remote controller
	S	Slave remote controller





Set SW1 to "Slave" for the slave remote controller. It was factory set to "Master" for shipment.
Note: The setting "Remote controller thermistor enabled" is only selectable with the master remote controller in the position where you want to check room temperature.
The air conditioner operation follows the last operation of the remote controller regardless of the master/ slave setting of it.

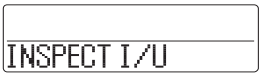
The indication when power source is supplied

When power source is turned on, the following is displayed on the remote controller until the communication between the remote controller and indoor unit settled.
Master remote controller : "WAIT M"
Slave remote controller : "WAIT S"

At the same time, a mark or a number will be displayed for two seconds first.
This is the software's administration number of the remote controller, not an error cord.

※ The left mark is only an example. Other marks may appear.

When remote controller cannot communicate with the indoor unit for half an hour, the below indication will appear.
Check wiring of the indoor unit and the outdoor unit etc.



The range of temperature setting

When shipped, the range of set temperature differs depending on the operation mode as below.

Heating : 16~30˚C (55~86˚F)

Except heating (cooling, fan, dry, automatic) : 18~30˚C (62~86˚F)

●Upper limit and lower limit of set temperature can be changed with remote controller.

Upper limit setting: valid during heating operation. Possible to set in the range of 20 to 30˚C (68 to 86˚F).

Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26˚C (62 to 79˚F).

When you set upper and lower limit by this function, control as below.

1. When ⑫ TEMP RANGE SET, remote controller function of function setting mode is "INDN CHANGE" (factory setting),

   【If upper limit value is set】

   During heating, you cannot set the value exceeding the upper limit.

   【If lower limit value is set】

   During operation mode except heating, you cannot set the value below the lower limit.

2. When ⑫ TEMP RANGE SET, remote controller function of function setting mode is "NO INDN CHANGE"

   【If upper limit value is set】

   During heating, even if the value exceeding the upper limit is set, upper limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

   【If lower limit value is set】

   During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit. But, the indication is the same as the temperature set.

●How to set upper and lower limit value

1. Stop the air-conditioner, and press (SET) and (MODE) button at the same time for over three seconds .

   The indication changes to "FUNCTION SET ▼".
2. Press [▼] button once, and change to the "TEMP RANGE ▲ " indication.
3. Press (SET) button, and enter the temperature range setting mode.
4. Select "UPPER LIMIT ▼" or "LOWER LIMIT ▲" by using [▲] [▼] button.
5. Press (SET) button to fix.
6. When "UPPER LIMIT ▼" is selected (valid during heating)

   ① Indication: " ∨ ∧ SET UP" → "UPPER 30˚C ∨"

   ② Select the upper limit value with temperature setting button [∨] [∧]. Indication example: "UPPER 26˚C ∨ ∧" (blinking)

   ③ Press (SET) button to fix. Indication example: "UPPER 26˚C" (Displayed for two seconds)

   After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼".
7. When "LOWER LIMIT ▲" is selected (valid during cooling, dry, fan, automatic)

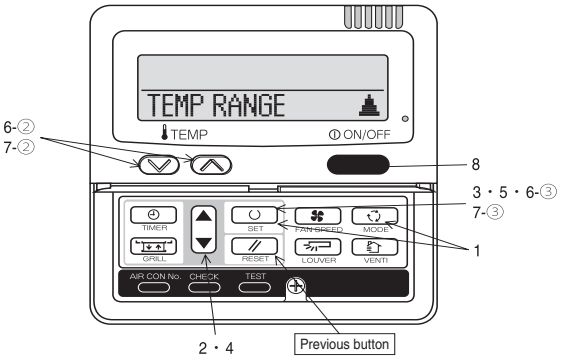
   ① Indication: " ∨ ∧ SET UP" → "LOWER 18˚C ∧"

   ② Select the lower limit value with temperature setting button [∨] [∧]. Indication example: "LOWER 24˚C ∨ ∧" (blinking)

   ③ Press (SET) button to fix. Indication for example: "LOWER 24˚C" (Displayed for two seconds)

   After the fixed lower limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼".
8. Press [ON/OFF] button to finish.

- It is possible to finish by pressing [ON/OFF] button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.



The functional setting

●The initial function setting for typical using is performed automatically by the indoor unit connected, when remote controller and indoor unit are connected.
As long as they are used in a typical manner, there will be no need to change the initial settings.
If you would like to change the initial setting marked "○", set your desired setting as for the selected item.
The procedure of functional setting is shown as the following diagram.

[Flow of function setting]

Start : Stop air-conditioner and press "○" (SET) and "⟲" (MODE) buttons at the same time for over three seconds.
Finalize : Press "○" (SET) button.
Reset : Press "⊘" (RESET) button.
Select : Press ▲ ▼ button.
End : Press ON/OFF button.
It is possible to finish above setting on the way, and unfinished change of setting is unavailable.
"○" : Initial settings
"※" : Automatic criterion

Record and keep the setting

Consult the technical data etc. for each control details

Stop air-conditioner and press ○ (SET) + ⟲ (MODE) buttons at the same time for over three seconds.

FUNCTION SET ▼

To next page

FUNCTION ▼ (Remote controller function)

	Function	setting		
※	01 GRILLE ↑↓ SET			
		↑↓ INVALID	○	
		50Hz ZONE ONLY		When you use at 50Hz area
		60Hz ZONE ONLY		When you use at 60Hz area
	02 AUTO RUN SET			
		AUTO RUN ON	※	
		AUTO RUN OFF	※	Automatical operation is impossible
	03 TEMP SW			
		VALID	○	
		INVALID		Temperature setting button is not working
	04 MODE SW			
		VALID	○	
		INVALID		Mode button is not working
	05 ON/OFF SW			
		VALID	○	
		INVALID		On/Off button is not working
	06 FAN SPEED SW			
		VALID	※	
		INVALID	※	Fan speed button is not working
	07 LOUVER SW			
		VALID	※	
		INVALID	※	Louver button is not working
	08 TIMER SW			
		VALID	○	
		INVALID		Timer button is not working
✻	09 SENSOR SET			
		SENSOR OFF	○	Remote thermistor is not working.
		SENSOR ON		Remote thermistor is working.
		SENSOR +3.0℃		Remote thermistor is working, and to be set for producing +3.0˚C increase in temperature.
		SENSOR +2.0℃		Remote thermistor is working, and to be set for producing +2.0˚C increase in temperature.
		SENSOR +1.0℃		Remote thermistor is working, and to be set for producing +1.0˚C increase in temperature.
		SENSOR -1.0℃		Remote thermistor is working, and to be set for producing -1.0˚C increase in temperature.
		SENSOR -2.0℃		Remote thermistor is working, and to be set for producing -2.0˚C increase in temperature.
		SENSOR -3.0℃		Remote thermistor is working, and to be set for producing -3.0˚C increase in temperature.
	10 AUTO RESTART			
		INVALID	○	
		VALID		
✻	11 VENT LINK SET			
		NO VENT	○	
		VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit.
		NO VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), you can operate /stop the ventilation device independently by (VENT) button.
	12 TEMP RANGE SET			
		INDN CHANGE	○	If you change the range of set temperature, the indication of set temperature will vary following the control.
		NO INDN CHANGE		If you change the range of set temperature, the indication of set temperature will not vary following the control, and keep the set temperature.
	13 I/U FAN			
		HI-MID-LO	※	Airflow of fan becomes of - - or the four speed of - - - .
		HI-LO	※	Airflow of fan becomes of - .
		HI-MID		Airflow of fan becomes of - .
		1 FAN SPEED	※	Airflow of fan is fixed at one speed.
	14 POSITION			If you change the remote controller function "14 POSITION", you must change the indoor function "04 POSITION" accordingly.
		4POSITION STOP	○	You can select the louver stop position in the four.
		FREE STOP		The louver can stop at any position.
	15 MODEL TYPE			
		HEAT PUMP	※	
		COOLING ONLY	※	
	16 EXTERNAL CONTROL SET			
		INDIVIDUAL	○	If you input signal into CNT of the indoor printed circuit board from external, the indoor unit will be operated independently according to the input from external.
		FOR ALL UNITS		If you input into CNT of the indoor printed circuit board from external, all units which connect to the same remote controller are operated according to the input from external.
	17 ROOM TEMP INDICATION SET			
		INDICATION OFF	○	
		INDICATION ON		In normal working indication, indoor unit temperature is indicated instead of airflow. (Only the master remote controller can be indicated.)
	18 INDICATION			
		INDICATION ON	○	
		INDICATION OFF		Heating preparation indication should not be indicated.
	19 ℃/℉ SET			
		℃	○	Temperature indication is by degree C
		℉		Temperature indication is by degree F

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Note (1) ✻ The mark cannot use SRK, SRF series.

ON/OFF button (finished)

Note 1: The initial setting marked "※" is decided by connected indoor and outdoor unit, and is automatically defined as following table.

Function No.	Item	Default	Model
Remote controller function02	AUTO RUN SET	AUTO RUN ON	"Auto-RUN" mode selectable indoor unit.
		AUTO RUN OFF	Indoor unit without "Auto-RUN" mode
Remote controller function06	FAN SPEED SW	VALID	Indoor unit with two or three step of air flow setting
		INVALID	Indoor unit with only one of air flow setting
Remote controller function07	LOUVER SW	VALID	Indoor unit with automatically swing louver
		INVALID	Indoor unit without automatically swing louver
Remote controller function13	I/U FAN	HI-MID-LO	Indoor unit with three step of air flow setting
		HI-LO	Indoor unit with two step of air flow setting
		HI-MID	
		1 FAN SPEED	Indoor unit with only one of air flow setting
Remote controller function15	MODEL TYPE	HEAT PUMP	Heat pump unit
		COOLING ONLY	Exclusive cooling unit

Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.
But only master indoor unit is received the setting change of indoor unit function "05 EXTERNAL INPUT" and "06 PERMISSION / PROHIBISHION".

From previous page

(Indoor unit function) I/U FUNCTION

Indoor unit No. are indicated only when plural indoor units are connected.

I/U000 ▲
I/U001
I/U002
I/U003
I/U004

Function	setting	
✻ 02 FAN SPEED SET	STANDARD	※
	HIGH SPEED 1	※
	HIGH SPEED 2	
✻ 03 FILTER SIGN SET	INDICATION OFF	
	TYPE 1	○
	TYPE 2	
	TYPE 3	
	TYPE 4	
04 POSITION	4POSITION STOP	○
	FREE STOP	
05 EXTERNAL INPUT	LEVEL INPUT	○
	PULSE INPUT	
06 OPERATION PERMISSION/PROHIBITION	INVALID	○
	VALID	
✻ 07 EMERGENCY STOP	INVALID	○
	VALID	
✻ 08 SP OFFSET	OFFSET +3.0℃	
	OFFSET +2.0℃	
	OFFSET +1.0℃	
	NO OFFSET	○
✻ 09 RETURN AIR TEMP	OFFSET +2.0℃	
	OFFSET +1.5℃	
	OFFSET +1.0℃	
	NO OFFSET	○
	OFFSET -1.0℃	
	OFFSET -1.5℃	
	OFFSET -2.0℃	
✻ 10 FAN CONTROL	LOW FAN SPEED	○
	SET FAN SPEED	
	INTERMITTENCE	
	FAN OFF	
✻ 11 FROST PREVENTION TEMP	TEMP HIGH	
	TEMP LOW	○
✻ 12 FROST PREVENTION CONTROL	FAN CONTROL ON	○
	FAN CONTROL OFF	
✻ 13 DRAIN PUMP LINK	✻◇	○
	✻◇ AND ✻	
	✻◇ AND ✻ AND ≋	
	✻◇ AND ≋	
✻ 14 ✻ FAN REMAINING	NO REMAINING	○
	0.5 HOUR	
	1 HOUR	
	6 HOUR	
✻ 15 ✻ FAN REMAINING	NO REMAINING	○
	0.5 HOUR	
	2 HOUR	
	6 HOUR	
✻ 16 ✻ FAN INTERMITTENCE	NO REMAINING	○
	20minOFF 5minON	
	5minOFF 5minON	
✻ 17 PRESSURE CONTROL	STANDARD	※
	TYPE1	※

Note2: Fan setting of "HIGH SPEED"

Fan tap		Indoor unit air flow setting			
		✻✻✻ - ✻✻✻ - ✻✻ - ✻✻	✻✻✻ - ✻✻ - ✻✻	✻✻✻ - ✻✻	✻✻✻ - ✻✻
FAN SPEED SET	STANDARD	PHi - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1, 2	PHi - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi

Initial function setting of some indoor unit is "HIGH SPEED".
4 speed is not able to be set with wireless remote controller.

The filter sign is indicated after running for 180 hours.
The filter sign is indicated after running for 600 hours.
The filter sign is indicated after running for 1000 hours.
The filter sign is indicated after running for 1000 hours, then the indoor unit will be stopped by compulsion after 24 hours.

If you change the indoor function "04 POSITION", you must change the remote controller function "14 POSITION" accordingly.
You can select the louver stop position in the four.
The louver can stop at any position.

Permission/prohibition control of operation will be valid.

With the VRF series, it is used to stop all indoor units connected with the same outdoor unit immediately.
When stop signal is inputed from remote on-off terminal "CNT-6", all indoor units are stopped immediately.

To be reset for producing +3.0˚C increase in temperature during heating.
To be reset for producing +2.0˚C increase in temperature during heating.
To be reset for producing +1.0˚C increase in temperature during heating.

To be reset producing +2.0˚C increase in return air temperature of indoor unit.
To be reset producing +1.5˚C increase in return air temperature of indoor unit.
To be reset producing +1.0˚C increase in return air temperature of indoor unit.

To be reset producing -1.0˚C increase in return air temperature of indoor unit.
To be reset producing -1.5˚C increase in return air temperature of indoor unit.
To be reset producing -2.0˚C increase in return air temperature of indoor unit.

When heating thermostat is OFF, to be operated with low fan speed. (or with ultra low fan speed in case of some models)
When heating thermostat is OFF, to be operated with set fan speed.

When heating thermostat is OFF, fan speed is operated intermittently.
When heating thermostat is OFF, the fan is stopped.
When the remote thermistor is working, "FAN OFF" is set automatically.
Do not set "FAN OFF" when the indoor unit's thermistor is working.

Change of indoor heat exchanger temperature to start frost prevention control.

Working only with the Single split series.
To control frost prevention, the indoor fan tap is raised.

Drain pump is run during cooling and dry.
Drain pump is run during cooling, dry and heating.
Drain pump is run during cooling, dry, heating and fan.
Drain pump is run during cooling, dry and fan.

After cooling is stopped, the fan does not perform extra operation.
After cooling is stopped, the fan perform extra operation for half an hour.
After cooling is stopped, the fan perform extra operation for an hour.
After cooling is stopped, the fan perform extra operation for six hours.

After heating is stopped or heating thermostat is OFF, the fan does not perform extra operation.
After heating is stopped or heating thermostat is OFF,the fan perform extra operation for half an hour.
After heating is stopped or heating thermostat is OFF,the fan perform extra operation for two hours.
After heating is stopped or heating thermostat is OFF, the fan perform extra operation for six hours.

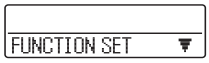
During heating is stopped or heating thermostat is OFF, the fan perform intermittent operation for five minutes with low fan speed after twenty minutes' OFF.
During heating is stopped or heating thermostat is OFF, the fan perform intermittent operation for five minutes with low fan speed after five minutes' OFF.

Connected "OA Processing" type indoor unit, and is automatically defined.

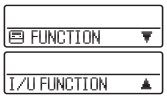
From previous page

How to set function

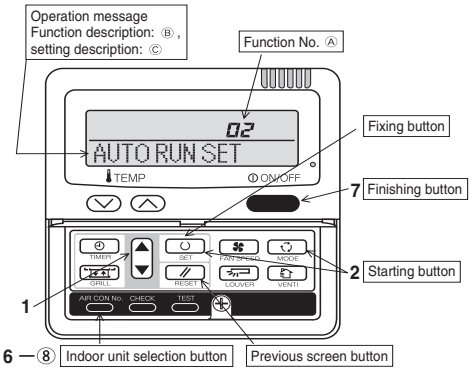
1. **Stop air-conditioner and press (SET) (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼" will be displayed.**



2. **Press (SET) button.**
3. **Make sure which do you want to set, "FUNCTION ▼" (remote controller function) or "I/U FUNCTION ▲" (indoor unit function).**
4. **Press ▲ or ▼ button.**
   Selecct "FUNCTION ▼" (remote controller function) or "I/U FUNCTION ▲" (indoor unit function).



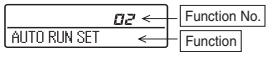
5. **Press (SET) button.**



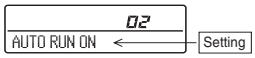
6. **【On the occasion of remote controller function selection】**

① "DATA LOADING" (Indication with blinking)
↓
Display is changed to "01 GRILLE ↑↓SET".

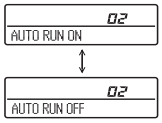
② Press ▲ or ▼ button.
"No. and function"are indicated by turns on the remote controller function table, then you can select from them.
(For example)



③ Press (SET) button.
The current setting of selected function is indicated.
(for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected



④ Press ▲ or ▼ button.
Select the setting.



⑤ Press (SET)
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, Set as the same procedure if you want to set continuously ,and if to finish, go to 7.

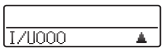
7. **Press ON/OFF button.**
   Setting is finished.

【On the occasion of indoor unit function selection】

① "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)
↓
Indication is changed to "02 FAN SPEED SET".
Go to ②.

[Note]

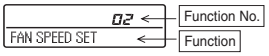
(1) If plural indoor units are connected to a remote controller, the indication is "I/U 000" (blinking) ← The lowest number of the indoor unit connected is indicated.



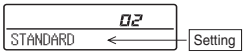
(2) Press ▲ or ▼ button.
Select the number of the indoor unit you are to set
If you select "ALL UNIT ▼", you can set the same setting with all unites.

(3) Press (SET) button.

② Press ▲ or ▼ button.
"No. and function" are indicated by turns on the indoor unit function table, then you can select from them.
(For example)



③ Press (SET) button.
The current setting of selected function is indicated.
(For example) "STANDARD" ← If "02 FAN SPEED SET" is selected.



④ Press ▲ or ▼ button.
Select the setting.

⑤ Press (SET) button.
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, set as the same procedure if you want to set continuously , and if to finish, go to 7.

※ When plural indoor units are connected to a remote controller, press the AIRCON NO. button, which allows you to go back to the indoor unit selection screen. (example "I/U 000 ▲")

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.
- Setting is memorized in the controller and it is saved independently of power failure.

【How to check the current setting】

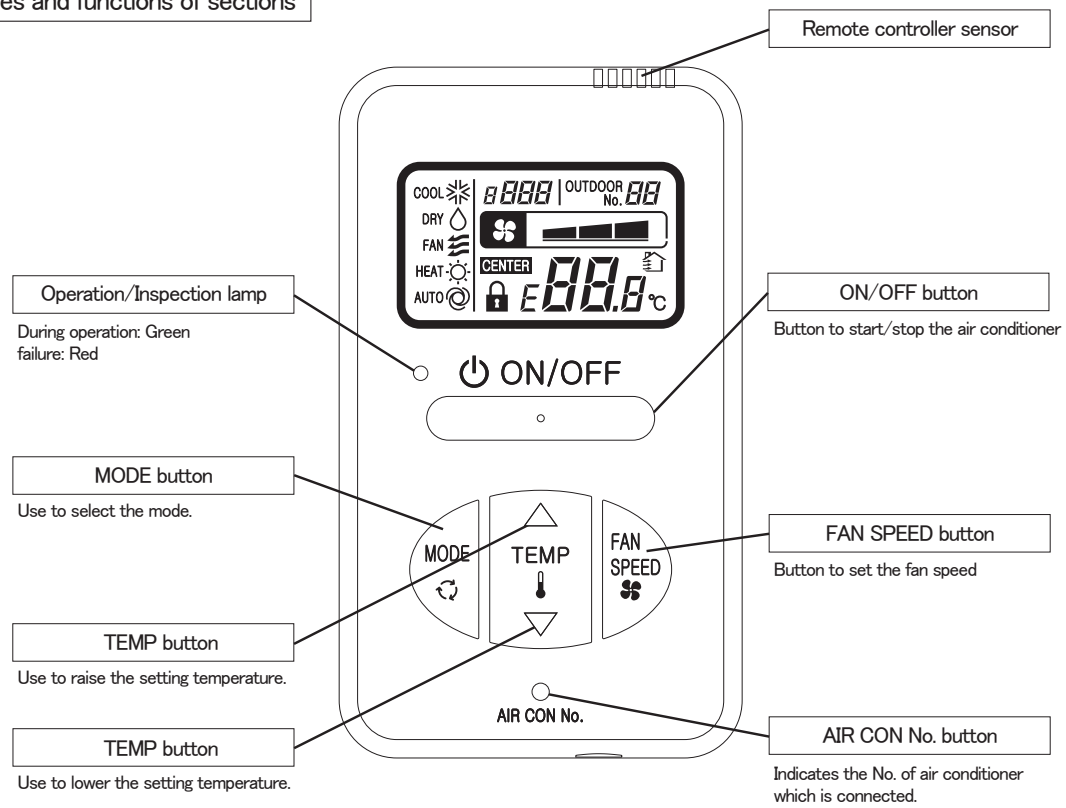
When you select from "No. and funcion" and press set button by the previous operation, the "Setting" displayed first is the current setting.
(But, if you select "ALL UNIT ▼ ", the setting of the lowest number indoor unit is displayed.)

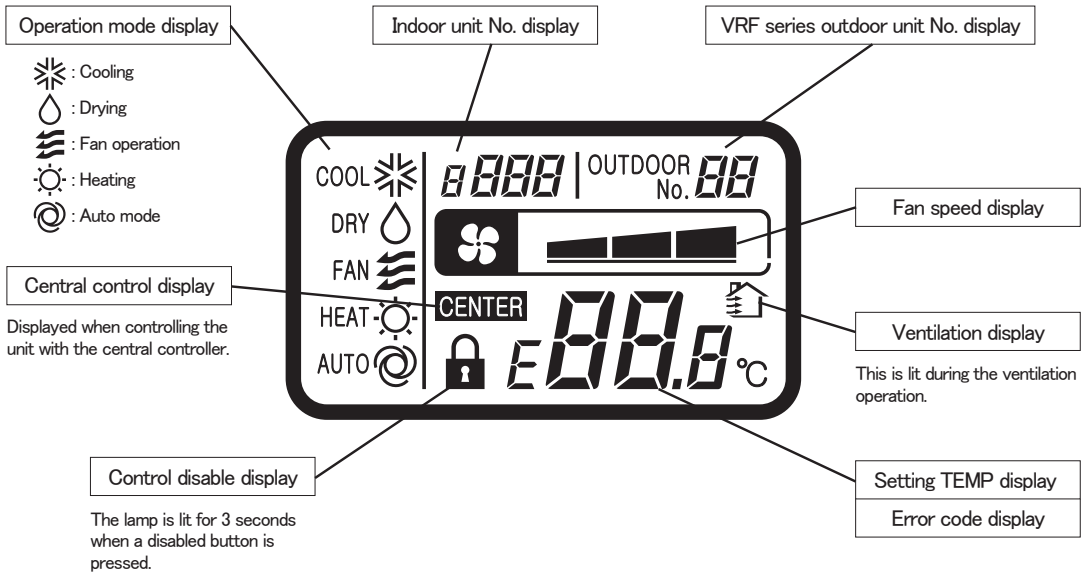
PJZ000Z272 a

13.3 Simple wired remote controller (RCH-E3)

Notes:
Following functions of Type -D indoor unit series are not able to be set with this simple wired remote controller (RCH-E3).
1. Individual flap control system (for FDT/FDTC)
2. Flap control system (for FDEN)
3. 4-fan speed setting (PHi/Hi/Me/Lo) →3-fan speed setting (Hi/Me/Lo) (for FDT/FDTC/FDUM/FDEN)

Names and functions of sections



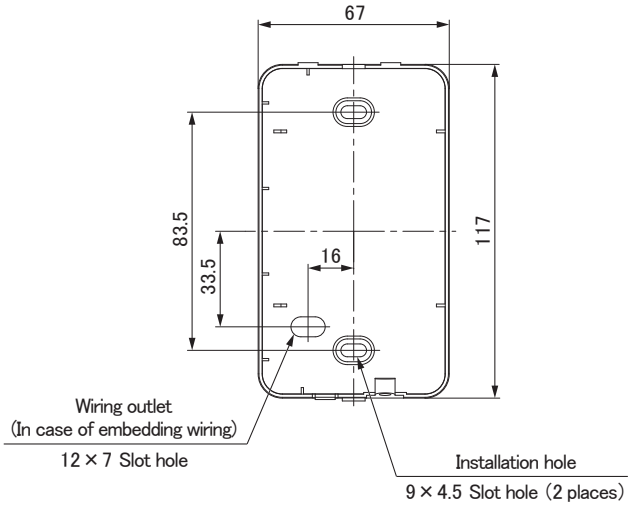


Installation of remote controller

DO NOT install the remote controller at the following places in order to avoid malfunction.

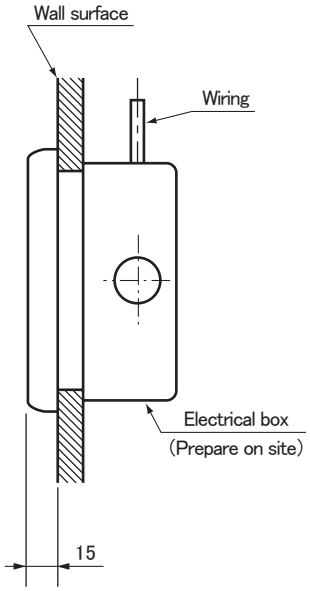
(1) Places exposed to direct sunlight
(2) Places near heat devices
(3) High humidity places
(4) Hot surface or cold surface enough to generate condensation
(5) Places exposed to oil mist or steam directly
(6) Uneven surface

Remote control installation dimensions

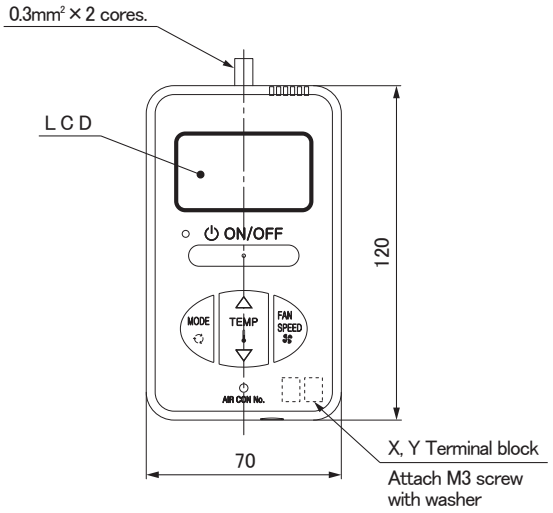


Note: Installation screw for remote controller
M4 Screw (2 pieces)

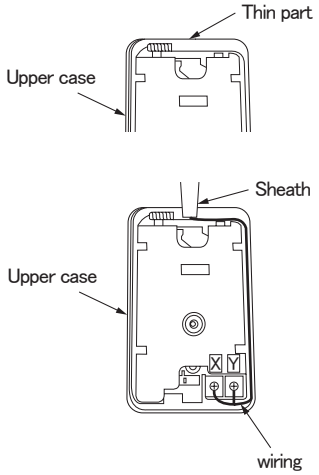
In case of embedding wiring



In case of exposing wiring

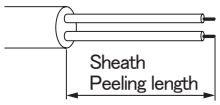


The remote controller wiring can be extracted from the upper center.
After the thin part in the upper side of the remote controller upper case is scraped with a nipper or knife, remove burr with a file.



The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



Wiring specifications

(1) Wiring of remote controller should use 0.3mm² × 2 core wires or cables. (on-site configuration)
(2) Maximum prolongation of remote controller wiring is 600m.
If the prolongation is over 100m, change to the size below.
But, the wiring in the remote controller case should be 0.3mm² (recommended) to 0.5mm².
Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire
connecting section. Be careful about contact failure.

Unit:mm

Length	Wiring thickness
100 to 200m	0.5mm² × 2 cores
Under 300m	0.75mm² × 2 cores
Under 400m	1.25mm² × 2 cores
Under 600m	2.0mm² × 2 cores

Adapted to **RoHS** directive

Simple Remote Controller Installation Manual

PJZ012D069

Read together with indoor unit's installation manual.

⚠WARNING

- **Fasten the wiring to the terminal securely and hold the cable securely so as not to apply unexpected stress on the terminal.**
  Loose connection or hold will cause abnormal heat generation or fire.
- **Make sure the power supply is turned off when electric wiring work.**
  Otherwise, electric shock, malfunction and improper running may occur.

⚠ CAUTION

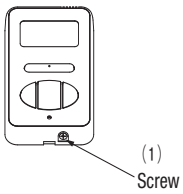
- **DO NOT install the remote controller at the following places in order to avoid malfunction.**
  (1) Places exposed to direct sunlight
  (2) Places near heat devices
  (3) High humidity places
  (4) Hot surface or cold surface enough to generate condensation
  (5) Places exposed to oil mist or steam directly
  (6) Uneven surface
- **DO NOT leave the remote controller without the upper case.**
  In case the upper cace needs to be detached, protect the remote controller with a packaging box or bag in order to keep it away from water and dust.

Accessories	Remote controller, wood screw (ϕ3.5×16) 2 pieces
Prepare on site	Remote controller cord (2 cores) (Refer to [2. Installation and wiring of remote controller]) [In case of embedding cord] Electrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

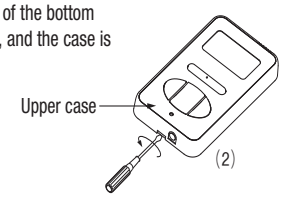
1. Installation procedure

In case of embedding cord

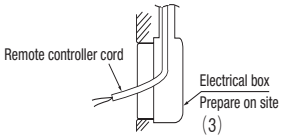
(1) Make certain to remove the screw on the bottom surface of the remote controller.



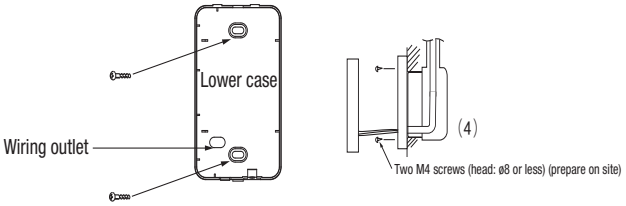
(2) Remove the upper case of the remote controller.
Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote controller and slightly twist it, and the case is removed.



(3) Pre-bury the electrical box and remote controller cord.



(4) Prepare two M4 screws (recommended length: 12 – 16mm), and install the lower case to the electrical box.
Do not use a screw whose screw head is larger than the height of the wall around the screw hole.

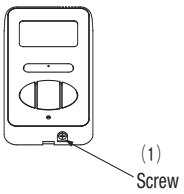


(5) Connect the remote controller cord to the terminal block.
Connect the terminals (X and Y) of the remote controller and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)

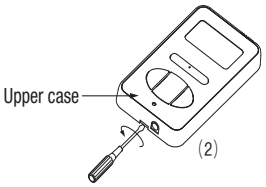
(6) Mount the upper case for restoring to its former state so as not to crimp the remote controller cord, and secure with the removed screw.

In case of exposing cord

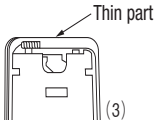
(1) Make certain to remove a screw on the bottom surface of the remote controller.



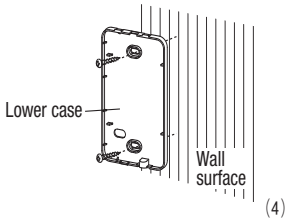
(2) Remove the upper case of the remote controller.
Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.



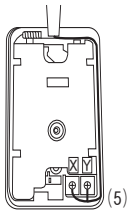
(3) The remote controller cord can be extracted from the upper center.
After the thin part in the upper side of the remote controller upper case is scraped with a nipper or knife, remove burr with a file.



(4) The lower case of the remote controller is mounted to a flat wall with two accessory wood screws.

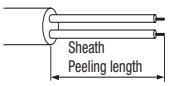


(5) Connect the remote controller cord to the terminal block.
Connect the terminals (X and Y) of the remote controller and the terminals (X and Y) of the indoor unit. (No polarity of X and Y)
The wiring route is as shown in the right.



The wiring in the remote controller case should be 0.3 mm^2 (recommended) to 0.5 mm^2 at maximum.
Further, peel off the sheath.
The peeling length of each wiring is as follows:

X wiring : 160mm Y wiring : 150mm



(6) Mount the upper case for restoring to its former state so as not to crimp the remote controller cord, and secure with the removed screw.

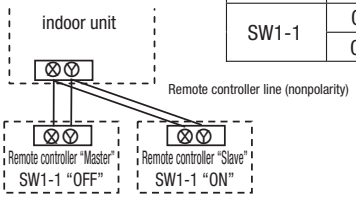
(7) In the case of exposing installation, secure the remote controller cord to the wall surface with a cord clamp so as not to loosen the remote controller cord.

2. Installation and wiring of remote controller

(1) Wiring of remote controller should use 0.3mm^2 × 2 core wires or cables. (on-site configuration)
(2) Maximum prolongation of remote controller wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, the wiring in the remote controller case should be 0.3mm^2 (recommended) to 0.5mm^2.
Change the wire size outside of the case according to wire connecting. Waterproof treatment is necessary at the wire
connecting section. Be careful about contact failure.
100 - 200m·····0.5mm^2 × 2 cores
Under 300m·····0.75mm^2 × 2 cores
Under 400m·····1.25mm^2 × 2 cores
Under 600m·····2.0mm^2 × 2 cores

3. Master/ slave setting when more than one remote controller are used

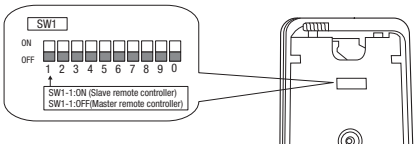
(1) Up to two remote controllers can be connected to one unit (or one group) of indoor unit.



Switch	Setting	Function detail
SW1-1	ON	Slave remote controller
	OFF	Master remote controller

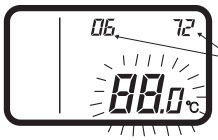
(2) Set the switch SW1-1 of the slave remote controller is "Slave" (ON). The factory default is set as "Master" (OFF).

(Note) • The remote controller thermistor enabled setting can be set only to the master remote controller.
• Install the master remote controller at the position to detect room temperature.
• The air conditioner operation follows the last operation of the remote controller in case of the master / slave setting.



4. The indication when power source is supplied

(1) At the time of turning the power source on, after the light is on for the first 2 seconds, the display becomes as shown below.
The number displayed on the upper side of LCD in the remote control is the software number, and this is not an error code.



Software number
(The number in the left is one example. Another number may be shown.)

(2) Then, "88.0 °C" blinks on the remote controller until the communication between the remote controller and the indoor unit is established.

(3) In the case of connecting one remote controller with one unit (or one group) of indoor unit, make certain to set the master remote controller (factory default).
If the slave remote control is set, a communication cannot be established.

(4) If a state where the communication between the remote controller and the indoor unit cannot be established continues about for 30 minutes, "E" is displayed. Confirm the wiring of the indoor unit and the outdoor unit and master/slave setting of the remote controller.

5. Confirmation method for return air temperature

Return air temperature can be confirmed by the remote controller operation.

(1) **Press AIR CON NO. button for over 5 seconds.**
"88" blinks on the temperature setting indicator.
("88" blinks for approximately 2 seconds while data is read.)
↓
Then, the return air temperature is displayed.
(Example) return air temperature: "27 °C" (blinking)

(Note) For the return air temperature, in the normal case, the return air temperature of the indoor unit is displayed; however, in the case that the remote control thermistor is effective, detected temperature by the remote controller thermistor is displayed.

(2) **Press ⏻ ON/OFF button.**
End.

[In the case that the remote thermistor is ineffective and plural indoor units are connected to one remote controller]

(1) **Press AIR CON NO. button for over 5 seconds.**
indoor unit No. indicator: "U 000" (blinking)
(Among the connected indoor units, the lowest number is displayed.)

(2) **Press TEMP△ or TEMP▽ button.**
Select the indoor unit No.

(3) **Press MODE button.**
Dectder the indoor unit No.
(Example) indoor unit No. indicator: "U 000"
"88" blinks on the temperature setting indicator. (blinking for approximately 2 to 10 seconds while data is read) Then, the return air temperature is displayed. When AIR CON NO. is pressed, return to the indoor unit selection display (example, "U 000").

(4) **Press ⏻ ON/OFF button.**
End.

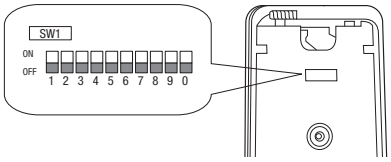
6. Function setting

Each function of the remote controller and the indoor unit is automatically set to the initial setting, which is the standard use, on the occasion of connecting the remote controller with the indoor unit. In the case of the standard use, the setting change is unnecessary. However, if you whould like to change the initial setting " ○ ", change the setting for only the item of the function number. **Record the setting contents and stored them.**

(1) Function setting item by switch on PCB

Switch No.	Setting	Setting detail	Initial setting
SW1-1	ON	Slave remote controller	
	OFF	Master remote controller	○
SW1-2	ON	Remote controller thermistor enabled	
	OFF	Remote controller thermistor disabled	○
SW1-3	ON	"MODE" button prohibited	
	OFF	"MODE" button enabled	○
SW1-4	ON	"ON/OFF" button prohibited	
	OFF	"ON/OFF" button enabled	○

Switch No.	Setting	Setting detail	Initial setting
SW1-5	ON	"TEMP" button prohibited	
	OFF	"TEMP" button enabled	○
SW1-6	ON	"FAN SPEED" button prohibited	※ Note 1
	OFF	"FAN SPEED" button enabled	※ Note 1
SW1-7	ON	Auto restart function enabled	
	OFF	Auto restart function disabled	○
SW1-8, 9, 0	ON	Not used	
	OFF		



- As for the slave remote controller, function setting is impossible other than SW1-1.
- In the indoor unit with only one fan speed, "FAN SPEED" button cannot be enabled.

(2) Function setting item by button operation

Classification	Function No.	Function	Setting No.	Setting	Initial setting	Remarks
Remote controller function	01	Indoor unit fan speed	01	Fan speed: three steps	※ Note 1	The fan speed is three steps, ■■■ - ■■ - ■ .
			02	Fan speed: two steps (Hi-Lo)	※ Note 1	The fan speed is two steps, ■■■ - ■ .
			03	Fan speed: two steps (Hi-Me)		The fan speed is two steps, ■■■ - ■■ .
			04	Fan: one step	※ Note 1	The fan speed is fixed to one step.
	03	Remote controller thermistor at the time of cooling	01	Remote controller thermistor: no offset	○	
			02	Remote controller thermistor: +3.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offset temperature at +3.0°C.
			03	Remote controller thermistor: +2.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offset temperature at +2.0°C.
			04	Remote controller thermistor: +1.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offset temperature at +1.0°C.
			05	Remote controller thermistor: -1.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offset temperature at -1.0°C.
			06	Remote controller thermistor: -2.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offset temperature at -2.0°C.
			07	Remote controller thermistor: -3.0 °C		At the time of cooling, in the case of remote controller thermistor enabled, offsett temperature at -3.0°C.
	04	Remote controller thermistor at the time of heating	01	Remote controller thermistor: no offset	○	
			02	Remote controller thermistor: +3.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at +3.0°C.
			03	Remote controller thermistor: +2.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at +2.0°C.
			04	Remote controller thermistor: +1.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at +1.0°C.
			05	Remote controller thermistor: -1.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at -1.0°C.
			06	Remote controller thermistor: -2.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at -2.0°C.
			07	Remote controller thermistor: -3.0 °C		At the time of heating, in the case of remote controller thermistor enabled, offset temperature at -3.0°C.
	05	Ventilation setting	01	No ventilator connection	○	
			02	Ventilator links air-conditioner		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit.
	06	"Auto" operation setting	01	"Auto" operation enabled	※ Note 1	
			02	"Auto" operation disabled	※ Note 1	"Auto" operation disabled
Indoor unit function	07	Operation permission/ prohibition	01	Disabled	○	
			02	Enabled		Operation permission/prohibition controller is enabled.
	08	External input	01	Level input	○	
			02	Pulse input		
	09	Fan speed setting	01	Standard	Note2	
			02	High speed 1	Note2	
			03	High speed 2	Note2	
	10	Fan remaining operation at the time of cooling	01	No remaining operation	○	After cooling stopped, no fan remaining operation
			02	0.5 hours		After cooling stopped, fan remaining operation for 0.5 hours
			03	1 hour		After cooling stopped, fan remaining operation for 1 hour
			04	6 hours		After cooling stopped, fan remaining operation for 6 hours
	11	Fan remaining operation at the time of heating	01	No remaining operation	○	After heating stopped or after heating thermostat OFF, no fan remaining operation
			02	0.5 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 0.5 hours
			03	2 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 2 hours
			04	6 hours		After heating stopped or after heating thermostat OFF, fan remaining operation for 6 hours
	12	Setting temperature offset at the time of heating	01	No offset	○	
			02	Setting temperature offset + 3.0 °C		The setting temperature at the time of heating is offset by +3.0 °C.
			03	Setting temperature offset + 2.0 °C		The setting temperature at the time of heating is offset by +2.0 °C.
			04	Setting temperature offset + 1.0 °C		The setting temperature at the time of heating is offset by +1.0 °C.
	13	Heating fan controller	01	Low fan speed	※ Note 1	At the time of heating thermostat OFF, operate with low fan speed.
			02	Setting fan speed		At the time of heating thermostat OFF, operate with the setting fan speed.
			03	Intermittent operation	※ Note 1	At the time of heatingr thermostat OFF, intermittently operate.
			04	Fan off		At the time of heating thermostat OFF, a fan will be stopped. When the remote controller thermistor is enabled, automatically set to "Fan off". Do not set at the time of the indoor unit thermistor.
	14	Return air temperature offset	01	No offset	○	
			02	Return air temperature offset +2.0 °C		Offset the return air temperature of the indoor unit by +2.0 °C.
			03	Return air temperature offset +1.5 °C		Offset the return air temperature of the indoor unit by +1.5 °C.
			04	Return air temperature offset +1.0 °C		Offset the return air temperature of the indoor unit by +1.0 °C.
			05	Return air temperature offset -1.0 °C		Offset the return air temperature of the indoor unit by -1.0 °C.
			06	Return air temperature offset -1.5 °C		Offset the return air temperature of the indoor unit by -1.5 °C.
			07	Return air temperature offset -2.0 °C		Offset the return air temperature of the indoor unit by -2.0 °C.

Note 1: The symbol " ※ " in the initial setting varies depending upon the indoor unit and the outdoor unit to be connected, and this is automatically determined as follows:

Swith No. Function No.	Function	Setting	Product model
SW1-6	"FAN SPEED" button	"FAN SPEED" button prohibited	Product model whose indoor fan speed is only one step
		"FAN SPEED" button enabled	Product model whose indoor fan speed is two steps or three steps
Remote controller function 01	Indoor unit fan speed	Fan speed: three steps	Product model whose indoor unit fan speed is three steps
		Fan speed: two steps (Hi-Lo)	Product model whose indoor unit fan speed is two steps
		Fan speed: two steps (Hi-Me)	
		Fan: one step	Product model whose indoor unit fan speed is only one step
Remote controller function 06	"Auto" operation setting	"Auto" operation enabled	Product model where "Auto" mode is selectable
		"Auto" operation disabled	Product model without "Auto" mode
Indoor unit function 13	Heating fan control	Low fan speed	Product model except FDUS
		Intermittent operation	FDUS

Note 2: Fan speed of "High speed" setting

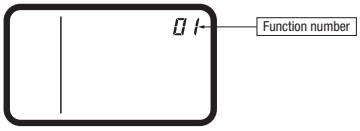
Fan speed setting	Indoor unit fan speed setting		
	■■■ - ■■ - ■	■■■ - ■	■■■ - ■■
Standard	Hi — Mid — Lo	Hi — Lo	Hi — Mid
High speed 1・2	UHi — Hi — Mid	UHi — Mid	UHi — Hi

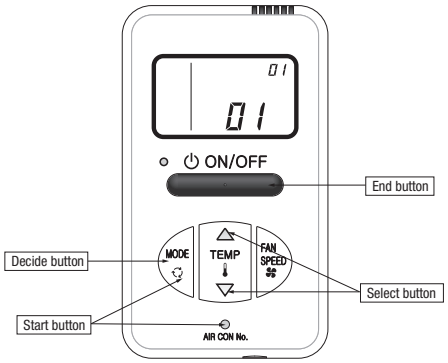
Initial setting of some indoor unit is "High speed".

Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.
But only master indoor unit is received the setting change of indoor unit function "07 Operation permission/ prohibition" and "08 External input".

7. How to set functions by button operation

(1) **Stop air-conditioning, and simultaneously press AIR CON NO. and MODE buttons at the same time for over three seconds.**
The function number "01" blinks in the upper right.

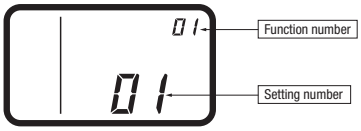




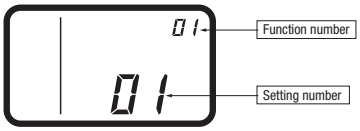
(2) **Press TEMP△ or TEMP▽ button.**
Select the function number.

(3) **Press MODE button.**
Decide the function number.

(4) **[In the case of selecting the remote controller function (01-06)]**
① The current setting number of the selected function number blinks
(Example)
Function number: "01" (lighting)
Setting number: "01" (blinking)

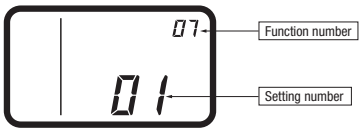


② **Press TEMP△ or TEMP▽ button.**
Select the setting number.
③ **Press MODE button.**
The setting is completed.
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.
(Example)
Function number: "01" (lighting for 3 to 20 seconds)
Setting number: "01" (lighting for 3 to 20 seconds)



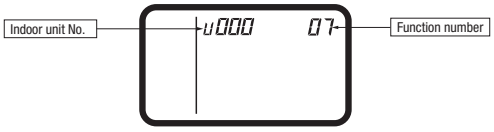
Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).

[In the case of selecting the indoor unit function (07-14)]
① **"88" blinks on the temperature setting indicators.**
(blinking for approximately 2 to 10 seconds while data is read)
↓
After that, the current setting number of the selected function number blinks.
(Example)
Function number: "07" (lighting)
Setting number: "01" (blinking)



Proceed to ②.

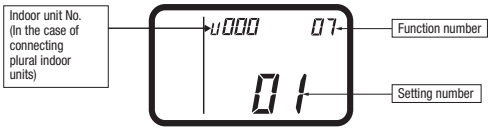
[Note]
a. In the case of connecting one remote control to plural indoor units, the display will be as follows:
Indoor unit No. display: "U 000" (blinking)
(Display the lowest number among the connected indoor units.)



b. Press TEMP△ or TEMP▽ button.
Select the indoor unit No. to be set.
If "U ALL" is selected, the same setting can be set to all units.
c. Press MODE button.
Decide the indoor unit No.
"88" blinks on the temperature setting indicators. (blinking for 2 to 10 seconds while data is read)
When AIR CON NO. button is pressed, go back to the indoor unit selection display (for example, "U 000" blinking).

② **Press TEMP△ or TEMP▽ button.**
Select the setting number

③ **Press MODE button.**
The setting is completed.
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.
(Example)
Indoor unit No.: "U 000" (lighting for 3 to 20 seconds)
Function number: "07" (lighting for 3 to 20 seconds)
Setting number: "01" (lighting for 3 to 20 seconds)



Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).

(5) **Press ON/OFF button.**
The setting is completed.

- Even if ON/OFF button is pressed during setting, the setting is ended. However, any details where the setting has not been completed will be ineffective.
- The setting contents are stored in the controller, and even if the power failure occur, this will not be lost.

[Confirmation method for current setting]
According to the operation, the "setting number" displayed first after selecting "function number" and pressing MODE button is the currently set content.
(However, in the case of selecting "U ALL" (all units), the setting number of the lowest number among the indoor units is displayed.)

13.4 Interface kit (SC-BIKN-E)

RKZ012A088 ⓐ

Accessories included in package

Be sure to check all the accessories included in package.

No.	Part name	Quantity
①	Indoor unit's connection cable (cable length: 1.8m)	1
②	Wood screws (for mounting the interface: ø4x 25)	2
③	Tapping screws (for the cable clump and the interface mounting bracket)	3
④	Interface mounting bracket	1
⑤	Cable clamp (for the indoor unit's connection cable)	1

Safety precautions

Before use, please read these Safety Precautions thoroughly before installation.

- All the cautionary items mentioned below are important safety related items to be taken into consideration, so be sure to observe them at all times.

⚠Warning	Incorrect installation could lead to serious consequences such as death, major injury or enviromental destruction.

- Symbols used in these precautions

❗	Always go along these instruction.

- After completed installation, carry out trial operation to confirm no anomaly, and ask the user to keep this installation manual in a good place for future reference.

⚠ Warnings

- **Installation must be carried out by a qualified installer.**
  If you install it by yourself, it may cause an electric shock, fire and personal injury , as a result of a system malfunction.
- **Install it in full accordance with the instruction manual.**
  Incorrect installation may cause an electric shock, fire and personal injury.
- **Electrical work must be carried out by a qualified electrician in accordance with the technical standard for electrical equipment, the indoor wiring standard and this instruction manual.**
  Incorrect installation may cause an electric shock, fire and personal injury.
- **Use the specific cables for wiring. And connect all the cables to terminals or connectors securely and clamp them with cable clamps in order for external forces not to be transmitted to the terminals directly.**
  Incomplete connection may cause malfunction, and lead to heat generation and fire.
- **Use the original accessories and specified components for installation.**
  If the parts other than those prescribed by us are used, it may cause an electric shock, fire and sersonal injury.

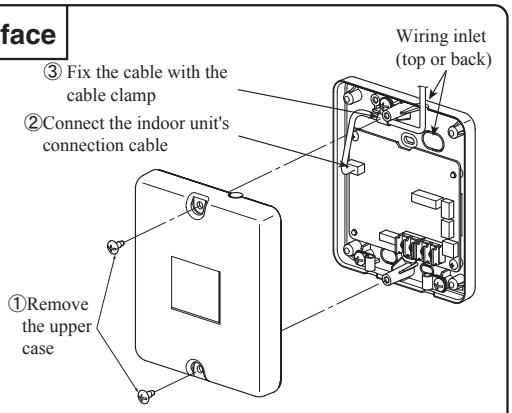
Connecting the indoor unit's connection cable to the interface

①Remove the upper case of the interface.
- Remove 2 screws from the interface casing before removal of upper casing.

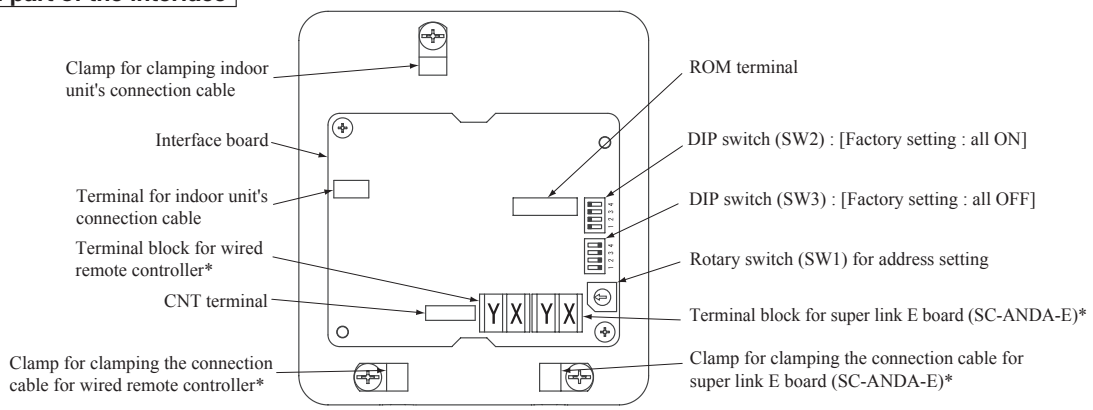
②Connect the indoor unit's connection cable to the interface.
- Connect the connector of the indoor unit connection cable to the connector on the interface's circuit board.

③Fix the indoor unit's connection cable with the cable clamp.
- Cable can be brought in from the top or from the back.
- Cut out the punch-outs for the connection cables running into the casing with cutter.

④Connect the indoor unit's connection cable to the indoor control PCB.
- Connect the indoor unit's connection cable to the indoor control PCB securely.
- Clamp the connection cable to the indoor control box securely with the cable clamp provided as an accessory.
- Regarding the cable connection to the indoor unit, refer to the instruction manual for indoor unit.



Name of each part of the interface



*Either the connection cables of super link E board (SC-ANDA-E) or of wired remote controller is connectable.

Switch	Setting	Function	Switch	Setting	Function
SW2-1	ON**	CNT level input	SW2-3	ON**	External input (CNT input)
	OFF	CNT Pulse input		OFF	Operation permission/prohibition (CNT input)
SW2-2	ON**	Wired remote controller : Valid	SW2-4	ON**	Heat pump
	OFF	Wired remote controller : Invalid		OFF	Cooling only

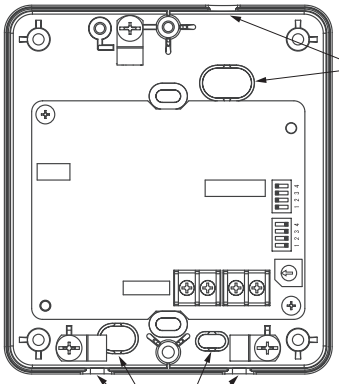
** Factory setting

Installation of the interface

- Install the interface within the range of the connection cable length (approximately 1.3m) from the indoor unit.
- Be sure not to extend the connection cable on site. If the connection cable is extended, malfunction may occur.
- Fix the interface on the wall, pillar or the like.

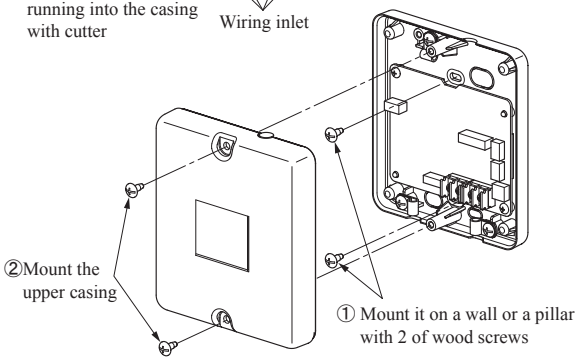
●DO NOT install the interface and wired remote controller at the following places.

○Places exposed to direct sunlight
○Places near heating devices
○High humidity places
○Surfaces where are enough hot or cold to generate condensation
○Places exposed to oil mist or steam directly
○Uneven surface



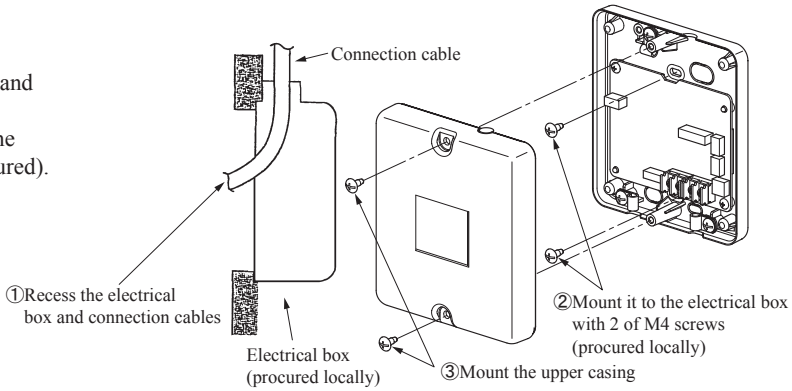
Mounting the interface directly on a wall

①Mount the lower casing of the interface on a flat surface with wood screws provided as standard accessory.
②Mount the upper casing.



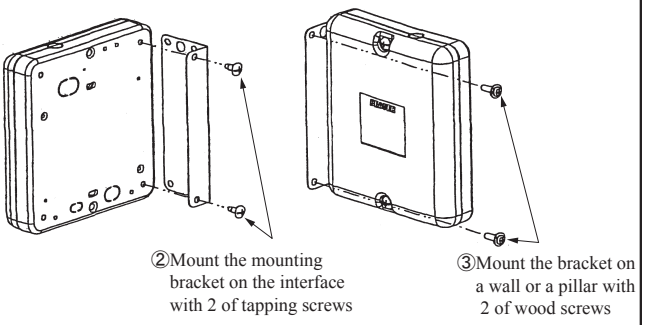
Recessing the interface in the wall

①Recess the electrical box (locally procured) and connection cables in the wall.
②Mount the lower casing of the interface to the electrical box with M4 screws (locally procured).
③Mount the upper casing.



Mounting the interface with the mounting bracket

①Mount the mounting bracket to the interface with tapping screws provided as standard accessory.
②Mount the mounting bracket on wall or the like with wood screws provided as standard accessory.
③Mount the mounting bracket to a wall surface, etc. using the wood screws provided.



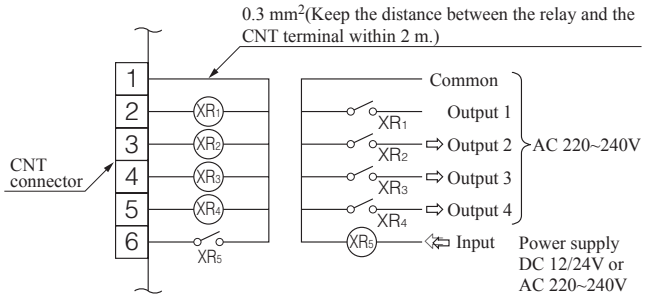
Installation check items

☐ Are the connection cables connected securely to the terminal blocks and connectors?
☐ Are the thickness and length of the connection cables conformed with the standard?

Functions of CNT connector

It is available to operate the air conditioning unit and to monitor the operation status with the external control unit (remote display) by sending the input/output signal through CNT connector on the indoor control PCB.

①Connect a external remote control unit (locally procured) to CNT terminal.
②In case of the pulse input, switch OFF the DIP switch SW2-1 on the interface PCB.
③When setting operation permission/prohibition mode, switch OFF the DIP switch SW2-3 on the interface PCB.



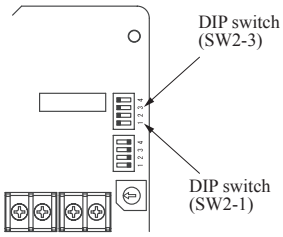
Input/ Output	Function	Output signal		Content
		Relay	ON/OFF	
Output 1	Operation output	XR_1	ON	During air-conditioner operation
Output 2	Heating output	XR_2	ON	During heating operation
Output 3	Compressor operation output	XR_3	ON	During compressor running
Output 4	Malfunction output	XR_4	ON	During anomalous stop

●$XR_{1\sim4}$ are for the DC 12V relay
●XR_5 is a DC 12/24V or AC 220~240V relay
●CNT connector (local) maker, model

Connector	Molex	5264-06
Terminals	Molex	5263T

Input/ Output	Function	SW2-1		SW2-3				Air-Conditioner	Operation by Remote Controller
		Setting		Setting	Input signal		Content		
					Level/Pulse	XR_5			
Input	External control input	ON*	Level input	ON*	Level	OFF→ON	External input	ON	Allowed
						ON→OFF		OFF	
				OFF		OFF→ON	Operation permission	OFF	
						ON→OFF	Operation prohibition	OFF	Not allowed
		OFF	Pulse input	ON*	Pulse	OFF→ON	External input	OFF→ON	Allowed
								ON→OFF	
				OFF	Level	OFF→ON	Operation permission	ON	
						ON→OFF	Operation prohibition	OFF	Not allowed

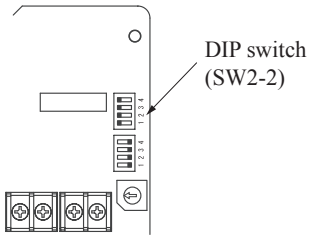
* Factory setting



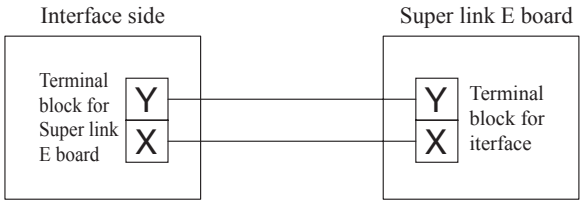
Connection of super link E board

Regarding the connection of super link E board, refer to the instruction manual of super link E board.
For electrical work, power supply for all of units in the super link system must be turned OFF.

①Switch ON the DIP switch SW2-2 (Factory setting: ON) on the interface PCB.
Caution: Wireless remote controller attached to the indoor unit can be used in parallel, after connecting the wired remote controller. However, some of functions other than the basic functions such as RUN/STOP, Temperature Setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.



②Wiring connection between the interface and the super link E board.

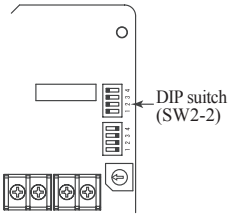


No.	Names of recommended signal wires
1	Shielded wire
2	Vinyl cabtyre round cord
3	Vinyl cabtyre round cable
4	Vinyl insulated wirevinyl sheathed cable for control

Within 200 m 0.5 mm² × 2 cores
Within 300 m 0.75 mm² × 2 cores
Within 400 m 1.25 mm² × 2 cores
Within 600 m 2.0 mm² × 2 cores

③Clamp the connection cables with cable clamps.

Connection of wired remote controller



Regarding the connection of wired remote controller, refer to the instruction manual of wired remote controller.

①Switch ON the DIP switch SW2-2 (Factory setting : ON) on the interface PCB.

Caution: Wireless remote controller attached to the indoor unit can be used in parallel, after connecting the wired remote controller. However, some of functions other than the basic functions such as RUN/STOP, Temperature Setting, etc. may not work properly and may have a mismatch between the display and the actual behavior.

②Wiring connection between the interface and the wired remote controller.

Installation and wiring of wired remote controller

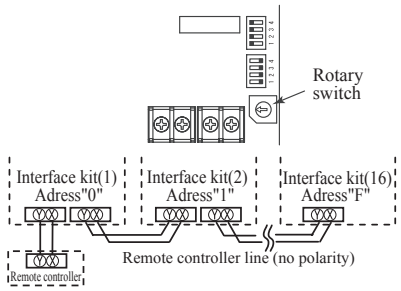
Ⓐ Install the wired remote controller with reference to the attached instruction manual of wired remote controller.
Ⓑ 0.3mm^2 x 2-core cable should be used for the wiring of wired remote controller.
Ⓒ Maximum length of wiring is 600m.
If the length of wiring exceeds 100m, change the size of cable as mentioned below.
100m-200m: 0.5mm^2 x 2-core, 300m or less: 0.75mm^2 x 2-core, 400m or less: 1.25mm^2 x 2-core, 600m or less: 2.0mm^2 x 2-core
However, cable size connecting to the terminal of wired remote controller should not exceed 0.5mm^2. Accordingly if the size of connection cable exceeds 0.5mm^2, be sure to downsize it to 0.5mm^2 at the nearest section of the wired remote controller and waterproof treatment should be done at the connecting section in order to avoid contact failure.
Ⓓ Don't use the multi-core cable to avoid malfunction.
Ⓔ Keep the wiring of wired remote controller away from grounding (Don't touch it to any metal frame of building, etc.).
Ⓕ Connect the connection cables to the terminal blocks of the wired remote controller and the interface securely (no polarity).

③Clamp the connection cables with cable clamps.

Control of multiple units by a single wired remote controller

Multiple units (up to 16) can be controlled by a single wired remote controller.
In this case, all units connected with a single wired remote controller will operate under the same mode and same setting temperature.

①Connect all the interface with 2-core cables of wired remote controller line.
②Set the address of indoor unit for remote controller communication from "0" to "F" with the rotary switch SW1 on the interface PCB.
③After turning the power ON, the address of indoor unit can be displayed by pressing AIR CON button on the wired remote controller.
Make sure all indoor units connected are displayed in order by pressing ▲ or ▼ button.

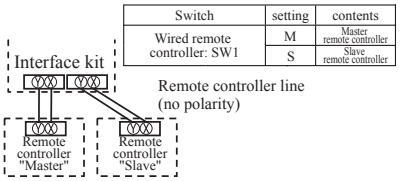


Master/Slave setting wired when 2 of wired remote controller are used

Maximum two wired remote controller can be connected to one indoor unit (or one group of indoor units)

①Set the DIP switch SW1 on the wired remote controller to "Slave" for the slave remote controller. (Factory setting : Master)
○ Caution : Remote controller sensor is invalid.

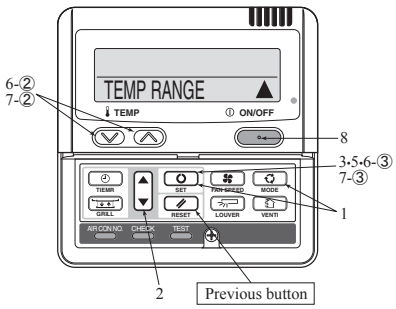
Switch	setting	contents
Wired remote controller: SW1	M	Master remote controller
	S	Slave remote controller



● When using the wireless remote controller in parallel with the wired remote controller;
Temperature setting range should be changed with the wired remote controller (The set temperature may not be displayed correctly on the wireless remote controller, unless change of temperature setting range is done.)
Changing procedure of temperature setting range is as follows.

How to set upper and lower limit of temperature sting range

1. Stop the air-conditioner, and press (SET) and (MODE) button at the same time for 3 seconds or more.
   The indication changes to"FUNCTION SET▼"
2. Press▼button once, and change to the "TEMP RANGE▲" indication.
3. Press (SET) button, and enter the temperature range setting mode.
4. Confirm that the "Upper limit ▼ " is shown on the display.
5. Press (SET)button to fix.
6. ①Indication: "∨∧SET UP"→"UPPER 28℃ ∨∧"
   ②Select the upper limit value 30℃ with temperature setting button △."UPPER30℃∨ " (blinking)
   ③Press (SET) button to fix. "UPPER 30℃" (Displayed for two seconds)
   After the fixed upper limit value displayed for two seconds, the indication will return to"UPPER LIMIT▼".
7. Press▼button once, "LOWER LIMIT ▲ " is selected, press (SET) button to fix.
   ①Indication: "∨∧SET UP" → "LOWER 20℃∨∧"
   ②Select the lower limit value 18℃ with temperature setting button ▽."LOWER18℃∧" (blinking)
   ③Press (SET) button to fix. "LOWER 18℃" (Displayed for two seconds)
   After the fixed lower limit value displayed for two seconds, the indication will return to"LOWER LIMIT▼"
8. Press ON/OFF button to finish.



- It is possible to quit in the middle by pressing ON/OFF button, but the change of setting is incompleted.
- During setting, if pressing (RESET) button, it returns to the previous screen.

Temperature setting range

Mode	Temperature setting range	Upper limit	Lower limit
Heating	16-30℃	20-30℃	16-26℃
Other than heating (Cooling, Fan, Dry, Auto)	18-30℃		

13.5 Super link E board (SC-ADNA-E)

PJZ012D029F

- Read and understand the instructions completely before starting installation.
- Refer to the instructions for both indoor and outdoor units.

Safety precautions

- Carefully read "Safety precautions" first. Follow the instructions for installation.
- Precautions are grouped into "Warning⚠" and "Caution⚠". The "Warning⚠" group includes items that may lead to serious injury or death if not observed. The items included in the "Caution⚠" group also may lead to serious results under certain conditions. Both groups are crucial for safety installation. Read and understand them carefully.
- After installation, conduct the test operation of the device to check for any abnormalities. Describe how to operate the device to the customer following the installation instruction manual. Instruct the customer to keep this installation instruction for future reference.

⚠Warning

- This device should be installed by the dealer where you purchase the device or a licensed professional shop. If the device is incorrectly installed by the customer, it may result in electric shock or fire.
- Install the device carefully following the installation instruction. If the device is incorrectly installed, it may result in electric shock or fire.
- Use the accessory parts and specified parts for installation. If any parts that do not match the specifications are used, it may result in electric shock or fire.
- A person with the electrical service certification should conduct the service based on the "Technical standards for electrical facilities", "Electrical Wiring Code", and the installation instruction. If the work is done incorrectly, it may result in electric shock or fire.
- Wiring should be securely connected using the specified types of wire. No external force on the wire should be applied to any terminals. If a secure connection is not achieved, it may result in electric shock or fire.

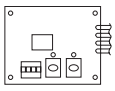
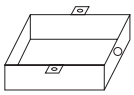
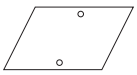
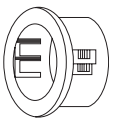
⚠Caution

- Provide ground connection.
  The ground line should never be connected to the gas supply piping, the water supply piping, the lightning conductor rod, nor the telephone ground.If the grounding is improper, it may result in electric shock.
- Do not install the device in the following locations.
  1.Where there is mist/spray of oil or steam such as kitchens.
  2.Where there is corrosive gases such as sulfurous acid gas.
  3.Where there is a device generating electromagnetic waves.
  These may interfere with the control system resulting in the device becoming uncontrollable.
  4.Where flammable volatile materials such as paint thinner and gasoline may exist or where they are handled. This may cause a fire.

1 Application

Indoor-to-outdoor three core communication specification type 3 (since October 2007)

2 Accessories

SL E board	Metal box	Metal cover	Screw for Ground
			M4×8L 2 pieces 
Pan head screws	Locking supports	Binding band	Grommet
ø4×8L 2 pieces 	To secure the print board and the metal box Made of nylon 4 pieces 		

3 Function

Allowing the center console SL1N-E, SL2NA-E, and SL3N-AE/BE to control and monitor the commercial air conditioning unit.

4 Control switching

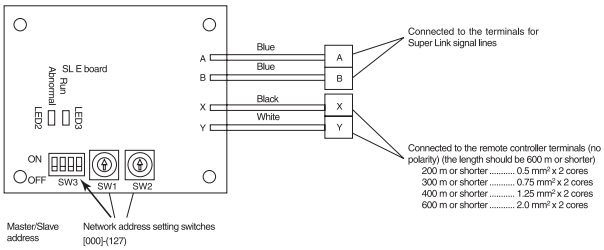
Settings can be changed by the switch SW3 on the SL E board as in the following.

Switch	Symbol	Switch	Remarks
SW3	1	ON	Master
		OFF (default)	Slave
	2	ON	Fixed previous protocol
		OFF (default)	Automatic adjustment of Super Link protocol
	3	ON	Indicates the forced operation stop when abnormality has occurred.
		OFF (default)	Indicates the status of running/stop as it is, when abnormality has occurred.
	4	ON	The hundredth address activated "1"
		OFF (default)	The hundredth address activated "0"

5 Connection Outline

Note for setting the address

- Set the address between 00 and 47 for the previous Super Link connection and between 000 and 127 for the new Super Link connection. (*1)
- Do not set the address overlapping with those of the other devices in the network. (The default is 000)



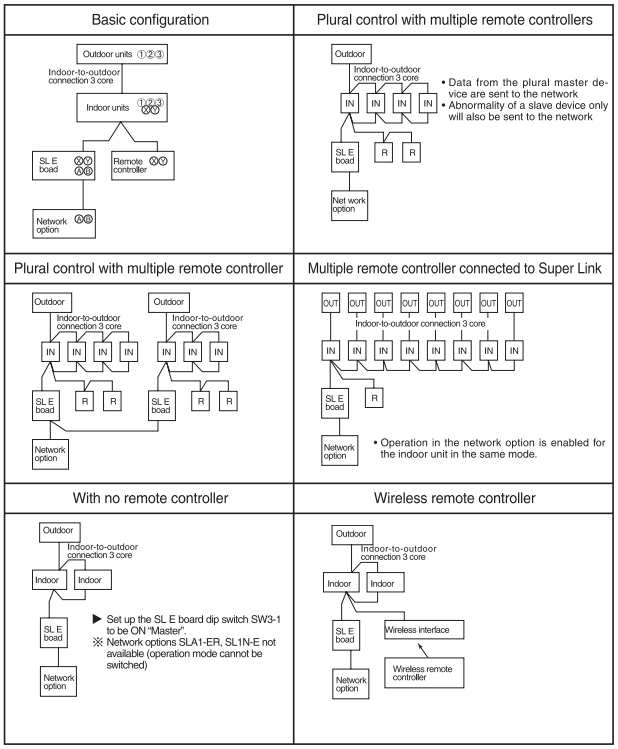
(*1) Whether the actual link is either the new Super Link or the previous Super Link depends on the models of the connected outdoor and indoor units. Consult the agent or the dealer.

Signal line specification

Communication method	Previous Super Link	New Super Link
Line type	MVVS	MVVS
Line diameter	0.75 - 1.25mm²	0.75/1.25mm²
Signal line (total length)	up to 1000m	up to 1500/1000m (*2)
Signal line (maximum length)	up to 1000m	up to 1000m

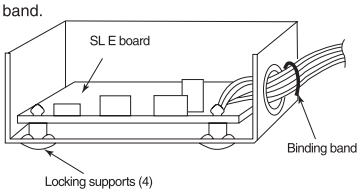
(*2) Up to 1500 m for 0.75 mm², and up to 1000 m for 1.25 mm².
Do not use 2.0 mm². It may cause an error.
(*3) Connect grounding on both ends of the shielding wire.
For the grounding method, refer to the section "6 Installation".

(1) Set the Super Link network address with SW1 (tens place), SW2 (ones place), and SW3 (hundreds place).
(2) Set the SL E board SW3-1 to be ON (Master) when using this without any remote controller (no wired remote controller nor wireless remote controller).
(3) Set up the plural master/slave device using the dip switches on the indoor unit board.
(4) Set up the remote controller master/slave device using the slide switch on the remote controller board.
(5) Set up "0" to "F" using the address rotary switch on the indoor unit board when controlling the indoor unit with the multiple remote controller.

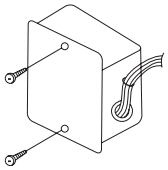


6 Installation

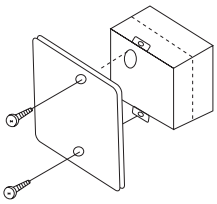
1. When using the metal box (mounted on the indoor unit / mounted on the back of the remote controller):
   (1) Mount the SL E board in the metal box using the locking supports.
   (2) Wiring should go through the provided grommet since then through the wiring to the hole on the Metal box.
   Secure the grommet after inserting the grommet into the Metal box as shown in below figure, then tie the wiring at the outlet of the unit using a binding band.



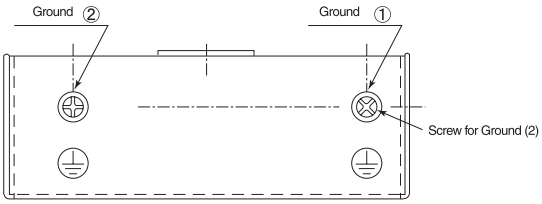
▲ When installed outside the indoor unit, put the metal cover on.



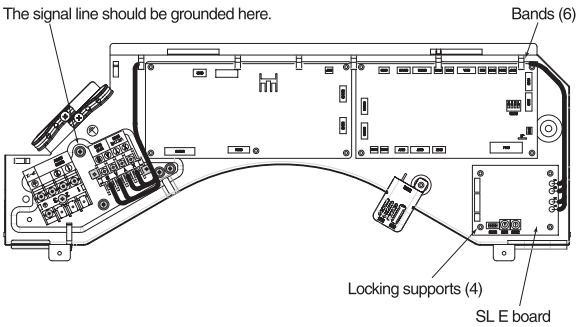
▲ When installed on the back of the remote controller, mount it directly on the remote controller bottom case.



Connect grounding. Connect grounding for the power line to Ground ①, and grounding for the signal line to Ground ② or to the Ground on the indoor unit control box.



2. When connecting to the indoor unit control box (ceiling-concealed type and FDT type only):
   (1) Mount the SL E board in the control box using the locking supports.
   (2) Remove 6 bands from the box and put the wiring through the bands to be secured.



Electrical shock hazard! Make sure to turn the power off for servicing. Be cautious so that no abnormal force should be applied to the wiring. Do not let the SL E board hung by the wiring. Do not damage the board with a screw driver.
The board is sensitive to static electricity. Release the static electricity of your body before servicing.
(you can do this by touching the control board which is grounded).

Location of installation

Install the device at the location where there are no electromagnetic waves nor where there is water and dust. The specified temperature range of the device is 0 to 40°C. Install the device at the location where the ambient temperature stays within the range. If it exceeds the specification, make sure to provide solution such as installing a cooling fan. When used outside of the range, it may cause abnormal operation.

7 Indicator display

Check the LED 3 (green) and LED 2 (red) on the SL E board for flashing.

SL E board LEDs		Inspection mode	Display on the integrated network control device
Red	Green		
Off	Flashing	Normal communication	
Off	Off	• Disconnection in the remote controller communication line (X or Y) • Short-circuit in the remote controller communication line (between X and Y) • Faulty indoor unit remote controller power • Faulty remote controller communication circuit • Faulty CPU on SL E board	No corresponding unit number
One flash	Flashing	• Disconnection in the Super Link signal line (A or B) • Short-circuit in the Super Link signal line (between A and B) • Faulty Super Link signal circuit	
Two flashes	Flashing	• Faulty address setting for the SL E board (Set up the address for previous SL E board : more than 48 new SL E board : more than 128)	
Three flashes	Flashing	• SL E board parent not set up when used without a remote controller • Faulty remote controller communication circuit	E1
Four flashes	Flashing	• Address overlapping for the SL E board and the Super Link network connected indoor unit	E2
Off	Flashing	• Number of connected devices exceeds the specification for the multiple indoor unit control	E10

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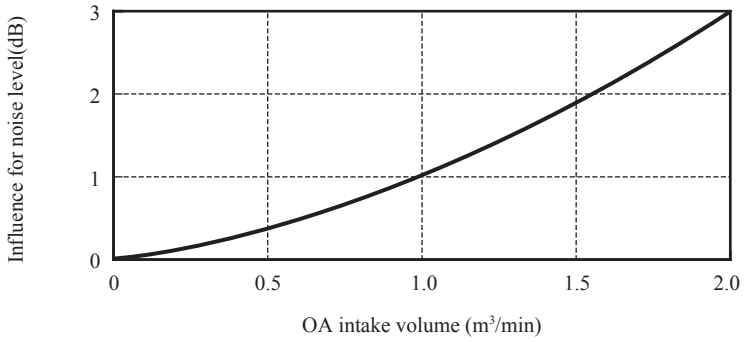
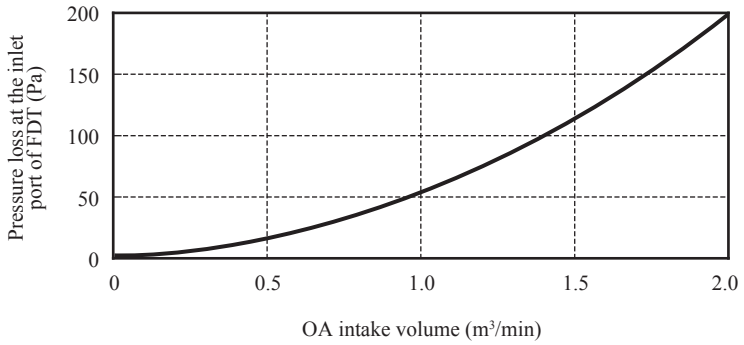
14. OUTDOOR AIR (OA) INTAKE FOR FDT

If it is required to intake OA through FDT unit, make sure to check following points carefully in order to conform to the requirement of customer.
If the OA intake volume through FDT unit is not satisfied with the required ventilation air volume, consider to install an indepemdent ventilation system.

1) Be sure to calculate cooling/heating load considering the ventilation heat load and to decide the air-conditioning system.
2) Be sure the OA intake volume to FDT unit should not exceed 20% of the Supply Air (SA) volume of FDT unit and it should be less than $2m^3$/min.
3) Be sure to decide the OA intake volume considering the mixed air temperature will be within the usage temperature range of FDT unit.
   Especially in following case, please consider to intake OA after processing OA or reducing the OA intake volume.
4) Be sure to equip a suitable filter for OA intaken in order to protect the dust.
   (Because OA does not pass through the filter equipped on FDT unit)
5) Be sure to insulate OA duct.
   (If not, it may have dew condensation.)
6) Be sure to interlock the booster fan for OA with the fan of FDT unit by using CNT connector.
   (If not, the dust trapped on the filter of FDT unit may be blown out to the room by the OA being intaken during the fan of FDT unit stopping)
7) Be sure to select a suitable booster fan for OA considering the pressure loss in the OA duct and the pressure loss at the inlet port of FDT with following diagram.
   (Please take into consideration the noise level as well)





<Selection of booster fan>

Booster fan should have a static pressure calculated with following formula

Static pressure of booster fan

= the pressure loss at the inlet port of FDT (from above diagram)

+ Pressure loss in the OA duct (In case of ϕ100 duct, 5Pa/m is required)

Select the booster fan from the fan characteristic diagram

INVERTER AIR CONDITIONERS

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