

MHI

TECHNICAL MANUAL

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

Ceiling cassette-4way compact type

**FDTC25VF
FDTC35VF**

CONTENTS

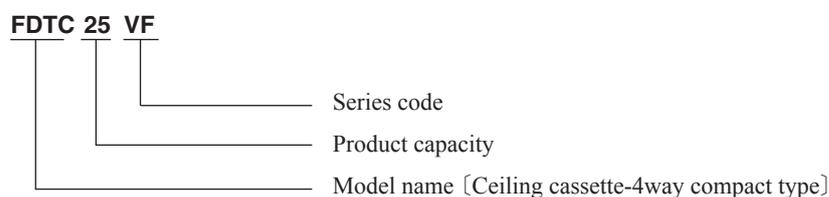
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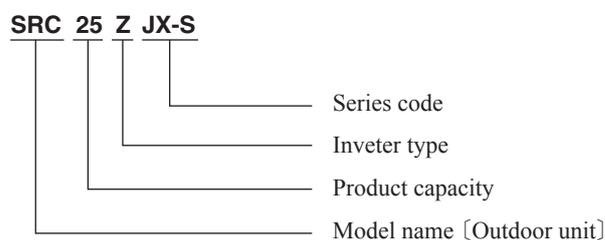
■ How to read the model name

Example:

• Indoor unit



• Outdoor unit



1. SPECIFICATIONS

Adapted to RoHS directive

Model		FDTC25VF	
		Indoor unit FDTC25VF	Outdoor unit SRC25ZJX-S
Item		Panel TC-PSA-25W-E	
Power source			220/230/240V~50Hz
Operation data		Cooling	Heating
Nominal capacity	kW	2.55 [0.9 (Min.)~3.2 (Max.)]	
Power consumption	kW	0.6	
Running current	A	3.0/2.9/2.8	
Power factor	%	91	
Inrush current	A	4.1	
Sound Pressure Level	dB(A)	Cooling P-Hi : 38 Hi : 36 Me : 32 Lo : 29 Heating P-Hi : 39 Hi : 38 Me : 33 Lo : 29.5	47
Exterior dimensions Height x Width x Depth	mm	Unit 248 × 570 × 570 Panel 35 × 700 × 700	595 x 780 x 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	
Refrigerant equipment Compressor type & Q'ty		—	RM-B5077MDE1 (Rotary type) x 1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.35 (DIAMOND FREEZE MA68)
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan × 1	Propeller fan × 1
Motor <Starting method>	W	33 <Direct line start>	24 <Direct line start>
Air flow (Standard)	CMM	Cooling P-Hi : 10 Hi : 9 Me : 8 Lo : 6.5 Heating P-Hi : 10.5 Hi : 9.5 Me : 8.5 Lo : 7	Cooling 29.5 Heating 27.0
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-E5, RC-EX1A (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 φ 6.35 (1/4") Pipe φ 6.35 (1/4") × 0.8 O/U φ 6.35 (1/4") Gas line : φ 9.52 (3/8") φ 9.52 (3/8") × 0.8 φ 9.52 (3/8")	
Connecting method		Flare piping	
Refrigerant line (one way) length		Max. 15m	
Vertical height difference between outdoor unit and indoor unit		Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.2kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	—
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 when the air flow is high mode.

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

(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 220/230/240V 50Hz.

(5) When wireless remote controller is used, fan is 3 speed setting (Hi-Me-Lo) only.

RWA000Z234 

Adapted to RoHS directive

Item	Model	FDTC35VF	
		Indoor unit FDTC35VF	Outdoor unit SRC35ZJX-S
		Panel TC-PSA-25W-E	
Power source		220/230/240V ~ 50Hz	
Operation data		Cooling	Heating
Nominal capacity	kW	3.6 [0.9 (Min.) ~ 4.1 (Max.)]	4.25 [0.9 (Min.) ~ 5.1 (Max.)]
Power consumption	kW	1.07	1.16
Running current	A	4.9/4.7/4.5	5.3/5.1/4.9
Power factor	%	99	99
Inrush current	A	5.3	
Sound Pressure Level	dB(A)	Cooling P-Hi : 41 Hi : 40 Me : 36 Lo : 30 Heating P-Hi : 43 Hi : 42 Me : 35 Lo : 32	50
Exterior dimensions Height x Width x Depth	mm	Unit 248 x 570 x 570 Panel 35 x 700 x 700	595 x 780 x 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	38
Refrigerant equipment Compressor type & Q'ty		—	RM-B5077MDE1 (Rotary type) x 1
Starting method		—	Direct line start
Refrigerant oil	ℓ	—	0.35 (DIAMOND FREEZE MA68)
Heat exchanger		Louver fin & inner grooved tubing	M shape fin & inner grooved tubing
Refrigerant control		—	Electronic expansion valve
Air handling equipment Fan type & Q'ty		Turbo fan x 1	Propeller fan x 1
Motor <Starting method>	W	33 <Direct line start>	24 <Direct line start>
Air flow (Standard)	CMM	Cooling P-Hi : 11 Hi : 9.5 Me : 9 Lo : 7 Heating P-Hi : 11.5 Hi : 10.0 Me : 9 Lo : 8	Cooling 32.5 Heating 29.5
Available static pressure	Pa	0	—
Outdoor air intake		Not possible	—
Air filter, Q'ty		Pocket plastic net x 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-E5, RC-EX1A (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	mm	Liquid line : I/U φ 6.35 (1/4") Pipe φ 6.35 (1/4") x 0.8 O/U φ 6.35 (1/4")	
Refrigerant piping size		Gas line : φ 9.52 (3/8")	φ 9.52 (3/8") x 0.8 φ 9.52 (3/8")
Connecting method		Flare piping	Flare piping
Refrigerant line (one way) length		Max. 15m	
Vertical height difference between outdoor unit and indoor unit		Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)	
Refrigerant Quantity		R410A 1.2kg in outdoor unit (incl. the amount for the piping of : 15m)	
Drain pump		Built-in Drain pump	—
Drain		Hose Connectable with VP20	—
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 when the air flow is high mode.

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

(2) This packaged air-conditioner is manufactured and tested in conformity with the ISO.

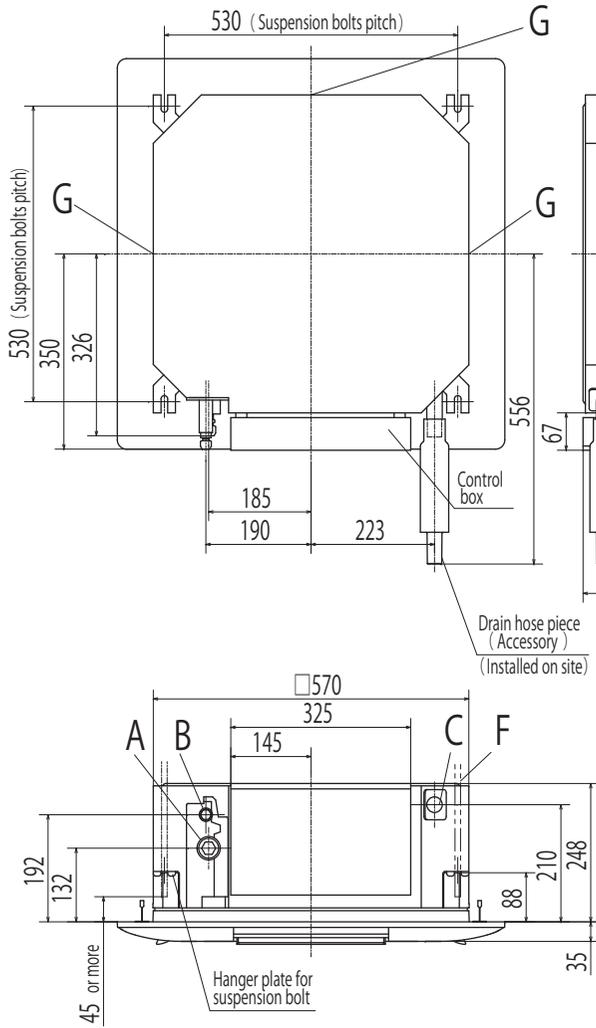
(3) Sound pressure level indicates the value in an anechoic chamber. During operation these value are somewhat higher due to ambient temperature.

(4) The operation data indicates when the air-conditioner is operated at 220/230/240V 50Hz.

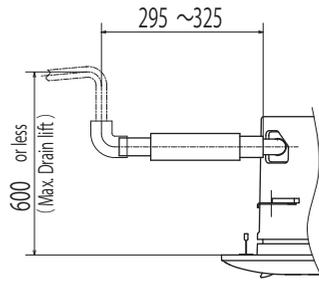
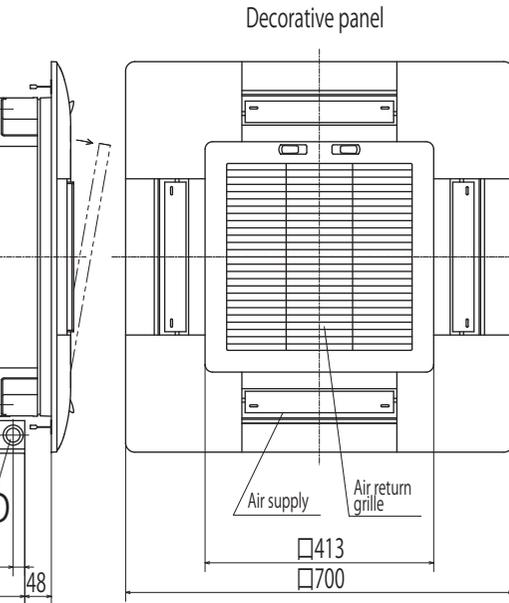
(5) When wireless remote controller is used, fan is 3 speed setting (Hi-Me-Lo) only.

RWA000Z234 

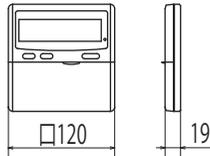
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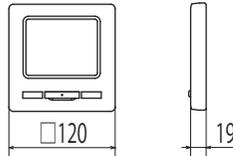
Notes (1) The model name label is attached on the control box lid.
 (2) Prepare the connecting socket (VP20) on site.
 (3) This unit is designed for 2x2 grid ceiling.
 If it is installed on a ceiling other than 2x2 grid ceiling, provide an inspection port on the control box side.



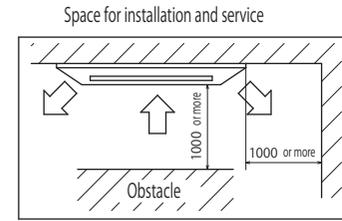
Remote controller (Option)



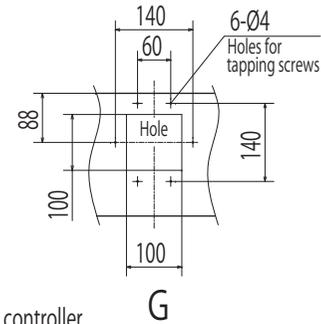
Remote controller (Option)



Symbol	Content	
A	Gas piping	Model 25,35 : ϕ 9.52 (3/8") (Flare)
		40-60 : ϕ 12.7 (1/2") (Flare)
B	Liquid piping	ϕ 6.35 (1/4") (Flare)
C	Drain piping	VP20 (I.D.20,O.D.26) Note (2)
D	Hole for wiring	ϕ 25
F	Suspension bolts	(M10 or M8)
G	Air outlet opening for ducting	(Knock out)



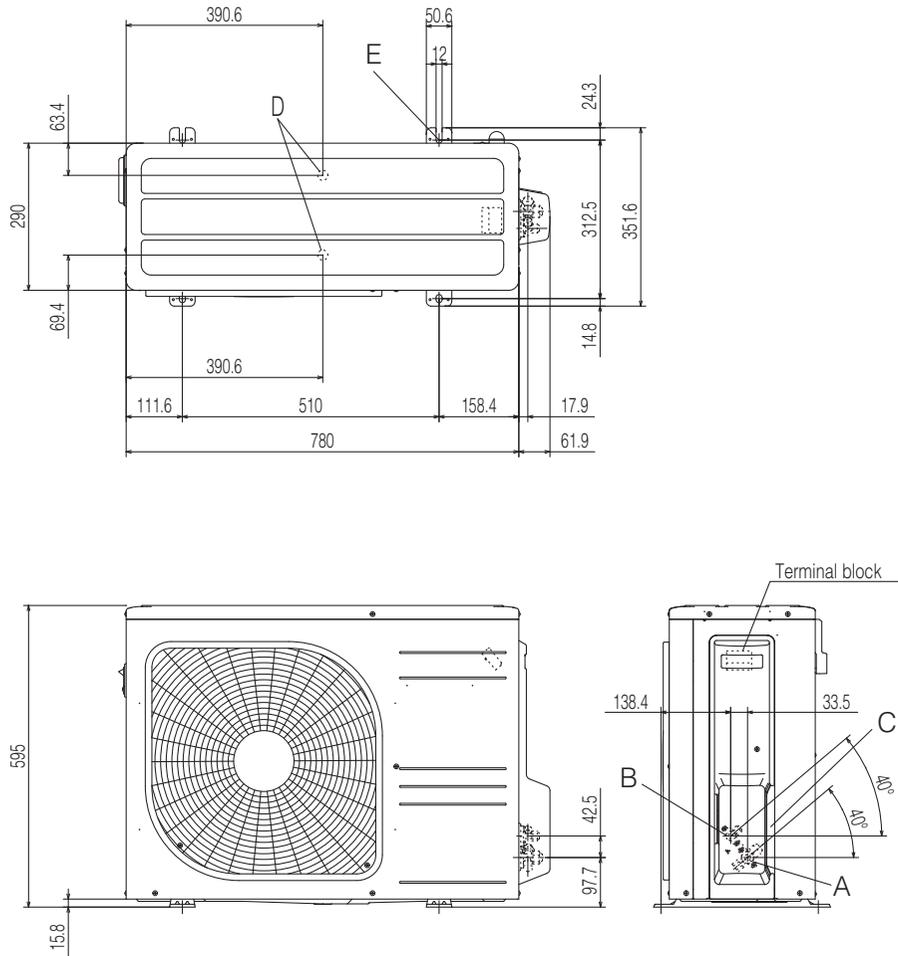
Make a space of 4000 or more between the units when installing more than one.



2. EXTERIOR DIMENSIONS

(1) Indoor units
 Models FDTc25VF, 35VF

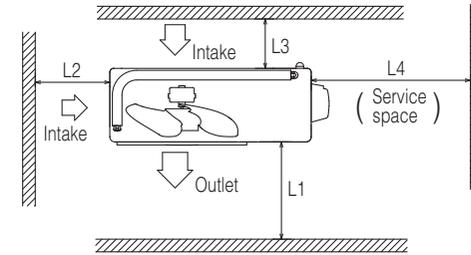
RCV000Z007 



Symbol	Content	
A	Service valve connection (gas side)	φ9.52 (3/8") (Flare)
B	Service valve connection (liquid side)	φ6.35 (1/4") (Flare)
C	Pipe/cable draw-out hole	
D	Drain discharge hole	φ20 x 2places
E	Anchor bolt hole	M10 x 4places

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

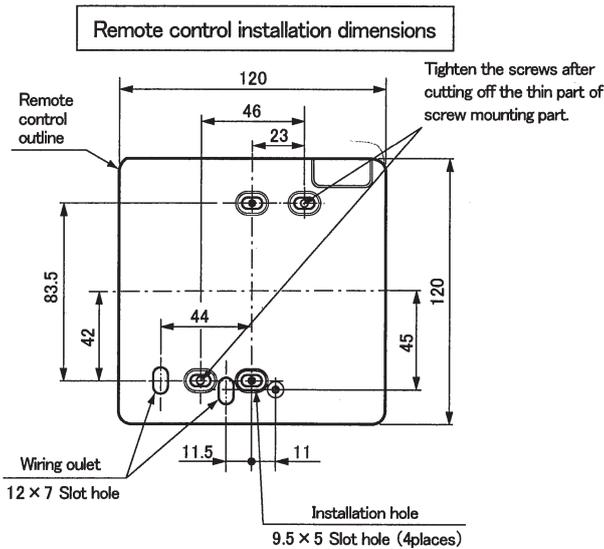
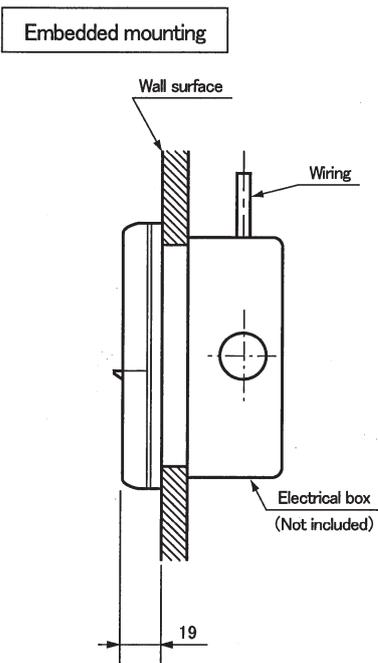
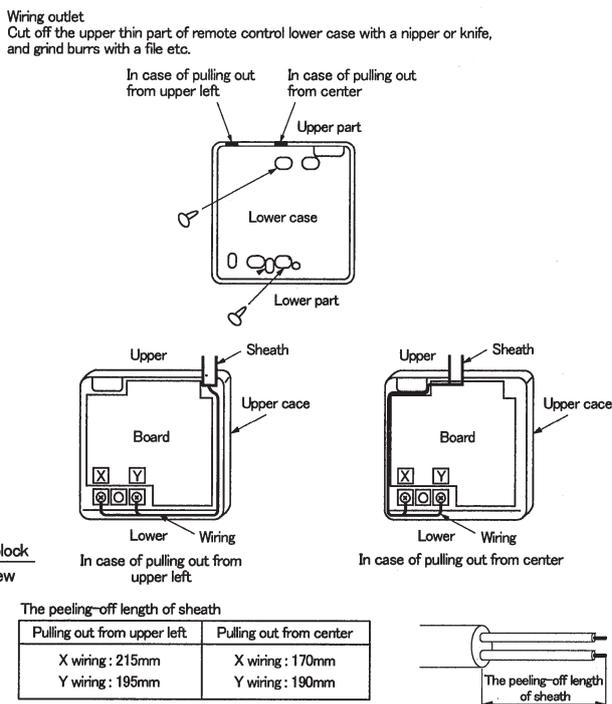
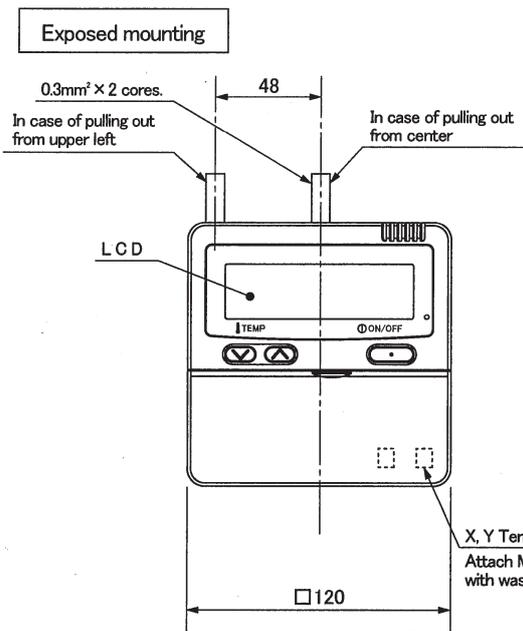
Examples of installation Dimensions	Examples of installation			
	I	II	III	IV
L1	Open	280	280	180
L2	100	75	Open	Open
L3	100	80	80	80
L4	250	Open	250	Open

Unit:mm

(2) Outdoor units
Models SRC25ZJX-S, 35ZJX-S

(3) Wired remote controller (option parts)

Model : RC-E5



(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 x 2 cores
Under 300m	0.75mm² x 2 cores
Under 400m	1.25mm² x 2 cores
Under 600m	2.0mm² x 2 cores

Adapted to **RoHS** directive

PJZ000Z295

PJA003Z340

CNB~Z	Connector
DM	Drain motor
F200~203	Fuse
FM i	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

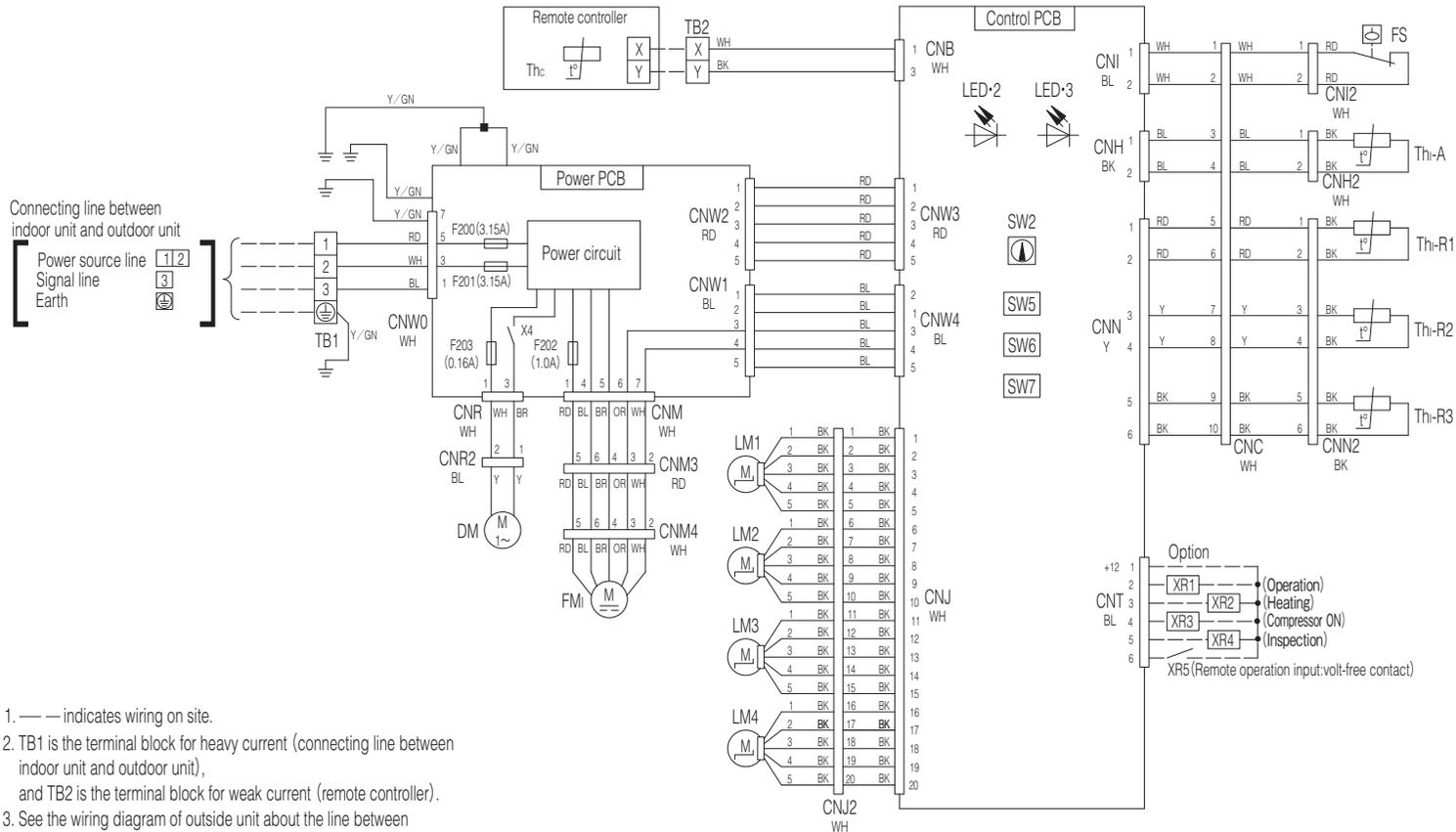
TB1	Terminal block (Power source) (□ mark)
TB2	Terminal block (Signal line) (□ mark)
Thc	Thermistor (Remote controller)
Th-A	Thermistor (Return air)
Th-R1,2,3	Thermistor (Heat exchanger)
X4	Relay for DM
■ mark	Closed-end connector

Color Marks

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

3. ELECTRICAL WIRING

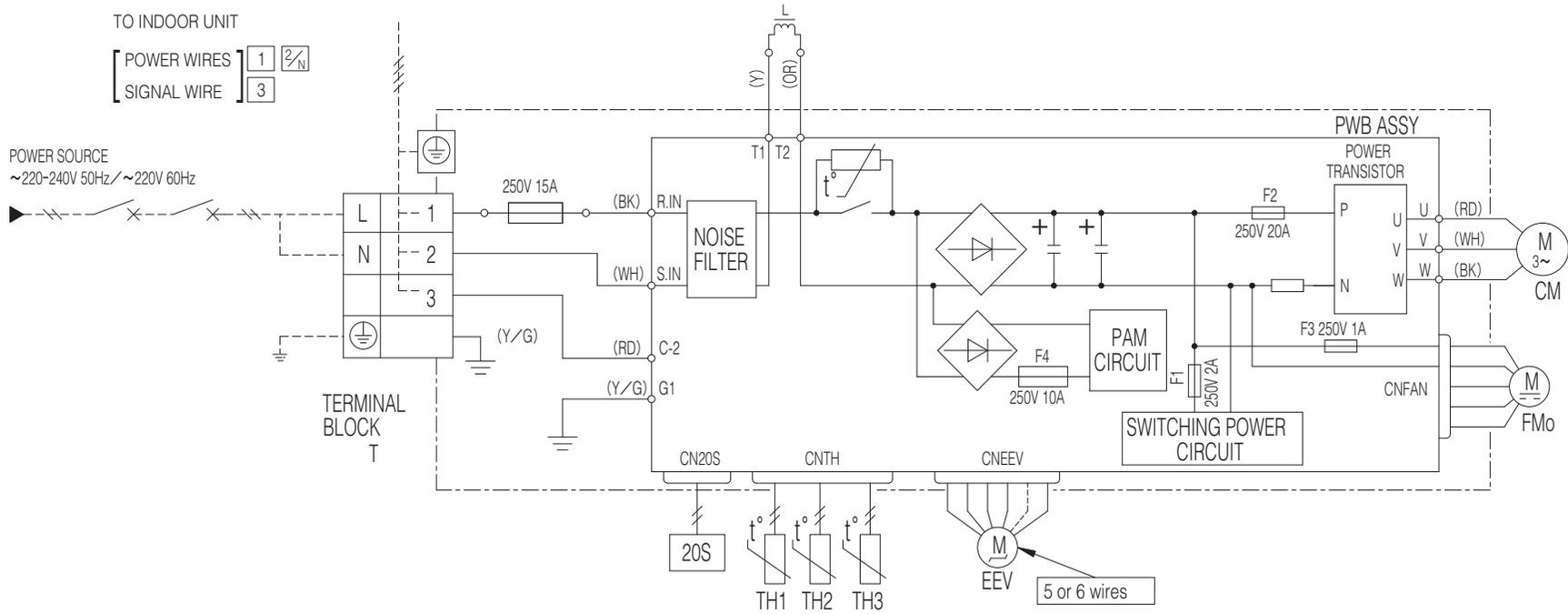
(1) Indoor units
Models FDTc25VF, 35VF



- Notes
- — indicates wiring on site.
 - 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).
 - See the wiring diagram of outside unit about the line between inside unit and outside unit.
 - Use twin core cable (0.3mm²X2) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.
 - Do not put remote controller line alongside power source line.

(2) Outdoor units

Models SRC25ZJX-S, 35ZJX-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
25	8	2.0	32	1.5mm ² x 3	1.5mm ²
35					

- 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	Connector
CNTH	
CNEEV	
CNFAN	
EEV	Electric expansion valve (coil)
FMo	Fan motor
L	Reactor
T	Terminal block
TH1	Heat exchanger sensor (outdoor unit)
TH2	Outdoor air temp.sensor
TH3	Discharge pipe temp.sensor
20S	Solenoid valve for 4 way valve

Mark	Color
BK	Black
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

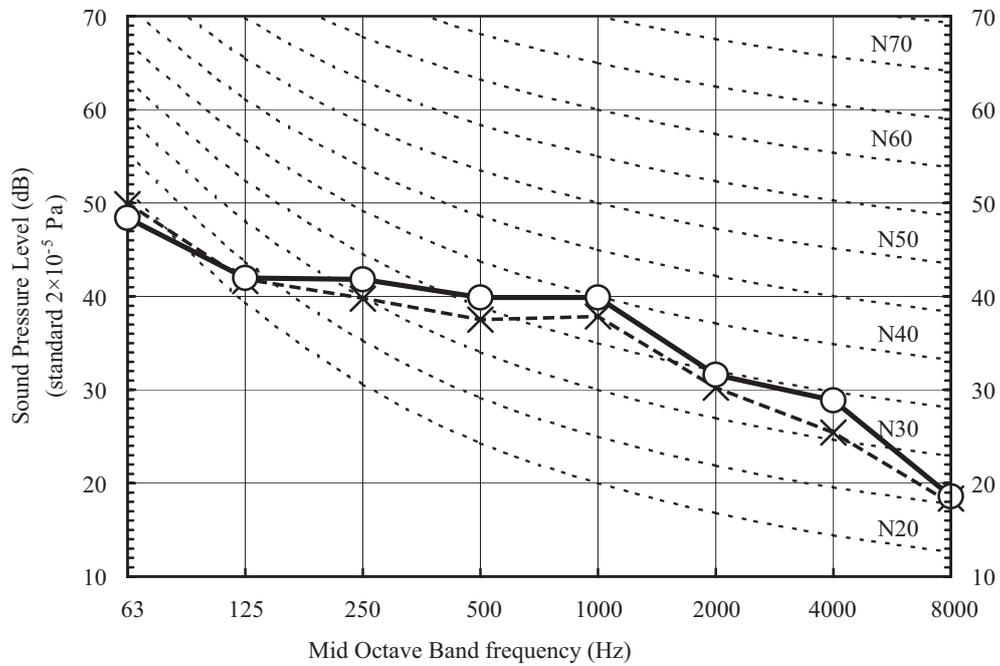
4. NOISE LEVEL

Model **FDTC25VF**
(Indoor Unit)

Condition ISO-T1, JIS C9612

Model	FDTC25VF	
Noise Level	Cooling	38 dB(A)
	Heating	39 dB(A)

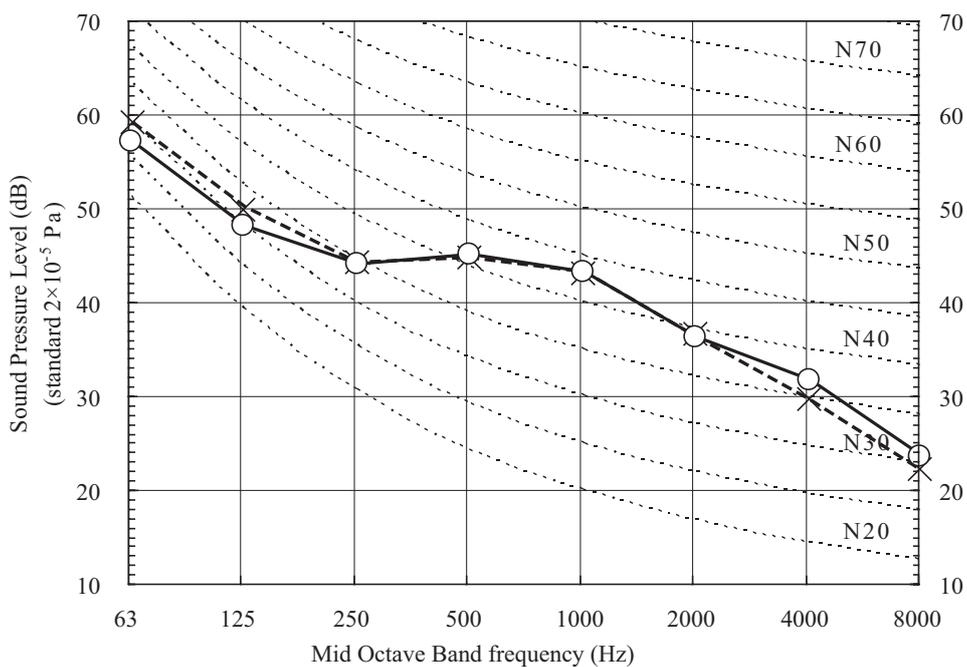
× Cooling, ○ — Heating



(Outdoor Unit)

Model	SRC25ZJX-S	
Noise Level	Cooling	47 dB(A)
	Heating	47 dB(A)

× Cooling, ○ — Heating



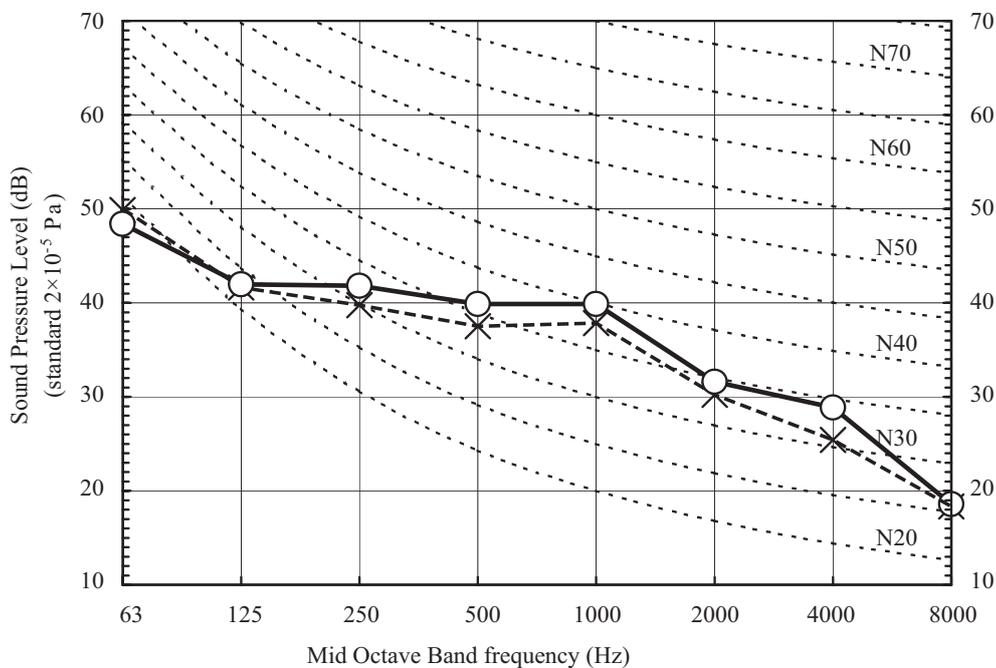
Model FDTC35VF

Condition	ISO-T1, JIS C9612
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(Indoor Unit)

Model	FDTC35VF	
Noise Level	Cooling	41 dB(A)
	Heating	43 dB(A)

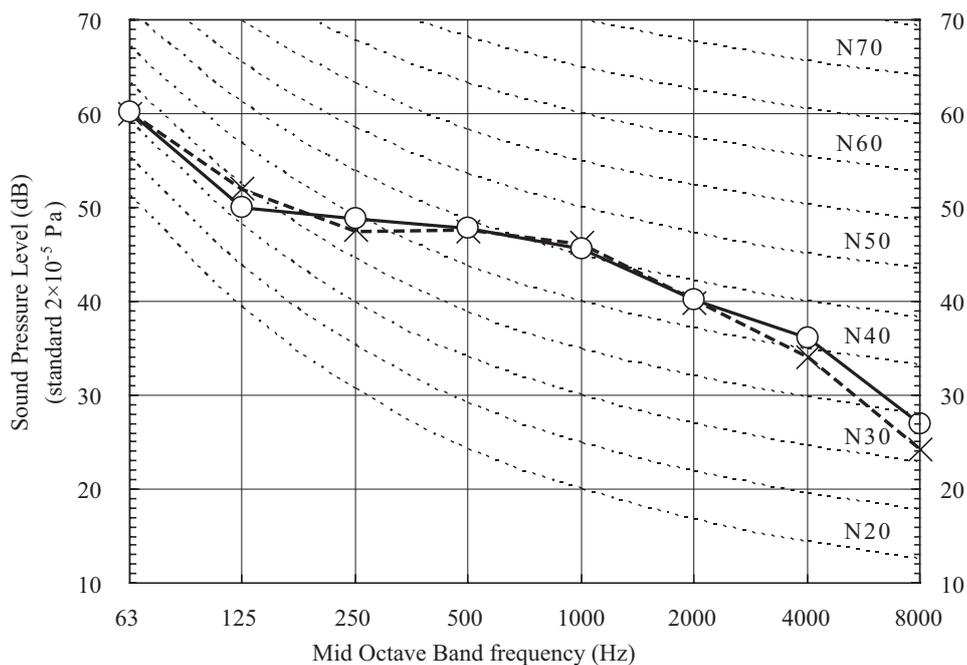
× Cooling, ○ — Heating



(Outdoor Unit)

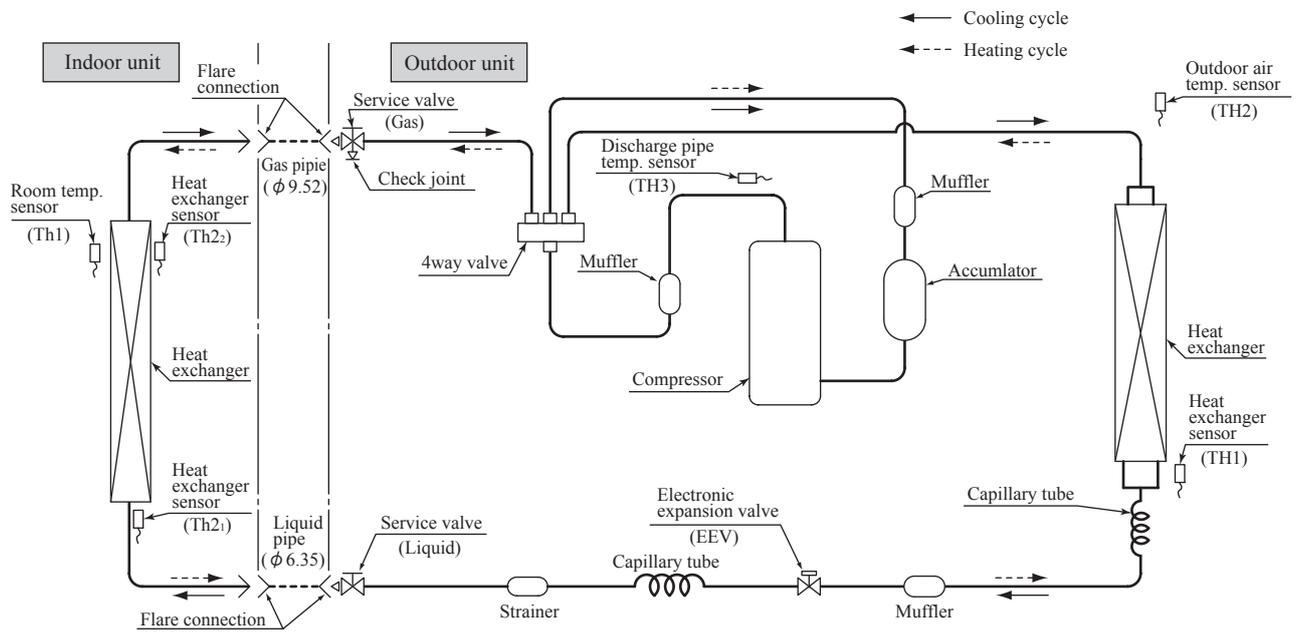
Model	SRC35ZJX-S	
Noise Level	Cooling	50 dB(A)
	Heating	50 dB(A)

× Cooling, ○ — Heating



5. PIPING SYSTEM

Models FDTC25VF, 35VF



6. RANGE OF USAGE & LIMITATIONS

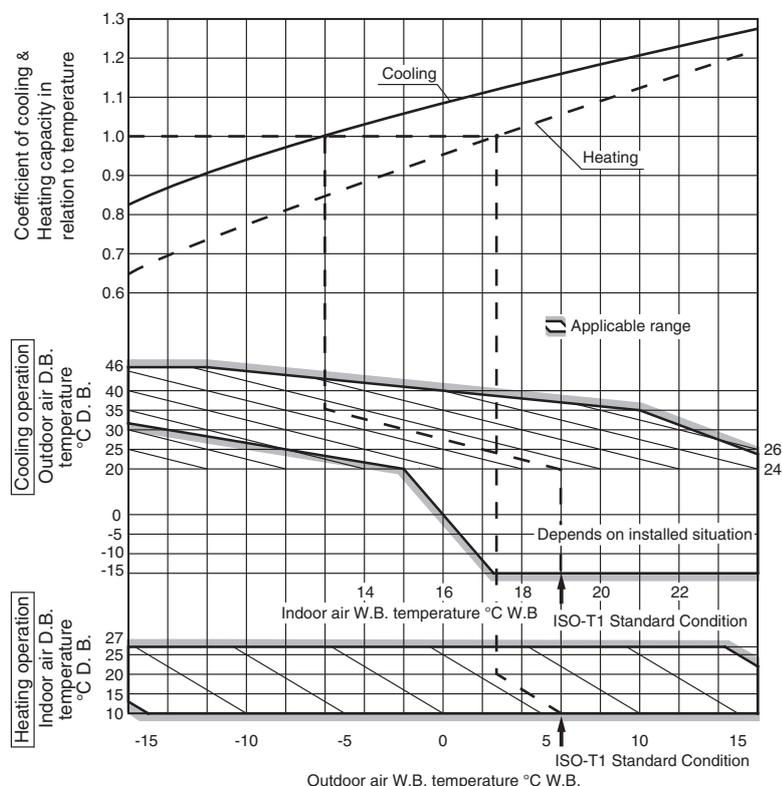
Item	Models	FDTC25, 35VF
Indoor return air temperature (Upper, lower limits)		Cooling operation : Approximately 18 to 32°C D.B. Heating operation : Approximately 10 to 27°C D.B.
Outdoor air temperature (Upper, lower limits)		Cooling operation : Approximately -15 to 46°C D.B. Heating operation : Approximately -15 to 21°C D.B.
Refrigerant line (one way) length		Max. 15m
Vertical height difference between outdoor unit and indoor unit		Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)
Power source voltage		Rating ± 10%
Voltage at starting		Min. 85% of rating
Frequency of ON-OFF cycle		Max. 4 times/h (Inching prevention 10 minutes)
ON and OFF interval		Min. 3 minutes

Selection chart

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

Net capacity = Capacity shown on specification × Correction factors as follows.

(1) Coefficient of cooling and heating capacity in relation to temperatures



(2) 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 piping length between the indoor and outdoor units.

Piping length [m]	7	10	15	20	25	30
Cooling	1.0	0.99	0.975	0.965	0.95	0.935
Heating	1.0	1.0	1.0	1.0	1.0	1.0

(3) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (1), (2) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in °CWB	-15	-10	-9	-7	-5	-3	-1	1	3	5 or more
Adjustment coefficient	0.95	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDTC35VF with the piping length of 15m, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is Net cooling capacity =

$$\begin{array}{ccccccc}
 \frac{3600}{\uparrow} & \times & \frac{0.975}{\uparrow} & \times & \frac{1.0}{\uparrow} & = & 3510 \text{ W} \\
 \text{FDTC35VF} & & \text{Length 15m} & & \text{Factor by air} & & \\
 & & & & \text{temperatures} & &
 \end{array}$$

7. CAPACITY TABLES

Model FDTC25VF

Cool Mode

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
Hi 9.0 (m ³ /min)	10	2.87	2.46	3.01	2.42	3.12	2.54	3.17	2.51	3.23	2.48	3.32	2.58	3.41	2.51
	12	2.82	2.44	2.96	2.40	3.07	2.52	3.13	2.49	3.19	2.46	3.28	2.56	3.38	2.50
	14	2.77	2.41	2.90	2.38	3.03	2.50	3.09	2.47	3.14	2.45	3.25	2.55	3.34	2.49
	16	2.71	2.39	2.85	2.35	2.98	2.48	3.04	2.46	3.10	2.43	3.21	2.54	3.31	2.48
	18	2.66	2.36	2.80	2.33	2.93	2.46	3.00	2.43	3.05	2.41	3.17	2.52	3.27	2.46
	20	2.60	2.33	2.74	2.30	2.88	2.44	2.95	2.42	3.01	2.39	3.13	2.51	3.23	2.45
	22	2.54	2.30	2.68	2.27	2.83	2.42	2.90	2.40	2.96	2.37	3.08	2.49	3.19	2.44
	24	2.48	2.27	2.62	2.25	2.78	2.40	2.85	2.38	2.91	2.36	3.04	2.48	3.15	2.43
	26	2.42	2.25	2.56	2.22	2.72	2.37	2.80	2.36	2.86	2.34	2.99	2.46	3.10	2.41
	28	2.35	2.22	2.49	2.20	2.67	2.35	2.75	2.34	2.81	2.32	2.95	2.45	3.06	2.40
	30	2.29	2.17	2.43	2.17	2.61	2.33	2.69	2.32	2.75	2.30	2.90	2.43	3.01	2.39
	32	2.22	2.10	2.36	2.14	2.55	2.31	2.64	2.30	2.70	2.28	2.85	2.42	2.96	2.36
	34	2.15	2.04	2.29	2.11	2.49	2.28	2.58	2.28	2.64	2.26	2.79	2.39	2.91	2.35
	35	2.12	2.01	2.26	2.10	2.46	2.27	2.55	2.27	2.61	2.25	2.77	2.39	2.89	2.34
	36	2.08	1.97	2.22	2.08	2.43	2.25	2.52	2.25	2.58	2.24	2.74	2.38	2.86	2.33
	38	2.01	1.91	2.15	2.04	2.36	2.23	2.46	2.23	2.52	2.21	2.69	2.36	2.81	2.32
39	1.97	1.87	2.11	2.00	2.33	2.21	2.43	2.22	2.49	2.20	2.66	2.35	2.78	2.31	

Heat Mode

Air flow	outdoor air temp.	indoor air temp				
		16°CDB	18°CDB	20°CDB	22°CDB	24°CDB
Hi 9.5 (m ³ /min)	-15°CWB	2.12	2.08	2.03	1.99	1.94
	-10°CWB	2.40	2.36	2.33	2.27	2.22
	-5°CWB	2.60	2.56	2.51	2.48	2.44
	0°CWB	2.73	2.69	2.64	2.61	2.57
	5°CWB	3.47	3.43	3.42	3.35	3.30
	6°CWB	3.53	3.49	3.45	3.41	3.36
	10°CWB	3.75	3.72	3.69	3.64	3.61
	15°CWB	4.08	4.05	4.02	3.97	3.94
20°CWB	4.39	4.35	4.33	4.28	4.25	

Model FDTC35VF

Cool Mode

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
Hi 9.5 (m ³ /min)	10	4.06	3.08	4.25	3.02	4.40	3.12	4.48	3.08	4.55	3.04	4.69	3.11	4.81	3.01
	12	3.98	3.04	4.17	2.99	4.34	3.09	4.42	3.05	4.50	3.01	4.64	3.09	4.77	3.00
	14	3.91	3.00	4.10	2.95	4.28	3.06	4.36	3.02	4.44	2.98	4.58	3.07	4.72	2.98
	16	3.83	2.96	4.02	2.92	4.21	3.03	4.29	2.99	4.38	2.95	4.53	3.05	4.67	2.96
	18	3.75	2.92	3.95	2.88	4.14	3.00	4.23	2.96	4.31	2.93	4.47	3.03	4.61	2.94
	20	3.67	2.88	3.87	2.84	4.07	2.97	4.16	2.94	4.25	2.90	4.41	3.01	4.56	2.91
	22	3.59	2.83	3.78	2.80	4.00	2.93	4.10	2.91	4.18	2.88	4.35	2.98	4.50	2.89
	24	3.50	2.79	3.70	2.76	3.92	2.90	4.02	2.88	4.11	2.85	4.29	2.95	4.44	2.87
	26	3.41	2.75	3.61	2.72	3.84	2.87	3.95	2.85	4.04	2.82	4.23	2.92	4.38	2.85
	28	3.32	2.70	3.52	2.68	3.76	2.83	3.88	2.82	3.96	2.79	4.16	2.90	4.32	2.83
	30	3.23	2.65	3.43	2.63	3.68	2.80	3.80	2.79	3.89	2.76	4.09	2.88	4.25	2.81
	32	3.14	2.61	3.33	2.59	3.60	2.76	3.72	2.75	3.81	2.73	4.02	2.85	4.18	2.79
	34	3.04	2.56	3.23	2.54	3.51	2.73	3.64	2.72	3.73	2.70	3.94	2.83	4.11	2.77
	35	2.99	2.54	3.18	2.52	3.47	2.70	3.60	2.71	3.68	2.68	3.91	2.81	4.07	2.75
	36	2.94	2.52	3.13	2.50	3.42	2.69	3.56	2.68	3.64	2.66	3.87	2.80	4.04	2.74
	38	2.84	2.46	3.03	2.46	3.33	2.65	3.47	2.65	3.56	2.63	3.79	2.77	3.96	2.72
39	2.79	2.44	2.98	2.43	3.29	2.63	3.43	2.63	3.51	2.61	3.75	2.76	3.92	2.70	

Heat Mode

Air flow	outdoor air temp.	indoor air temp				
		16°CDB	18°CDB	20°CDB	22°CDB	24°CDB
Hi 10.0 (m ³ /min)	-15°CWB	2.61	2.56	2.50	2.45	2.39
	-10°CWB	2.96	2.91	2.87	2.79	2.74
	-5°CWB	3.20	3.16	3.09	3.06	3.01
	0°CWB	3.36	3.31	3.25	3.21	3.17
	5°CWB	4.28	4.23	4.21	4.12	4.07
	6°CWB	4.35	4.30	4.25	4.20	4.15
	10°CWB	4.62	4.58	4.55	4.49	4.44
	15°CWB	5.03	4.99	4.95	4.90	4.85
20°CWB	5.41	5.36	5.34	5.28	5.23	

8. APPLICATION DATA

PJA012D786

8.1 Installation of indoor unit

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 22.
 This unit must always be used with the panel.

SAFETY PRECAUTIONS	
<p>● Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.</p> <p>● 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 mention the important items to protect your health and safety so strictly follow them by any means.</p> <p>● The meanings of "Marks" used here are as shown as follows: ⓧ Never do it under any circumstances. ⚠ Always do it according to the instruction.</p> <p>● 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.</p>	
⚠ 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 connectors 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 properly.	⚠
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 sulfuric 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.	⊘
<ul style="list-style-type: none"> • 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 ammonia atmospheres. • Places exposed to oil mist or steam directly. • On vehicles and ships • Places where machinery which generates high harmonics is used. 	<ul style="list-style-type: none"> • 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)	⊘
<ul style="list-style-type: none"> • 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 item

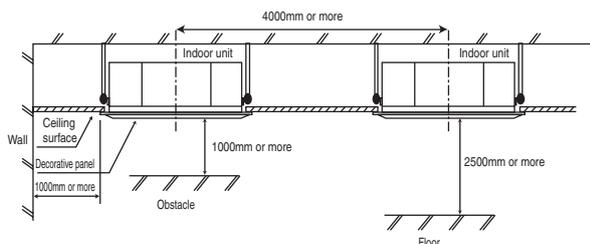
For unit hanging		For refrigerant pipe			For drain pipe			
Flat washer (M10)	Level gauge (Insulation)	Pipe cover(big)	Pipe cover (small)	Strap	Pipe cover(big)	Pipe cover(small)	Drain hose	Hose clamp
8	4	1	1	4	1	1	1	1
For unit hanging	For adjustment in hoisting in the unit's main body	For heat insulation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

- 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.)
- 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.
- If there are 2 units of wireless type, keep them away for more than 5m to avoid malfunction due to cross communication.
- When plural indoor units are installed nearby, keep them away for more than 4m.

Space for installation and service

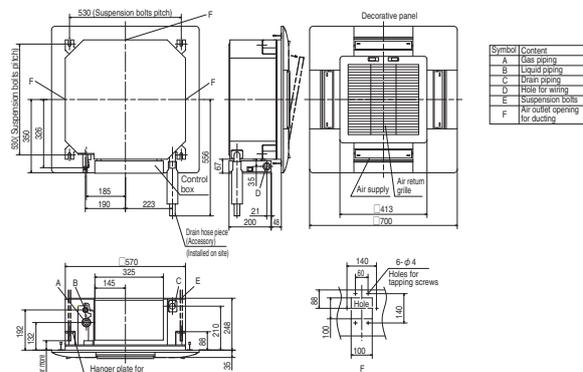
- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.
- Install the indoor unit at a height of more than 2.5m above the floor.



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 hung 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.

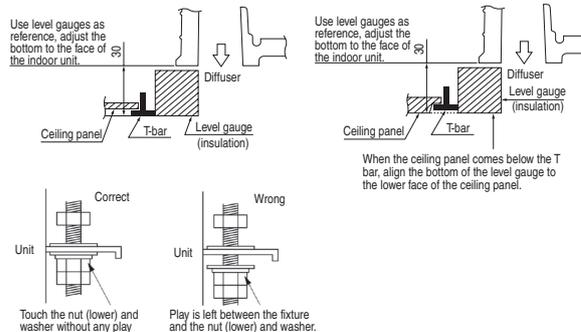
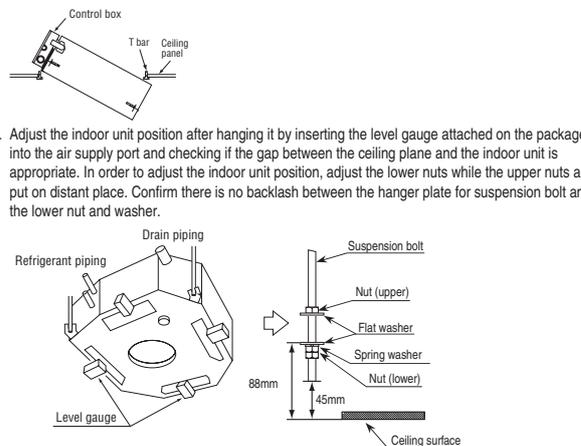
Ceiling opening, Suspension bolts pitch, Pipe position



④ Installation of indoor unit

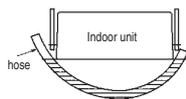
Work procedure

- 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.
- Arrange the suspension bolt at the right position (530mmx530mm).
- Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
- 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.



④ Installation of indoor unit (continued)

- 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.
- 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

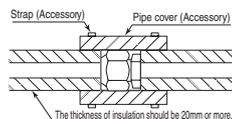
Caution

- 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

- 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.)
- 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.
- 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.
- 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

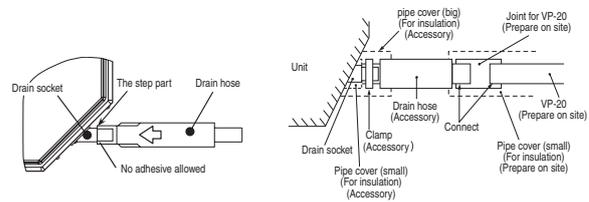
Caution

- 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.

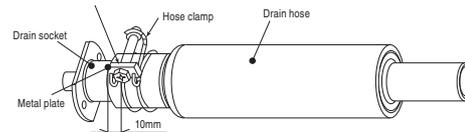
⑥ Drain pipe (continued)

Work procedure

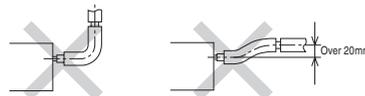
- Make sure to insert the drain hose (the end made of soft PVC) to the end of the step part of drain socket. Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
 - Do not apply adhesives on this end.



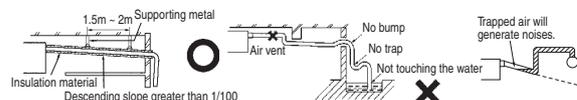
Fasten the screw within 5mm left to the nut.



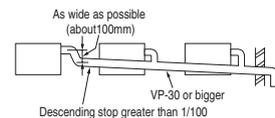
- Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
 - As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
 - Make sure that the adhesive will not get into the 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.



- 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.



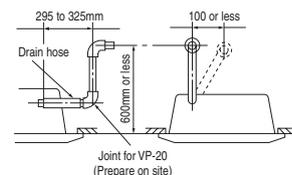
- When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



- 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

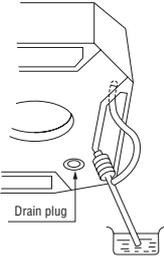
- The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water 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.



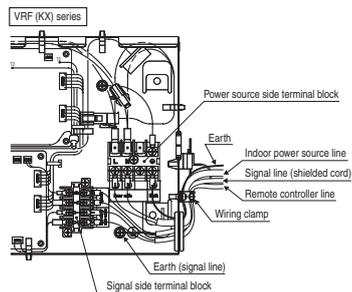
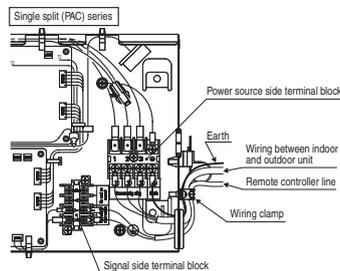
Drain pump operation

- 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 [L and N]) 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.



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 

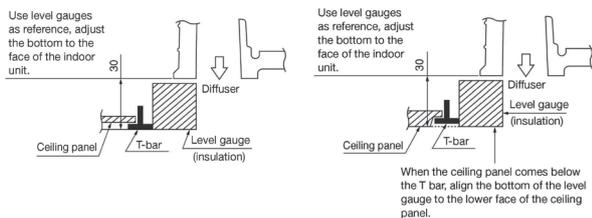
Please read this manual together with the indoor unit's installation manual. (See page 16)

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

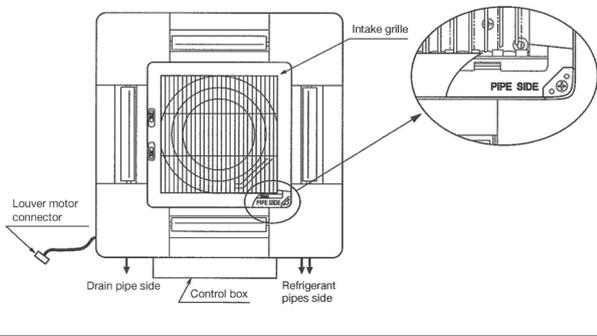
- Read this manual together with the air conditioner installation manual carefully.
- Check if the gap between the ceiling plane and the indoor unit is correct by inserting the level gauge into the air outlet port of the indoor unit. (See below drawing)
- Adjust the installation elevation if necessary.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



② Orientation of the panel and return air grille installation

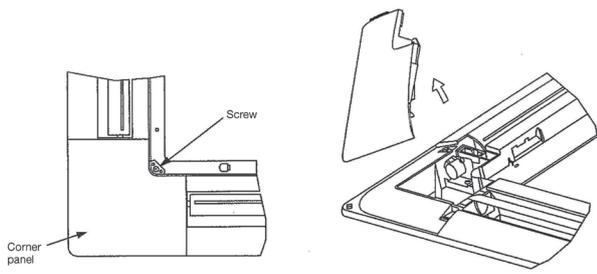
1. Take note that there is an orientation to install the panel.
 - Attach the panel with the orientation shown on the below.
 - Align the "PIPE SIDE" mark (on the panel) with the refrigerant pipes on the indoor unit.
2. The intake grille can also be attached in a rotated position by 90 degrees.

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.



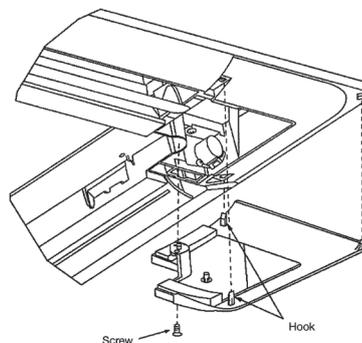
③ Removing a corner panel

- 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.



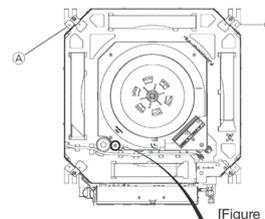
⑤ Panel installation

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

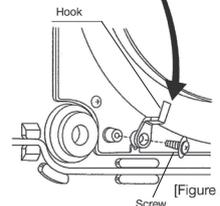
Accessories

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 (A)(B)) [Figure 1]

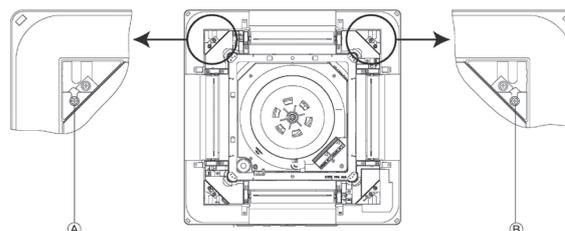


2. Attach the hook supplied with the panel to the main body with the hook fixing screw (1 screw). [Figure 2]

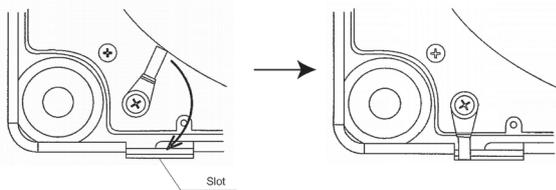


3. Open the intake grille.
4. Please remove the screw of a corner panel and remove a corner panel. (four places)

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



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

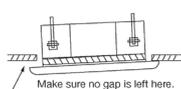
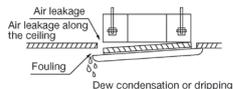


[Figure 4]

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

Caution

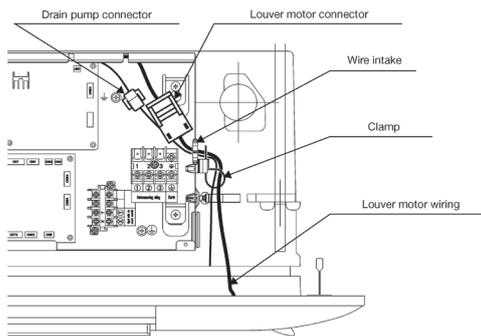
- Improperly tightened hanging bolts can cause the problems listed below, so make sure that you have tightened them securely.
- If there is a gap remaining between the ceiling and the decorative panel even after the hanging bolts are tightened, adjust the installation level of the indoor unit again.



8. Please open the lid of a control box.

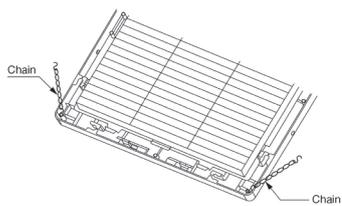
9. Like drain pump wiring, please band together by the clamp and put in louver motor wiring into a control box. [Figure 5]

10. Please connect a louver motor connector. [Figure 5]



[Figure 5]

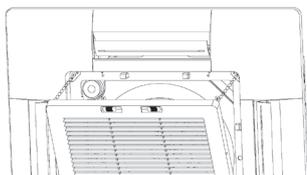
11. Attach two chains to the intake grille with two screws. [Figure 6]



[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.

*1 This function is not able to be set with wireless remote controls or simple remote control (RCH-H3).
*2 For setting the swing range of other louvers, return to 1 and proceed same procedure respectively.

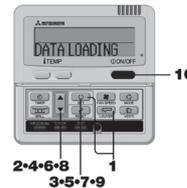
7 How to set the airflow direction

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.

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 1/1"
"1/0000"



2 Press ▲ or ▼ button. (selection of indoor unit)

Select the indoor unit of which the louver is set.

[EXAMPLE]
"1/0001" (displayed for two seconds)
"DATA LOADING"
"No.1"

3 Press SET button. (determination of indoor unit)

Selected indoor unit is fixed.

[EXAMPLE]
"1/0001" (displayed for two seconds)
"DATA LOADING"
"No.1"

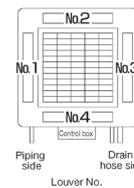
NOTICE

• 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.

4 Press ▲ or ▼ button. (selection of louver No.)

Select the louver No. to be set according to the right figure.

[EXAMPLE]
"No.1" (displayed for two seconds)
"No.4"



5 Press SET button. (Determination of louver No.)

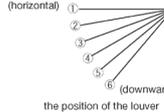
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

[EXAMPLE] If No. 1 louver is selected
"No.1 UPPER1" (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 downwards. "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

[EXAMPLE]
"No.1 UPPER1" (the most horizontal)
"No.1 UPPER2"
"No.1 UPPER3"
"No.1 UPPER4"
"No.1 UPPER5" (the most downwards)
"No.1 UPPER6" (return to the default setting)



7 Press SET button. (i in 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)

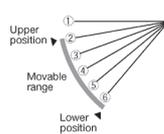
Select the lower limit position of louver. "position 1" is the most horizontal, and "position 6" is the most downwards. "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

[EXAMPLE]
"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. (i in 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 function.

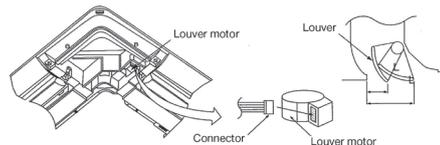
ATTENTION

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.

8.2 Installation of outdoor unit

Models SRC25ZJX-S, 35ZJX-S

RWC012A030A 

Models 25-35
R410A REFRIGERANT USED

- This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 16
- 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

- We recommend you to read this “SAFETY PRECAUTIONS” carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
- The precautions described below are divided into **WARNING** and **CAUTION**. The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the **WARNING** and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in **CAUTION**. These are very important precautions for safety. Be sure to observe all of them without fail.
- 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, gloves, 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.
- Symbols which appear frequently in the text have the following meaning:

	Observe instructions with great care		Strictly prohibited		Provide proper earthing
---	--------------------------------------	---	---------------------	---	-------------------------

WARNING

	<ul style="list-style-type: none"> • 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. • Install the system in full accordance with the instruction 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. • 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. 	<ul style="list-style-type: none"> • 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 burst 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. 	<ul style="list-style-type: none"> • 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 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 disconnecting refrigerant pipes in case of pump down operation. If disconnecting refrigerant pipes in state of opening operation valves before compressor stopping, air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit • 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.
	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
	<ul style="list-style-type: none"> • 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. 		

⚠ CAUTION

!	<ul style="list-style-type: none"> • Use the circuit breaker with sufficient breaking capacity. If the breaker does not have sufficient breaking capacity, it can cause the unit malfunction and fire. • Earth leakage breaker must be installed. If the earth leakage breaker is not installed, it can cause electric shocks. • Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations. • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
⊘	<ul style="list-style-type: none"> • Do not install the unit in the locations listed below. <ul style="list-style-type: none"> • 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 ammoniac 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. It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire. 	<ul style="list-style-type: none"> • Do not install the outdoor unit in the locations listed below. <ul style="list-style-type: none"> • 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 plants. • 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 	<p>the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.</p> <ul style="list-style-type: none"> • 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.

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)	1
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
① Piping cover (for insulation of connection piping)	1

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

Notabilia as a unit designed for R410A

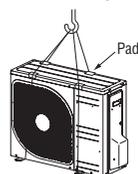
- Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant. A cylinder containing R410A has a pink indication mark on the top.
- A unit designed for R410A has adopted a different size indoor unit operation valve charge port 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 a charge 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.

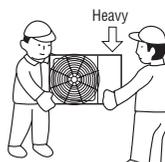
1) Delivery

- 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 (diffuser side) 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 front panel of the unit and with his left hand the corner column section.

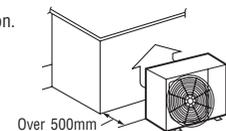


3) Selecting the installation location

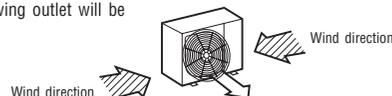
Be careful of the following conditions and choose an installation place.

- Where air is not trapped.
- Where the installation fittings can be firmly installed.
- Where wind does not hinder the intake and outlet pipes.
- Out of the heat range of other heat sources.
- A place where stringent regulation of electric noises is applicable.
- Where it is safe for the drain water to be discharged.
- Where noise and hot air will not bother neighboring residents.
- Where snow will not accumulate.
- Where strong winds will not blow against the outlet pipe.
- A place where no TV set or radio receiver is placed within 5m. (If electrical interference is caused, seek a place less likely to cause the problem)
- If a operation is conducted when the outdoor air temperature is -5°C lower, the outdoor unit should be installed at a place where it is not influenced by natural wind.
- Where it is likely that the unit is subjected to strong winds, provide wind guards according to the following guidelines. Strong winds can cause performance degradation, an accidental stop due to a rise of high pressure and a broken fan.

1. Place the unit outlet pipe perpendicular to the wind direction.



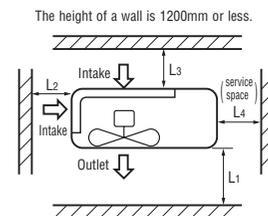
2. Install so the direction of the air from the blowing outlet will be perpendicular to the direction of the wind.



4) Installation space

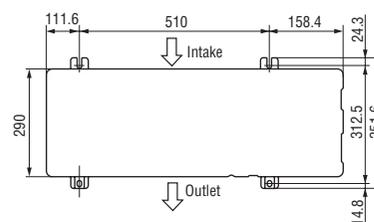
- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- When more than one unit are installed side by side, provide a 250mm or wider interval between them as a service space. In order to facilitate servicing of controllers, please provide 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.

Size	Example installation	Model 20, 25, 35 (mm)			
		I	II	III	IV
L1	Open	280	280	180	
L2	100	75	Open	Open	
L3	100	80	80	80	
L4	250	Open	250	Open	

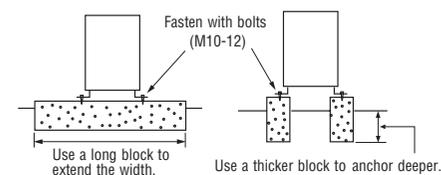


5) Installation

① Anchor bolt fixed position



② Notabilia for installation



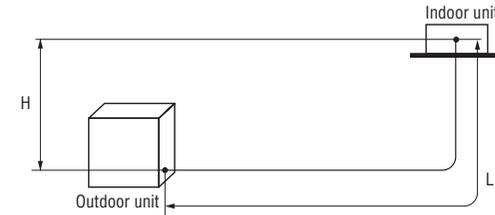
- In installing the unit, fix the unit's legs with bolts specified on the left.
 - The protrusion of an anchor bolt on the front side must be kept within 15 mm.
 - Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
 - Refer to the above illustrations for 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 within 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.
- Additional refrigerant charge is not required at all.

Restrictions		Dimensional restrictions	Marks appearing in the drawing on the right
Main pipe length		15m or less	L
Elevation difference between indoor and outdoor units	When the outdoor unit is positioned higher,	10m or less	H
	When the outdoor unit is positioned lower,	10m 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.

2) Determination of pipe size

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

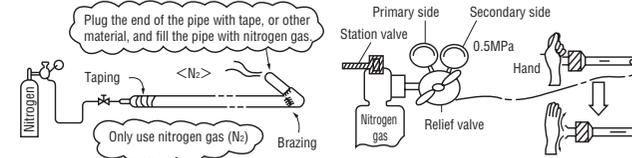
	Model 20, 25, 35	
	Gas pipe	Liquid pipe
Outdoor unit connected	φ 9.52 Flare	φ 6.35 Flare
Refrigerant piping (branch pipeL)	φ 9.52	φ 6.35
Indoor unit connected	φ 9.52	φ 6.35

When pipe is brazing.

About brazing

Brazing must be performed under a nitrogen gas flow.

Without nitrogen gas, a large quantity of foreign matters (oxidized film) 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	9.52
Minimum pipe wall thickness [mm]	0.8	0.8
Pipe material*	O-type pipe	O-type pipe

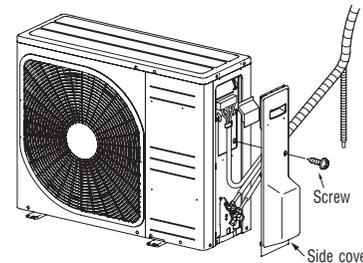
*Phosphorus deoxidized seamless copper pipe ICS 23.040.15, ICS 77.150.30

4) On-site piping work

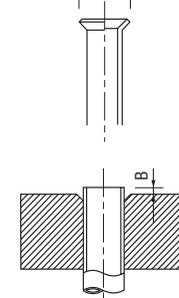
IMPORTANT Take care so that installed pipes may not touch components within a unit. If touching with an internal component, it will generate abnormal sounds and/or vibrations.

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.
- Tighten a flare joint securely.



A



Flared pipe end : A (mm)

Copper pipe outer diameter	A
φ6.35	9.1
φ9.52	13.2

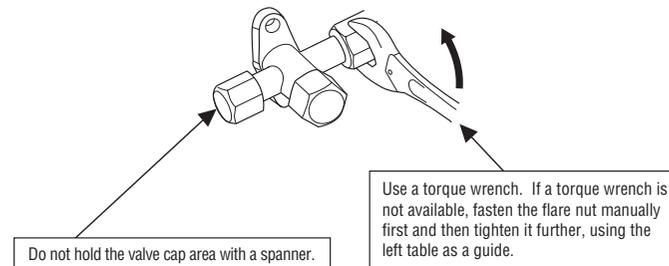
Copper pipe protrusion for flaring : B (mm)

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
φ9.52		

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

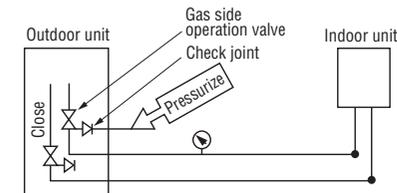
Fix both liquid and gas operation valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

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
φ9.52 (3/8")	34~42	30~45	200



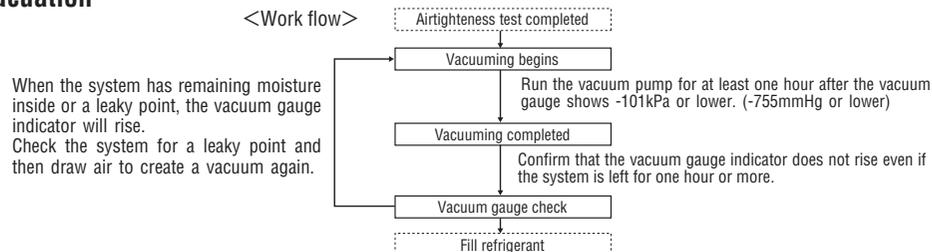
5) Air tightness test

- 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.
 - Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
 - Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
 - Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
 - 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°C, the pressure also fall approximately 0.01 MPa. The pressure, if changed, should be compensated for.
 - 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.
- 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

<Work flow>



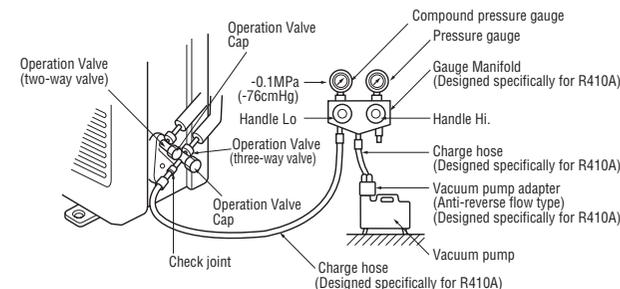
When the system has remaining moisture inside or a leaky point, the vacuum gauge indicator will rise. Check the system for a leaky point and then draw air to create a vacuum again.

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.

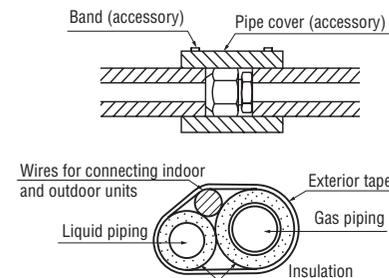
7) Heating and condensation prevention

- 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.
- Use a heat insulating material that can withstand 120°C 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%.**



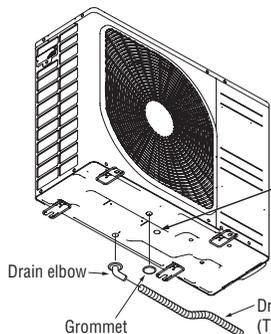
Securely tighten the operation valve cap and the check joint blind nut after adjustment.

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
φ9.52 (3/8")		



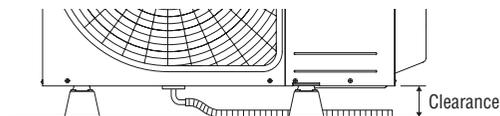
3. DRAIN PIPING WORK

- 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.

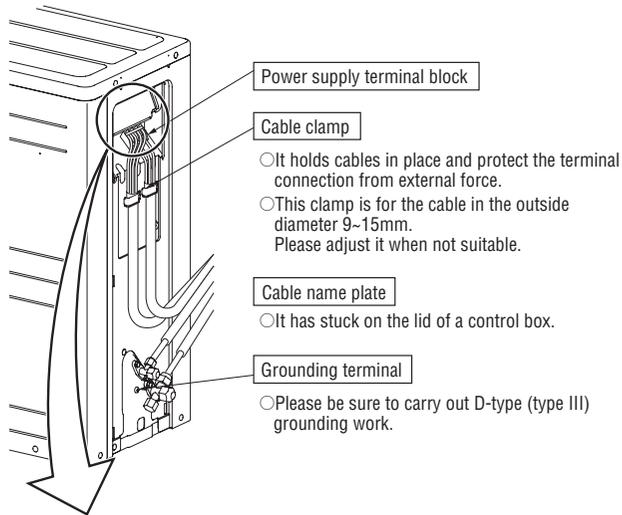
- Do not use any supply cord lighter than one specified in parentheses for each type below.
 - braided cord (code designation 60245 IEC 51),
 - ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
 - flat twin tinsel cord (code designation 60227 IEC 41);
 Use polychloroprene sheathed flexible 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 improperly 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 accident such as an electric shock or a fire.
- Do not turn on the power until the electrical work is completed.
- Do not use a condensive capacitor for power factor improvement under any circumstances. (It does 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 they 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

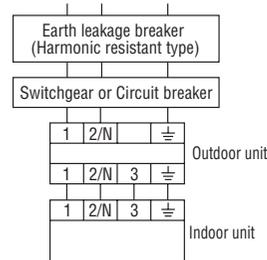
In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

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 cable, indoor-outdoor connecting wires

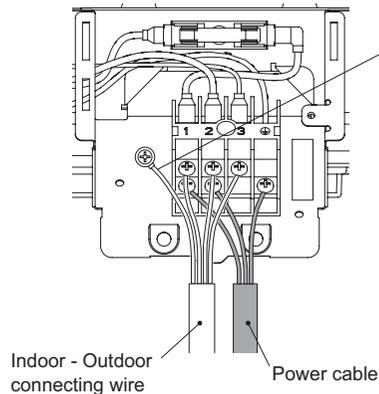


● Always perform grounding system installation work with the power cord unplugged.

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 source (minimum)	Interconnecting and grounding wires (minimum)
			Switch breaker	Over current protector rated capacity		
Single-phase	25	15A,30mA, 0.1sec or less	30A	16A	2.0mm ²	1.5mm ² ×4
	35					

- 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.



CAUTION
Please connect the earthed line of indoor and outdoor connecting wire to a bracket part of the illustration.

power cable, indoor - outdoor connecting wire circuit diagram

INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turn 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

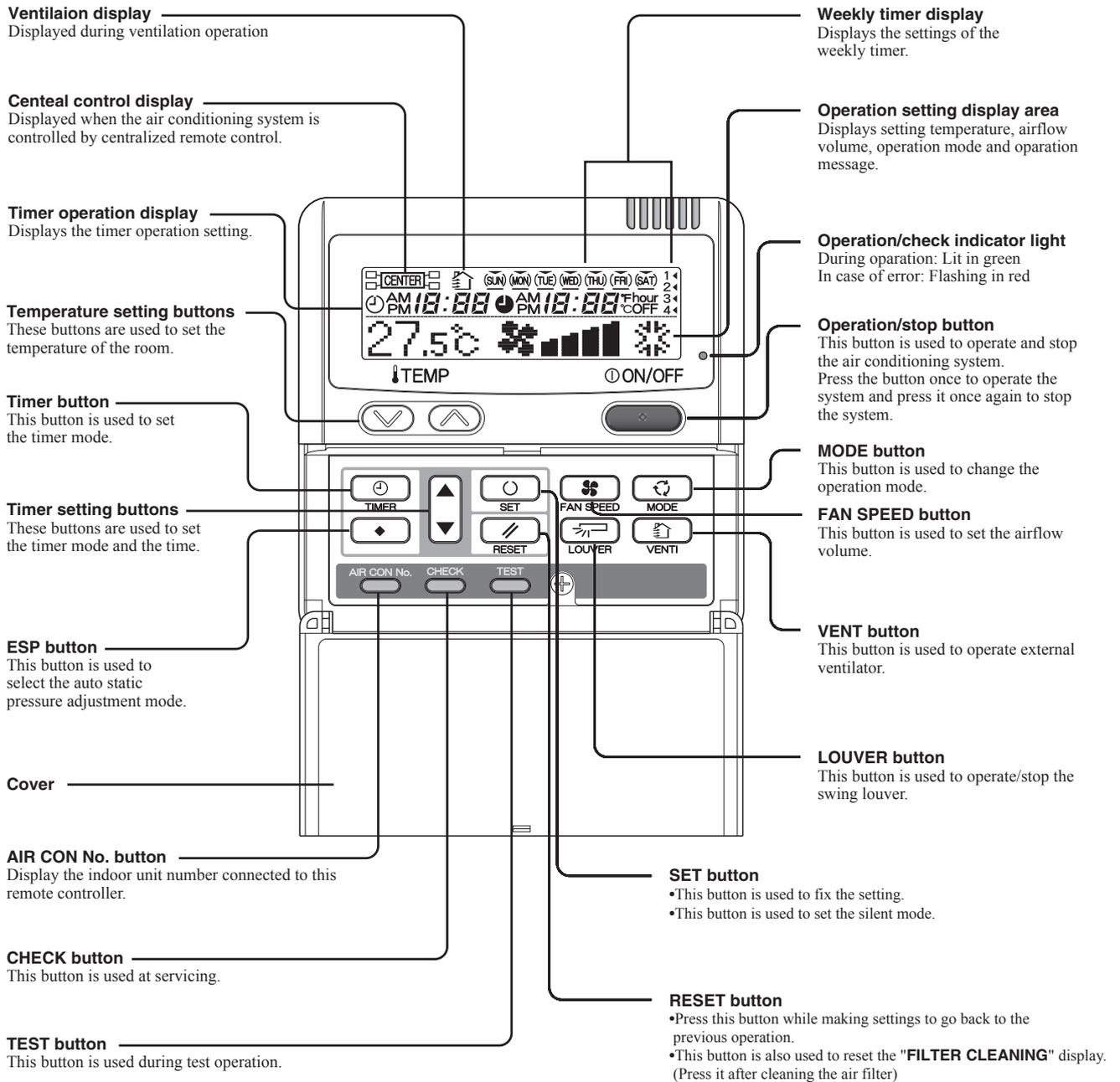
- | | |
|--|---|
| <input type="checkbox"/> Power cables and connecting wires are securely fixed to the terminal block. | <input type="checkbox"/> The pipe joints for indoor and outdoor pipes have been insulated. |
| <input type="checkbox"/> The power supply voltage is correct as the rating. | <input type="checkbox"/> The reverse flow check cap is attached. |
| <input type="checkbox"/> The drain hose is fixed securely. | <input type="checkbox"/> The cover of the pipe cover (A) faces downward to prevent rain from entering. |
| <input type="checkbox"/> Operational valve is fully open. | <input type="checkbox"/> Gaps are properly sealed between the pipe covers (A) (B) and the wall surface / pipes. |
| <input type="checkbox"/> No gas leaks from the joints of the operational valve. | |

9. OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

9.1 Wired remote controller (option parts)

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.

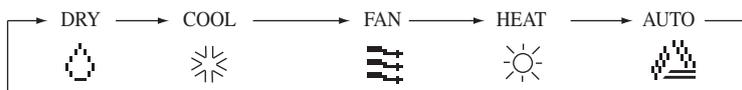
The figure below shows the remote control with the cover opened.



* All displays are described in the liquid crystal display for explanation.

9.2 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 “ESP” 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

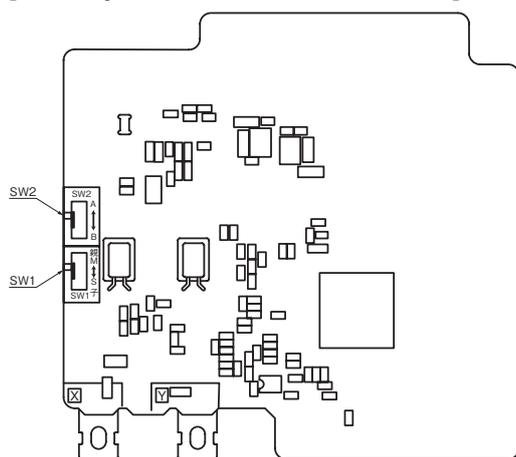
However, the stop position (4-position) is cancelled so that it returns to Position (1).

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

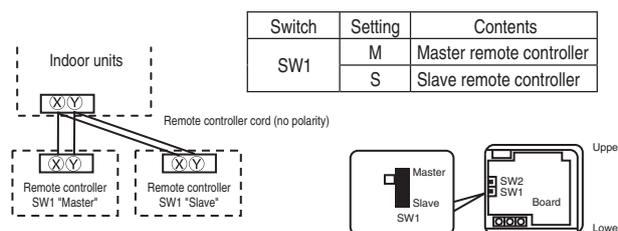
⑧ Sleep timer and weekly timer settings (Other timer settings are not memorized.)

[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.)



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.

Caution

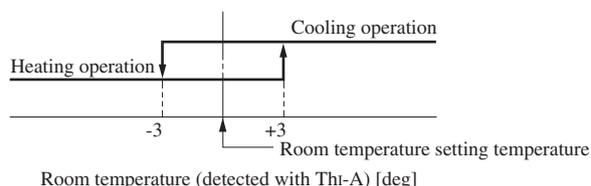
When using multiple remote controllers, the following displays or settings cannot be done with the slave remote controller. It is available only with the master remote controller.

- ① Louver position setting (set upper or lower limit of swinging range)
- ② Setting indoor unit functions
- ③ Setting temperature range
- ④ Operation data display
- ⑤ Error data display
- ⑥ Silent mode setting
- ⑦ Test operation of drain pump
- ⑧ Remote controller sensor setting

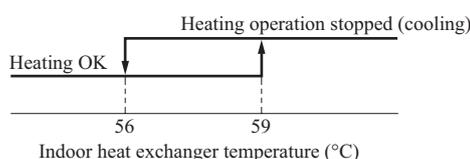
9.3 Operation control function by the indoor controller

(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.



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

- 1) When the humidity sensor is not provided

Return air temperature thermistor [Th1-A (by the remote controller when the remote controller thermistor is enabled)] controls the indoor temperature environment simultaneously.

 - a) 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.
 - b) 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.
 - c) 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.
 - d) After stopping the cooling operation, the indoor unit continues to run at Lo for 15 seconds.
- 2) When the humidity thermistor is provided [Optional]
 - a) Operation starts in the cooling mode, and the target relative temperature is determined based on the setting temperature. If the humidity detected by the humidity thermistor becomes lower than the target relative temperature, the indoor unit fan tap is retained.
 - b) Anything other than a) above is same as the item 1) above.

(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

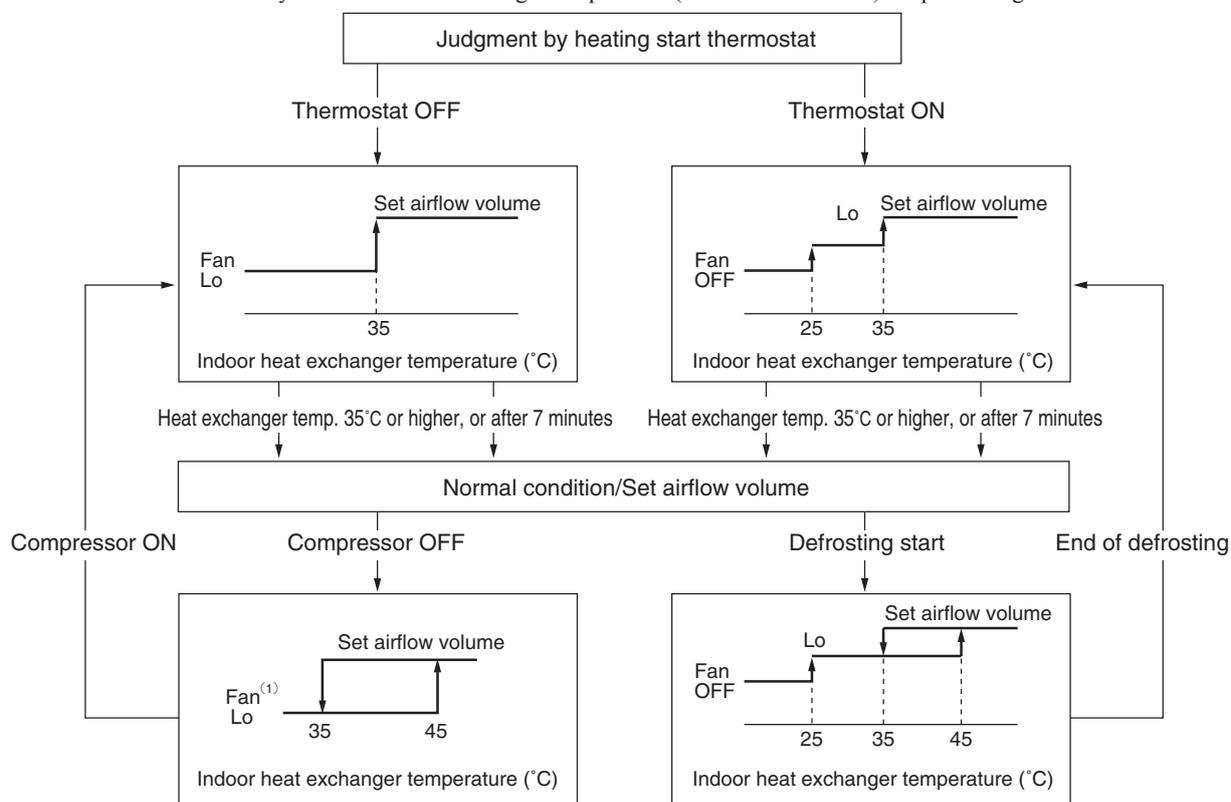
(e) Remote controller display during the operation stop

1) “Centralized control ON” is displayed always on the LCD under the “Center/Remote” and “Center” modes during the operation stop (Power ON). This is not displayed under the “Remote” mode.

2) If this display is not shown under the “Center/Remote” mode, check if the indoor unit power switch is turned on or not.

(f) Hot start (Cold draft prevention at heating)

At the startup of heating operation, at resetting of the thermostat, during defrost operation and at returning to heating, the indoor fan is controlled by the indoor heat exchanger temperature (detected with Th_i-R) for preventing the cold draft.



Note (1) Heating preparation is displayed during the hot start (when the compressor is operating and the indoor fan does not provide the set airflow volume).

(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 Th1-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) Fan control during the heating thermostat OFF

When the heating thermostat is turned OFF, the setting of the fan control is selectable using the indoor function of wired remote controller [FAN CONTROL].

- 1) Low fan speed (Factory default)

If the indoor heat exchanger temperature drops below 35°C with the heating thermostat OFF, the indoor fan operate at the lower speed tap at each setting.
- 2) Set fan speed

Even if the indoor heat exchanger temperature drops below 35°C with the heating thermostat OFF, the indoor fan continues to run at the set airflow volume.
- 3) Intermittence

If the indoor heat exchanger temperature drops below 35°C with the heating thermostat OFF, the indoor fan operates at the lower speed tap at each setting and, when the indoor heater exchanger temperature drops below 25°C, the indoor fan stops for 5 minutes. Then the fan runs at the low speed tap for 2 minutes, and the judgment is made by the thermostat.
- 4) Fan OFF

If the indoor heat exchanger temperature drops below 35°C with the heating thermostat OFF, the indoor fan is turned OFF. The same applies also when the remote controller 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

- 1) Louver control
 - a) Press the “LOUVER” button to operate the swing louver when the air conditioner is operating. “SWING 摆动” 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 停止” 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 摆动” 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.

4) Individual flap (louver) control system

The individual flaps (louvers) for 4 directions can be controlled to swing within the ranges between upper limit and lower limit selected with wired remote controller respectively.

For detail setting method, refer to ⑦ in page 21.

Note (1) This function is not able to be set with wireless remote controller or simple remote controller (RCH-E3)

(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 motor

1) Drain motor (DM) is operated during the cooling or dehumidifying mode operations and simultaneously with the compressor ON. The DM continues to operate for 5 minutes after the operation stop, anomalous stop, thermostat stop or when it was switched from the cooling and dehumidifying operations to the fan or heating operation.

	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

a) Control A

- i) 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.
- ii) It keeps operating while the float switch is detecting the anomalous condition.

b) 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.)

2) Drain motor (DM) interlock control

a) Start conditions

Depending on the function setting by the remote controller, the drain motor is turned ON under either one of the following conditions.

- i) During heating mode operation (Both the thermostat ON/OFF)
- ii) During heating mode operation (Both the thermostat ON/OFF) + Fan operation
- iii) Fan operation

b) End conditions

The drain motor is turned OFF 5 minutes after the stop of operations i) to iii) above.

(m) 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

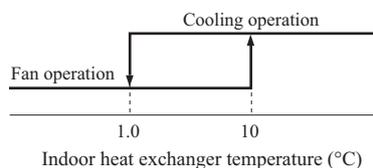
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

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.

(n) 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 Th_i-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 20 seconds, 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) When the indoor return air detection temperature (detected with Th_i-A) is 23°C or higher and the indoor heat exchanger temperature (detected with Th_i-R) detects the compressor frequency drop start temperature A°C+1°C, of indoor unit fan speed is increased by 20rpm.
- b) 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.

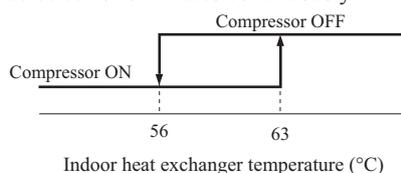
• Compressor frequency drop start temperature

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.

(o) Heating overload protection

- 1) If the indoor heat exchanger temperature (detected with Th_i-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.

(p) Anomalous fan motor

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).

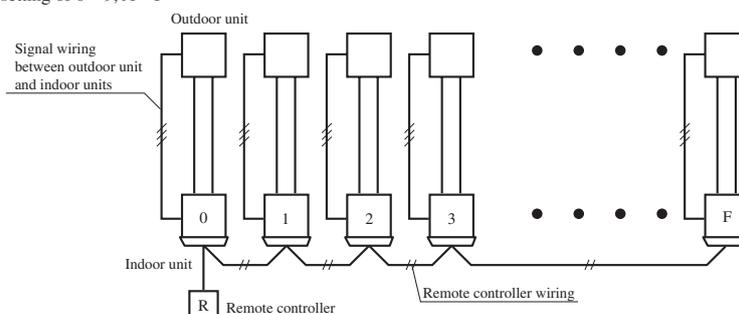
(q) Plural unit control – Control of 16 units group by one remote controller

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.

SW2: For setting of 0 – 9, A – F



(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).

(r) 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	UH - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1, 2	UH - UH - Hi - Me	UH - Hi - Me	UH - Me	UH - Hi

Notes (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 controller or simple remote controller (RCH-E3)

(s) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

1) Broken wire detection

When the return air temperature thermistor detects -50°C or lower or the heat exchanger temperature thermistor detect -50°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).

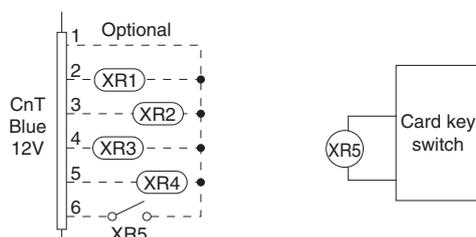
2) Short-circuit detection

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).

(t) 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)	
	ON	OFF	ON	OFF
CnT-6	Operation	Stop	Operation permission*1	Operation prohibition (Unit stops)

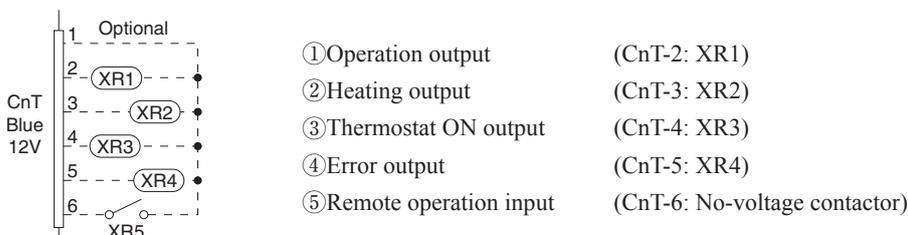
*1 **Only the “LEVEL INPUT” is acceptable for external input**, however when the indoor function setting of “Level input (Factory default)” or “Pulse input” is selected by the function for “External input” of the wired remote controller, operation status will be changed as follows.

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.

(u) 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.



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.

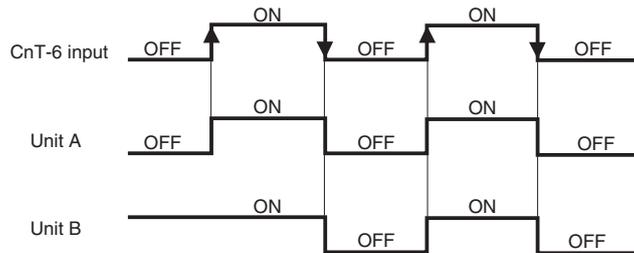
Only the “LEVEL INPUT” is acceptable for external input, however when the indoor function setting of “Level input (Factory default)” or “Pulse input” is selected by the function for “External input” of the wired remote controller, operation status will be changed as follows.

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.

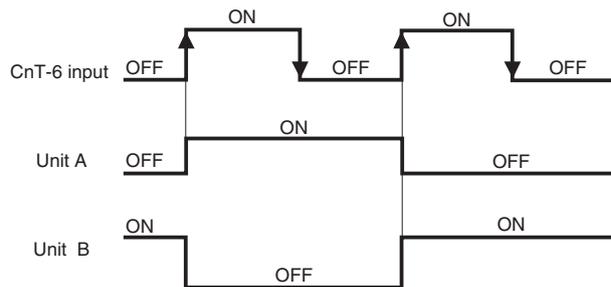


Note: The latest operation has priority

It is available to operate/stop by remote controller or center controller

b) In case of “Pulse input” setting (Local setting)

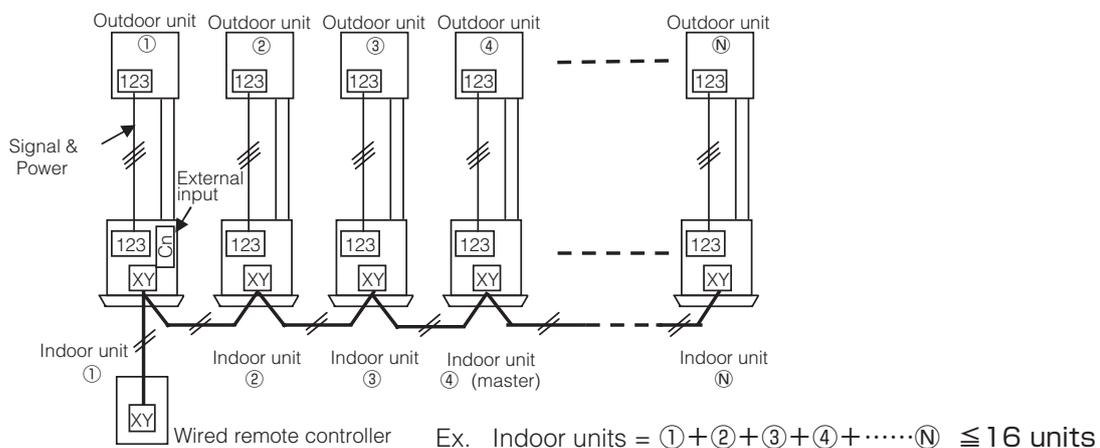
It is effective only when the input signal to CnT-6 is changed OFF→ON, and at that time unit operation [ON/OFF] is inverted.



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.



CnT-6	Individual operation (Factory default)		All units operation (Local setting)	
	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 operation.	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 – ⑩	Units ① – ⑩

When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote controller system:

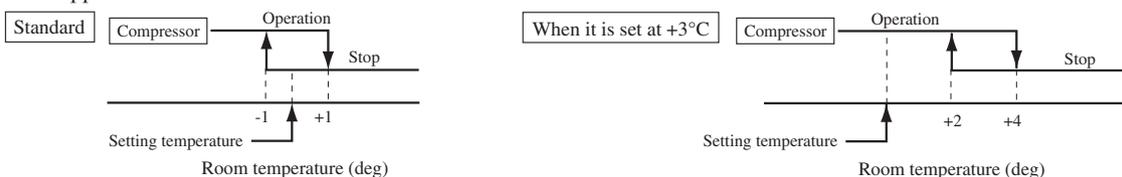
- (1) With the factory default, external input to CnT-6 is effective for only the unit ①.
- (2) When setting “For all unit” (Local setting), all units in one remote controller system can be controlled by external input to CnT-6 on the indoor unit ①.
- (3) External input to CnT-6 on the other indoor unit than the unit ① is not effective.

(v) Fan control at heating startup

- 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 Th_i-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.

(w) 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.



(x) 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.

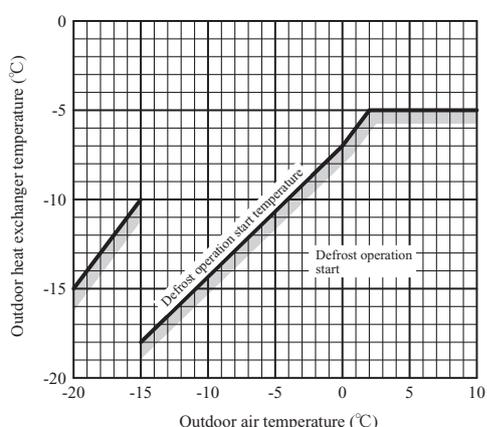
- 1) It is adjustable in the unit of 0.5°C with the wired remote controller indoor unit function “RETURN AIR TEMP”.
 - +1.0°C, +1.5°C, +2.0°C • -1.0°C, -1.5°C, -2.0°C
- 2) Compensated temperature is transmitted to the remote controller and the compressor to control them.

Note (1) The detection temperature compensation is effective on the indoor unit thermistor only.

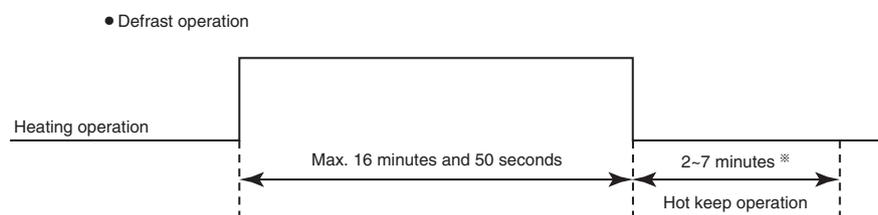
9.4 Operation control function by the outdoor controller

(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 45 minutes. (Accumulated compressor operation time)
 - b) After end of defrosting operation
When it elapsed 45 minutes. (Accumulated compressor operation time)
 - c) Outdoor heat exchanger sensor (TH1) temperature
When the temperature has been below -5°C for 3 minutes continuously.
 - d) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature
 - The outdoor air temperature $\geq 0^{\circ}\text{C} : 7^{\circ}\text{C}$ or higher
 - $-15^{\circ}\text{C} \leq$ The outdoor air temperature $< 0^{\circ}\text{C} : 4/15 \times$ The outdoor air temperature $+ 7^{\circ}\text{C}$ or higher
 - The outdoor air temperature $< -15^{\circ}\text{C} : -5^{\circ}\text{C}$ 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: 13°C or higher
 - b) Continued operation time of defrosting \rightarrow For more than 16 minutes and 50 seconds.



※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 41°C or more, or 47°C or more with the compressor running, the lower limit speed of compressor is brought up.

Item	Model	FDTC25, 35VF
Outdoor air temperature	More than 41 at less than 47	47°C or more
Lower limit speed	30 rps	40 rps

- 2) **Detail of operation**

- a) The outdoor fan is stepped up by 3 speed step. (Upper limit 7th speed.)
- b) 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 40°C or 46°C.
- b) The compressor command speed is 0 rps.

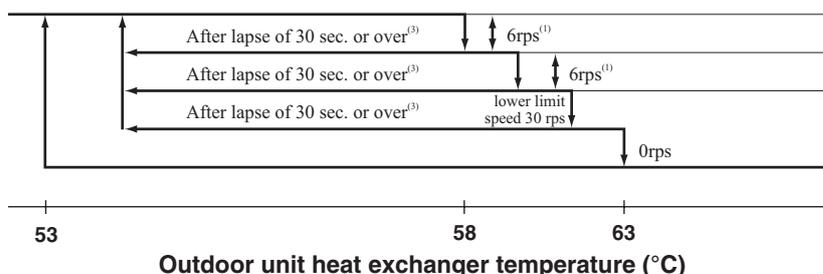
(c) Cooling high pressure control

- 1) **Purpose:** Prevents anomalous high pressure operation during cooling.

- 2) **Detector:** Outdoor heat exchanger sensor (TH1)

- 3) **Detail of operation:**

(Example) Fuzzy



- Notes
- (1) When the outdoor heat exchanger temperature is in the range of 58~63 °C, the speed is reduced by 6 rps at each 30 seconds.
 - (2) When the temperature is 63 °C or higher, the compressor is stopped.
 - (3) When the outdoor heat exchanger temperature is in the range of 53~58 °C, if the compressor command speed is been maintained and the operation has continued for more than 30 seconds at the same speed, it returns to the normal cooling operation.

(d) Cooling low outdoor temperature protective control

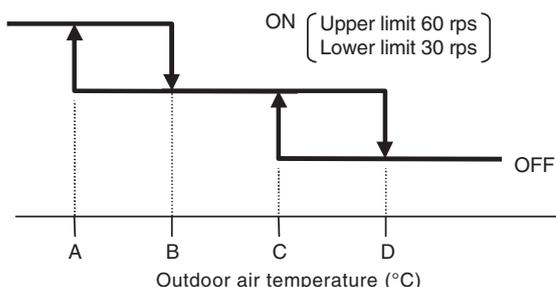
- 1) **Operating conditions:** When the outdoor air temperature (TH2) is 22°C or lower continues for 20 seconds while the compressor command speed is other than 0 rps.

- 2) **Detail of operation:**

- a) The lower limit of the compressor command speed is set to 44 (30) rps and even if the speed becomes lower than 44 (30) rps, the speed is kept to 44 (30) 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 50 (60) rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 50 (60) rps.

Note (1) Values in () are for outdoor air temperature is 22°C or 25°C

ON (Upper limit 50 rps
Lower limit 44 rps)



● Values of A, B, C, D

	Outdoor air temp. (°C)			
	A	B	C	D
First time	0	3	22	25
Since the seconds times	7	10	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.

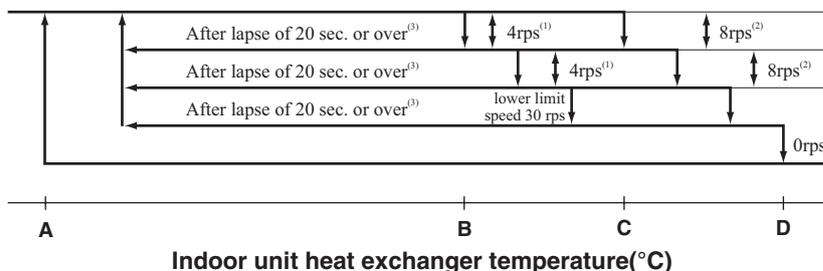
(e) Heating high pressure control

1) Purpose: Prevents anomalous high pressure operation during heating.

2) Detector: Indoor heat exchanger sensor (THI-R)

3) Detail of operation:

(Example) Fuzzy



- Notes
- (1) When the indoor heat exchanger temperature is in the range of B~C °C, the speed is reduced by 4 rps at each 20 seconds.
 - (2) When the indoor heat exchanger temperature is in the range of C~D °C, the speed is reduced by 8 rps at each 20 seconds. When the temperature is D °C or higher continues for 1 minute, the compressor is stopped.
 - (3) When the indoor heat exchanger temperature is in the range of A~B °C, 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 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 : °C

	A	B	C	D
RPSmin < 50	48	53	55	58
50 ≤ RPSmin < 95	48.5	56	58	61
95 ≤ RPSmin < 97	48.5	56 ~ 55.5	58	61
97 ≤ RPSmin < 104	48.5	55.5 ~ 51.5	58 ~ 53.5	61
104 ≤ RPSmin < 115	48.5 ~ 42.1	51.5 ~ 44	53.5 ~ 47.3	61
115 ≤ RPSmin	42.1	44	47.3	61

Note (1) RPSmin: The lower one between the outdoor speed and the compressor command speed

(f) Heating overload protective control

1) Operating conditions: When the outdoor air temperature (TH2) is 22°C or higher continues for 30 seconds while the compressor command speed other than 0 rps.

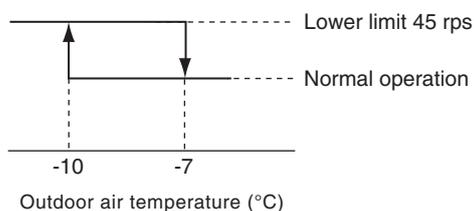
2) Detail of operation:

- a) Taking the upper limit of compressor command speed range at 60 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 40 rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 40 rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.
- c) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at 40 rps.
- d) The outdoor fan is set on 2nd speed.
- e) The indoor fan is stepped up by 1 speed step.

3) Reset conditions: The outdoor air temperature (TH2) is lower than 21°C.

(g) Heating low outdoor temperature protective control

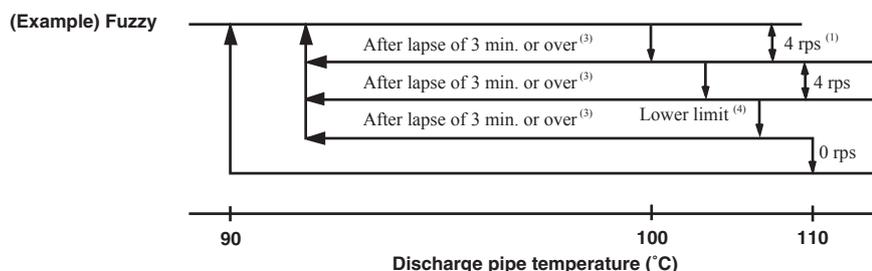
- 1) **Operating conditions:** When the outdoor air temperature (TH2) is lower than -10°C or higher continues for 30 seconds while the compressor command speed is other than 0 rps.
- 2) **Detail of operation:** The lower limit compressor command speed is change as shown in the figure below.



- 3) **Reset conditions:** When either of the following condition is satisfied.
 - a) The outdoor air temperature (TH2) becomes -7°C .
 - 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.



- Notes
- (1) When the discharge pipe temperature is in the range of $100\sim 110^{\circ}\text{C}$, 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 $90\sim 100^{\circ}\text{C}$ even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of $90\sim 100^{\circ}\text{C}$, 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	20 rps	30 rps

- b) If the temperature of 110°C 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) 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.

(m) 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.

(n) Outdoor fan control at low outdoor temperature

◆ **Cooling**

- 1) **Operating conditions:** When the outdoor air temperature (TH2) is 22°C 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 ≤ 21°C
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21°C, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 1st speed)
 - b) 21°C < Outdoor heat exchanger temperature ≤ 38°C
After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 21°C~38°C, maintain outdoor fan speed.
 - c) Outdoor heat exchanger temperature > 38°C
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38°C, 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 25°C or higher.
 - b) The compressor command speed is 0 rps.

◆ **Heating**

- 1) **Operating conditions:** When the outdoor air temperature (TH2) is 4°C 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 6°C or higher.
 - b) The compressor command speed is 0 rps.

(o) 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	$50 \leq N$	$10 \leq Th1 \leq 40$	$Th1 - 4 < Th2$
Heating	$50 \leq N$	$0 \leq Th1 \leq 40$	$Th2 < Th1 + 6$

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

10. MAINTENANCE DATA

10.1 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	64
		* 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	65
		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	66 ~ 70
				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	Repair	71
				Remote controller indoor control PCB	* Defective remote controller or indoor control PCB (defective communication circuit)?		
E5	Keeps flashing	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	72
		2 times flash	Keeps flashing	(Noise)	• CPU-runaway on outdoor control PCB	Power reset or Repair	
		2 times flash	Keeps flashing	Outdoor control PCB	* Occurrence of defective outdoor control PCB on the way of power supply (defective communication circuit)?	Replacement of PCB	
E6	Keeps flashing	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	73
				Indoor control PCB	* Defective indoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E7	Keeps flashing	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	74
				Indoor control PCB	* Defective indoor control PCB (Defective temperature thermistor input circuit)?	Replacement of PCB	
E8	Keeps flashing	1 time flash	Keeps flashing	Installation or operating condition	• Heating over-load (Anomalous high indoor heat exchanger temperature)	Repair	75
				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	Keeps flashing	1 time flash	Keeps flashing	Drain trouble	• Defective drain pump (DM), broken drain pump wire, disconnected connector	Replacement, repair of DM	76
				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	Keeps flashing	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	77
E16	Keeps flashing	Stays OFF	Keeps flashing	Fan motor	• Defective fan motor	Replacement, repair	78
				Indoor control PCB	• Defective indoor control PCB	Replacement	
E19	Keeps flashing	1 time flash	Keeps flashing	Indoor control PCB	• Improper operation mode setting	Repair	79
E28	Keeps flashing	Stays OFF	Keeps flashing	Remote controller temperature thermistor	• Broken wire of remote controller temperature thermistor	Repair	80

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		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED				
E35		Stays OFF	Keeps flashing	Installation, operation status	• Higher outdoor heat exchanger temperature	Repair	81
				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	Installation, operation status	• Higher discharge temperature	Repair	82
				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	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	83
				Outdoor control PCB	* Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	84
				Outdoor control PCB	* Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39	Keeps flashing	Stays OFF	Keeps flashing	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	85
				Outdoor control PCB	* Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E42		Stays OFF	Keeps flashing	Outdoor control PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	86 · 87
				Installation, operation status	• Service valve closing operation	Repair	
E47		Stays OFF	Keeps flashing	Outdoor control PCB	• Defective active filter	Repair PCB replacement	88
E48		Stays OFF	Keeps flashing	Fan motor	• Defective fan motor	Replacement	89
				Outdoor control PCB	• Defective outdoor control PCB		
E51		Stays OFF	Keeps flashing	Power transistor error (outdoor control PCB)	• Power transistor error	Replacement of PCB	90
E57		Stays OFF	Keeps flashing	Operation status	• Shortage in refrigerant quantity	Repair	91
				Installation status	• Service valve closing operation	Service valve opening check	
E58		Stays OFF	Keeps flashing	• Overload operation • Overcharge • Compressor locking	• Current safe stop	Replacement	92
E59		Stays OFF	Keeps flashing	Compressor, outdoor control PCB	• Anomalous compressor startup	Replacement	93
E60		Stays OFF	Keeps flashing	Compressor	• Anomalous compressor rotor lock	Replacement	94

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.

(iii) 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	<ul style="list-style-type: none"> Displays the error of higher priority (When plural errors are persisting)
Red LED on indoor control PCB	<p style="text-align: center;"><i>E1 E5E10 >E35 >.....E60</i></p> <ul style="list-style-type: none"> Displays the present errors. (When a new error has occurred after the former error was reset.)

■ Error detecting timing

Section	Error description	Error code	Error detecting timing
Indoor	Drain trouble (Float switch activated)	<i>E9</i>	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	<i>E1</i>	Communication between indoor unit and remote controller is interrupted for mote than 2 minutes continuously after initial communication was established.
	Communication error during operation	<i>E5</i>	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	<i>E10</i>	Whenever excessively connected indoor units is detected after power ON.
	Return air temperature thermistor anomaly	<i>E7</i>	-50°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	<i>E6</i>	-50°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	<i>E38</i>	-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	<i>E37</i>	-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	<i>E39</i>	-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**

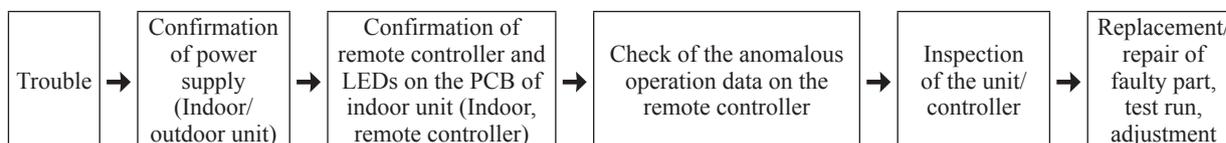
Error indicator	Memorized error log	Reset
Remote controller display	• Higher priority error is memorized.	• Stop the unit by pressing the ON/OFF switch of remote controller. • If the unit has recovered from anomaly, it can be operated.
Red LED on indoor control PCB	• Not memorized.	

■ **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.



(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	
<ul style="list-style-type: none"> • 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.
<ul style="list-style-type: none"> • After completing the replacement, do commissioning to confirm there are no anomaly. 	
⚠ WARNING	
<ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction. • Insert connector 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. 	

• 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
25VF	○	—	—	—
35VF	—	○	—	—



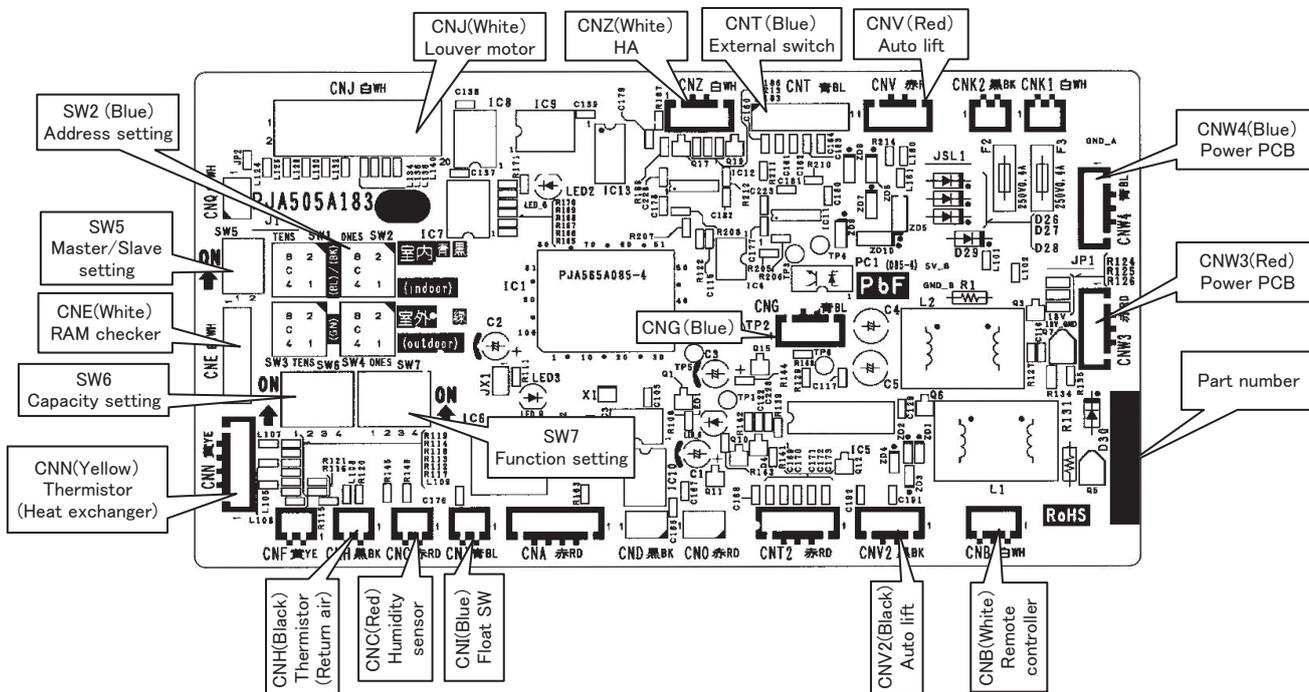
Example setting fro 25VF

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

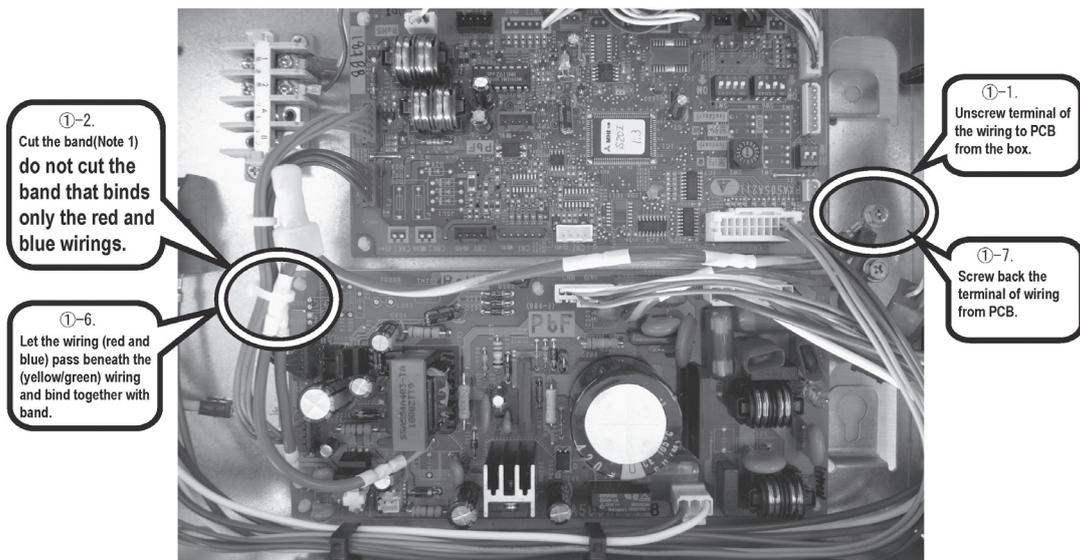
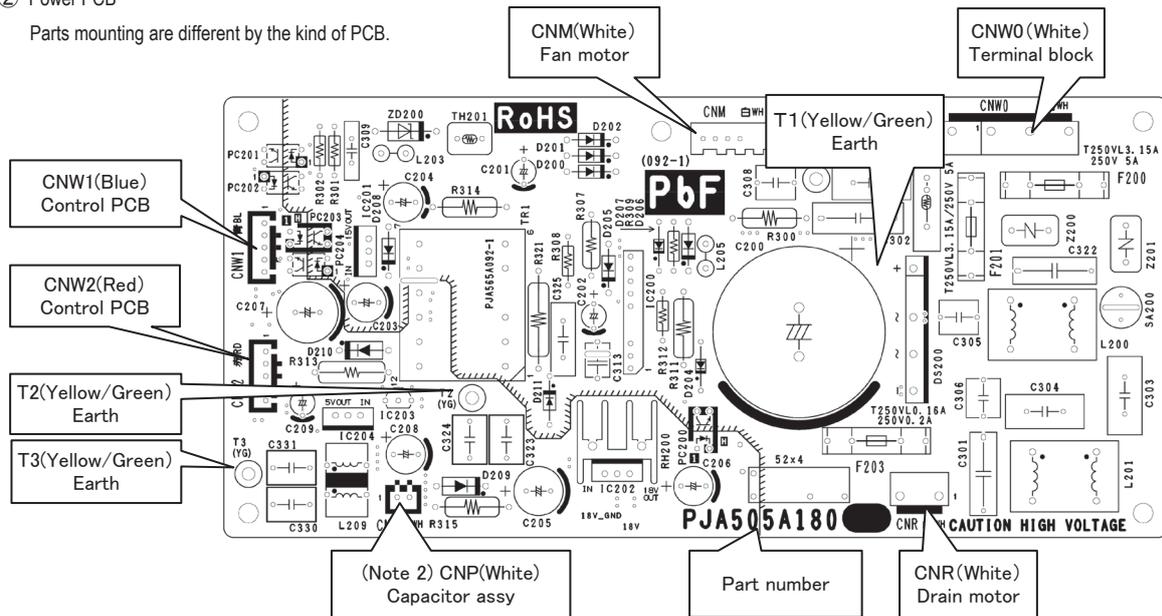
This PCB is a general PCB. Replace the PCB according to this instruction.

① Replace the PCB (refer to below 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.



●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	
	25VF	35VF
SW6-1	1	0
SW6-2	0	1
SW6-3	0	0
SW6-4	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.

- 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.)

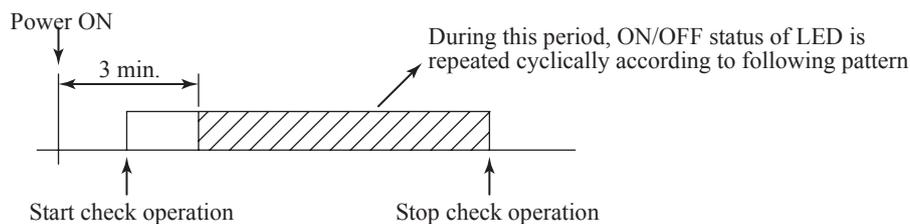
Number	Data Item
01	☼ (Operation Mode)
02	SET TEMP °C (Set Temperature)
03	RETURN AIR °C (Return Air Temperature)
04	SENSOR °C (Remote Controller Thermistor Temperature)
05	THI-R1 °C (Indoor Heat Exchanger Thermistor / U Bend)
06	THI-R2 °C (Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3 °C (Indoor 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 °C (Outdoor Air Temperature)
22	THO-R1 °C (Outdoor Heat Exchanger Thermistor)
23	THO-R2 °C (Outdoor Heat Exchanger Thermistor)
24	COMP Hz (Compressor Frequency)
25	HP MPa (High Pressure)
26	LP MPa (Low Pressure)
27	Td °C (Discharge Pipe Temperature)
28	COMP BOTTOM °C (Comp Bottom Temperature)
29	CT AMP (Current)
30	TARGET SH °C (Target Super Heat)
31	SH °C (Super Heat)
32	TDSH °C (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)

(5) Inverter checker for diagnosis of inverter output

● Checking method

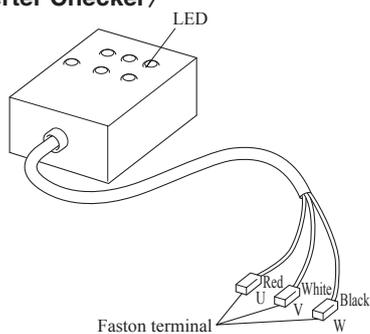
- (a) Setup procedure of checker.
 - 1) Power OFF (Turn off the breaker).
 - 2) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.
 - 3) Connect the wires U (Red), V (White) and W (Black) of the checker to the terminal of disconnected wires (U, V, W) from compressor 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

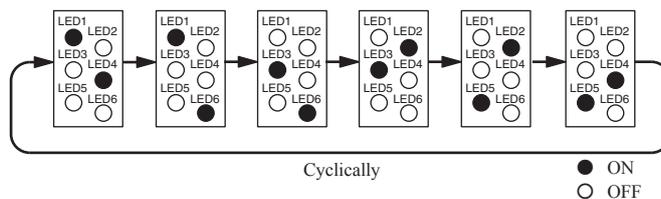


- 4) Stop check operation within about 2minutes after starting check operation.

<Inverter Checker>



LED ON/OFF pattern

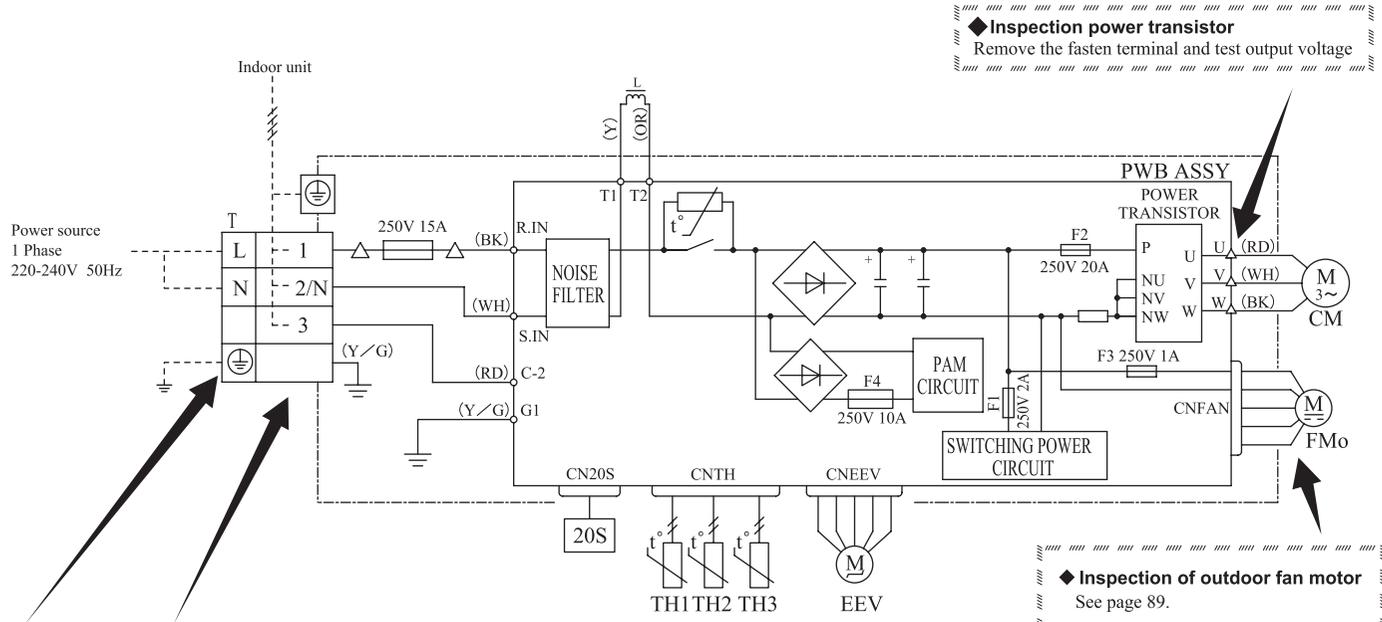


Connect to the terminal of the wires which are disconnected from compressor.

⚠ 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 89.

◆ **Power source and serial signal inspection**
 ① to ③: AC 220/230/240V
 ① to ②: AC 220/230/240V
 ② to ③: Normal if the voltage oscillates between DC 0 and approx. 20V

10.2 Troubleshooting flow

(1) List of troubles

No.	Remote controller display	Description of trouble	Reference page
1	None	Operates but does not cool.	57
2	None	Operates but does not heat.	58
3	None	Earth leakage breaker activated	59
4	None	Excessive noise/vibration (1/3)	60
5	None	Excessive noise/vibration (2/3)	61
6	None	Excessive noise/vibration (3/3)	62
7	None	Louver motor failure	63
8	None	Power supply system error (Power supply to indoor control PCB)	64
9	None	Power supply system error (Power supply to remote controller)	65
10	INSPECT I/U	INSPECT I/U (When 1 or 2 remote controllers are connected)	66
11	INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controllers)	67
12	🔊WAIT🔊	Communication error at initial operation	68~70
13	E1	Remote controller communication circuit error	71
14	E5	Communication error during operation	72
15	E6	Indoor heat exchanger temperature thermistor anomaly	73
16	E7	Return air temperature thermistor anomaly	74
17	E8	Heating overload operation	75
18	E9	Drain trouble	76
19	E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote controller	77
20	E16	Indoor fan motor anomaly	78
21	E19	Indoor unit operation check, drain motor check setting error	79
22	E28	Remote controller temperature thermistor anomaly	80
23	E35	Cooling overload operation	81
24	E36	Discharge pipe temperature error	82
25	E37	Outdoor heat exchanger temperature sensor anomaly	83
26	E38	Outdoor air temperature sensor anomaly	84
27	E39	Discharge pipe temperature sensor anomaly	85
28	E42	Current cut	86, 87
29	E47	Active filter voltage error	88
30	E48	Outdoor fan motor anomaly	89
31	E51	Power transistor anomaly	90
32	E57	Insufficient refrigerant amount or detection of service valve closure	91
33	E58	Current safe stop	92
34	E59	Compressor startup failure	93
35	E60	Anomalous compressor rotor lock	94

(2) Troubleshooting

Error code Remote controller: None	LED	Green	Red	Content Operates but does not cool
	Indoor	Keeps flashing	Stays OFF	

<p>1. Applicable model</p> <p>All models</p>	<p>5. Troubleshooting</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 70%;">Diagnosis</th> <th style="width: 30%;">Countermeasure</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <p>Check the indoor unit fan operation. Check the temperature difference between return and supply air.</p> <p>Is the temperature difference between return and supply air 10-20degC at cooling?</p> <p>NO</p> <p>Is the compressor operating?</p> <p>NO</p> <p>Is the compressor rotation speed low?</p> <p>NO</p> <p>Check which control "Determination control of compressor rotation speed" or "Protective control by controlling compressor rotation speed" is appropriate to this phenomenon.</p> <p>Are the temperature conditions of room and outdoor air close to the rated conditions? (1)</p> <p>NO</p> <p>The unit is operating normally but is operating under the control for protecting compressor or other respective parts.</p> </td> <td style="vertical-align: top;"> <p>It is normal. (This unit is designed to start in the soft start mode by detecting the under dome temperature of compressor when it restart after power reset.)</p> <p>It is necessary to replace to higher capacity one or to install additional unit.</p> <p>Compressor refrigerant oil protection control at starting is activated.</p> <p>Compressor may be stopped by the error detection control. For the contents of control, refer to anomalous stop control by controlling compressor rotation speed of microcomputer control functions.</p> <p>Inspect the followings.</p> <ul style="list-style-type: none"> • Minor clogging of filter • Minor clogging of heat exchanger • Minor short-circuit • Minor shortage of refrigerant amount • Poor compression of compressor <p>Considering appropriate operation control, check suspicious points. Inspect the followings for reference.</p> <ul style="list-style-type: none"> • Major clogging of filter • Major clogging of heat exchanger • Major short-circuit • Major shortage of refrigerant amount • Compressor protection ON • Indoor fan tap </td> </tr> </tbody> </table>	Diagnosis	Countermeasure	<p>Check the indoor unit fan operation. Check the temperature difference between return and supply air.</p> <p>Is the temperature difference between return and supply air 10-20degC at cooling?</p> <p>NO</p> <p>Is the compressor operating?</p> <p>NO</p> <p>Is the compressor rotation speed low?</p> <p>NO</p> <p>Check which control "Determination control of compressor rotation speed" or "Protective control by controlling compressor rotation speed" is appropriate to this phenomenon.</p> <p>Are the temperature conditions of room and outdoor air close to the rated conditions? (1)</p> <p>NO</p> <p>The unit is operating normally but is operating under the control for protecting compressor or other respective parts.</p>	<p>It is normal. (This unit is designed to start in the soft start mode by detecting the under dome temperature of compressor when it restart after power reset.)</p> <p>It is necessary to replace to higher capacity one or to install additional unit.</p> <p>Compressor refrigerant oil protection control at starting is activated.</p> <p>Compressor may be stopped by the error detection control. For the contents of control, refer to anomalous stop control by controlling compressor rotation speed of microcomputer control functions.</p> <p>Inspect the followings.</p> <ul style="list-style-type: none"> • Minor clogging of filter • Minor clogging of heat exchanger • Minor short-circuit • Minor shortage of refrigerant amount • Poor compression of compressor <p>Considering appropriate operation control, check suspicious points. Inspect the followings for reference.</p> <ul style="list-style-type: none"> • Major clogging of filter • Major clogging of heat exchanger • Major short-circuit • Major shortage of refrigerant amount • Compressor protection ON • Indoor fan tap
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2. Error detection method	
3. Condition of Error displayed	
4. Presumable cause - Poor compression of compressor - Faulty expansion valve operation	

Note:

Error code Remote controller: None	LED	Green	Red	Content Operates but does not heat
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models
2. Error detection method
3. Condition of Error displayed
4. Presumable cause
<ul style="list-style-type: none"> Faulty 4-way valve operation Poor compression of compressor Faulty expansion valve operation

5. Troubleshooting	
Diagnosis	Countermeasure
<p>Check the indoor unit fan operation. Check the temperature difference between return and supply air.</p> <pre> graph TD Start[Check indoor unit fan operation and temperature difference] --> D1{Is the temperature difference between return and supply air 10-30degC at heating?} D1 -- YES --> D2{Does the heat load increase after installation?} D1 -- NO --> D3{Is the compressor operating?} D2 -- YES --> B1[Mistake in model selection. Calculate heat load once again.] D2 -- NO --> C1[It is normal. This unit is designed to start in the soft start mode by detecting the under dome temperature of compressor when it restart after power reset.] D3 -- NO --> D4{"WAIT" message is displayed for 3 seconds when performing cooling, defrosting and heating operations from the remote controller.} D3 -- YES --> D5{Is the compressor rotation speed low?} B1 --> C2[It is necessary to replace to higher capacity one or to install additional unit.] D4 -- YES --> C3[Compressor refrigerant oil protection control at starting is activated.] D4 -- NO --> C4[Compressor may be stopped by the error detection control. For the contents of control, refer to anomalous stop control by controlling compressor rotation speed of microcomputer control functions.] D5 -- NO --> C5[Inspect the followings. Minor clogging of filter, Minor clogging of heat exchanger, Minor short-circuit, Minor shortage of refrigerant amount, Poor compression of compressor] D5 -- YES --> B2[Check which control "Determination control of compressor rotation speed" or "Protective control by controlling compressor rotation speed" is appropriate to this phenomenon.] B2 --> D6{Are the temperature conditions of room and outdoor air close to the rated conditions? (1)} D6 -- YES --> C6[Considering appropriate operation control, check suspicious points. Inspect the followings for reference. Major clogging of filter, Major clogging of heat exchanger, Major short-circuit, Major shortage of refrigerant amount, Compressor protection ON, Indoor fan tap] D6 -- NO --> B3[The unit is operating normally but is operating under the control for protecting compressor or other respective parts.] </pre>	

Note:

Error code Remote controller: None	LED	Green	Red	Content Earth leakage breaker activated
	Indoor	Stays OFF	Stays OFF	

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Diagnosis	Countermeasure								
<pre> graph TD D1{Are OK the insulation resistance and coil resistance of compressor?} -- NO --> C1[Replace compressor.*] D1 -- YES --> D2{Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc?} D2 -- NO --> C2[Secure insulation resistance.] D2 -- YES --> P1[Check the outdoor unit grounding wire/earth leakage breaker.] </pre>									
<p>Check of the outdoor unit grounding wire/earth leakage breaker</p> <p>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.)</p> <p>② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic regulation.</p> <p>* Insulation resistance of compressor</p> <ul style="list-style-type: none"> 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. <p>When the earth breaker is activated at lower insulation resistance, check the following points.</p> <p>① 6 hours after power ON, check if the insulation resistance recovers to normal.</p> <p>When power ON, crankcase heater heat up compressor and evaporate the refrigerant migrated in the compressor.</p> <p>② Check if the earth leakage breaker is conformed to higher harmonic regulation or not.</p> <p>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.</p>									
<p>2. Error detection method</p>									
<p>3. Condition of Error displayed</p>									
<p>4. Presumable cause</p> <ul style="list-style-type: none"> Defective compressor Noise 									

Note:

<table border="1"> <tr> <td>Error code</td> <td>LED</td> <td>Green</td> <td>Red</td> <td>Content</td> </tr> <tr> <td>Remote controller: None</td> <td>Indoor</td> <td>-</td> <td>-</td> <td>Excessive noise/vibration (1/3)</td> </tr> </table>	Error code	LED	Green	Red	Content	Remote controller: None	Indoor	-	-	Excessive noise/vibration (1/3)
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
<ul style="list-style-type: none"> ① Improper installation work <ul style="list-style-type: none"> • Improper anti-vibration work at installation • Insufficient strength of mounting face ② Defective product <ul style="list-style-type: none"> • Before/after shipping from factory ③ Improper adjustment during commissioning <ul style="list-style-type: none"> • Excess/shortage of refrigerant, etc.

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD Q1{Does noise/vibration occur during or soon after stopping operation of air-conditioner?} Q2{[Installation work] Does noise/vibration occur not only from the air-conditioner but also from entire building?} Q3{Does the installation of indoor/outdoor unit loose?} Q4{Are pipes touching the wall, etc?} Q5{[Product] Does noise/vibration occur from operating fan (fan only)?} Q6{Is there a fan or louver touching other components?} Q7{To next page} Q1 -- NO --> C1[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.] Q1 -- YES --> Q2 Q2 -- YES --> Q3 Q2 -- NO --> Q4 Q3 -- YES --> C2[Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.] Q3 -- NO --> Q4 Q4 -- YES --> C3[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.] Q4 -- NO --> C4[Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.] Q5 -- YES --> Q6 Q5 -- NO --> Q7 Q6 -- YES --> C5[Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it.] Q6 -- NO --> C6[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 background noise is very low, convince client prior to installation.] </pre>	<p>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.</p> <p>Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.</p> <p>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.</p> <p>Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.</p> <p>Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it.</p> <p>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 background noise is very low, convince client prior to installation.</p>

Note:

Error code Remote controller: None	LED	Green	Red	Content Excessive noise/vibration (2/3)
	Indoor	-	-	

<p>1. Applicable model</p> <p>All models</p>	5. Troubleshooting	
<p>2. Error detection method</p>	Diagnosis	Countermeasure
<p>3. Condition of Error displayed</p>		
<p>4. Presumable cause</p>		

Note:

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Error code	LED	Green	Red	Content						
Remote controller: None	Indoor	–	–	Excessive noise/vibration (3/3)						

<p>1. Applicable model</p> <p>All models</p>	5. Troubleshooting	
<p>2. Error detection method</p>	<p>Diagnosis</p>	<p>Countermeasure</p> <p>If insufficient cooling/heating problem happens due to anomalous operating conditions at cooling/heating, followings are suspicious.</p> <ul style="list-style-type: none"> • Overcharge of refrigerant • Insufficient charge of refrigerant • Intrusion of air, nitrogen, etc. <p>In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant.</p> <p>* 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.</p> <ul style="list-style-type: none"> • 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
<p>3. Condition of Error displayed</p>		
<p>4. Presumable cause</p>		

Note:

<table border="1"> <tr> <td>Error code</td> <td>LED</td> <td>Green</td> <td>Red</td> <td>Content</td> </tr> <tr> <td>Remote controller: None</td> <td>Indoor</td> <td>Keeps flashing</td> <td>Stays OFF</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">Louver motor failure</td> </tr> </table>	Error code	LED	Green	Red	Content	Remote controller: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure
Error code	LED	Green	Red	Content						
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure						

1. Applicable model
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause
<ul style="list-style-type: none"> • Defective LM • LM wire breakage • Faulty indoor control PCB

5. Troubleshooting	
Diagnosis	Countermeasure
<p>▲ Check at the indoor unit side.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;"> Operate after waiting for more than 1 minute. </div> <pre> graph TD Start[Operate after waiting for more than 1 minute.] --> Q1{Does the louver operate at the power on?} Q1 -- NO --> Q2{Is LM wiring broken?} Q2 -- YES --> C1[Repair wiring.] Q2 -- NO --> Q3{Is LM locked?} Q3 -- YES --> C2[Replace LM.] Q3 -- NO --> C3[Defective indoor control PCB -> Replace.] Q1 -- YES --> Q4{Is the louver operable with the remote controller?} Q4 -- YES --> C4[Normal] Q4 -- NO --> C5[Adjust LM lever and then check again.] </pre> <p style="text-align: center;">LM: louver motor</p>	

Note:

Error code Remote controller: None	LED	Green	Red	Content Power supply system error (Power supply to indoor control PCB)
	Indoor	Stays OFF	Stays OFF	

1. Applicable model
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause
<ul style="list-style-type: none"> • Misconnection or breakage of connecting wires • Blown fuse • Faulty indoor control or power PCB • Broken harness • Faulty outdoor control PCB (Noise filter)

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD D1{Is AC220/230/240V detected between 1 and 2 on the terminal block of indoor unit?} D2{Is AC220/230/240V for 1-phase unit detected between 1 and 2 on the terminal block of outdoor unit?} D3{Are fuses OK (F200, F201)?} D4{Is the check of resistance between ③, ⑤ of CNW0 OK?} D5{Is the checked result of resistance of FM, LM, etc OK?} D6{Is DC5V detected between ④-⑤ of CNW2?} D7{Is JX1 open?} D1 -- NO --> D2 D1 -- YES --> D3 D2 -- NO --> C1[Defective outdoor control PCB (Noise filter)] D2 -- YES --> C2[Misconnection or breakage of connecting wires] D3 -- NO --> D4 D3 -- YES --> D6 D4 -- NO --> C3[Defective indoor control or power PCB → Replace.] D4 -- YES --> D5 D5 -- NO --> C4[Replace FM, LM, etc.] D5 -- YES --> C5[Replace fuse.] D6 -- NO --> C6[Defective indoor power PCB → Replace.] D6 -- YES --> D7 D7 -- NO --> C7[Open JX1.] D7 -- YES --> C8[Defective indoor control PCB → Replace.] </pre>	<p>Defective outdoor control PCB (Noise filter)</p> <p>Misconnection or breakage of connecting wires</p> <p>Defective indoor control or power PCB → Replace.</p> <p>Replace FM, LM, etc.</p> <p>Replace fuse.</p> <p>Defective indoor power PCB → Replace.</p> <p>Open JX1.</p> <p>Defective indoor control PCB → Replace.</p>

Note:

Error code Remote controller: None	LED	Green	Red	Content Power supply system error (Power supply to remote controller)
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause
<ul style="list-style-type: none"> • Remote controller wire breakage/short-circuit • Defective remote controller • Malfunction by noise • Faulty indoor power PCB • Broken harness • Faulty indoor control PCB

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD D1{Isn't there any loose connection of remote controller wires?} D2{Isn't remote controller wire broken or short-circuited?} P1[Disconnect remote controller wires.] D3{Is DC15V or higher detected between X-Y of indoor unit terminal block?} D4{Is DC180V between ①-② of CNW2?} C1[Correct.] C2[Replace wires.] C3[Replace remote controller.] C4[Defective indoor power PCB -> Replace.] C5[Defective indoor control PCB -> Replace.] D1 -- YES --> C1 D1 -- NO --> D2 D2 -- YES --> C2 D2 -- NO --> P1 P1 --> D3 D3 -- YES --> C3 D3 -- NO --> D4 D4 -- YES --> C5 D4 -- NO --> C4 </pre>	

Note:

Error code Remote controller: INSPECT I/U	LED	Green	Red	Content INSPECT I/U (When 1 or 2 remote controllers are connected)
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Improper setting • Surrounding environment • Defective remote controller communication circuit • Faulty indoor control PCB

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD Q1{Are 2 units of remote controller connected?} Q2{Is it set at the slave remote controller?} Q3{Does it become normal?} Q4{Do more than one indoor units have the same address?} Q5{Are remote controller wires laid along high voltage wires?} Q6{Does DM start 60 seconds later automatically.} Q1 -- YES --> S1[Set one remote controller for "Master" and the other for "Slave"] S1 --> Q3 Q3 -- NO --> Q2 Q1 -- NO --> Q2 Q2 -- YES --> C1[Set SW1 on remote controller PCB at "Master".] Q2 -- NO --> Q4 Q3 -- YES --> Q4 Q4 -- YES --> C2[Set address again. (SW2 on indoor control PCB)] Q4 -- NO --> Q5 Q5 -- YES --> C3[Separate remote controller wires from high voltage wires.] Q5 -- NO --> S2[Disconnect the connecting wire ③ between the indoor and outdoor unit.] S2 --> S3[Power supply reset] S3 --> Q6 Q6 -- YES --> C4[Defective indoor control PCB -> Replace.] Q6 -- NO --> C5[Defective remote controller -> Change.] </pre>	

Note: If any error is detected 30 minutes after displaying “WAIT” on the remote controller, the display changes to “INSPECT I/U”.

Error code Remote controller: INSPECT I/U	LED	Green	Red	Content INSPECT I/U (Connection of 3 units or more remote controller)
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Improper setting • Surrounding environment • Defective remote controller communication circuit • Faulty indoor control or power PCB • Faulty outdoor control PCB

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD Q1{Are more than 3 units of remote controller connected?} -- YES --> C1[Reduce to 2 units or less.] Q1 -- NO --> Q2{Does remote controller display "Slave"?} Q2 -- YES --> C2[Change remote controller setting to "Master". (SW1 on remote controller PCB)] Q2 -- NO --> Q3{Do more than one indoor units have the same address?} Q3 -- YES --> C3[Change address. (SW2 on indoor control PCB)] Q3 -- NO --> Q4{Is it set to a slave indoor unit. SW5-1, 2?} Q4 -- YES --> C4[Change to master. (SW5-1, 2 on indoor control PCB)] Q4 -- NO --> Q5{Is there loose or wrong connection at the terminal of wiring between indoor and outdoor units?} Q5 -- YES --> C5[Correct] Q5 -- NO --> Q6{Is the grounding wire connected properly?} Q6 -- YES --> C6[Correct] Q6 -- NO --> Q7{Is approx. DC20V detected between ②-③ on the outdoor unit terminal block?} Q7 -- YES --> C7[Defective outdoor control PCB → Replace.] Q7 -- NO --> Q8{Is approx. DC20V detected between ②-③ on the indoor unit terminal block?} Q8 -- YES --> C8[Broken connecting wire → Correct.] Q8 -- NO --> C9[Defective indoor control or power PCB → Replace.] </pre>	

Note: If any error is detected 30 minutes after displaying “WAIT” on the remote controller, the display changes to “INSPECT I/U”.

Error code Remote controller: 🌀WAIT🌀	LED	Green	Red	Content Communication error at initial operation (1/3)
	Indoor	Keeps flashing	Stays OFF	

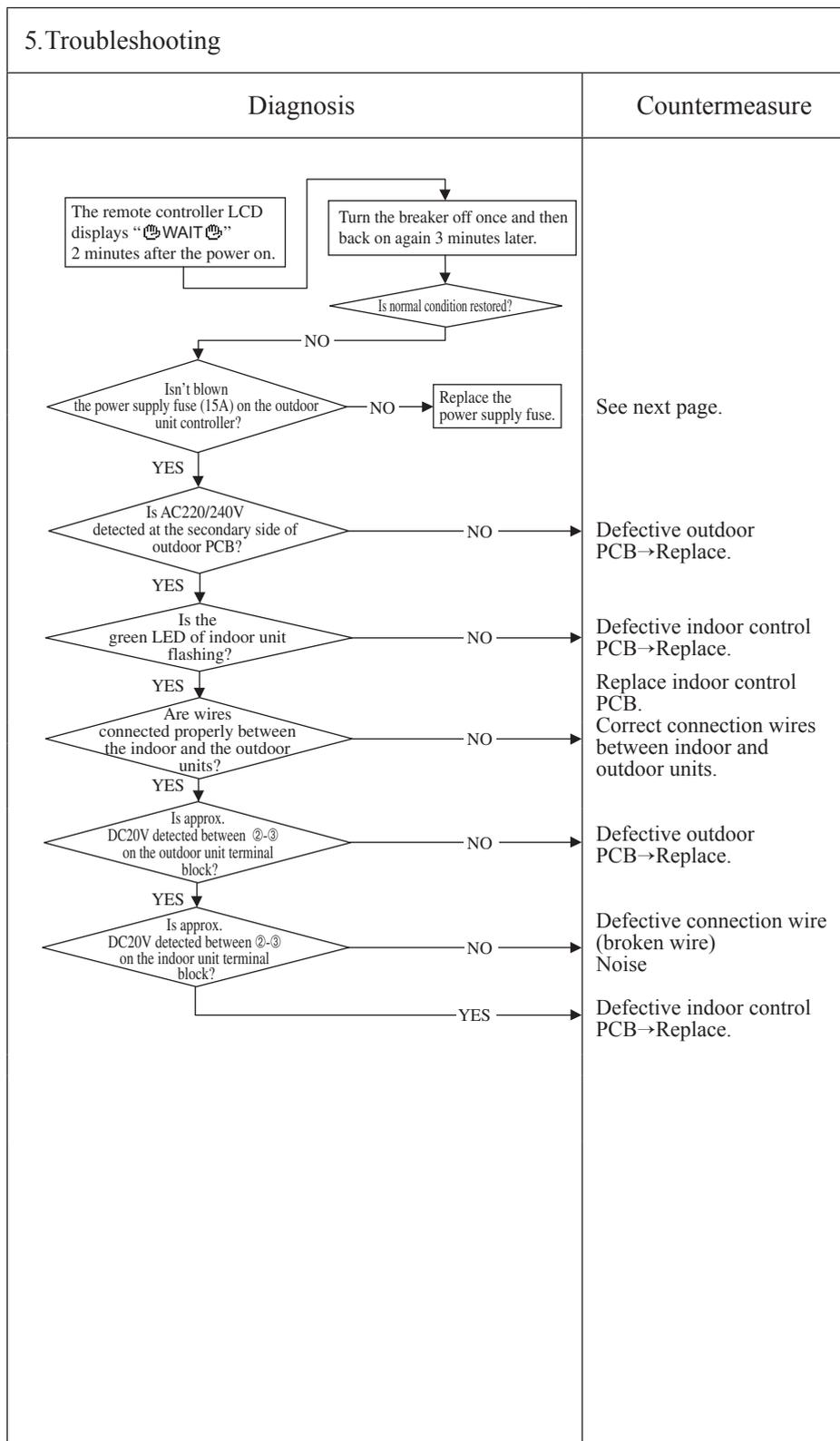
1.Applicable model
All models
When the remote controller LCD displays “🌀WAIT🌀” 2 minutes after the power on.

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



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 Remote controller: 🖱️WAIT🖱️	LED	Green	Red	Content Communication error at initial operation (2/3)
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model

All models

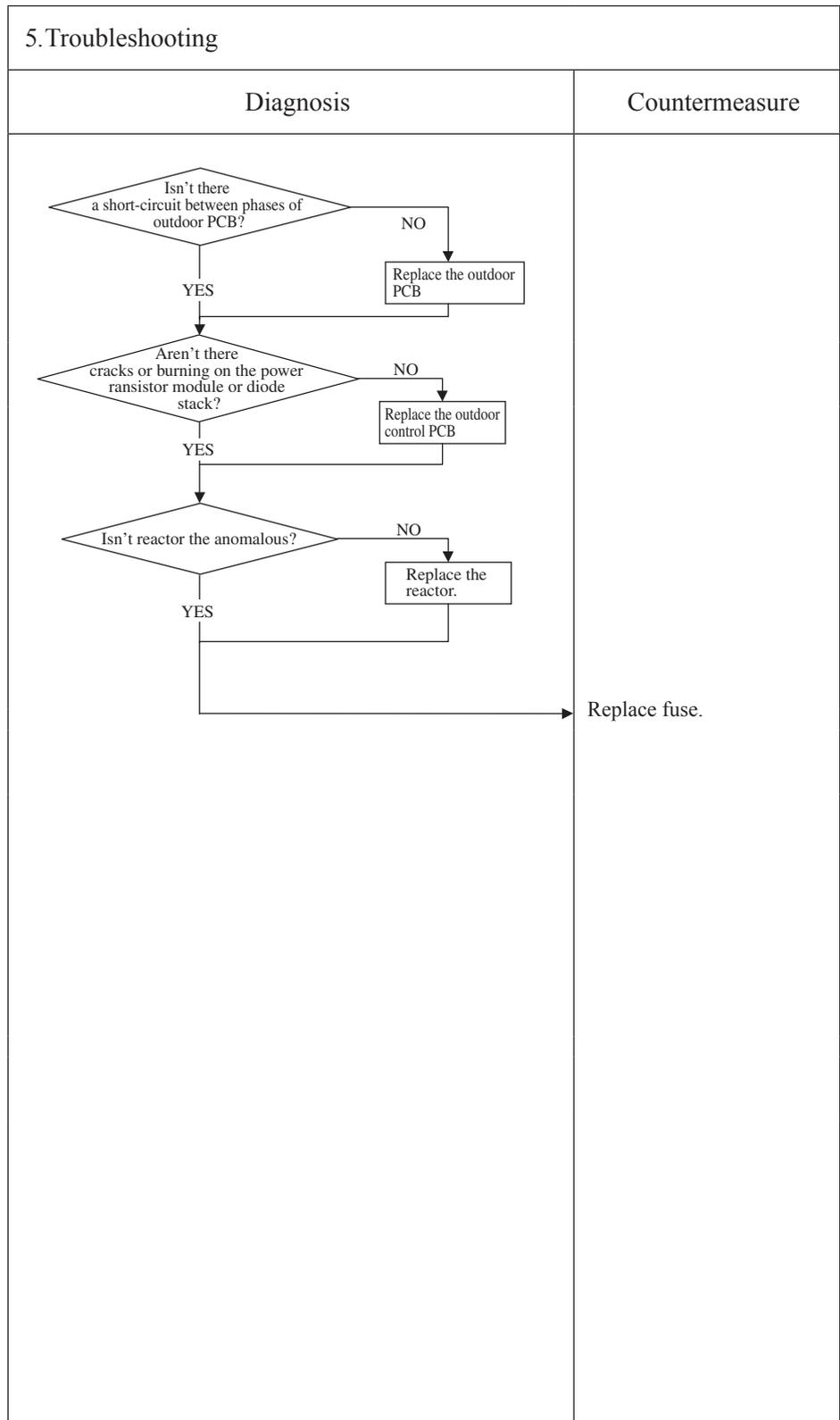
When the fuse is blown, the method to inspect outdoor PCB before replacing the power supply fuse

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor PCB
- Faulty reactor



Note:

Error code Remote controller: WAIT	LED	Green	Red	Content Communication error at initial operation (3/3)
	Indoor	Keeps flashing	Stays OFF	

1.Applicable model	5.Troubleshooting		
All models When the remote controller display is extinguished after the power on.	Diagnosis		Countermeasure
2.Error detection method			
3.Condition of Error displayed			
4.Presumable cause <ul style="list-style-type: none"> • Blown fuse • Connection between PCB's • Blown fuse • Faulty indoor control PCB • Defective remote controller • Wire breakage on remote controller • Faulty outdoor PCB 			

Note:

Error code Remote controller: E1	LED	Green	Red	Content Remote controller communication circuit error
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model	5. Troubleshooting	
All models	Diagnosis	Countermeasure
2. Error detection method	<pre> graph TD A{Is it possible to reset normally by the power reset?} -- YES --> B[Malfunction by noise Check peripheral environment.] A -- NO --> C[Turn SW7-1 to OFF. → ON Remove the wire ③ connecting between indoor/outdoor units.] C --> D[Power reset] D --> E{Does the drain pump restart automatically 1 minute later?} E -- YES --> F[Defective indoor control PCB → Replace.] E -- NO --> G[Defective remote controller → Replace.] </pre> <p>Note (2) Does the remote controller still display “WAIT” even after 3 minutes?</p>	
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		
<ul style="list-style-type: none"> • Defective communication circuit between remote controller-indoor unit • Noise • Defective remote controller • Faulty indoor control PCB 		

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
<ul style="list-style-type: none"> • Unit No. setting error • Broken remote controller wire • Faulty remote controller wire connection • Faulty outdoor PCB

5.Troubleshooting	
Diagnosis	Countermeasure
<p style="text-align: center;">Note (1) Inspect faulty connections (disconnection, looseness) on the outdoor unit terminal block.</p> <p style="text-align: center;">Is the connection of signal wires at the outdoor unit side OK?</p> <p style="text-align: center;">NO → Repair signal wires.</p> <p style="text-align: center;">YES</p> <p style="text-align: center;">Note (2) Check for faulty connection or breakage of signal wires between indoor-outdoor units.</p> <p style="text-align: center;">Is the connection of signal wires between indoor-outdoor units OK?</p> <p style="text-align: center;">NO → Repair signal wires.</p> <p style="text-align: center;">YES</p> <p style="text-align: center;">Power reset</p> <p style="text-align: center;">Has the remote controller LCD returned to normal state?</p> <p style="text-align: center;">NO → Defective outdoor PCB (Defective network communication circuit) → Replace.</p> <p style="text-align: center;">YES → Unit is normal. (Malfunction by temporary noise, etc.)</p>	

Note:

Error code Remote controller: E6	LED	Green	Red	Content Indoor heat exchanger temperature thermistor anomaly
	Indoor	Keeps flashing	1 time flash	

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 -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.
- 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
<p>Is the connection of indoor heat exchanger temperature thermistor connector OK?</p> <p>NO →</p> <p>YES →</p> <p>Are characteristics of indoor heat exchanger temperature thermistor OK?</p> <p>NO →</p> <p>YES →</p>	<p>Correct. → Insert connector securely.</p> <p>Defective indoor heat exchanger temperature thermistor → Replace.</p> <p>Defective indoor control PCB → Replace. (Defective indoor unit heat exchanger temperature thermistor input circuit)</p>

(Broken wire) **Temperature-resistance characteristic**

(Shot circuit)

Note:

Error code Remote controller: E7	LED	Green	Red	Content Return air temperature thermistor anomaly
	Indoor	Keeps flashing	1 time flash	

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
<ul style="list-style-type: none"> When the temperature thermistor detects -50°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
<ul style="list-style-type: none"> Defective return air temperature thermistor connector Defective return air temperature thermistor Faulty indoor control PCB

5. Troubleshooting																	
Diagnosis	Countermeasure																
<pre> graph TD Q1{Is the connection of return air temperature thermistor connector OK?} Q2{Are the characteristics of return air temperature thermistor OK?} C1[Correct. -> Connect connector.] C2[Defective return air temperature thermistor -> Replace.] C3[Defective indoor control PCB -> Replace. (Defective return air temperature thermistor input circuit)] Q1 -- NO --> C1 Q1 -- YES --> Q2 Q2 -- NO --> C2 Q2 -- YES --> C3 </pre>																	
<p style="text-align: center;">Temperature-resistance characteristic</p> <table border="1"> <caption>Temperature-resistance characteristic data points (approximate)</caption> <thead> <tr> <th>Temperature (°C)</th> <th>Resistance (kΩ)</th> </tr> </thead> <tbody> <tr><td>0</td><td>15</td></tr> <tr><td>10</td><td>10</td></tr> <tr><td>20</td><td>6</td></tr> <tr><td>25</td><td>5</td></tr> <tr><td>30</td><td>4</td></tr> <tr><td>40</td><td>3</td></tr> <tr><td>50</td><td>2</td></tr> </tbody> </table>		Temperature (°C)	Resistance (kΩ)	0	15	10	10	20	6	25	5	30	4	40	3	50	2
Temperature (°C)	Resistance (kΩ)																
0	15																
10	10																
20	6																
25	5																
30	4																
40	3																
50	2																

Note:

Error code Remote controller: E8	LED	Green	Red	Content Heating overload operation
	Indoor	Keeps flashing	1 time flash	

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
<pre> graph TD Q1{Is the air filter clogged?} -- YES --> C1[Wash.] Q1 -- NO --> Q2{Is the indoor heat exchanger temperature thermistor connection OK?} Q2 -- NO --> C2[Defective indoor heat exchanger temperature thermistor connector → Correct.] Q2 -- YES --> Q3{Are the characteristics of indoor heat exchanger temperature thermistor OK? (2)} Q3 -- NO --> C3[Defective indoor heat exchanger temperature thermistor.] Q3 -- YES --> R1[Check the error data with the remote controller.] R1 --> Q4{Is the unit operating in the state of heating overload?} Q4 -- NO --> C4[Check refrigerant system.] Q4 -- YES --> C5[Adjust] </pre>	
<p>Note (1) Judge if it is in the state of overload or not as follows.</p> <ul style="list-style-type: none"> ▲ 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? <p>Note (2) For characteristics of indoor heat exchanger temperature thermistor, see the error display E6.</p> <p>The graph shows a horizontal line representing indoor heat exchanger temperature. A vertical line at 56°C is labeled 'Reset'. A vertical line at 63°C is labeled 'Error stop'. The x-axis is labeled 'Indoor heat exchanger temperature (°C)'.</p>	

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.

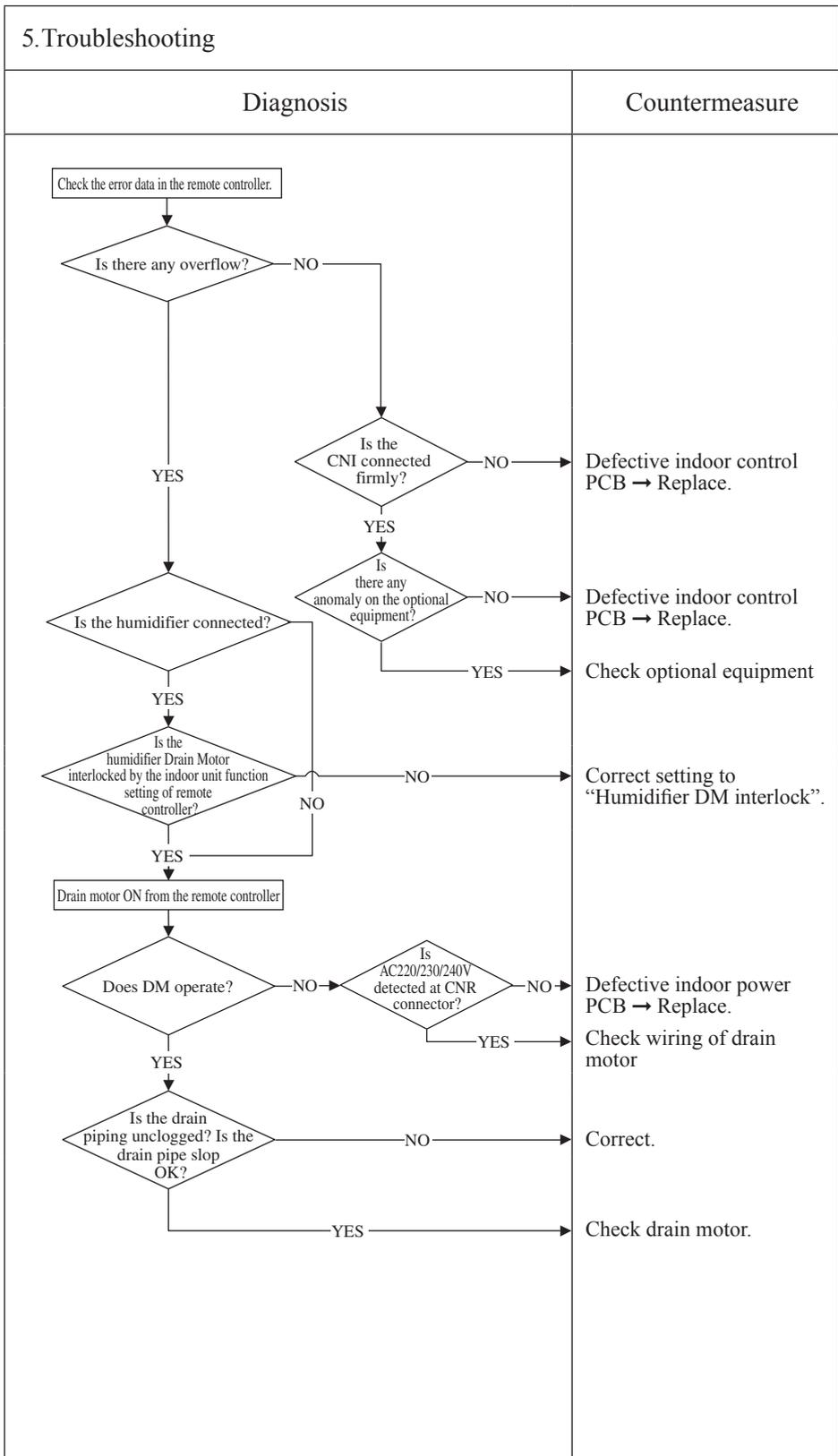
Error code Remote controller: E9	LED	Green	Red	Content Drain trouble
	Indoor	Keeps flashing	1 time flash	

1. Applicable model
All models

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



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 Remote controller: E10	LED	Green	Red	Content Excessive number of connected indoor units (more than 17 units) by controlling with one remote controller
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model	5. Troubleshooting	
All models	Diagnosis	Countermeasure
2. Error detection method	<pre> graph LR A{Aren't more than 17 indoor units connected to one remote controller?} -- NO --> B[Defective remote controller -> Replace.] A -- YES --> C[Reduce to 16 or less units.] </pre>	
When it detects more than 17 of indoor units connected to one remote controller		
3. Condition of Error displayed		
Same as above		
4. Presumable cause		
<ul style="list-style-type: none"> • Excessive number of indoor units connected • Defective remote controller 		

Note:

Error code Remote controller: E16	LED	Green	Red	Content Indoor fan motor anomaly
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models

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
<ul style="list-style-type: none"> • 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
<pre> graph TD D1{Does any foreign material intervene in rotational area of fan propeller?} -- YES --> C1[Remove foreign material.] D1 -- NO --> D2{Does the fan rotate smoothly when turned by hand?} D2 -- YES --> D3{Is DC280V detected between ①-④ of fan motor connector CNM?} D2 -- NO --> C2[Replace the fan motor.] D3 -- YES --> PR[Power supply reset] D3 -- NO --> D4{Is the fuse F202 blown?} PR --> D5{Is it normalized?} D4 -- YES --> C3[Replace faulty fan motor and power PCB.] D4 -- NO --> C4[Check power voltage.] D5 -- YES --> C5[Malfunction by temporary noise] D5 -- NO --> C6[Replace fan motor. (If the error persists after replacing the fan motor, replace the indoor control PCB.)] </pre>	

Note:

Error code Remote controller: E19	LED	Green	Red	Content Indoor unit operation check, drain motor check setting error
	Indoor	Keeps flashing	1 time flash	

1. Applicable model	5. Troubleshooting		
All models	Diagnosis		Countermeasure
2. Error detection method	<pre> graph TD Start[E19 occurs when the power ON] --> Decision{Is SW7-1 on the indoor control PCB ON?} Decision -- NO --> Countermeasure1[Defective indoor control PCB (Defective SW7) → Replace] Decision -- YES --> Countermeasure2[Turn SW7-1 on the indoor control PCB OFF and reset the power] </pre>		
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)			

Note:

Error code Remote controller: E28	LED	Green	Red	Content Remote controller temperature thermistor anomaly
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models

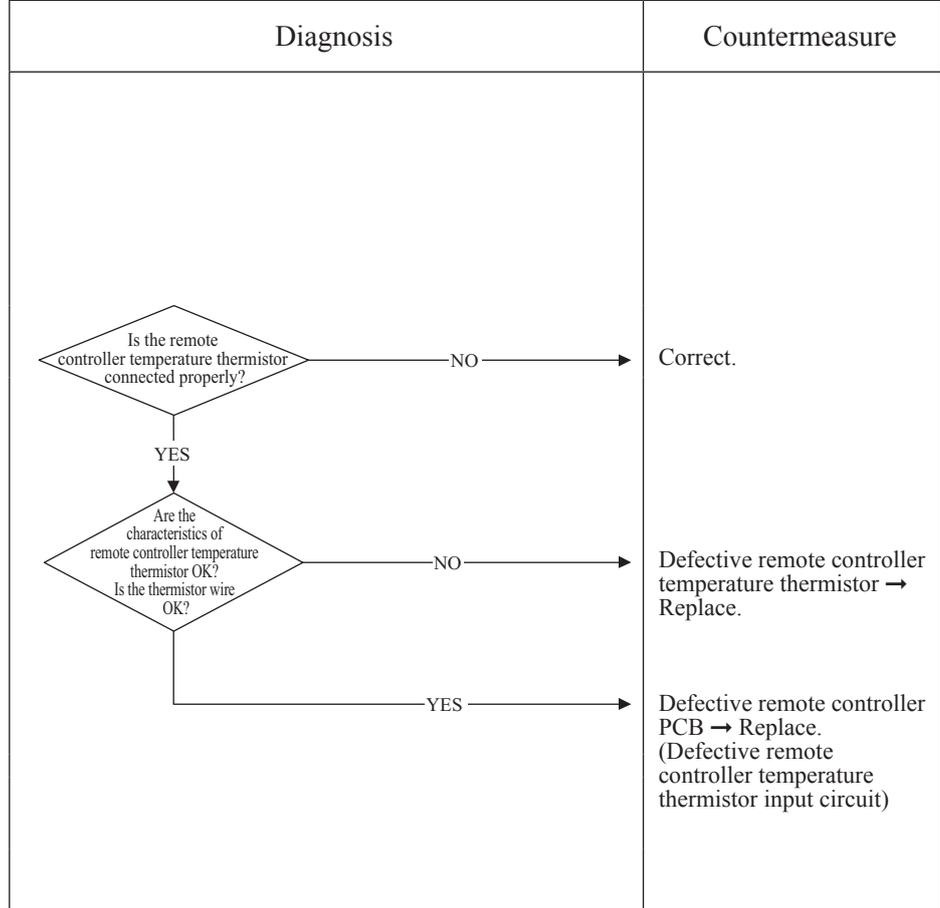
2. Error detection method
Detection of anomalously low temperature (resistance) of remote controller temperature thermistor (ThC)

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



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 Remote controller: E35	LED	Green	Red	Content Cooling overload operation
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models

2. Error detection method
<p>Outdoor heat exchanger temperature (°C)</p>

3. Condition of Error displayed
When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 63°C or higher continues for 10 minutes, including the compressor stop.

4. Presumable cause
<ul style="list-style-type: none"> • 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
<p style="text-align: right;">* For the characteristics of outdoor heat exchanger temperature sensor, refer to E37.</p>	<p>Replace outdoor heat exchanger temperature sensor.</p> <p>Check unit side.</p> <ul style="list-style-type: none"> • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger? <p>Control operation check*</p> <p>Defective outdoor PCB → Replace.</p> <p>Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.</p>

Note:

Error code Remote controller: E36	LED	Green	Red	Content Discharge pipe temperature error
	Indoor	Keeps flashing	Stays OFF	

<p>1. Applicable model</p> <p>All models</p>	5. Troubleshooting		
<p>2. Error detection method</p> <p>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.</p>	Diagnosis	Countermeasure	
<p>3. Condition of Error displayed</p> <p>When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.</p>	<pre> graph TD Q1{Are the characteristics of discharge pipe temperature sensor normal?} Q2{Is the discharge pipe temperature error persisted during cooling operation?} Q3{Is the discharge pipe temperature control normal?} Q4{Is the temperature (measured actually) at detection of error correct?} Q1 -- NO --> C1[Replace discharge pipe temperature sensor.] Q1 -- YES --> Q2 Q2 -- YES --> C2[Insufficient refrigerant amount : Recharge refrigerant by weighing proper amount on a scale.] Q2 -- NO --> Q3 Q3 -- NO --> C3[Control operation check *] Q3 -- YES --> Q4 Q4 -- NO --> C4[Defective outdoor PCB → Replace.] Q4 -- YES --> C5[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?] </pre>		
<p>4. Presumable cause</p> <ul style="list-style-type: none"> • 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 	<p>* 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.</p>		

Note:

Error code Remote controller: E37	LED	Green	Red	Content Outdoor heat exchanger temperature sensor anomaly
	Indoor	Keeps flashing	Stays OFF	

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
<p>Is the outdoor heat exchanger temperature sensor connector connected properly?</p> <p>NO →</p> <p>YES →</p> <p>For the characteristics of outdoor heat exchanger temperature sensor, see the following graph.</p> <p>Are the characteristics of outdoor heat exchanger temperature sensor OK?</p> <p>NO →</p> <p>YES →</p>	<p>Correct connector.</p> <p>Defective outdoor heat exchanger temperature sensor → Replace.</p> <p>Defective outdoor PCB → Replace. (Defective outdoor heat exchanger temperature sensor input circuit)</p>

Temperature-resistance characteristics

(Broken wire)

(Shot circuit)

Temperature (°C)	Temperature sensor resistance (kΩ)
0	15
10	10
20	7
25	5
30	4
40	3
50	2

Note:

Error code Remote controller: E38	LED	Green	Red	Content Outdoor air temperature sensor anomaly
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Defective outdoor PCB Broken sensor harness or temperature sensing section (Check molding.) Disconnected wire connection (connector)

5. Troubleshooting																	
Diagnosis	Countermeasure																
<pre> graph TD Q1{Is the outdoor air temperature sensor connector connected properly?} -- NO --> C1[Correct connector.] Q1 -- YES --> Q2{Is the characteristics of the outdoor air temperature sensor OK?} Q2 -- NO --> C2[Defective outdoor air temperature sensor → Replace.] Q2 -- YES --> C3[Defective outdoor PCB → Replace. (Defective outdoor air temperature sensor input circuit)] </pre>																	
<p style="text-align: center;">Temperature-resistance characteristics</p> <p>(Broken wire)</p> <table border="1"> <caption>Temperature-resistance characteristics data</caption> <thead> <tr> <th>Temperature (°C)</th> <th>Temperature sensor resistance (kΩ)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>~16</td> </tr> <tr> <td>10</td> <td>~10</td> </tr> <tr> <td>20</td> <td>~6</td> </tr> <tr> <td>25</td> <td>5</td> </tr> <tr> <td>30</td> <td>~4</td> </tr> <tr> <td>40</td> <td>~3</td> </tr> <tr> <td>50</td> <td>~2</td> </tr> </tbody> </table> <p>(Shot circuit)</p>		Temperature (°C)	Temperature sensor resistance (kΩ)	0	~16	10	~10	20	~6	25	5	30	~4	40	~3	50	~2
Temperature (°C)	Temperature sensor resistance (kΩ)																
0	~16																
10	~10																
20	~6																
25	5																
30	~4																
40	~3																
50	~2																

Note:

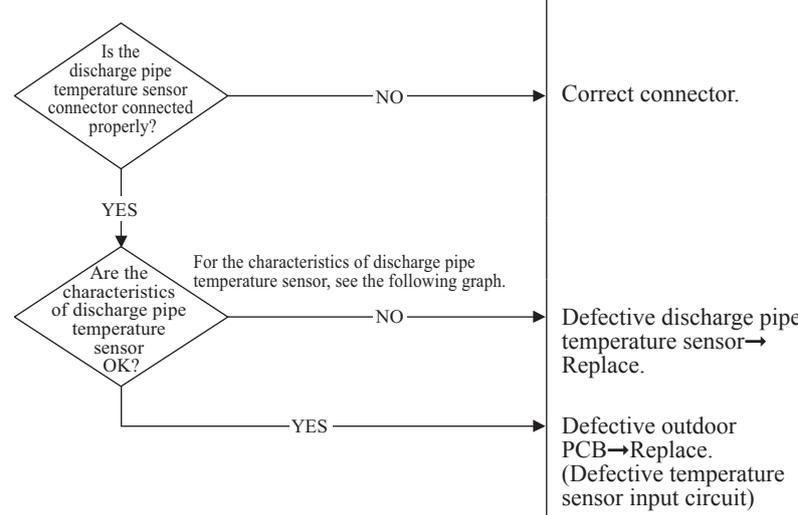
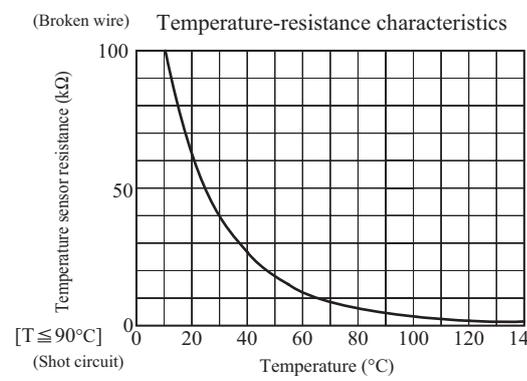
Error code Remote controller: E39	LED	Green	Red	Content <h2 style="text-align: center;">Discharge pipe temperature sensor anomaly</h2>
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Defective outdoor PCB • Broken sensor harness or temperature sensing section (Check molding.) • Disconnected wire connection (connector)

5.Troubleshooting																			
Diagnosis	Countermeasure																		
 <pre> graph TD Q1{Is the discharge pipe temperature sensor connector connected properly?} -- NO --> C1[Correct connector.] Q1 -- YES --> Q2{Are the characteristics of discharge pipe temperature sensor OK?} Q2 -- NO --> C2[Defective discharge pipe temperature sensor -> Replace.] Q2 -- YES --> C3[Defective outdoor PCB -> Replace. (Defective temperature sensor input circuit)] </pre>																			
<p>(Broken wire) Temperature-resistance characteristics</p>  <table border="1"> <caption>Temperature-resistance characteristics</caption> <thead> <tr> <th>Temperature (°C)</th> <th>Temperature sensor resistance (kΩ)</th> </tr> </thead> <tbody> <tr><td>0</td><td>100</td></tr> <tr><td>20</td><td>60</td></tr> <tr><td>40</td><td>30</td></tr> <tr><td>60</td><td>15</td></tr> <tr><td>80</td><td>8</td></tr> <tr><td>100</td><td>4</td></tr> <tr><td>120</td><td>2</td></tr> <tr><td>140</td><td>1</td></tr> </tbody> </table> <p>[T ≤ 90°C] (Shot circuit)</p>		Temperature (°C)	Temperature sensor resistance (kΩ)	0	100	20	60	40	30	60	15	80	8	100	4	120	2	140	1
Temperature (°C)	Temperature sensor resistance (kΩ)																		
0	100																		
20	60																		
40	30																		
60	15																		
80	8																		
100	4																		
120	2																		
140	1																		

Note:

Error code	LED	Green	Red	Content
Remote controller: E42	Indoor control PCB	Keeps flashing	Stays OFF	Current cut (1/2)

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
<ul style="list-style-type: none"> • The valves closed • Faulty power supply • Insufficient refrigerant amount • Faulty compressor • Faulty power transistor module

5.Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD Q1{Is the Power supply voltage OK?} -- NO --> C1[Check power supply.] Q1 -- YES --> Q2{Are the service valves opened?} Q2 -- NO --> C2[Open the valves.] Q2 -- YES --> Q3{Is the high pressure during operation OK?} Q3 -- NO --> C3[Check refrigerant amount and refrigerant 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 compressor is discharged from the compressor.] Q3 -- YES --> Q4{Is the checked result of insulation resistance and coil resistance (l) of compressor motor OK? (1) 1.703Ω (U-V, V-W, U-W) or more at 20°C} Q4 -- NO --> C4[Replace compressor.] Q4 -- YES --> E[To next page.] </pre>	

Note:

Error code Remote controller: E42	LED	Green	Red	Content Current cut (2/2)
	Indoor	Keeps flashing	Stays OFF	

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 inverter 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
<p>From previous page</p> <p>Is the checked result of power transistor module OK?</p> <p>NO → Defective outdoor PCB → Replace.</p> <p>YES</p> <div style="border: 1px dashed black; padding: 5px;"> <ul style="list-style-type: none"> • 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 the low pressure sensor and suction pipe temperature thermistor normal? • Is there any anomalous sound on the compressor? </div> <p>YES</p> <p>After resetting power for several times does it become normal?</p> <p>NO → Defective outdoor PCB → Replace.</p> <p>YES</p> <p>Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.</p>	

Note:

Error code Remote controller: E47	LED	Green	Red	Content Active filter voltage error
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model	5. Troubleshooting		
All models	Diagnosis	Countermeasure	
2. Error detection method	<pre> graph TD D1{Is the power supply normal?} -- NO --> C1[Restore normal condition.] D1 -- YES --> D2{Is voltage within the specified range?} D2 -- NO --> C2[Restore normal condition.] D2 -- YES --> D3{Check soldered surfaces on the outdoor PCB for foreign matter like dust, fouling, etc.} D3 -- NO --> C3[Remove foreign matter like dust, fouling, etc.] D3 -- YES --> C4[Defective outdoor PCB -> Replace.] </pre>		
3. Condition of Error displayed	Same as above		
4. Presumable cause	<ul style="list-style-type: none"> • Defective outdoor PCB • Dust on outdoor PCB • Anomalous power supply 		

Note:

<table border="1"> <tr> <td>Error code</td> <td>LED</td> <td>Green</td> <td>Red</td> <td>Content</td> </tr> <tr> <td>Remote controller: E48</td> <td>Indoor</td> <td>Keeps flashing</td> <td>Stays OFF</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">Outdoor fan motor anomaly</td> </tr> </table>	Error code	LED	Green	Red	Content	Remote controller: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly
Error code	LED	Green	Red	Content						
Remote controller: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly						

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
<ul style="list-style-type: none"> • Defective outdoor PCB • Foreign material at rotational area of fan propeller • Defective fan motor • Dust on outdoor PCB • Blown F3 fuse

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD D1{Does any foreign material intervene in rotational area of fan propeller?} -- YES --> C1[Remove foreign matter.] D1 -- NO --> D2{Does the fan rotate smoothly when turned by hand?} D2 -- NO --> C2["Replace fan motor. If resistance between ① (Vm):blue -④(GND):black is detected 1kΩ or lower, it is faulty."] D2 -- YES --> D3{Is DC308-336V detected between (CNFAN ④ (black)-⑥ (red)) of fan motor connector?} D3 -- YES --> R1[Power supply reset] D3 -- NO --> D4{Is F3 (250V1A) fuse blown?} R1 --> D5{Is normal state restored?} D4 -- YES --> C3[Replace faulty fan motor and outdoor PCB.] D4 -- NO --> C4[Check power supply voltage.] D5 -- YES --> C5[Malfunction by temporary noise] D5 -- NO --> C6["Replace fan motor (If anomaly persists after replacing fan motor, replace outdoor PCB.)"] </pre>	

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 Remote controller: E51	LED	Green	Red	Content Power transistor anomaly
	Indoor	Keeps flashing	Stays OFF	

<p>1.Applicable model</p> <p>All models</p>	5.Troubleshooting		
<p>2.Error detection method</p> <p>Power transistor primary current</p>	Diagnosis	Countermeasure	
<p>3.Condition of Error displayed</p> <p>If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.</p>	<pre> graph TD A{Check soldered surfaces on the outdoor control PCB for foreign matter like dust, fouling, etc.} -- NO --> B[Remove foreign matter like dust, fouling, etc.] A -- YES --> C{Isn't F2 fuse (250V, 20A) blown?} C -- YES --> D[Replace fuse.] C -- NO --> E[Defective outdoor PCB -> Replace.] </pre>		<p>Remove foreign matter like dust, fouling, etc.</p> <p>Replace fuse.</p> <p>Defective outdoor PCB → Replace.</p>
<p>4.Presumable cause</p> <ul style="list-style-type: none"> • Faulty outdoor PCB • Dust on control PCB • Blown F2 fuse 			

Note:

Error code Remote controller: E57	LED	Green	Red	Content Insufficient refrigerant amount or detection of service valve closure
	Indoor	Keeps flashing	Stays OFF	

1. Applicable model
All models

2. Error detection method
• Judge insufficient refrigerant amount by detecting the temperature difference 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 refrigerant amount

5. Troubleshooting

Diagnosis	Countermeasure
<p>Is the service valve fully opened?</p> <p>NO →</p> <p>YES ↓</p> <p>Are the connections of indoor heat exchanger and/or return air temperature thermistor connectors OK?</p> <p>NO →</p> <p>YES ↓</p> <p>Are the characteristics of indoor heat exchanger and/or return air temperature thermistor OK?</p> <p>NO →</p> <p>YES ↓</p> <p>Is the low pressure during operation normal?</p> <p>NO →</p> <p>YES →</p>	<p>Open fully.</p> <p>Correct indoor heat exchanger, return air temperature thermistor connector connections.</p> <p>Defective indoor heat exchanger, return air temperature thermistor → Replace.</p> <p>Charge refrigerant.</p> <p>Defective indoor control PCB → Replace. (Defective indoor heat exchanger, return air temperature thermistor input circuits)</p>

Indoor heat exchanger, return air temperature thermistor
Temperature-resistance characteristics

(Broken wire)

(Shot circuit)

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) \geq 4 deg
Heating: Indoor heat exchanger temperature (ThI-R) – Indoor return air temperature (ThI-A) \leq 6 deg

Error code Remote controller: E58	LED	Green	Red	Content Current safe stop
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Excessive refrigerant amount • Indoor,outdoor unit installation spaces • Faulty compressor • Defective outdoor air temp. sensor • Defective outdoor PCB

5.Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD D1{Is the refrigerant amount normal?} -- NO --> C1[Adjust the refrigerant amount properly.] D1 -- YES --> D2{Is outdoor ventilation condition good?} D2 -- NO --> C2[Secure space for inlet and outlet.] D2 -- YES --> D3{Inspect compressor} D3 -- NO --> C3[Replace compressor.] D3 -- YES --> D4{Inspect outdoor air temp. sensor} D4 -- NO --> C4[Replace sensor.] D4 -- YES --> C5[Defective outdoor PCB -> Replace. (Defective outdoor air temp. sensor input circuit)] </pre>	

Note:

Error code Remote controller: E59	LED	Green	Red	Content Compressor startup failure
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Faulty outdoor fan motor • Faulty outdoor PCB • Anomalous power supply voltage • Improper refrigerant amount and refrigerant circuit • Faulty compressor (Motor bearing)

5.Troubleshooting	
Diagnosis	Countermeasure

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 whether the insulation resistance can recover or not, after 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 Remote controller: E60	LED	Green	Red	Content Compressor rotor lock error
	Indoor	Keeps flashing	Stays OFF	

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
<ul style="list-style-type: none"> • Defective outdoor fan motor • Defective outdoor PCB • Anomalous power supply voltage • Improper refrigerant amount and refrigerant circuit • Defective compressor (motor, bearing)

5. Troubleshooting	
Diagnosis	Countermeasure
<pre> graph TD Q1{Is the power supply voltage OK?} -- NO --> C1[Check and correct the power supply voltage] Q1 -- YES --> R1[Reset the power supply and restart operation.] R1 --> Q2{Does the compressor start?} Q2 -- NO --> Q3{Does E59 occur?} Q3 -- YES --> C2[Correct it based on the troubleshooting of E59] Q3 -- NO --> Q4{Does the compressor run without occurrence of E42?} Q4 -- NO --> C3[Correct it based on the troubleshooting of E42] Q4 -- YES --> Q5{Is the output from inverter checker OK?} Q5 -- NO --> C4[Defective outdoor PCB -> Replace.] Q5 -- YES --> Q6{Is the noise or vibration of compressor normal?} Q6 -- NO --> C5[Replace compressor.] Q6 -- YES --> Q7{Does it start up normally without recurrence of E60.} Q7 -- NO --> C6[Check compressor for insulation, resistance. Replace compressor if necessary.] Q7 -- YES --> C7[Defective outdoor PCB -> Replace.] </pre>	

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 whether the insulation resistance can recover or not, after 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 breaker conforms to high-harmonic specifications
(As units has inverter, in order to prevent from improper operation, be sure to use high-harmonic one.)

11. OPTION PARTS

PJA012D730

11.1 Installation of wired remote controller (RC-E5)

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.

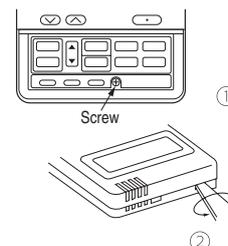
(1) Places exposed to direct sunlight	(4) Hot surface or cold surface enough to generate condensation
(2) Places near heat devices	(5) Places exposed to oil mist or steam directly
(3) High humidity places	(6) Uneven surface

⊘
- DO NOT leave the remote controller without the upper case.
In case the upper case 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 insulation thickness in 1mm or more. [In case of embedding cord] Electrical box, M4 screw (2 pieces) [In case of exposing cord] Cord clamp (if needed)

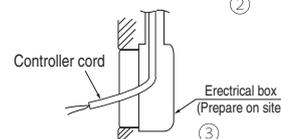
Installation procedure

- 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.

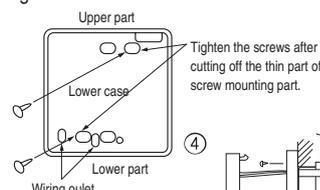
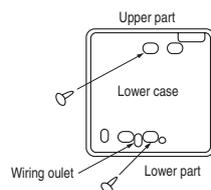


[In case of embedding cord]

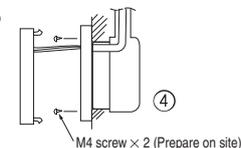
- ③ Embed the electrical box and remote controller cord beforehand.



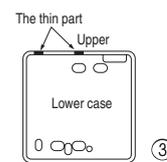
- ④ Prepare two M4 screws (recommended length is 12-16mm) on site, and install the lower case to electrical box. Choose either of the following two positions in fixing it with screws.



- 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)

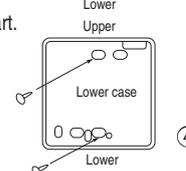


- ⑥ Install the upper case as before so as not to catch up the remote controller cord, and tighten with the screws.

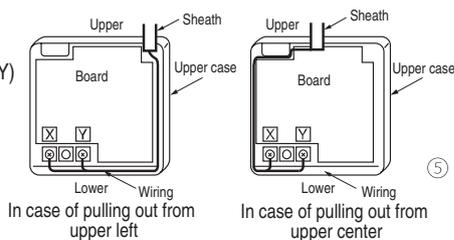


[In case of exposing cord]

- ③ You can pull out the remote controller 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.

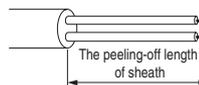


- ⑤ Connect the remote controller cord to the terminal block.
 Connect the terminal of remote controller (X,Y) with the terminal of indoor unit (X,Y).
 (X and Y are no polarity)
 Wiring route is as shown in the right diagram depending on the pulling out direction.



The wiring inside the remote controller case should be within 0.3mm² (recommended) to 0.5mm².
 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	X wiring : 170mm
Y wiring : 195mm	Y wiring : 190mm



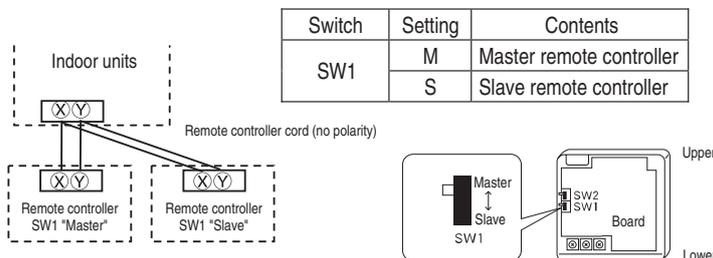
- ⑥ Install the upper case as before so as not to catch up the remote controller cord, and tighten with the screws.
 ⑦ In case of exposing cord, fix the cord on the wall with cord clamp so as not to slack.

Installation and wiring of remote controller

- ① Wiring of remote controller should use 0.3mm² × 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 0.5mm². 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 500m.....2.0mm² × 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.)



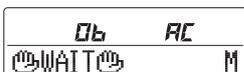
Set SW1 to "Slave" for the slave remote controller. It was factory set to "Master" for shipment.
 Note: The setting "Remote controller thermistor enabled" is only selectable with the master remote controller in the position where you want to check room temperature.
 The air conditioner operation follows 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.

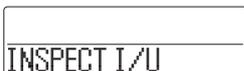
Master remote controller : " WAIT M"
 Slave remote controller : " WAIT S"

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.

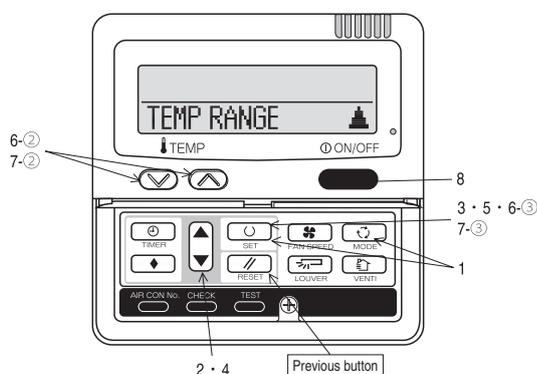
1. When ⑫ TEMP RANGE SET, remote controller function of function setting mode is "INDN CHANGE" (factory setting),
 [If upper limit value is set]
 During heating, you cannot set the value exceeding the upper limit.
 [If lower limit value is set]
 During operation mode except heating, you cannot set the 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 button to finish.

• It is possible to finish by pressing button on the way, but unfinished change of setting is unavailable.

• During setting, if you press (RESET) button, you return to the previous screen.



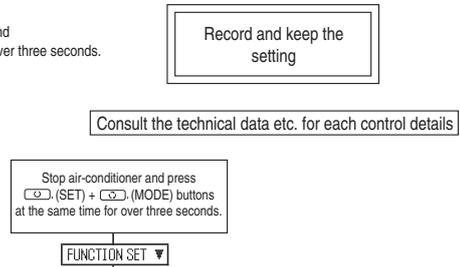
The functional setting

- 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



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FUNCTION (Remote controller function)

Function	setting	
01 ESP SET	ESP VALID	○ Validate setting of ESP: External Static Pressure
	ESP INVALID	○ Invalidate setting of ESP
02 AUTO RUN SET	AUTO RUN ON	※ Automatical operation is impossible
	AUTO RUN OFF	※
03 TEMP SW	VALID	○ Temperature setting button is not working
	INVALID	○
04 MODE SW	VALID	○ Mode button is not working
	INVALID	○
05 ON/OFF SW	VALID	○ On/Off button is not working
	INVALID	○
06 FAN SPEED SW	VALID	※ Fan speed button is not working
	INVALID	※
07 LOUVER SW	VALID	※ Louver button is not working
	INVALID	※
08 TIMER SW	VALID	○ Timer button is not working
	INVALID	○
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℃ increase in temperature.
	SENSOR +2.0℃	○ Remote thermistor is working, and to be set for producing +2.0℃ increase in temperature.
	SENSOR +1.0℃	○ Remote thermistor is working, and to be set for producing +1.0℃ increase in temperature.
	SENSOR -1.0℃	○ Remote thermistor is working, and to be set for producing -1.0℃ increase in temperature.
	SENSOR -2.0℃	○ Remote thermistor is working, and to be set for producing -2.0℃ increase in temperature.
	SENSOR -3.0℃	○ Remote thermistor is working, and to be set for producing -3.0℃ increase in temperature.
10 AUTO RESTART	INVALID	○
	VALID	○
11 VENT LINK SET	NO VENT	○ 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.
	VENT LINK	○
	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 HI-MID-LO or the four speed of HI-MID-LO.
	HI-LO	※ Airflow of fan becomes of HI-LO.
	HI-MID	※ Airflow of fan becomes of HI-MID.
	1 FAN SPEED	※ Airflow of fan is fixed at one speed.
14 POSITION	POSITION STOP	○ If you change the remote controller function "14 POSITION", you must change the indoor function "04 POSITION" accordingly.
	FREE STOP	○ You can select the louver stop position in the four. 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	○ In normal working indication, indoor unit temperature is indicated instead of airflow.
	INDICATION ON	○ (Only the master remote controller can be indicated.)
18 INDICATION	INDICATION ON	○ Heating preparation indication should not be indicated.
	INDICATION OFF	○
19 °C/°F SET	°C	○ Temperature indication is by degree C
	°F	○ Temperature indication is by degree F

To next page

[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 / PROHIBITION".

From previous page

(Indoor unit function) I/U FUNCTION ▲ Indoor unit No. are indicated only when plural indoor units are connected.

To set other indoor unit, press [AIRCON NO.] button, which allows you to go back to the indoor unit selection screen (for example: I/U 000 ▲).

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	4 POSITION 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℃	
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 SPEED SET	STANDARD	Indoor unit air flow setting			
		UH - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
HIGH SPEED1, 2		UH - UH - Hi - Me	UH - Hi - Me	UH - Me	UH - 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 inputted from remote on-off terminal "CNT-6", all indoor units are stopped immediately.

To be reset for producing +3.0℃ increase in temperature during heating.
 To be reset for producing +2.0℃ increase in temperature during heating.
 To be reset for producing +1.0℃ increase in temperature during heating.

To be reset producing +2.0℃ increase in return air temperature of indoor unit.
 To be reset producing +1.5℃ increase in return air temperature of indoor unit.
 To be reset producing +1.0℃ increase in return air temperature of indoor unit.

To be reset producing -1.0℃ increase in return air temperature of indoor unit.
 To be reset producing -1.5℃ increase in return air temperature of indoor unit.
 To be reset producing -2.0℃ increase in return air temperature of indoor unit.

When heating thermostat is OFF, fan speed is low speed.
 When heating thermostat is OFF, fan speed is set speed.
 When heating thermostat is OFF, fan speed is operated intermittently.
 When heating thermostat is OFF, the fan is stopped.
 When the remote thermostat is working, "FAN OFF" is set automatically.
 Do not set "FAN OFF" when the indoor unit's thermostat 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.

FUNCTION SET ▼
2. Press (SET) button.
3. Make sure which do you want to set, "FUNCTION ▼" (remote controller function) or "I/U FUNCTION ▲" (indoor unit function).

FUNCTION ▼
4. Press or button.
 Select "FUNCTION ▼" (remote controller function) or "I/U FUNCTION ▲" (indoor unit function).

I/U 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 ESP 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)

02

←

Function No.

AUTO RUN SET

←

Function

- ③ Press (SET) button.
 The current setting of selected function is indicated. (for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected

02

←

Setting

- ④ Press or button.
 Select the setting.

02

↑

02

↓

02

↑

02

↓

02

↑

02

↓

- 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.

SET COMPLETE

Operation message
Function description: ⑥, setting description: ⑦

【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.

I/U000 ▲

- (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)

02

←

Function No.

FAN SPEED SET

←

Function

- ③ Press (SET) button.
 The current setting of selected function is indicated. (For example) "STANDARD" ← If "02 FAN SPEED SET" is selected.

02

←

Setting

- 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.

SET COMPLETE

- It is possible to finish by pressing 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 function" 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.)

11.2 Wireless kit (RCN-TC-24W-ER)

PJA012D758

Notes :

Following functions of FDTC Type-F 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	(8) Places where the receiver is influenced by the fluorescent lamp (especially inverter type) or sunlight.
(2) Places near heat devices	(9) Places where the receiver is affected by infrared rays of any other communication devices
(3) High humidity places	(10) Places where some object may obstruct the communication with the remote controller
(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.	
- 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.

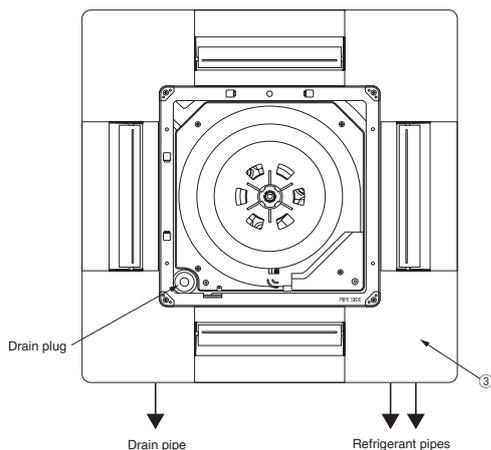
Receiver		1	Remote controller holder		1
Wireless remote controller		1	Wood screw for holder		2
Parts set		1	AAA dry cell battery (RO3)		2

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.



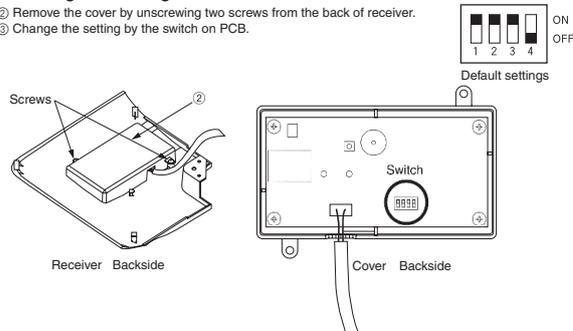
Setting on site

- ① PCB on the receiver has the following switches to set the functions. Default setting is shown with mark.

SW 1	Customized signal setting to avoid mixed communication	ON : Normal OFF : Remote
SW 2	Receiver master/slave setting	ON : Master OFF : Slave
SW 3	Buzzer valid/invalid	ON : Valid OFF : Invalid
SW 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

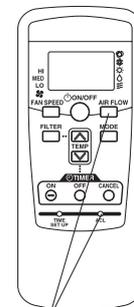
Pressing [ACL] switch with [AIR FLOW] button kept pressing or inserting the batteries with pressing [AIR FLOW] button will customize the signal.

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.)

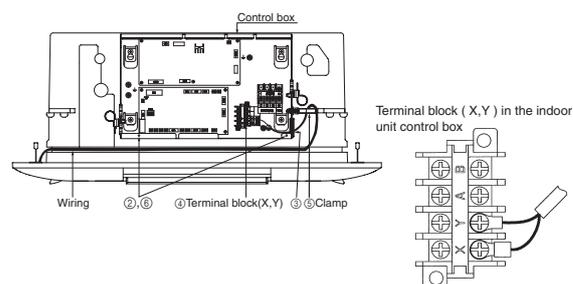
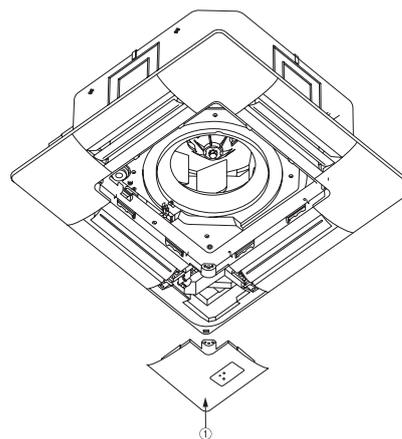


Radio interference prevention mode

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.

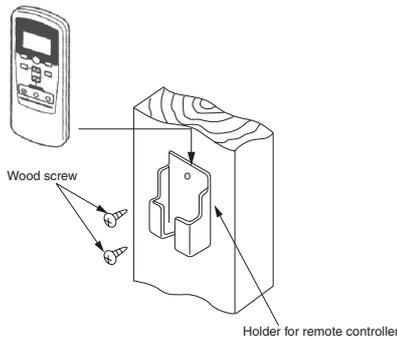


③ Remote controller

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

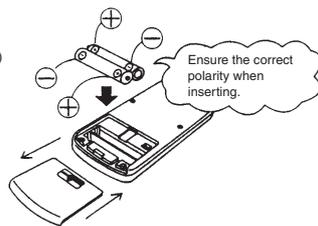


Installation tips for the remote controller holder

- 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.



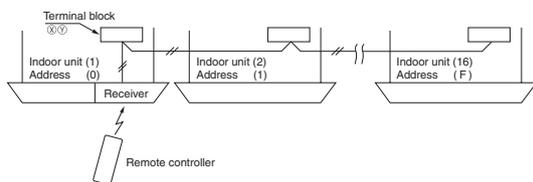
Control plural indoor units with one remote controller

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
(Maximum 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

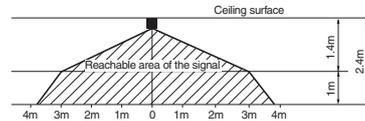
Up to two receivers can be installed in one indoor unit group. When two receivers are used, it is necessary for a receiver to turn OFF SW2 on the receiver PCB to set it as slave.

(For the method of switching, please see **Setting on site** in the section of

2. **How to install the receiver** in this manual.)

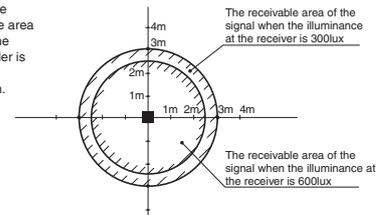
Wireless remote controller's operable area

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.

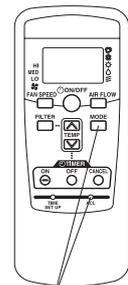
Pressing [ACL] switch with [MODE] button kept pressing or inserting the batteries with pressing [MODE] button will make auto mode operation.

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.)

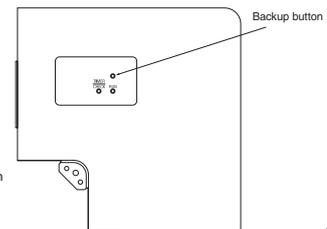


Auto mode operation setting

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

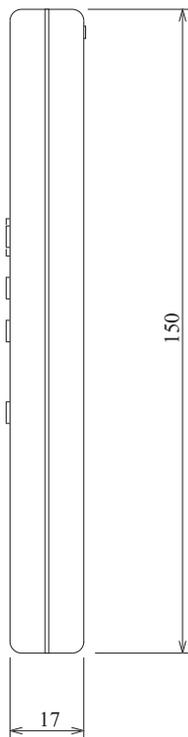
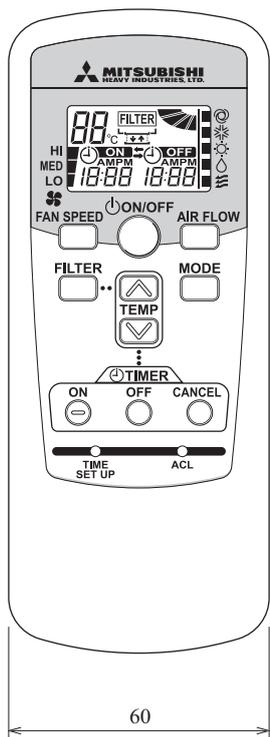
- After safety confirmation, turn on the power.
- Transmit a cooling operation command with wireless remote controller, while the backup button on the receiver is pressed.
- If the backup button on the receiver is pressed during a test run, it will end the test run.
- If you cannot operate the unit properly 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

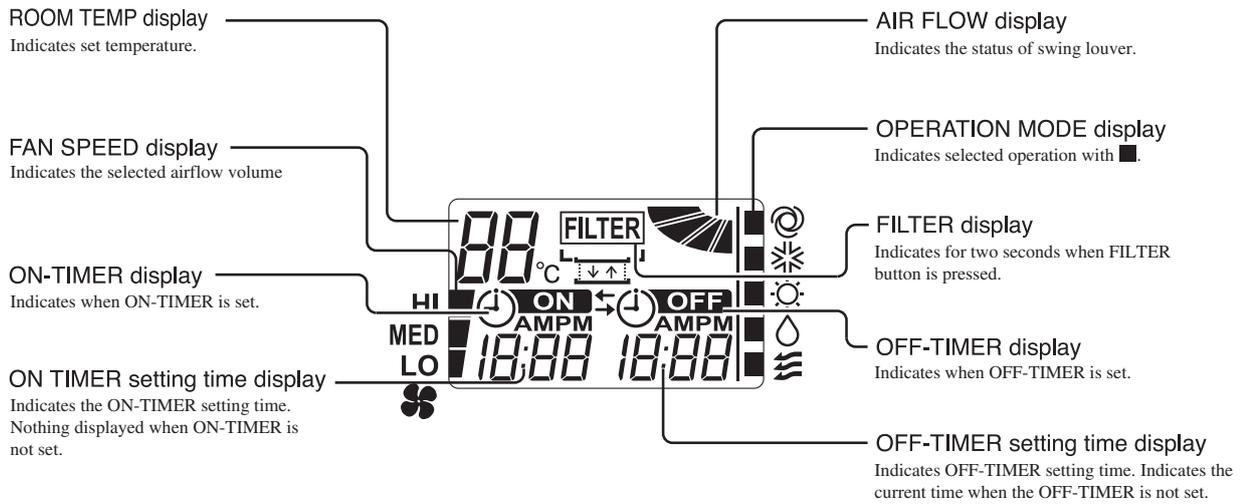
On the receiver of a wireless kit, a two-digit (7-segment) display is provided.

- (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.

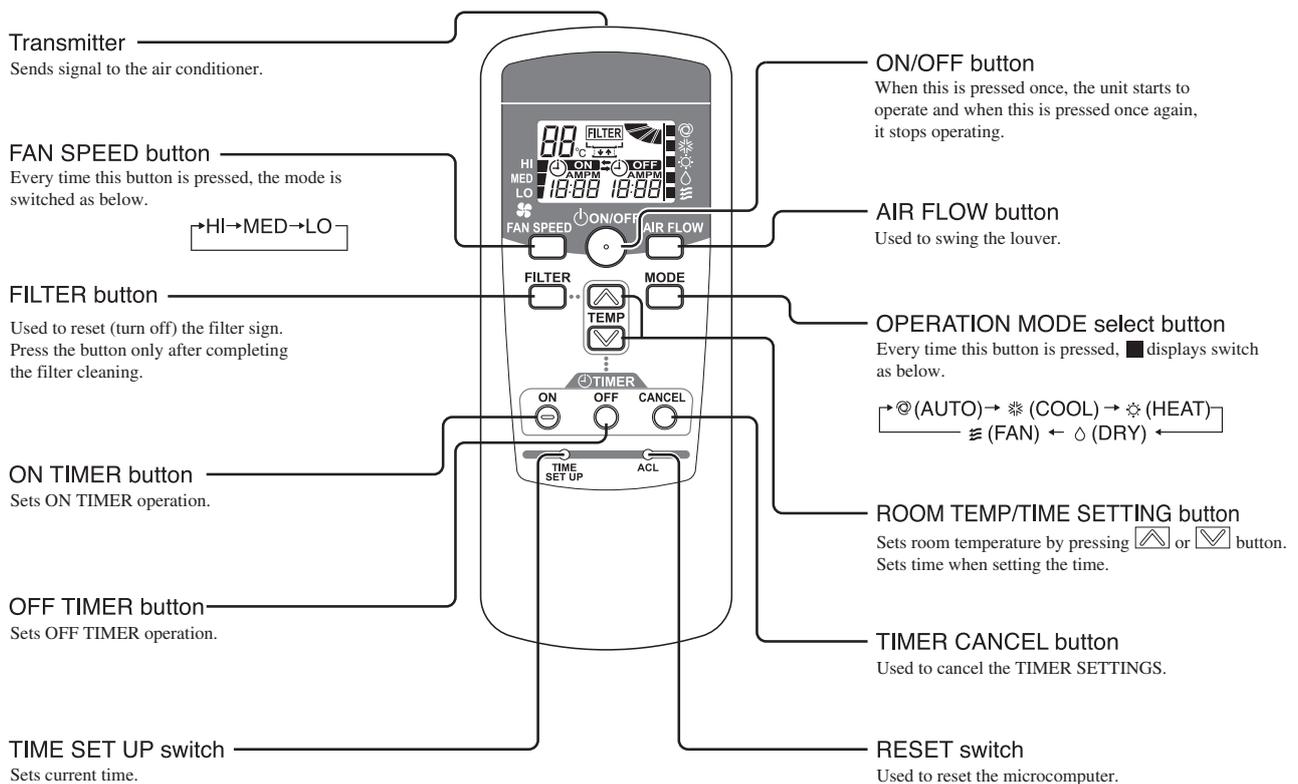
Exterior dimension



Indication section



Operation section

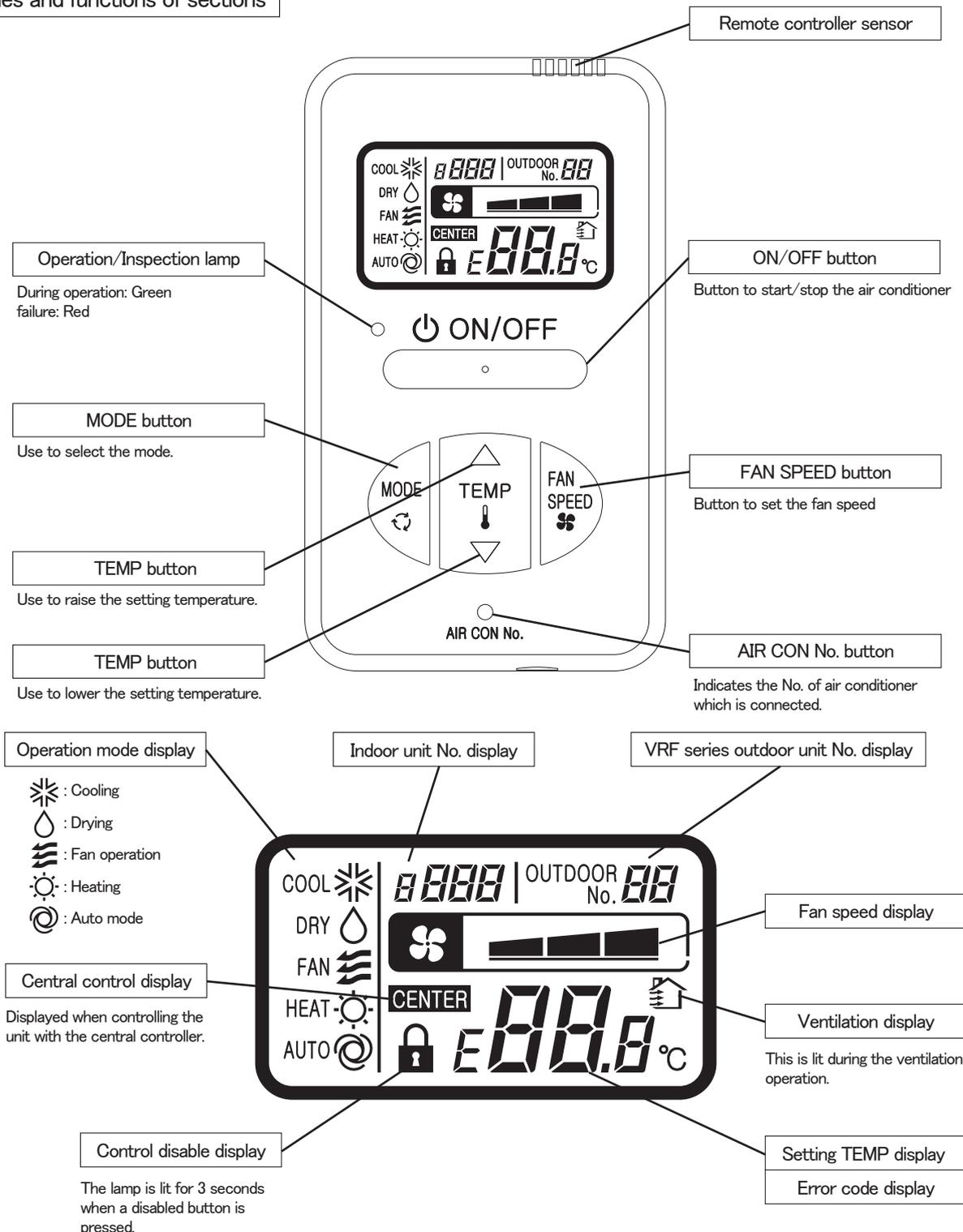


* All displays are described in the liquid crystal display for explanation

11.3 Simple wired remote controller (RCH-E3)

Notes :
 Following functions of Type-F indoor unit series are not able to be set with this simple wired remote controller (RCH-E3).
 1. Individual flap control system (for FDTC)
 2. 4-fan speed setting (PHi/Hi/Me/Lo) → 3-fan speed setting (Hi/Me/Lo) (for FDTC)

Names and functions of sections

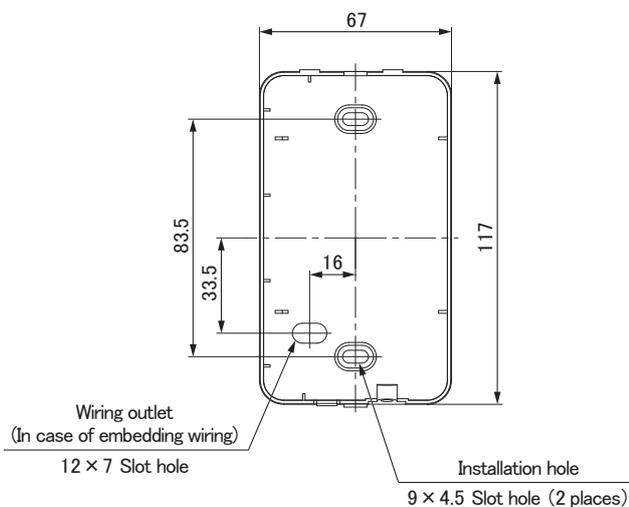


Installation of remote controller

- 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

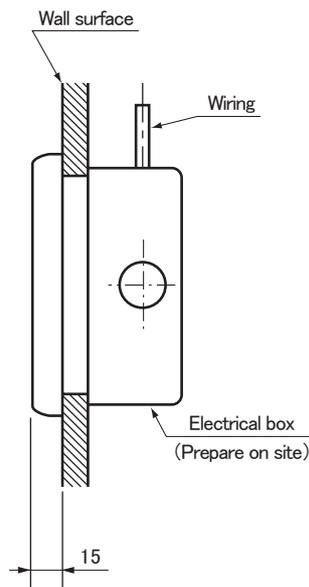
PJZ000Z272

Remote control installation dimensions

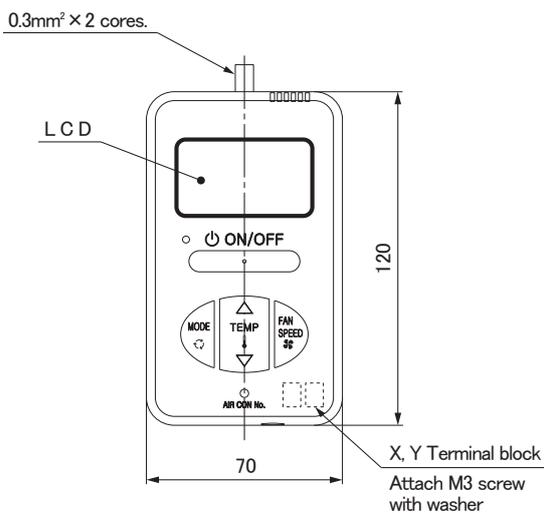


Note: Installation screw for remote controller
M4 Screw (2 pieces)

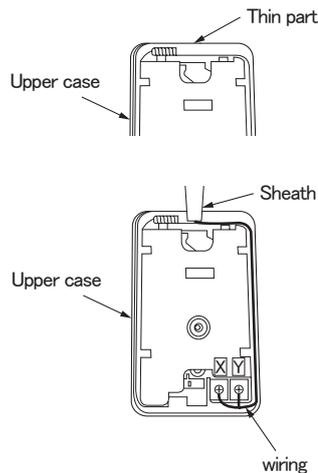
In case of embedding wiring



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	0.5mm ² × 2 cores
Under 300m	0.75mm ² × 2 cores
Under 400m	1.25mm ² × 2 cores
Under 600m	2.0mm ² × 2 cores

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	(4) Hot surface or cold surface enough to generate condensation
(2) Places near heat devices	(5) Places exposed to oil mist or steam directly
(3) High humidity places	(6) Uneven surface
- **DO NOT leave the remote controller without the upper case.**
In case the upper case 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 (φ 3.5 × 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

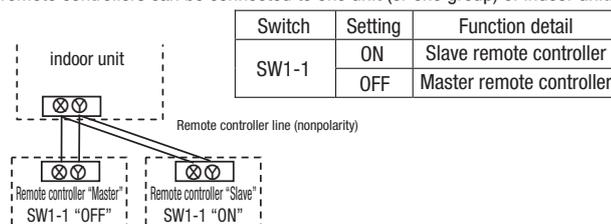
- (1) **Make certain to remove** a screw on the bottom surface of the remote controller.
 - (2) Remove the upper case of the remote controller. Insert a flat-blade screwdriver to a concave portion of the bottom surface of the remote control and slightly twist it, and the case is removed.
 - (3) The remote 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 mm² (recommended) to 0.5 mm² 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

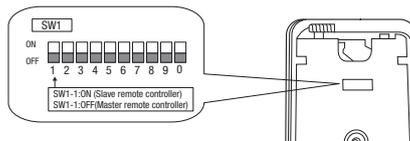
- (1) Wiring of remote controller should use 0.3mm² × 2 core wires or cables. (on-site configuration)
- (2) Maximum prolongation of remote controller wiring is 600 m.
If the prolongation is over 100m, change to the size below.
But, the wiring in the remote controller case should be 0.3mm² (recommended) 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.
100 - 200m 0.5mm² × 2 cores
Under 300m 0.75mm² × 2 cores
Under 400m 1.25mm² × 2 cores
Under 600m 2.0mm² × 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.

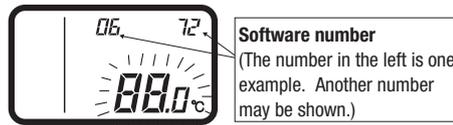


(2) Set the switch SW1-1 of the slave remote controller is "Slave" (ON). The factory default is set as "Master" (OFF).
 (Note) • The remote controller thermistor enabled setting can be set only to the master remote controller.
 • Install the master remote controller at the position to detect room temperature.
 • 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.



(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 Δ** or **TEMP ∇** button.
 Select the indoor unit No.

(3) Press **MODE** button.
 Decider 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").

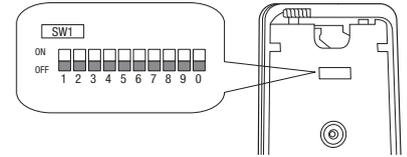
(4) Press **ON/OFF** button.
 End.

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 would 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	Switch No.	Setting	Setting detail	Initial setting
SW1-1	ON	Slave remote controller		SW1-5	ON	"TEMP" button prohibited	
	OFF	Master remote controller	○		OFF	"TEMP" button enabled	○
SW1-2	ON	Remote controller thermistor enabled		SW1-6	ON	"FAN SPEED" button prohibited	※ Note 1
	OFF	Remote controller thermistor disabled	○		OFF	"FAN SPEED" button enabled	※ Note 1
SW1-3	ON	"MODE" button prohibited		SW1-7	ON	Auto restart function enabled	
	OFF	"MODE" button enabled	○		OFF	Auto restart function disabled	○
SW1-4	ON	"ON/OFF" button prohibited		SW1-8, 9, 0	ON	Not used	
	OFF	"ON/OFF" button enabled	○		OFF	Not used	



- 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, offset 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 heating 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:

Switch 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".

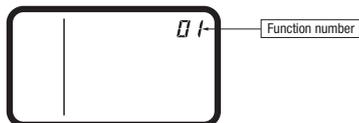
Note 3: As for plural indoor unit, set indoor functions to each master and slave indoor unit.

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.

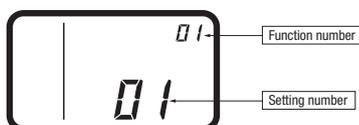
- (3) Press [MODE] button. Decide the function number.

- (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.

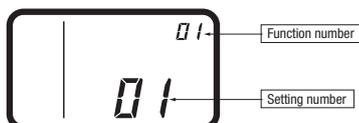
- ③ Press [MODE] button. The setting is completed.

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)



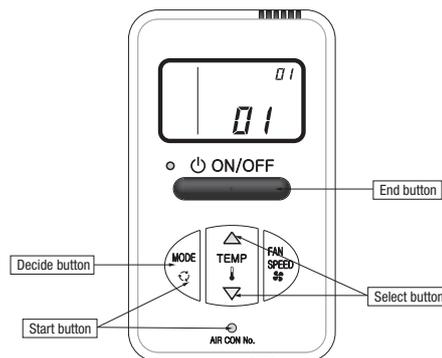
Then, the screen goes back to the function number blinking indication (1), if the setting is sequentially conducted, continue with the same procedures. If the setting is finished, proceed to (5).

- (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.)



[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)



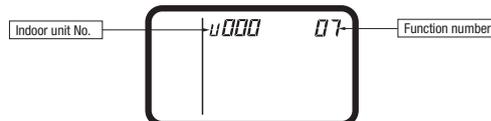
Proceed to ②.

[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.

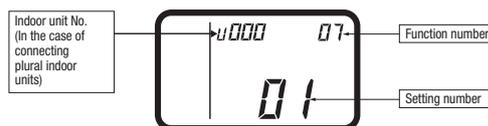
Light is on for approximately 3 to 20 seconds while data of the decided function No. and setting No. is transmitted.

(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).

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