

20. INVERTER DRIVEN MULTI-INDOOR UNIT HEAT RECOVERY CLIMATE CONTROL SYSTEM

(Simultaneous heating &
Cooling 3 Pipe System)

(OUTDOOR UNIT)

Alternative refrigerant R407C use models

FDCP2001HKXRE2, 2501HKXRE2

(INDOOR UNIT)

FDTJ28HKXE2

36HKXE2

45HKXE2

56HKXE2

71HKXE2

90HKXE2

112HKXE2

140HKXE2

FDTWJ28HKXE2B

45HKXE2B

56HKXE2B

71HKXE2B

90HKXE2B

112HKXE2B

140HKXE2B

FDTSJ22HKXE2B

28HKXE2B

36HKXE2B

45HKXE2B

71HKXE2B

FDRJ22HKXE2

28HKXE2

45HKXE2

56HKXE2

71HKXE2

90HKXE2

112HKXE2

140HKXE2

FDUMJ36HKXE2

45HKXE2

56HKXE2

71HKXE2

90HKXE2

112HKXE2

140HKXE2

FDEJ36HKXE2B

45HKXE2B

56HKXE2B

71HKXE2B

112HKXE2B

140HKXE2B

FDKJ22HKXE2

28HKXE2

36HKXE2

45HKXE2

56HKXE2

71HKXE2

FDFLJ28HKXE2

45HKXE2

71HKXE2

FDFUJ28HKXE2

45HKXE2

56HKXE2

71HKXE2

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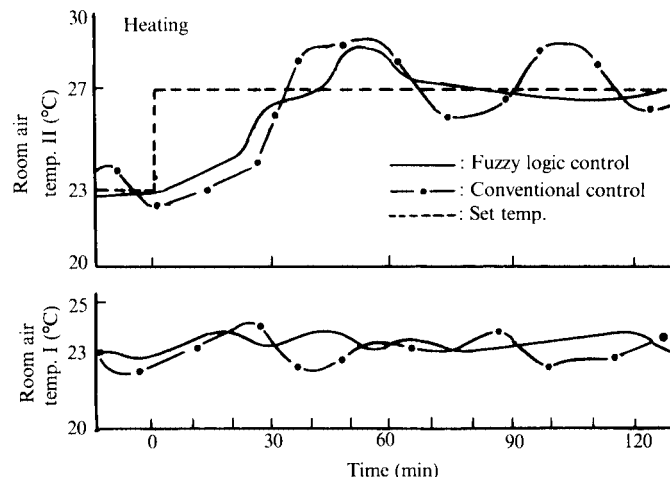
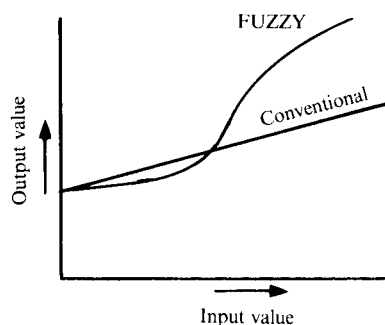
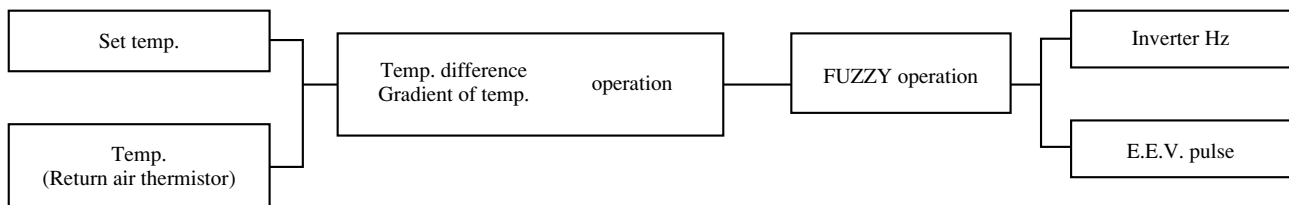
20.1 GENERAL INFORMATION

20.1.1 Specific features

(1) Fuzzy control

(a) Response speed and stability are enhanced.

- The system automatically controls changes of return air temperature, set temperature and room temperature according to the fuzzy control.
- The system response speed, can keep room temperature constant, and can adjust room temperature to set temperature quickly.



(b) Elimination of temperature irregularity as the time of operation ON/OFF control

- The system finely controls the compressor to room temperature according to the temperature sensor, air conditions room temperature consistently and improves cooling or heating feeling in each room (or minimize influence of shutdown in other room).

(2) Super lynk system

- Non polar 2-core signal wires for indoor, outdoor units by means of the automatic polarity selection.
- In addition, the max. 48 units can be controlled with a pair of signal wires. The high speed transmission method same as the computer network system [start up of 48 units can be completed within a few seconds by the determination of operation mode and the start of operation].
- As separate power supplies for the indoor and the outdoor units are employed, a pair of 2 signal wires only are required for the inter connecting wiring of indoor and outdoor units regardless of the number of units so that the installation work can be simplified, the cost of wiring work can be curtailed and causes of wiring error can be minimized.

(3) Installation of automatic address setting function

- The address setting method are divided into three types according to wiring method: “Automatic Address Setting,” “Remote control Address Setting.” and “Manual Address Setting.” In case of the Automatic Address Setting, no address needs be set as usual.

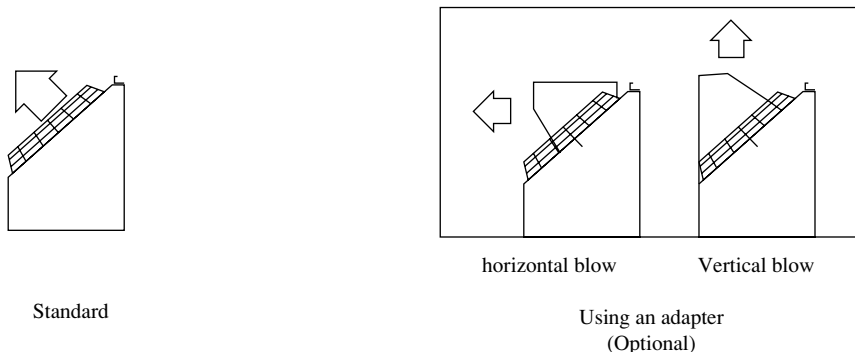
(4) Connectable indoor capacity

Capacity from 50% to 130% is possible.

- FDCP2001HKXRE2
Number of connectable units: 1 to 8 units
Connectable capacity: 11000 ~ 29200 W
- FDCP2501HKXRE2
Number of connectable units : 1 to 8 units
Connectable capacity: 13200 ~ 37100 W

(5) Cooling opetation down to -5°C outdoor temperature**(6) Indoor units are available with 9 capacities, in 9 types and 54 models.**

- 9 capacities...22(0.8 HP), 28(1 HP), 36(1.25 HP), 45(1.6 HP), 56(22 HP), 71(2.5 HP), 90(3.2 HP), 112(4 HP) and 140(5 HP).
- 9 types...Ceiling recessed type(FDT), 2-way outlet ceiling recessed type(FDTW), 1-way outlet ceiling recessed type(FDTS), Cassetteria type(FDR), Satellite ducted type(FDUM), Ceiling suspension type(FDE), Wall mounted type(FDK), Floor standing exposed type(FDFL) and Floor standing hidden type(FDFU).

(7) Vertical blow or horizontal blow type can be selected for the outdoor unit.**(8) Long piping design offers One way piping length of 100 m**

- Indoor and outdoor units can have a level difference of up to 50 m, with a one way piping length of up to 100 m. This is the top-class long piping design in the industry. A level difference of as much as 15 m between indoor units ensures that the system can meet a wide variety of air conditioning requirements in any building.

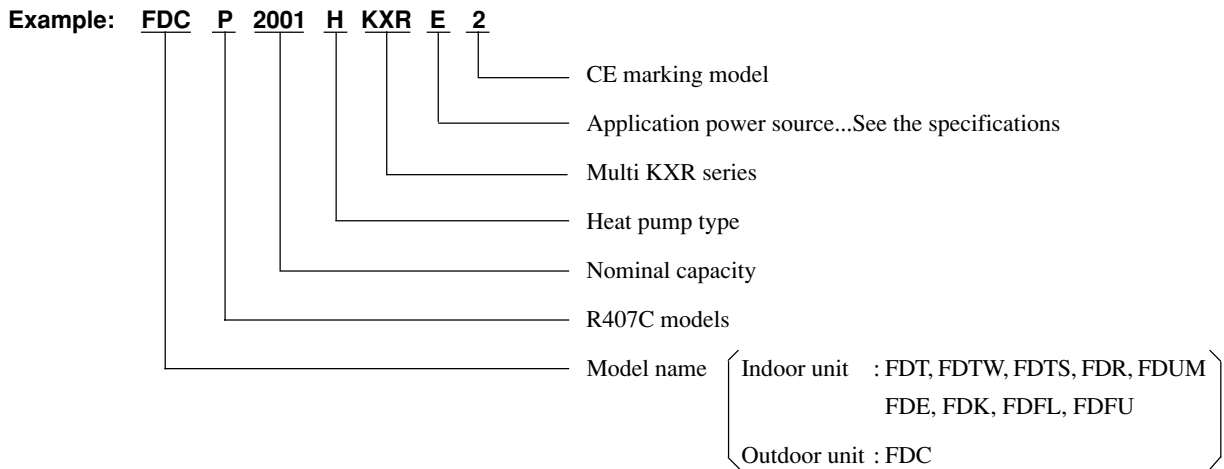
(9) Layout free refrigerant piping

The branch type piping makes the system flexible enough to satisfy any layout plan on the floor or in a room.

(10) Improvement of serviceability

- Failures of indoor unit and outdoor units are shown on the liquid crystal display on the remote controller.
 - Failures of indoor unit and outdoor units can be checked by remote controller.
- Easy checking of outdoor inspection LED.
 - The LED can be checked without removing the service panel, and faulty units can be easily indentified out of several units.

20.1.2 How to read the model name



20.1.3 Table of models

Model	Capacity									
	22	28	36	45	56	71	90	112	140	
Ceiling recessed type (FDT)		○	○	○	○	○	○	○	○	○
2-way outlet ceiling recessed type (FDTW)		○		○	○	○	○	○	○	○
1-way outlet ceiling recessed type (FDTS)	○	○	○	○		○				
Casseteria type (FDR)	○	○		○	○	○	○	○	○	○
Stellite ducted type (FDUM)			○	○	○	○	○	○	○	○
Ceiling suspension type (FDE)			○	○	○	○		○	○	
Wall mounted type (FDK)	○	○	○	○	○	○				
Floor standing exposed type (FDFL)		○		○		○				
Floor standing hidden type (FDFU)		○		○	○	○				
Outdoor units to be combined FDC	FDCP224HKXRE2 (8 Horse Power)					FDCP280HKXRE2 (10 Horse Power)				

20.1.4 Table of indoor units panel (Optional)

Model	Capacity	Parts Model
FDT	Capacity:28,36,45,56,71,90,112,140	T-PSA-32W-E
FDTW (Standard type)	Capacity:28,45,56	TW-PSA-22W-E
	Capacity:71,90	TW-PSA-32W-E
	Capacity:112,140	TW-PSA-42W-E
FDTW (Attachment of ceiling material type)	Capacity:28,45,56	TW-PSB-28W-E
	Capacity:71,90	TW-PSB-38W-E
	Capacity:112,140	TW-PSB-48W-E
FDTS	Capacity:22,28,36,45	TS-PSA-26W-E
	Capacity:71	TS-PSA-36W-E
FDR (Silent type)	Capacity:22,28,45,56	R-PNLS-26W-E
	Capacity:71,90	R-PNLS-36W-E
	Capacity:112,140	R-PNLS-46W-E
FDR (Canvas type)	Capacity:22,28,45,56	R-PNLC-26W-E
	Capacity:71,90	R-PNLC-36W-E
	Capacity:112,140	R-PNLC-46W-E

20.2 SELECTION DATA

20.2.1 Specifications

(1) Indoor unit

(a) Ceiling recessed type (FDT)

Models FDTJ28HKXE2, 36HKXE2

Item	Models	
	FDTJ28HKXE2 ⁽³⁾	FDTJ36HKXE2 ⁽³⁾
Nominal cooling capacity* ¹	W	2800
Nominal heating capacity* ²	W	3200
Power source	1 Phase 220/240V 50Hz	
Noise level	dB(A) Hi: 37 Me: 34 Lo: 33	
Exterior dimensions Height × Width × Depth	mm	Unit:260 × 840 × 840 Panel:30 × 950 × 950
Net weight	kg	Unit:24 Panel:7
Refrigerant equipment Heat exchanger	Louver fine & inner grooved tubing	
Refrigerant control	Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty	Turbo fan × 1	
Motor	W	17 × 1
Starting method	Line starting	
Air flow(Standard)	CMM	Hi: 12 Me: 10 Lo: 9
Fresh air intake	Possible	
Air filter, Q'ty	Long life filter × 1(Washable)	
Shock & vibration absorber	Rubber sleeve(for fan motor)	
Insulation (noise & heat)	Polyurethane foam	
Operation control Operation switch	Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control	Thermostat by electronics	
Safety equipment	Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)	Liquid line:φ6.35(1/4"), Gas line:φ12.7(1/2")
Connecting method	Flare piping	
Drain hose	Connectable with VP25	
Insulation for piping	Necessary (both Liquid & Gas line)	
Accessories	Mounting kit	
Optional parts	Decorative Panel	
Outdoor units to be combined	FDCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

- Decorative Panel model (Optional)

Model	Panel Part No.
FDTJ28,36 type	T-PSA-32W-E

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDTJ45HKXE2, 56HKXE2, 71HKXE2

Item	Models	FDTJ45HKXE2 ⁽³⁾	FDTJ56HKXE2 ⁽³⁾	FDTJ71HKXE2 ⁽³⁾
		Nominal cooling capacity* ¹	W	4500
Nominal heating capacity* ²	W	5000	6300	8000
Power source		1 Phase 220/240V 50Hz		
Noise level	dB(A)	Hi: 38 Me: 35 Lo: 34		Hi: 40 Me: 38 Lo: 36
Exterior dimensions Height × Width × Depth	mm	Unit:260 × 840 × 840 Panel:30 × 950 × 950		
Net weight	kg	Unit:24 Panel:7		
Refrigerant equipment Heat exchanger		Louver fine & inner grooved tubing		
Refrigerant control		Electronic Expansion Valve +Capillary tube		
Air handling equipment Fan type & Q'ty		Turbo fan × 1		
Motor	W	20 × 1	25 × 1	
Starting method		Line starting		
Air flow(Standard)	CMM	Hi: 15 Me: 12 Lo: 10		Hi: 16 Me: 13 Lo: 11
Fresh air intake		Possible		
Air filter, Q'ty		Long life filter × 1(Washable)		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4") Gas line:φ 12.7(1/2")	Liquid line:φ 9.52(3/8") Gas line:φ 15.88(5/8")	
Connecting method		Flare piping		
Drain hose		Connectable with VP25		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit		
Optional parts		Decorative Panel		
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2		

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
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●Decorative Panel model (Optional)

Item	Panel Part No.
Model FDTJ45,56,71 type	T-PSA-32W-E

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDTJ90HKXE2, 112HKXE2, 140HKXE2

Item	Models			
		FDTJ90HKXE2 ⁽³⁾	FDTJ112HKXE2 ⁽³⁾	FDTJ140HKXE2 ⁽³⁾
Nominal cooling capacity*1	W	9000	11200	14000
Nominal heating capacity*2	W	10000	12500	16000
Power source		1 Phase 220/240V 50Hz		
Noise level	dB(A)	Hi: 42 Me: 40 Lo: 38	Hi: 49 Me:46 Lo: 42	Hi: 50 Me: 47 Lo: 45
Exterior dimensions Height × Width × Depth	mm	Unit: 260 × 840 × 840 Panel:30 × 950 × 950	Unit: 320 × 840 × 840 Panel:30 × 950 × 950	
Net weight	kg	Unit:24 Panel:7	Unit:28 Panel:7	Unit:30 Panel:7
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing		
Refrigerant control		Electronic Expansion Valve +Capillary tube		
Air handling equipment Fan type & Q'ty		Turbo fan × 1		
Motor	W	50 × 1	80 × 1	130 × 1
Starting method		Line starting		
Air flow(Standard)	CMM	Hi: 21 Me: 15 Lo: 12	Hi: 28 Me: 24 Lo: 21	Hi: 30 Me: 26 Lo: 22
Fresh air intake		Possible		
Air filter, Q'ty		Long life filter × 1(Washable)		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	mm(in)	Liquid line:φ9.52(3/8") Gas line:φ15.88(5/8")	Liquid line:φ9.52(3/8") Gas line:φ19.05(3/4")	
Connecting method		Flare piping		
Drain hose		Connectable with VP25		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit		
Optional parts		Decorative Panel		
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2		

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling*1	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating*2	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
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- Decorative Panel model (Optional)

Model	Item	Panel Part No.
FDTJ90,112,140 type		T-PSA-32W-E

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

(b) 2-way outlet ceiling recessed type (FTW)

Models FDTWJ28HKXE2B, 45HKXE2B, 56HKXE2B

Item	Models			
		FDTWJ28HKXE2B ⁽³⁾	FDTWJ45HKXE2B ⁽³⁾	FDTWJ56HKXE2B ⁽³⁾
Nominal cooling capacity* ¹	W	2800	4500	5600
Nominal heating capacity* ²	W	3200	5000	6300
Power source		1 Phase 220/240V 50Hz		
Noise level	dB(A)	Hi: 39 Me:36 Lo: 33		
Exterior dimensions Height × Width × Depth	mm	Unit:280× 817× 620 Panel:8 × 1055 × 680		
Net weight	kg	Unit:19 Panel:7		
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing		
Refrigerant control		Electronic Expansion Valve +Capillary tube		
Air handling equipment Fan type & Q'ty		Turbo fan × 1		
Motor	W	30 × 1		
Starting method		Line starting		
Air flow(Standard)	CMM	Hi: 14 Me: 12 Lo: 10		
Fresh air intake		Possible		
Air filter, Q'ty		Long life filter × 1(Washable)		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	mm(in)	Liquid line:φ6.35(1/4") Gas line:φ12.7(1/2")		Liquid line: φ9.52(3/8") Gas line: φ15.88(5/8")
Connecting method		Flare piping		
Drain hose		Connectable with VP25		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit		
Optional parts		Decorative Panel		
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2		

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

●Decorative Panel model (Optional)

Item	Panel Part No.	
	Standard type	Attachment of ceiling material type
Model FDTWJ28,45,56 type	TW-PSA-22W-E	TW-PSB-28W-E

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDTWJ71HKXE2B, 90HKXE2B

Item		Models	FDTWJ71HKXE2B ⁽³⁾	FDTWJ90HKXE2B ⁽³⁾
Nominal cooling capacity* ¹	W		7100	9000
Nominal heating capacity* ²	W		8000	10000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 41 Me: 38 Lo: 35	Hi: 41 Me: 39 Lo: 36
Exterior dimensions Height × Width × Depth	mm		Unit: 330 × 1054 × 620	Panel: 8 × 1300 × 680
Net weight	kg		Unit: 26	Panel: 9
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve + Capillary tube	
Air handling equipment Fan type & Qty			Turbo fan × 1	
Motor	W		35 × 1	40 × 1
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 16 Me: 13 Lo: 11	Hi: 19 Me: 16 Lo: 12
Fresh air intake			Possible	
Air filter, Q'ty			Long life filter × 1 (Washable)	
Shock & vibration absorber			Rubber sleeve (for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional: RCD-HKX-S-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line: φ9.52(3/8"), Gas line: φ15.88(5/8")	
Connecting method			Flare piping	
Drain hose			Connectable with VP25	
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit	
Optional parts			Decorative Panel	
Outdoor units to be combined			FDPCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1, JIS B8616
Heating* ²	20℃	—	7℃	6℃	

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

JIS B8616 "UNITARY AIR-CONDITIONERS"

● Decorative Panel model (Optional)

Item	Panel Part No.	
	Standard type	Attachment of ceiling material type
FDTWJ71,90 type	TW-PSA-32W-E	TW-PSB-38W-E

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDTWJ112HKXE2B, 140HKXE2B

Item	Models		FDTWJ112HKXE2B ⁽³⁾	FDTWJ140HKXE2B ⁽³⁾
	Nominal cooling capacity* ¹	W		11200
Nominal heating capacity* ²	W		12500	16000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 44 Me: 41 Lo: 38	Hi: 45 Me: 42 Lo: 39
Exterior dimensions Height × Width × Depth	mm		Unit:345 × 1524 × 620	Panel:8 × 1770 × 680
Net weight	kg		Unit:38	Panel:11
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty			Turbo fan × 2	
Motor	W		40 × 2	50 × 2
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 28 Me: 25 Lo: 23	Hi: 32 Me: 28 Lo: 24
Fresh air intake			Possible	
Air filter, Q'ty			Long life filter × 2(Washable)	
Shock & vibration absorber			Rubber sleeve(for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line:φ9.52(3/8"),Gas line:φ19.05(3/4")	
Connecting method			Flare piping	
Drain hose			Connectable with VP25	
Insulation for piping			Necessary (both Liquid & Gas linse)	
Accessories			Mounting kit	
Optional parts			Decorative Panel	
Outdoor units to be combined			FDCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

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

JIS B8616"UNITARY AIR-CONDITIONERS"

- Decorative Panel model (Optional)

Item	Panel Part No.	
	Standard type	Attachment of ceiling material type
Model		
FDTWJ112,140 type	TW-PSA-42W-E	TW-PSB-48W-E

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

(c) 1-way outlet ceiling recessed type (FDTS)

Models FDTSJ22HKXE2B, 28HKXE2B, 36HKXE2B

Item	Model	FDTSJ22HKXE2B ⁽³⁾	FDTSJ28HKXE2B ⁽³⁾	FDTSJ36HKXE2B ⁽³⁾
		Nominal cooling capacity* ¹	W	2200
Nominal heating capacity* ²	W	2500	3200	4000
Power source		1 Phase 220/240V 50Hz		
Noise level	dB(A)	Hi: 39 Lo: 38	Hi: 40 Me: 39 Lo: 38	
Exterior dimensions Height × Width × Depth	mm	Unit:194 × 1040 × 650 Panel:10 × 1290 × 770		
Net weight	Kg	Unit:26 Panel:6		
Refrigerant equipment Heat exchanger		Louver fine & inner grooved tubing		
Refrigerant control		Electronic Expansion Valve +Capillary tube		
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2		
Motor	W	35 × 1		
Starting method		Line starting		
Air flow(Standard)	CMM	Hi: 11 Lo: 8	Hi: 12 Me: 11 Lo: 10	
Fresh air intake		Possible		
Air filter, Q'ty		Long life filter × 1(Washable)		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	mm(in)	Liquid line:φ6.35(1/4"),Gas line:φ12.7(1/2")		
Connecting method		Flare piping		
Drain hose		Connectable with VP25		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit		
Optional parts		Decorative Panel		
Outdoor units to be combined		FDCEP2001HKXRE2, 2501HKXRE2		

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

- Decorative Panel model (Optional)

Item	Panel Part No.
Model	With Auto Swing
FDTSJ22,28,36 type	TS-PSA-26W-E

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDTSJ45HKXE2B, 71HKXE2B

Item		Model	FDTSJ45HKXE2B ⁽³⁾	FDTSJ71HKXE2B ⁽³⁾
Nominal cooling capacity*1	W		4500	7100
Nominal heating capacity*2	W		5000	8000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 43 Me: 40 Lo: 38	Hi: 44 Me: 40 Lo: 38
Exterior dimensions Height × Width × Depth	mm		Unit:194 × 1040 × 650 Panel:10 × 1290 × 770	Unit:194 × 1300 × 650 Panel:10 × 1500 × 790
Net weight	kg		Unit:26 Panel:6	Unit:30 Panel:7
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty			Centrifugal fan × 2	Centrifugal fan × 4
Motor	W		40×1	25×2
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 14 Me: 12 Lo: 10	Hi: 18 Me: 15 Lo: 12
Fresh air intake			Possible	
Air filter, Q'ty			Long life filter × 1(Washable)	
Shock & vibration absorber			Rubber sleeve(for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line:φ 6.35(1/4") Gas line: φ 12.7(1/2")	Liquid line:φ 9.52(3/8") Gas line:φ 15.88(5/8")
Connecting method			Flare piping	
Drain hose			Connectable with VP25	
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit	
Optional parts			Decorative Panel	
Outdoor units to be combined			FDCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling*1	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating*2	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

●Decorative Panel model (Optional)

Item	Panel Part No.
Model	With Auto Swing
FDTSJ45 type	TS-PSA-26W-E
FDTSJ71 type	TS-PSA-36W-E

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

(d) Cassetteria type (FDR)

Models FDRJ22HKXE2, 28HKXE2

Item	Models	FDRJ22HKXE2 ⁽⁴⁾		FDRJ28HKXE2 ⁽⁴⁾	
		Silent panel	Canvas panel	Silent panel	Canvas panel
Air inlet panel					
Panel model (Option)		R-PNLS-26W-E	R-PNLC-26W-E	R-PNLS-26W-E	R-PNLC-26W-E
Nominal cooling capacity ^{*1}	W	2200		2800	
Nominal heating capacity ^{*2}	W	2500		3200	
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 41 Me: 39 Lo: 36	Hi: 42 Me: 40 Lo: 37	Hi: 42 Me: 40 Lo: 37	Hi: 43 Me: 41 Lo: 38
Exterior dimensions Height × Width × Depth	mm	Unit:355 × 750 × 635 Panel:10 × 1040 × 750	Unit:(299+α) × 750 × 635 Panel:10 × 864 × 585	Unit:355 × 750 × 635 Panel:10 × 1040 × 750	Unit:(299+α) × 750 × 635 Panel:10 × 864 × 585
Net weight	kg	Unit:30 Panel:7	Unit:30 Panel:5	Unit:30 Panel:7	Unit:30 Panel:5
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve +Capillary tube			
Air handling equipment Fan type & Qty		Centrifugal fan × 2			
Motor	W	40 × 1		50 × 1	
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 10 Me: 9 Lo: 8		Hi: 12 Me: 11 Lo: 10	
Available static pressure (at Me)	Pa(mmAq)	Standard:45(4.5), Hi speed:85(8.5)			
Fresh air intake		Side or back			
Air filter Q'ty		Long life filter × 1(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4"),Gas line:φ 12.7(1/2")			
Connecting method		Flare piping			
Drain hose		Connectable with VP25			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		Silent panel, Canvas panel, Canvas duct			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2)This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3)Canvas panel is used in combination with following canvas duct
Canvas duct: HA01503

(4)The number "2",following the type of each model,represents"CE-marked model"especially for European Union, and for European nations which require CE marking.

(5)Add the canvas duct length to the unit height for the canvas type.

Models FDRJ45HKXE2, 56HKXE2

Item	Models	FDRJ45HKXE2 ⁽⁴⁾		FDRJ56HKXE2 ⁽⁴⁾	
		Silent panel	Canvas panel	Silent panel	Canvas panel
Air inlet panel					
Panel model (Option)		R-PNLS-26W-E	R-PNLC-26W-E	R-PNLS-26W-E	R-PNLC-26W-E
Nominal cooling capacity ^{*1}	W	4500		5600	
Nominal heating capacity ^{*2}	W	5000		6300	
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 43 Me: 40 Lo: 37	Hi: 44 Me: 41 Lo: 38	Hi:43 Me: 40 Lo: 37	Hi: 44 Me: 41 Lo: 38
Exterior dimensions Height × Width × Depth	mm	Unit:355 × 750 × 635 Panel:10 × 1040 × 750	Unit:(299+α) × 750 × 635 Panel:10 × 864 × 585	Unit:355 × 750 × 635 Panel:10 × 1040 × 750	Unit:(299+α) × 750 × 635 Panel:10 × 864 × 585
Net weight	kg	Unit:30 Panel:7	Unit:30 Panel:5	Unit:30 Panel:7	Unit:30 Panel:5
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve +Capillary tube			
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2			
Motor	W	55 × 1			
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 14 Me: 12 Lo: 11			
Available static pressure (at Me)	Pa(mmAq)	Standard:50(5.0), Hi speed:85(8.5)			
Fresh air intake		Side or back			
Air filter Q'ty		Long life filter × 1(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4") Gas line:φ 12.7(1/2")		Liquid line:φ 9.52(3/8") Gas line:φ 15.88(5/8")	
Connecting method		Flare piping			
Drain hose		Connectable with VP25			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		Silent panel, Canvas panel, Canvas duct			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2)This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3)Canvas panel is used in combination with following canvas duct
Canvas duct: HA01503

(4)The number "2",following the type of each model,represents"CE-marked model"especially for European Union, and for European nations which require CE marking.

(5)Add the canvas duct length to the unit height for the canvas type.

Models FDRJ71HKXE2, 90HKXE2

Item	Models	FDRJ71HKXE2 ⁽⁴⁾		FDRJ90HKXE2 ⁽⁴⁾	
		Silent panel	Canvas panel	Silent panel	Canvas panel
Air inlet panel					
Panel model (Option)		R-PNLS-36W-E	R-PNLC-36W-E	R-PNLS-36W-E	R-PNLC-36W-E
Nominal cooling capacity ^{*1}	W	7100		9000	
Nominal heating capacity ^{*2}	W	8000		10000	
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 43 Me: 40 Lo: 37	Hi: 44 Me: 41 Lo: 38	Hi: 43 Me: 40 Lo: 37	Hi: 44 Me: 41 Lo: 38
Exterior dimensions Height × Width × Depth	mm	Unit:355 × 950 × 635 Panel:10 × 1240 × 750	Unit:(299+α) × 950 × 635 Panel:10 × 1064 × 585	Unit:355 × 950 × 635 Panel:10 × 1240 × 750	Unit:(299+α) × 950 × 635 Panel:10 × 1064 × 585
Net weight	kg	Unit:35 Panel:8	Unit:35 Panel:6	Unit:35 Panel:8	Unit:35 Panel:6
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve +Capillary tube			
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2			
Motor	W	90×1		100×1	
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 18 Me: 16 Lo: 14		Hi: 20 Me: 18 Lo: 15	
Available static pressure (at Me)	Pa(mmAp)	Standard:45(4.5), Hi speed:80(8.0)			
Fresh air intake		Side or back			
Air filter Q'ty		Long life filter × 1(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 9.52(3/8"),Gas line:φ 15.88(5/8")			
Connecting method		Flare piping			
Drain hose		Connectable with VP25			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		Silent panel, Canvas panel, Canvas duct			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2)This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3)Canvas panel is used in combination with following canvas duct
Canvas duct: HA01490

(4)The number "2",following the type of each model,represents"CE-marked model"especially for European Union, and for European nations which require CE marking.

(5)Add the canvas duct length to the unit height for the canvas type.

Models FDRJ112HKXE2, 140HKXE2

Item	Models	FDRJ112HKXE2 ⁽⁴⁾		FDRJ140HKXE2 ⁽⁴⁾	
		Silent panel	Canvas panel	Silent panel	Canvas panel
Air inlet panel					
Panel model (Option)		R-PNLS-46W-E	R-PNLC-46W-E	R-PNLS-46W-E	R-PNLC-46W-E
Nominal cooling capacity ^{*1}	W	11200		14000	
Nominal heating capacity ^{*2}	W	12500		16000	
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 45 Me: 42 Lo: 38	Hi: 46 Me: 43 Lo: 39	Hi: 46 Me: 43 Lo: 39	Hi: 47 Me: 44 Lo: 40
Exterior dimensions Height × Width × Depth	mm	Unit:406 × 1370 × 635 Panel:10 × 1660 × 750	Unit:(350+α) × 1370 × 635 Panel:10 × 1484 × 585	Unit:406 × 1370 × 635 Panel:10 × 1660 × 750	Unit:(350+α) × 1370 × 635 Panel:10 × 1484 × 585
Net weight	kg	Unit:50 Panel:9	Unit:50 Panel:7	Unit:52 Panel:9	Unit:52 Panel:7
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve +Capillary tube			
Air handling equipment Fan type & Q'ty		Centrifugal fan × 3			
Motor	W	45 × 1, 90 × 1		50 × 1, 100 × 1	
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 28 Me: 25 Lo: 22		Hi: 34 Me: 31 Lo: 27	
Available static pressure (at Me)	Pa(mmAq)	Standard:50(5.0), Hi speed:80(8.0)			
Fresh air intake		Side or back			
Air filter Q'ty		Long life filter × 2(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 9.52(3/8"),Gas line:φ 19.05(3/4")			
Connecting method		Flare piping			
Drain hose		Connectable with VP25			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		Silent panel, Canvas panel, Canvas duct			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2)This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3)Canvas panel is used in combination with following canvas duct
Canvas duct: HA01484

(4)The number "2",following the type of each model,represents"CE-marked model"especially for European Union, and for European nations which require CE marking.

(5)Add the canvas duct length to the unit height for the canvas type.

(e) Satellite ducted type (FDUM)

Models FDUMJ36HKXE2, 45HKXE2

Item	Models		FDUMJ36HKXE2 ⁽²⁾	FDUMJ45HKXE2 ⁽³⁾
	W			
Nominal cooling capacity* ¹	W		3600	4500
Nominal heating capacity* ²	W		4000	5000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 34 Me: 32 Lo: 29	Hi: 35 Me: 32 Lo: 29
Exterior dimensions Height × Width × Depth	mm		299 × 750 × 635	
Net weight	kg		34	
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty			Centrifugal fan × 2	
Motor	W		50×1	55×1
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 12 Me: 11 Lo: 10	Hi: 14 Me: 12 Lo: 11
Available static pressure (at Me)	Pa(mmAq)		Standard:50(5), Hi speed:85(8.5)	
Fresh air intake			Side	
Air filter, Q'ty			-	
Shock & vibration absorber			Rubber sleeve(for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional:RCD-HKX-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line:φ6.35(1/4"),Gas line:φ12.7(1/2")	
Connecting method			Flare piping	
Drain hose			Connectable with VP25	
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit	
Optional parts			-	
Outdoor units to be combined			FD2CP2001HKXRE2, 2501HKXRE2	

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

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling* ¹		27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²		20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDUMJ56HKXE2, 71HKXE2, 90HKXE2

Item	Models	FDUMJ56HKXE2 ⁽³⁾	FDUMJ71HKXE2 ⁽³⁾	FDUMJ90HKXE2 ⁽³⁾
		Nominal cooling capacity ^{*1}	W	5600
Nominal heating capacity ^{*2}	W	6300	8000	10000
Power source		1 Phase 220/240V 50Hz		
Noise level	dB(A)	Hi: 35 Me: 32 Lo: 29	Hi: 35 Me: 32 Lo: 29	Hi: 36 Me: 33 Lo: 30
Exterior dimensions Height × Width × Depth	mm	299 × 750 × 635	299 × 950 × 635	
Net weight	kg	34	40	
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing		
Refrigerant control		Electronic Expansion Valve +Capillary tube		
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2		
Motor	W	55×1	90×1	100×1
Starting method		Line starting		
Air flow(Standard)	CMM	Hi: 14 Me: 12 Lo: 11	Hi: 18 Me: 16 Lo: 14	Hi: 20 Me: 18 Lo: 15
Available static pressure (at Me)	Pa(mmAq)	Standard:50(5), Hi speed:85(8.5)		
Fresh air intake		Side		
Air filter, Q'ty		-		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	mm(in)	Liquid line:φ9.52(3/8"),Gas line:φ15.88(5/8")		
Connecting method		Flare piping		
Drain hose		Connectable with VP25		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit		
Optional parts		-		
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2		

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDUMJ112HKXE2, 140HKXE2

Item	Models	FDUMJ112HKXE2 ⁽³⁾	FDUMJ140HKXE2 ⁽³⁾
Nominal cooling capacity* ¹	W	11200	14000
Nominal heating capacity* ²	W	12500	16000
Power source		1 Phase 220/240V 50Hz	
Noise level	dB(A)	Hi: 38 Me: 35 Lo: 32	Hi: 39 Me: 37 Lo: 34
Exterior dimensions Height × Width × Depth	mm	350 × 1370 × 635	
Net weight	kg	57	59
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing	
Refrigerant control		Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty		Centrifugal fan × 3	
Motor	W	45 × 1, 90 × 1	50 × 1, 100 × 1
Starting method		Line starting	
Air flow(Standard)	CMM	Hi: 28 Me: 25 Lo: 22	Hi: 34 Me: 31 Lo: 27
Available static pressure (at Me)	Pa(mmAq)	Standard:60(6), Hi speed:90(9)	Standard:60(6), Hi speed:85(8.5)
Fresh air intake		Side	
Air filter, Q'ty		-	
Shock & vibration absorber		Rubber sleeve(for fan motor)	
Insulation (noise & heat)		Polyurethane foam	
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-E2)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 9.52(3/8"), Gas line:φ 19.05(3/4")	
Connecting method		Flare piping	
Drain hose		Connectable with VP25	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		Mounting kit	
Optional parts		-	
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1, JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

(f) Ceiling suspension type (FDE)

Models FDEJ36HKXE2B, 45HKXE2B

Item	Models	FDEJ36HKXE2B ⁽³⁾	FDEJ45HKXE2B ⁽³⁾
		Nominal cooling capacity* ¹	W
Nominal heating capacity* ²	W	4000	5000
Power source		1 Phase 220/240V 50Hz	
Noise level	dB(A)	Hi: 43 Me:40 Lo: 38	
Exterior dimensions Height × Width × Depth	mm	184 × 1000 × 650	
Net weight	kg	22	
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing	
Refrigerant control		Electronic Expansion Valve + Capillary tube	
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2	
Motor	W	40 × 1	
Starting method		Line starting	
Air flow(Standard)	CMM	Hi: 14 Me: 12 Lo: 10	
Fresh air intake		Not possible	
Air filter, Q'ty		Polypropylene net × 2(Washable)	
Shock & vibration absorber		Rubber sleeve(for fan motor)	
Insulation (noise & heat)		Polyurethane foam	
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4"), Gas line:φ 12.7(1/2")	
Connecting method		Flare piping	
Drain hose		Connectable with VP20	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		Mounting kit	
Optional parts		-	
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2	

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

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling* ¹		27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²		20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDEJ56HKXE2B, 71HKXE2B

Item		Models	FDEJ56HKXE2B ⁽⁹⁾	FDEJ71HKXE2B ⁽⁹⁾
Nominal cooling capacity* ¹	W		5600	7100
Nominal heating capacity* ²	W		6300	8000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 43 Me:40 Lo: 38	Hi: 44 Me:40 Lo: 38
Exterior dimensions Height × Width × Depth	mm		184 × 1000 × 650	184 × 1260 × 650
Net weight	kg		22	27
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve + Capillary tube	
Air handling equipment Fan type & Q'ty			Centrifugal fan × 2	Centrifugal fan × 4
Motor	W		40×1	25×2
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 14 Me: 12 Lo: 10	Hi: 18 Me: 15 Lo: 12
Fresh air intake			Not possible	
Air filter, Q'ty			Polypropylene net × 2(Washable)	
Shock & vibration absorber			Rubber sleeve(for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line:φ9.52(3/8"), Gas line:φ15.88(5/8")	
Connecting method			Flare piping	
Drain hose			Connectable with VP20	
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit	
Optional parts			-	
Outdoor units to be combined			FDCEP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

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

JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDEJ112HKXE2B, 140HKXE2B

Item		Models	FDEJ112HKXE2B ⁽³⁾	FDEJ140HKXE2B ⁽³⁾
Nominal cooling capacity* ¹	W		11200	14000
Nominal heating capacity* ²	W		12500	16000
Power source			1 Phase 220/240V 50Hz	
Noise level	dB(A)		Hi: 49 Me:46 Lo: 42	Hi: 50 Me:47 Lo: 42
Exterior dimensions Height × Width × Depth	mm		239 × 1260 × 650	239 × 1470 × 650
Net weight	kg		34	40
Refrigerant equipment Heat exchanger			Louver fins & inner grooved tubing	
Refrigerant control			Electronic Expansion Valve +Capillary tube	
Air handling equipment Fan type & Q'ty			Centrifugal fan × 3	Centrifugal fan × 4
Motor	W		35×1 + 55×1	55×2
Starting method			Line starting	
Air flow(Standard)	CMM		Hi: 28 Me: 25 Lo: 22	Hi: 34 Me: 30 Lo: 26
Fresh air intake			Not possible	
Air filter, Q'ty			Polypropylene net × 2(Washable)	
Shock & vibration absorber			Rubber sleeve(for fan motor)	
Insulation (noise & heat)			Polyurethane foam	
Operation control Operation switch			Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control			Thermostat by electronics	
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)		Liquid line: φ9.52(3/8"), Gas line: φ19.05(3/4")	
Connecting method			Flare piping	
Drain hose			Connectable with VP20	
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit	
Optional parts			-	
Outdoor units to be combined			FDCP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

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

JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

(g) Wall mounted type (FDK)
Models FDKJ22HKXE2, 28HKXE2, 36HKXE2, 45HKXE2

Item	Models				
		FDKJ22HKXE2 ⁽³⁾	FDKJ28HKXE2 ⁽³⁾	FDKJ36HKXE2 ⁽³⁾	FDKJ45HKXE2 ⁽³⁾
Nominal cooling capacity* ¹	W	2200	2800	3600	4500
Nominal heating capacity* ²	W	2500	3200	4000	5000
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 42 Lo: 37	Hi: 42 Me:40 Lo: 37		Hi: 44 Me:41 Lo: 37
Exterior dimensions Height × Width × Depth	mm	375 × 950 × 194			
Net weight	kg	19			
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve + Capillary tube			
Air handling equipment Fan type & Qty		Tangential fan × 1			
Motor	W	30 × 1			35 × 1
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 9 Lo: 8	Hi: 10 Me: 9 Lo: 8		Hi: 11.5 Me: 10 Lo: 8
Fresh air intake		Not possible			
Air filter, Q'ty		Polypropylene net × 2(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line: ϕ 6.35(1/4"), Gas line: ϕ 12.7(1/2")			
Connecting method		Flare piping			
Drain hose		Connectable with I.D. 16mm			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		—			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling* ¹		27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²		20℃	—	7℃	6℃	

 (2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

Models FDKJ56HKXE2, 71HKXE2

Item	Model	FDKJ56HKXE2 ⁽³⁾	FDKJ71HKXE2 ⁽³⁾
		Nominal cooling capacity* ¹	W
Nominal heating capacity* ²	W	6300	8000
Power source		1 Phase 220/240V 50Hz	
Noise level	dB(A)	Hi: 46 Me:43 Lo: 39	Hi: 47 Me:44 Lo: 40
Exterior dimensions Height × Width × Depth	mm	375 × 1148 × 194	375 × 1436 × 194
Net weight	kg	20	22
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing	
Refrigerant control		Electronic Expansion Valve + Capillary tube	
Air handling equipment Fan type & Q'ty		Tangential fan ×1	Tangential fan ×2
Motor	W	40×1	45×1
Starting method		Line starting	
Air flow(Standard)	CMM	Hi: 17 Me: 15 Lo: 13	Hi: 21 Me: 18 Lo: 15
Fresh air intake		Not possible	
Air filter, Q'ty		Polypropylene net × 2(Washable)	
Shock & vibration absorber		Rubber sleeve(for fan motor)	
Insulation (noise & heat)		Polyurethane foam	
Operation control Operation switch		Remote control switch (Optional:RCD-HKX-S-E2)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 9.52(3/8"), Gas line:φ 15.88(5/8")	
Connecting method		Flare piping	
Drain hose		Connectable with I.D. 16mm	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		Mounting kit	
Optional parts		-	
Outdoor units to be combined		FDKP2001HKXRE2, 2501HKXRE2	

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

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

JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

(h) Floor standing exposed type (FDL)

Models FDFLJ28HKXE2, 45HKXE2, 71HKXE2

Item	Model	FDFLJ28HKXE2 ⁽³⁾		FDFLJ45HKXE2 ⁽³⁾		FDFLJ71HKXE2 ⁽³⁾	
Nominal cooling capacity* ¹	W	2800		4500		7100	
Nominal heating capacity* ²	W	3200		5000		8000	
Power source		1 Phase 220/240V 50Hz					
Noise level	dB(A)	Hi: 41 Me:38 Lo: 36			Hi: 43 Me:41 Lo: 40		
Exterior dimensions Height × Width × Depth	mm	630 × 1196 × 225				630 × 1481 × 225	
Net weight	kg	32				40	
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing					
Refrigerant control		Electronic Expansion Valve + Capillary tube					
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2					
Motor	W	30 × 1			40 × 1		
Starting method		Line starting					
Air flow(Standard)	CMM	Hi: 12 Me: 11 Lo: 10		Hi: 14 Me: 12 Lo: 10		Hi: 18 Me: 15 Lo: 12	
Fresh air intake		Not possible					
Air filter, Q'ty		Polypropylene net × 2(Washable)					
Shock & vibration absorber		Rubber sleeve(for fan motor)					
Insulation (noise & heat)		Polyurethane foam					
Operation control Operation switch		Remote control switch (Optional:RCD-HKXFL-E2)					
Room temperature control		Thermostat by electronics					
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat					
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4") Gas line: φ 12.7(1/2")				Liquid line:φ 9.52(3/8") Gas line: φ 15.88(5/8")	
Connecting method		Flare piping					
Drain hose		Connectable with VP20					
Insulation for piping		Necessary (both Liquid & Gas lines)					
Accessories		Mounting kit					
Optional parts		-					
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2					

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling* ¹	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating* ²	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

(i) Floor standing hidden type (FDFU)

Models FDFUJ28HKXE2, 45HKXE2, 56HKXE2, 71HKXE2

Item	Model	Model			
		FDFUJ28HKXE2 ⁽³⁾	FDFUJ45HKXE2 ⁽³⁾	FDFUJ56HKXE2 ⁽³⁾	FDFUJ71HKXE2 ⁽³⁾
Nominal cooling capacity ^{*1}	W	2800	4500	5600	7100
Nominal heating capacity ^{*2}	W	3200	5000	6300	8000
Power source		1 Phase 220/240V 50Hz			
Noise level	dB(A)	Hi: 41 Me:38 Lo: 36	Hi: 43 Me:41 Lo: 40		
Exterior dimensions Height × Width × Depth	mm	630 × 1077 × 225			630 × 1362 × 225
Net weight	kg	25			32
Refrigerant equipment Heat exchanger		Louver fins & inner grooved tubing			
Refrigerant control		Electronic Expansion Valve + Capillary tube			
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2			
Motor	W	30 × 1	40 × 1		
Starting method		Line starting			
Air flow(Standard)	CMM	Hi: 12 Me: 11 Lo: 10	Hi: 14 Me: 12 Lo: 10	Hi: 18 Me: 15 Lo: 12	
Fresh air intake		Not possible			
Air filter, Q'ty		Polypropylene net × 2(Washable)			
Shock & vibration absorber		Rubber sleeve(for fan motor)			
Insulation (noise & heat)		Polyurethane foam			
Operation control Operation switch		Remote control switch (Optional:RCD-HKXFL-E2)			
Room temperature control		Thermostat by electronics			
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat			
Installation data Refrigerant piping size	mm(in)	Liquid line:φ 6.35(1/4") Gas line:φ 12.7(1/2")		Liquid line:φ 9.52(3/8") Gas line:φ 15.88(5/8")	
Connecting method		Flare piping			
Drain hose		Connectable with VP20			
Insulation for piping		Necessary (both Liquid & Gas lines)			
Accessories		Mounting kit			
Optional parts		-			
Outdoor units to be combined		FDCP2001HKXRE2, 2501HKXRE2			

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

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling ^{*1}	27℃	19℃	35℃	24℃	ISO-T1,JIS B8616
Heating ^{*2}	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616"UNITARY AIR-CONDITIONERS"

(3) The number "2", following the type of each model, represents"CE-marked model" especially for European Union, and for European nations which require CE marking.

(2) Outdoor unit

Models FDCP2001HKXRE2, 2501HKXRE2

Item	Models	FDCP2001HKXRE2 ⁽³⁾	FDCP2501HKXRE2 ⁽³⁾
Power source		3 Phase 380/415V 50Hz	
Nominal cooling capacity ^{*1}	W	22400	28000
Nominal heating capacity ^{*2}	W	25000	31500
Noise level	dB(A)	60	
Exterior dimensions Height × Width × Depth	mm	1700 × 1350 × 600	
Net weight	kg	340	361
Refrigerant equipment compressor type & Q'ty		RS5555HAS11	RS5570HAS11
Motor	kW	5.5	7.5
Starting method		Direct start	
Capacity control	%	100 ~ 22.0	
Crankcase heater	W	40	
Heat exchanger		Louver fines & inner grooved tubing	
Refrigerant control		Expansion Valve +Capillary tube	
Refrigerant		R407C	
Quantity	kg	11	
Refrigerant oil		2.5 (MA32)	
Defrost control		MC controlled De-Icer	
Air handling equipment Fan type & Q'ty		Centrifugal fan × 2	
Motor	W	100 × 2	
Starting method		Direct start	
Air flow(Standard)	CMM	175	
Shock & vibration absorber		Rubber mount (for compressor)	
Safety equipment		Compressor overheat protection, overcurrent protection, power transformer overheating protection, abnormal high pressure protection	
Installation data Refrigerant piping size	mm(in)	Liquid line:φ12.7(1/2") Intake line:φ25.4(1") Discharge line:φ19.05(3/4")	Liquid line:φ12.7(1/2") Intake line:φ28.58(11/8") Discharge line:φ19.05(3/4")
Connecting method		Brazing	
Drain		Hole for drain(φ20 × 6pcs)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		Discharge gas side connection piping (for service valve and back direction connections), intake gas side connection piping (for operation valve and back direction connections)	
Indoor units to be combined		FDTJ28, 36, 45, 56, 71, 90, 112, 140HKXE2 FDTWJ28, 45, 56, 71, 90, 112, 140HKXE2B FDTSJ22, 28, 36, 45, 71HKXE2B FDRJ22, 28, 45, 56, 71, 90, 112, 140HKXE2 FDUMJ36, 45, 56, 71, 90, 112, 140HKXE2 FDEJ36, 45, 56, 71, 112, 140HKXE2B FDKJ22, 28, 36, 45, 56, 71HKXE2 FDFLJ28, 45, 71HKXE2 FDFUJ28, 45, 56, 71HKXE2	

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in JIS-B8616.

(2) The refrigerant quantity in the connecting pipe is not included Charge it additionally at the site.

(3) The number "2", following the type of each model, represents "CE-marked model" especially for European Union, and for European nations which require CE marking.

(4) When an individual flow divide controller is used a pipe part set is required.

Flow divide controller part No. list

Type	Part No.
	FDCP2001,2501
Individual flow divide controller	HPFD01R-E

Type	Part No.
	FDCP2001,2501
For 3 pipes (for horizontal division)	DIS-IKXR3-E
For 3 pipes (for vertical division)	DIS-VIKXR3-E

(3) Operation chart

Since the Multi KXR series air conditioner units are free multitype to which the indoor units of different capacity and different model can be combined, the operation characteristics of all combinations are very complicated, therefore only the individual operation characteristics of indoor and outdoor units are shown. For the combined operation characteristics, calculate them with the method shown in the next page.

(a) Operating characteristic of outdoor unit

(380 V/415 V)

Item	Models	FDCP2001HKXRE2	FDCP2501HKXRE2
	Cooling input	kW	10.2/10.2
Heating input	8.4/8.4		9.2/9.2
Cooling running current	A	15.9/14.6	21.8/20.0
Heating running current		13.3/12.2	15.6/14.3
Inrush current (MAX.)	A	5	5
Cooling power factor	%	97/97	86/86
Heating power factor		96/96	90/90

Note (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
JIS B8616 "UNITARY AIR-CONDITIONERS"

(b) Operating characteristic of indoor unit
FDT Series

(220 V/240 V)

Item	Models	FDT Series							
		28	36	45	56	71	90	112	140
Power input (kW)		0.09/0.10		0.10/0.12		0.10/0.12	0.11/0.13	0.17/0.20	0.21/0.24
Running current (A)		0.40/0.44		0.45/0.49		0.47/0.50	0.50/0.55	0.75/0.81	0.93/1.02

FDTW Series

(220 V/240 V)

Item	Models	FDTW Series						
		28	45	56	71	90	112	140
Power input (kW)		0.09/0.10			0.10/0.11	0.12/0.13	0.18/0.20	0.20/0.24
Running current (A)		0.43/0.44			0.48/0.50	0.57/0.59	0.86/0.89	0.90/0.98

FDTS Series

(220 V/240 V)

Item	Models	FDTS Series				
		22	28	36	45	71
Power input (kW)		0.07/0.08			0.10/0.11	0.12/0.15
Running current (A)		0.33/0.36			0.43/0.46	0.58/0.63

FDR, FDUM Series

(220 V/240 V)

Item	Models	FDR, FDUM Series							
		22	28, 36	45	56	71	90	112	140
Power input (kW)		0.09/0.11	0.11/0.13	0.14/0.16		0.15/0.17	0.16/0.19	0.24/0.28	0.28/0.32
Running current (A)		0.41/0.46	0.51/0.56	0.63/0.67		0.68/0.71	0.73/0.79	1.07/1.17	1.28/1.32

FDE Series

(220 V/240 V)

Item	Models	FDE Series					
		36	45	56	71	112	140
Power input (kW)		0.10/0.11			0.12/0.15	0.20/0.24	0.24/0.29
Running current (A)		0.43/0.46			0.58/0.63	0.90/0.98	1.10/1.20

Notes (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

JIS B8616 "UNITARY AIR-CONDITIONERS"

(2) The values shown in the above table are common to both cooling and heating operations.

FDK, FDFL, FDFU Series

(220 V/240 V)

Item	Models	FDK Series					FDFL, FDFU Series			
		22	28	36	45	56	71	28	45,56	71
Power input (kW)		0.05/0.06			0.06/0.07	0.08/0.09	0.09/0.11	0.09/0.10	0.09/0.10	0.09/0.10
Running current (A)		0.26/0.28			0.31/0.33	0.36/0.39	0.41/0.48	0.41/0.42	0.40/0.41	0.40/0.41

Notes (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.

JIS B8616 "UNITARY AIR-CONDITIONERS"

(2) The values shown in the above table are common to both cooling and heating operations.

(c) Calculation of total operation characteristics

Since the operation characteristics of series Multi-KXR depend on combination of indoor unit, calculate the total operation characteristics of the system by using the formulas below according to specifications of each indoor unit or outdoor unit.

1) Total power input

Total power input (kW) = Power input of outdoor unit + \sum (Power input of indoor unit)

2) Total running current

Total running current (A) = Running current of outdoor unit + $[\sum$ (Running current) \times 2/3]

3) Total power factor

Total power factor (%) = $[\text{Total power input (W)} / \sqrt{3} \times \text{Total running current (A)} \times \text{Power source}] \times 100$

Total operation characteristics = Operation characteristic value of outdoor unit + Operation characteristic value of indoor unit

[Example]

(Conditions) Operation Voltage Indoor unit: 220 V, 50 Hz
 Outdoor unit: 380 V, 50 Hz
 Operation mode Cooling and Heating
 Unit..... Outdoor unit: FDCP2501HKXRE2 \times 1 unit
 Indoor unit: FDTJ71HKXE2 \times 2 units
 FDTJ45HKXE2 \times 2 units

Operation characteristics of each unit

(Cooling/Heating)

Item	Models	FDCP2501HKXRE2	FDTJ71HKXE2	FDTJ45HKXE2
		Power input (kW)		12.4/9.2
Running current (A)		21.8/15.6	0.47/0.47	0.45/0.45

① Total power input (kW)

(Cooling) $12.4 + (0.10 \times 4) = 12.8$ (kW)

(Heating) $0.2 + (0.10 \times 4) = 9.6$ (kW)

② Total running current (A)

(Cooling) $21.8 + (0.47 \times 2 + 0.45 \times 2) \times \frac{2}{3} \doteq 23.0$ (A)

(Heating) $15.6 + (0.47 \times 2 + 0.45 \times 2) \times \frac{2}{3} \doteq 16.8$ (A)

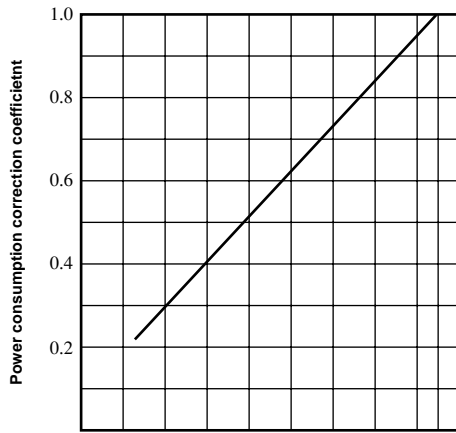
③ Total power factor (%)

(Cooling) $\frac{12.8 \times 1000}{\sqrt{3} \times 23.0 \times 380} \times 100 \doteq 85\%$

(Heating) $\frac{9.6 \times 1000}{\sqrt{3} \times 16.8 \times 380} \times 100 \doteq 87\%$

• Correction factor of compressor power input

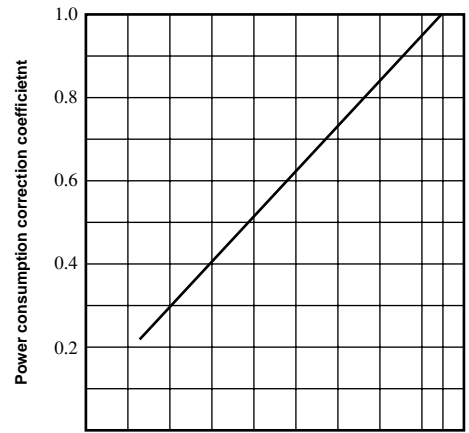
Model FDCP2001HKXRE2



Total capacity of indoor units operating simultaneously

45 105 164 224
 (Below, the coefficients are the same.)

Model FDCP2501HKXRE2



Total capacity of indoor units operating simultaneously

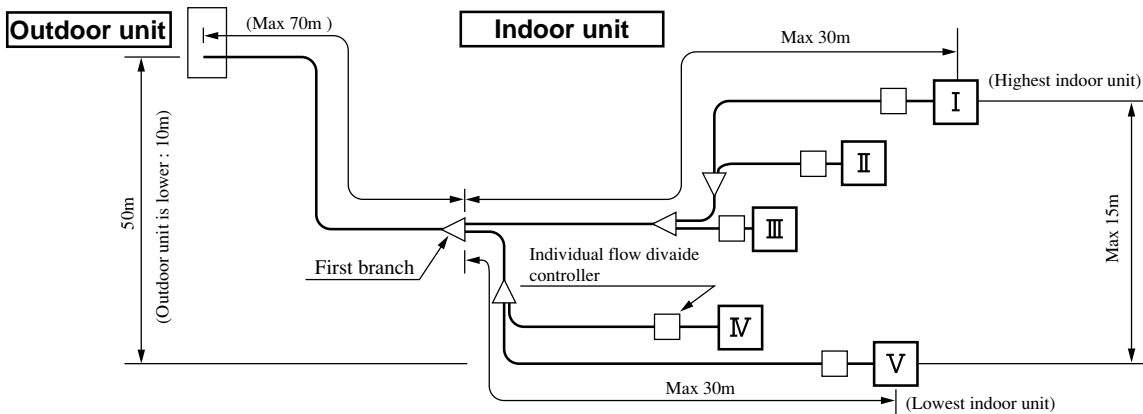
45 90 105 164 224 280
 (Below, the coefficients are the same.)

20.2.2 Range of usage & limitations

System		FDCP2001HKXRE2	FDCP2501HKXRE2
Item			
Indoor intake air temperature (Upper, lower limits)		Refer to the selection chart.	
Outdoor air temperature (Upper, lower limits)			
Indoor units that can be used in combination	Number of connected units	1 to 8 units	
	Total capacity	11000 to 29200w	13200 to 37100w
Single direction piping length		Indoor unit MAX 100m	
Piping length after first division		MAX 30m	
Difference in height between indoor and outdoor units	When above outdoor unit	MAX 50m	
	When below outdoor unit	MAX 10m	
Difference in height between indoor units		MAX 15m	
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature 28 °C or less, relative humidity 80% or less	
Compressor stop/start frequency	1 cycle time	6 min or more(from stop to stop or from start to start)	
	Stop time	3 min or more	
Power source voltage	Voltage fluctuation	Within ±10% of rated voltage	
	Voltage drop during start	Within ±15% of rated voltage	
	Interval unbalance	Within ± 3% of rated voltage	

Allowable length of refrigerant piping, Height difference between indoor and outdoor unit

Individual flow divide controller



- Between the outdoor unit and first branch (main piping): Max 70m (actual length)
- Between the first branch and each indoor unit : Max 30m (each indoor unit) (actual length)

Note (1) The indoor unit and individual flow divide controller positions should be within the range of the reach of the connections of the wires that come with the individual flow divide controller

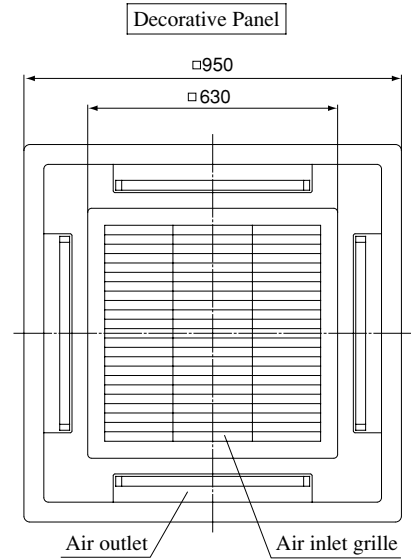
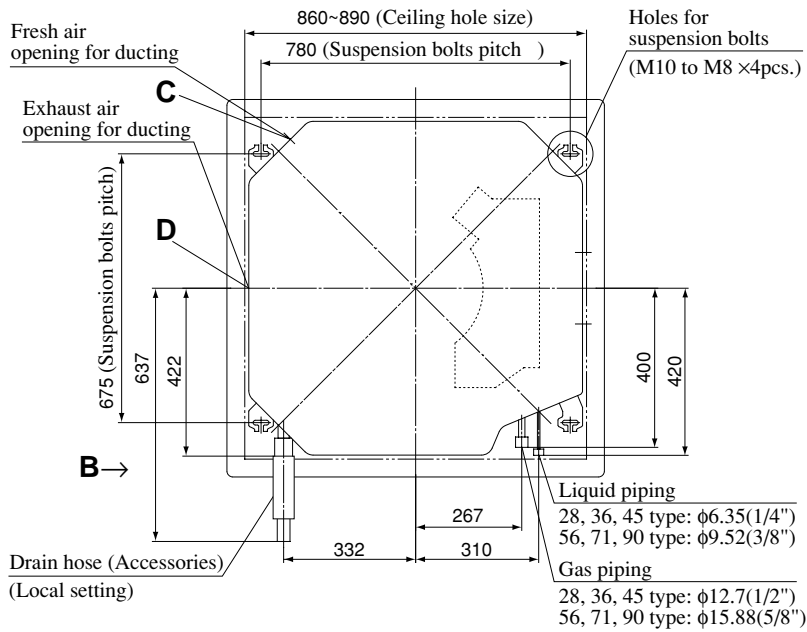
20.2.3 Exterior dimensions

(1) Indoor unit

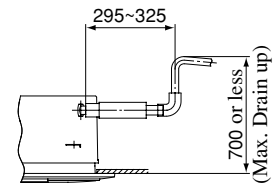
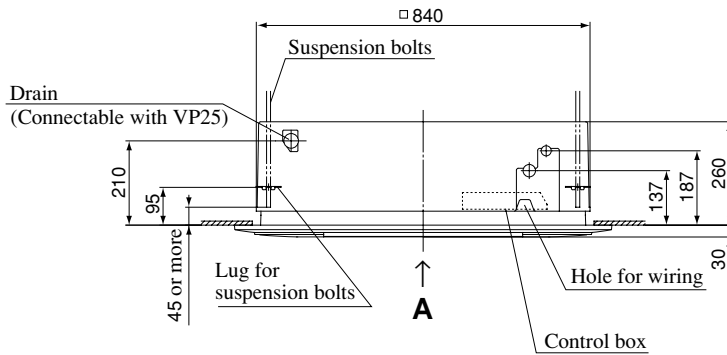
(a) Ceiling recessed type (FDT)

Models FDTJ28HKXE2, 36HKXE2, 45HKXE2, 56HKXE2, 71HKXE2, 90HKXE2

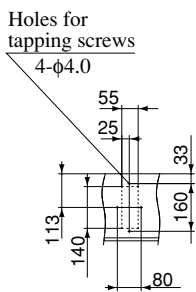
Unit : mm



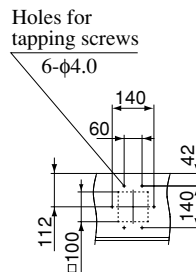
VIEW A



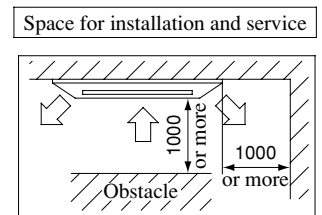
VIEW B



VIEW C



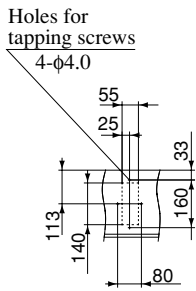
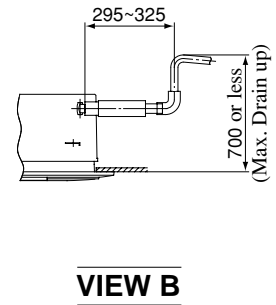
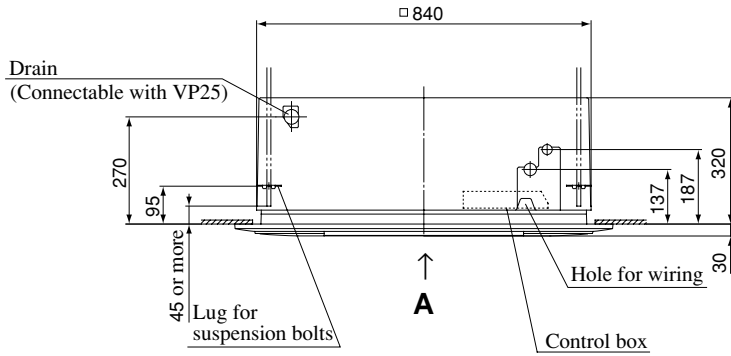
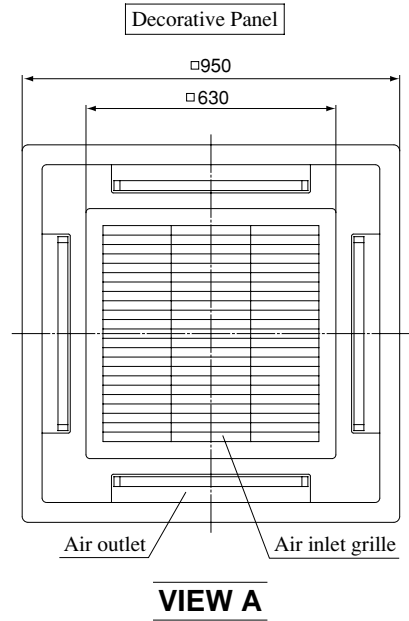
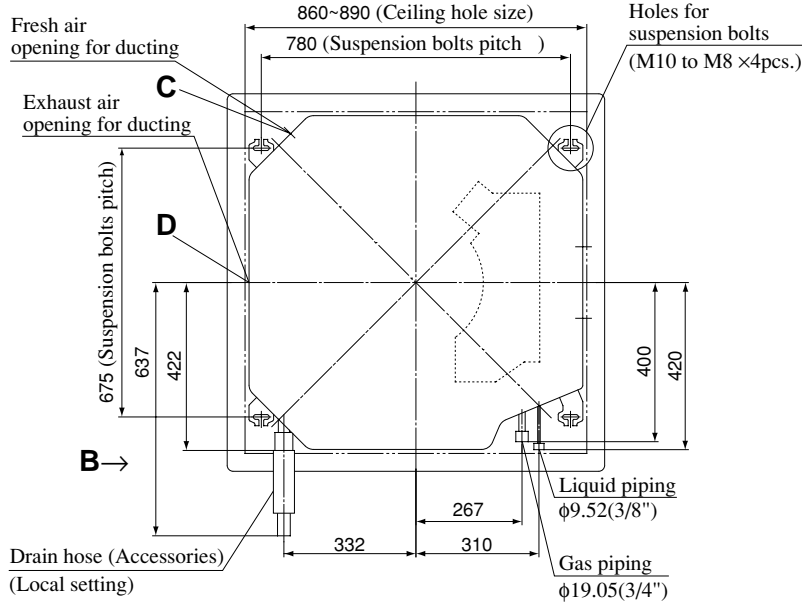
VIEW D



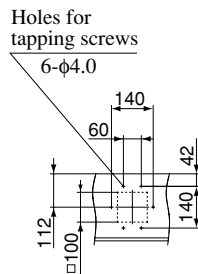
FDC-HKXR

Models FDTJ112HKXE2, 140HKXE2

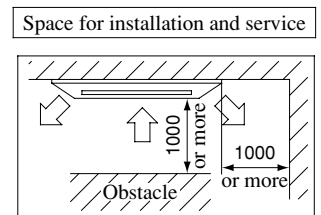
Unit : mm



VIEW C



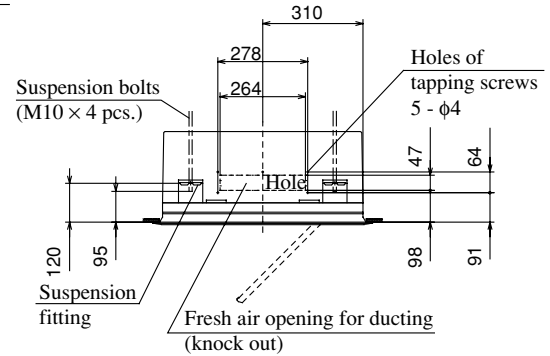
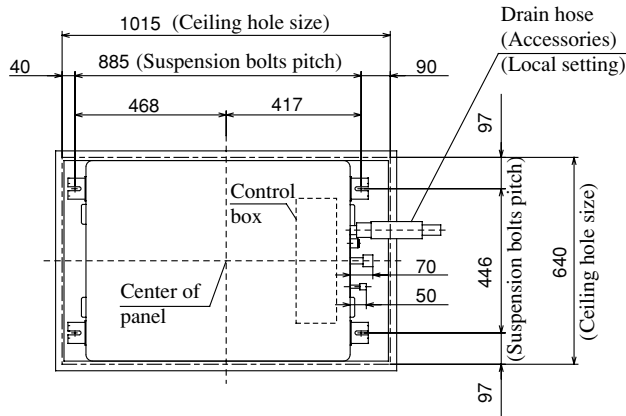
VIEW D



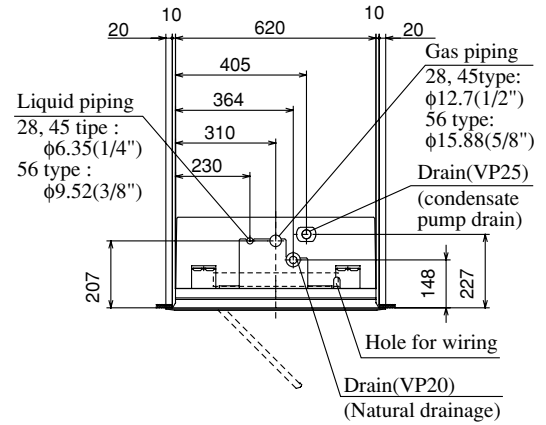
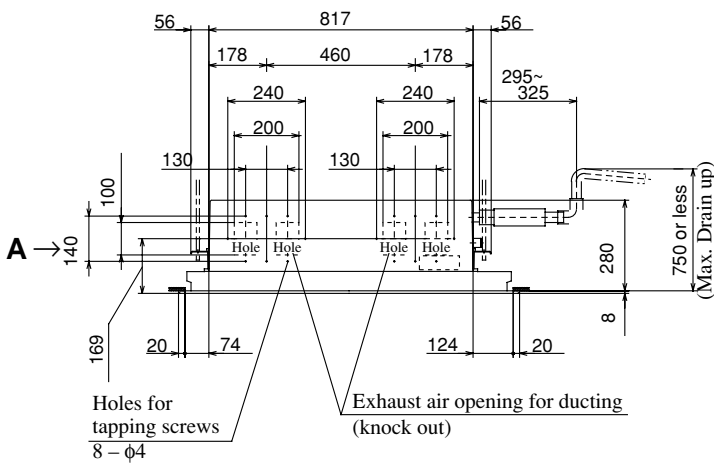
(b) 2-way outlet ceiling recessed type (FDTW)

Models FDTWJ28HKXE2B, 45HKXE2B, 56HKXE2B

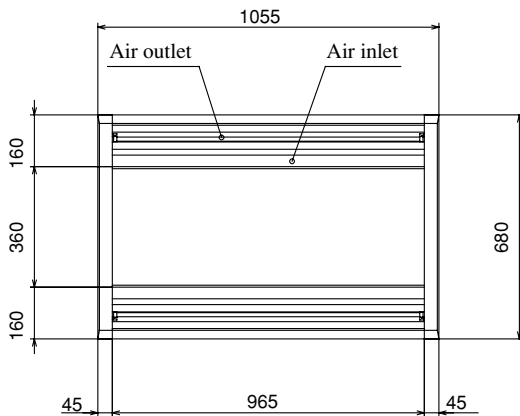
Unit : mm



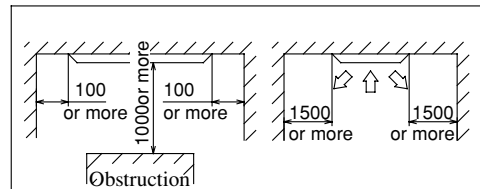
VIEW A



Decorative Panel



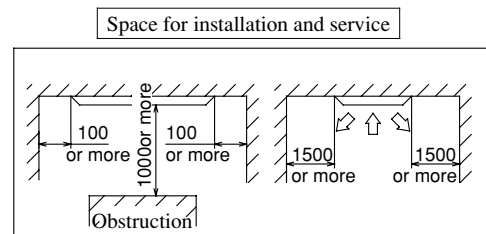
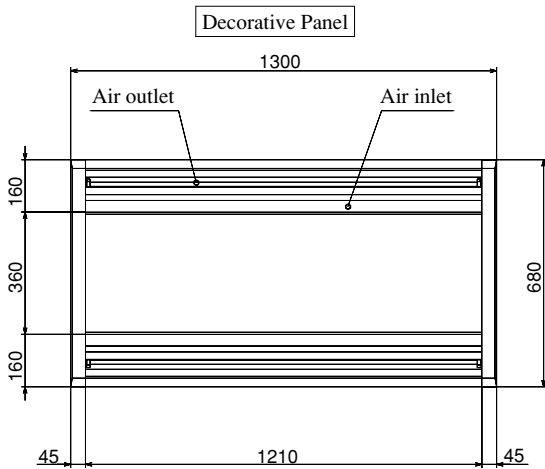
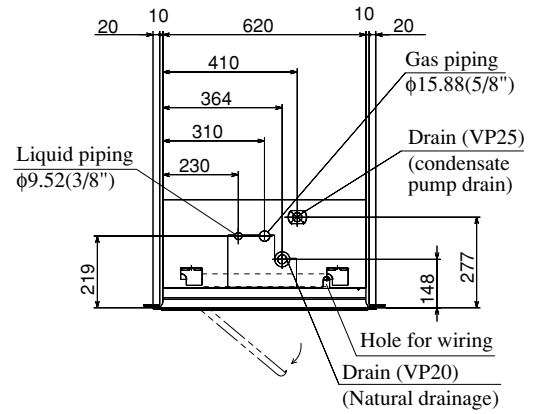
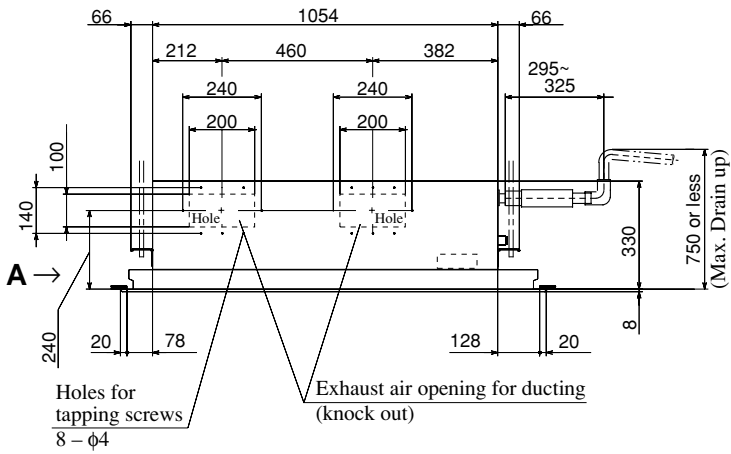
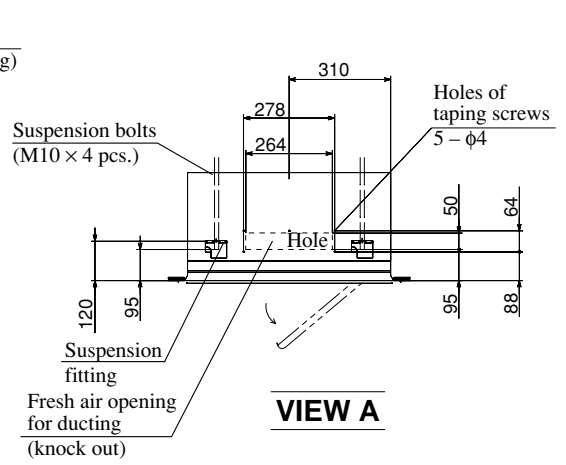
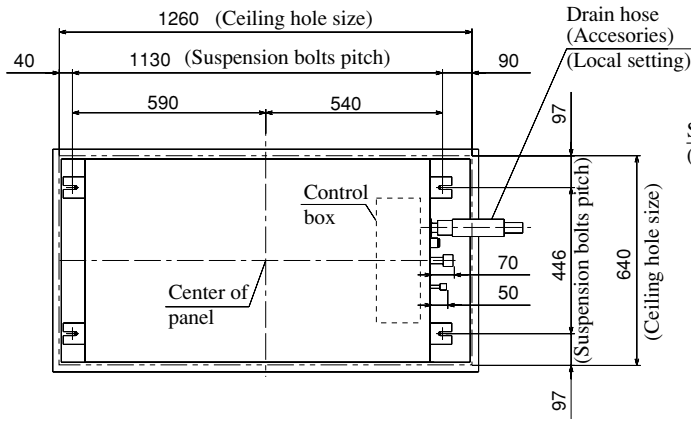
Space for installation and service



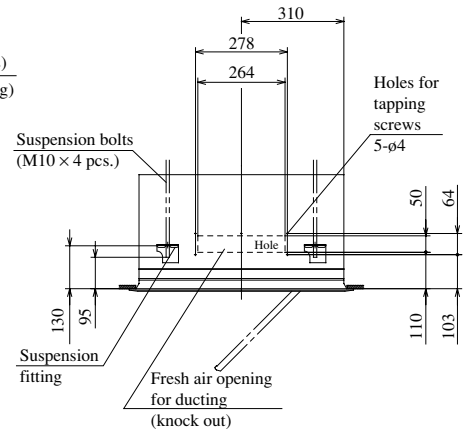
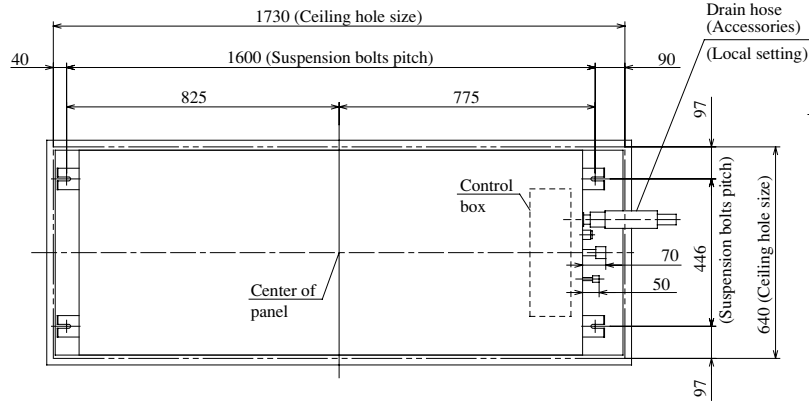
FDC-HKXR

Models FDTWJ71HKXE2B, 90HKXE2B

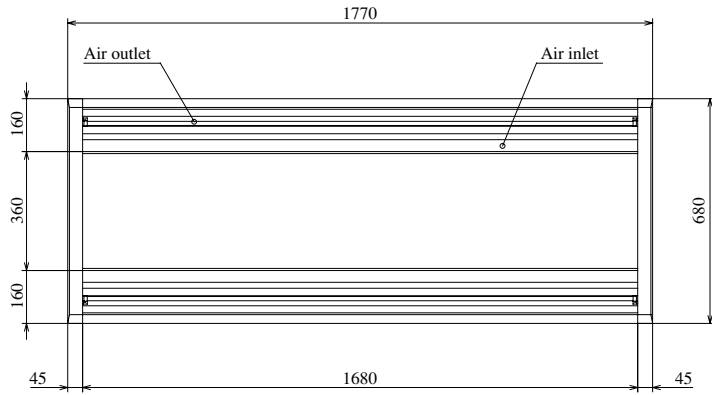
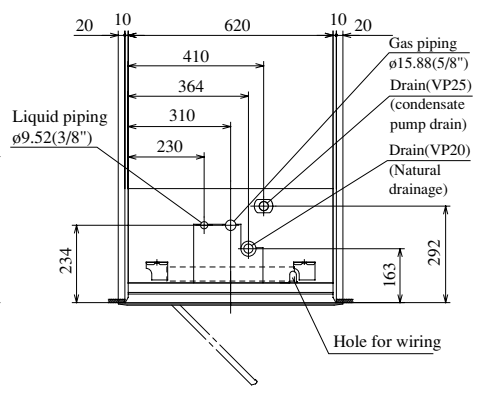
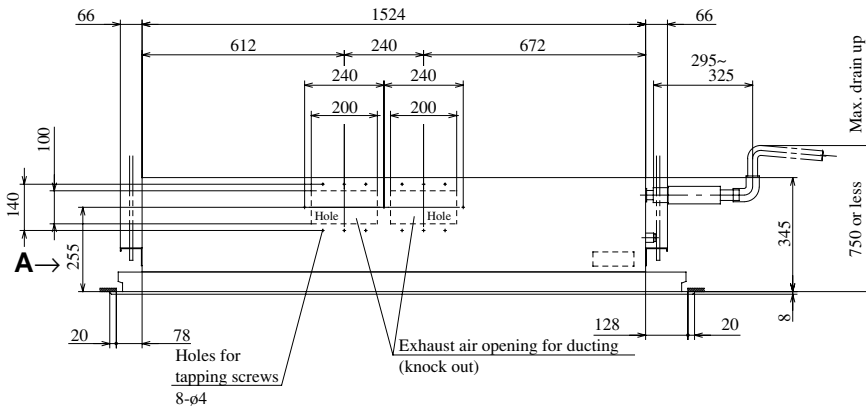
Unit : mm



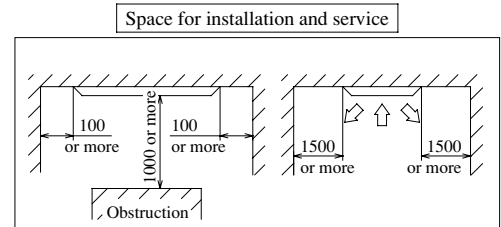
Models FDTWJ112HKXE2B, 140HKXE2B



VIEW A

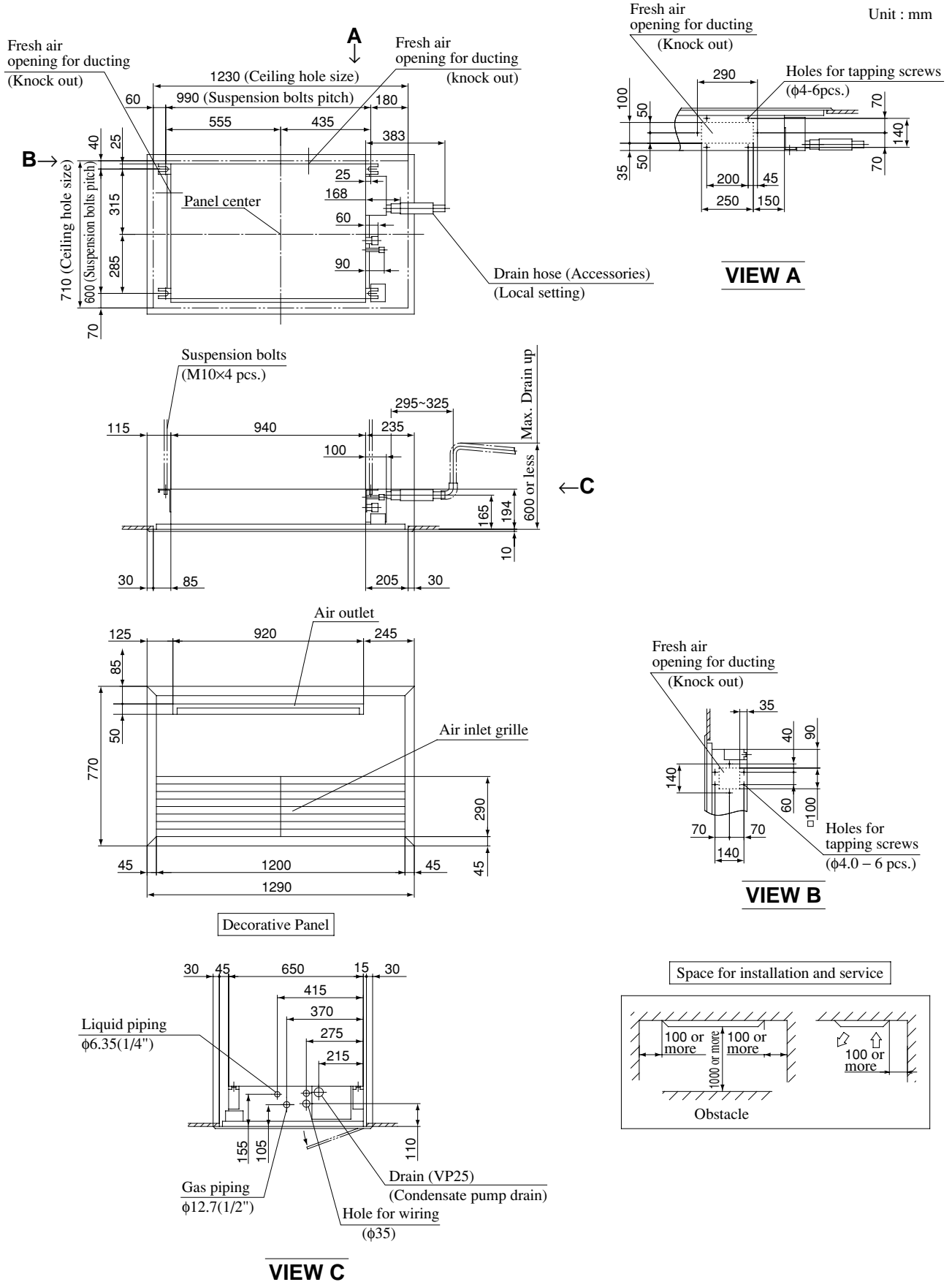


Decorative Panel



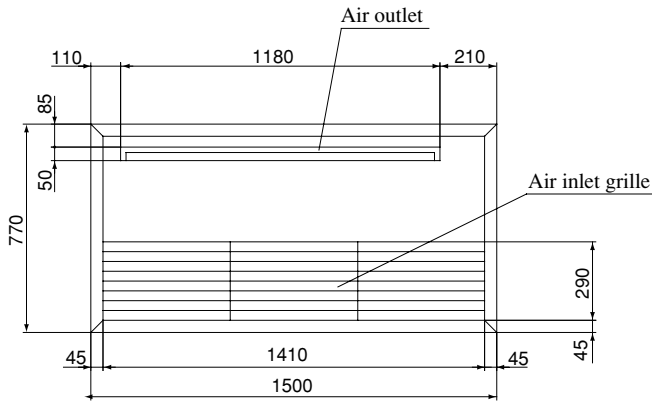
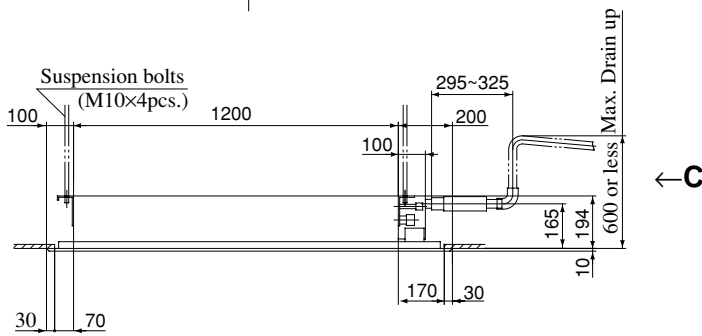
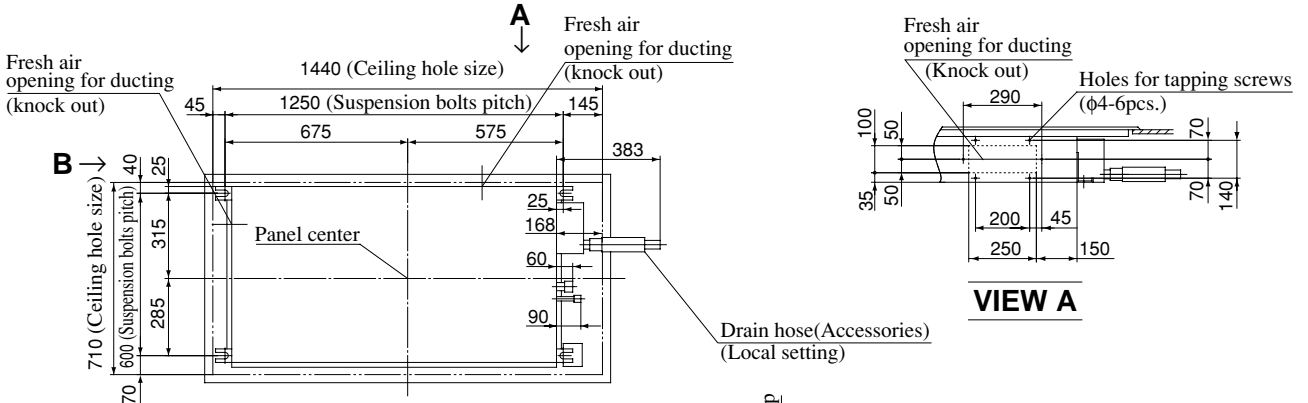
(c) 1-Way outlet ceiling recessed type (FDTS)

Models FDTJ22HKXE2B, 28HKXE2B, 36HKXE2B, 45HKXE2B

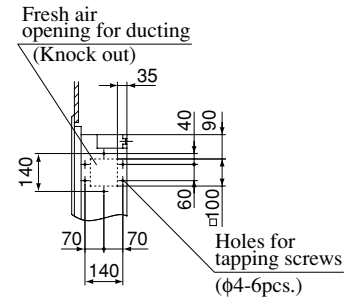


Model FDT SJ71HKXE2B

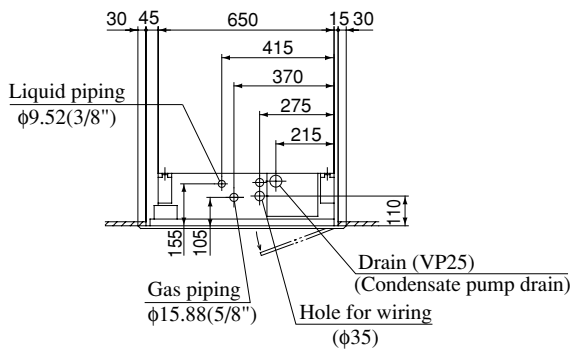
Unit : mm



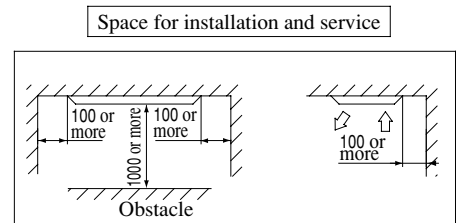
Decorative Panel



VIEW B



VIEW C

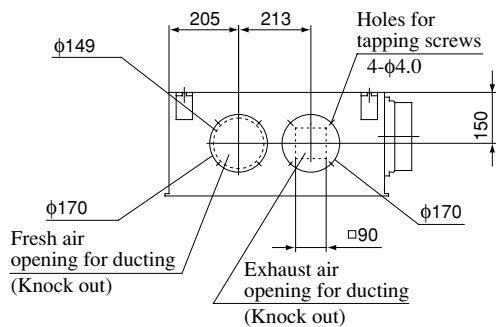
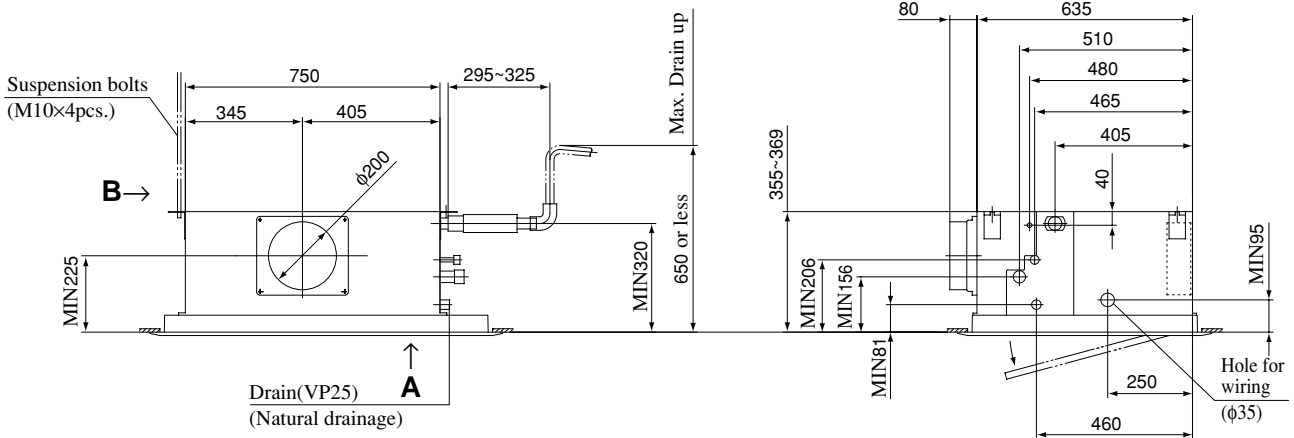
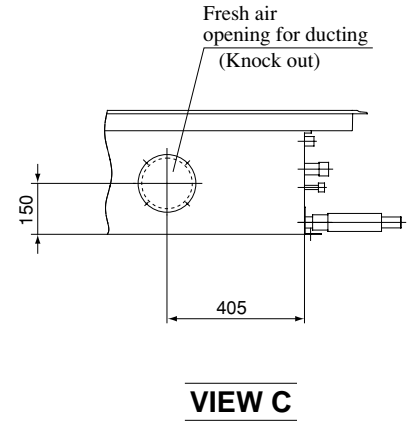
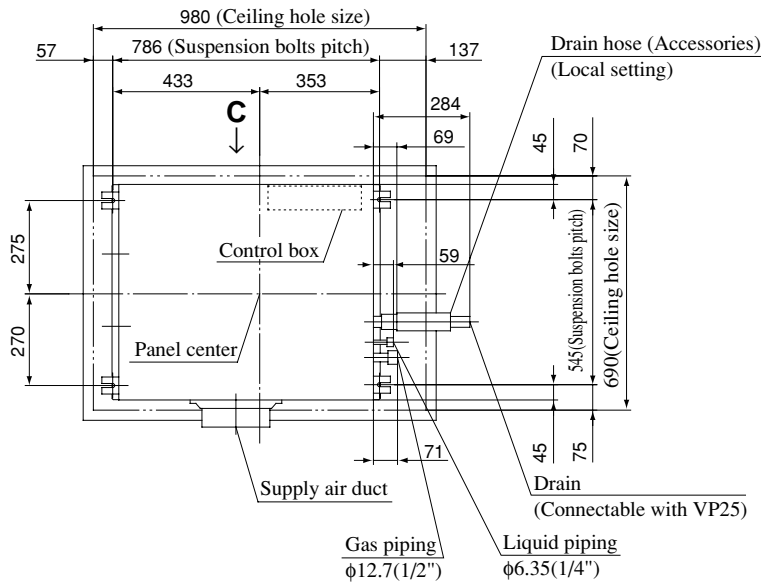


(d) Cassetteria type (FDR)

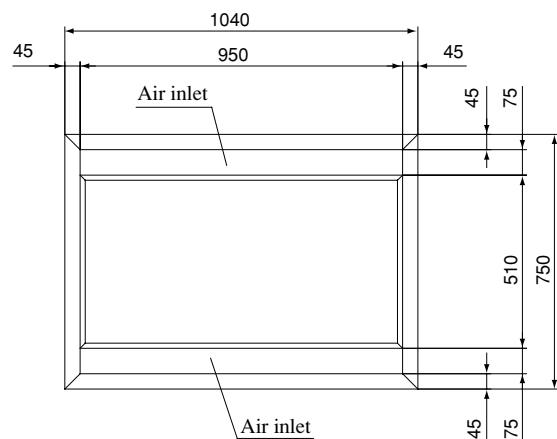
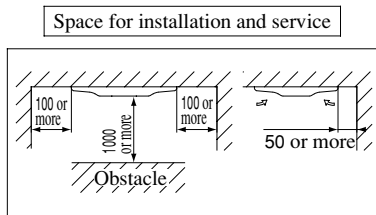
Model FDRJ22HKXE2

Silent Panel (Model: R-PNLS-26W-E)

Unit : mm



VIEW B

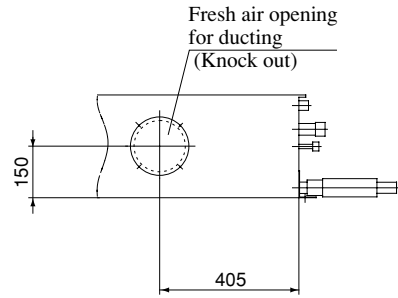
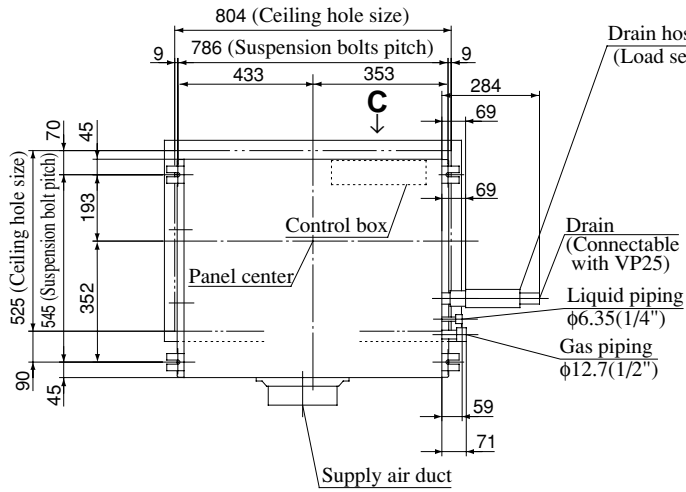


VIEW A

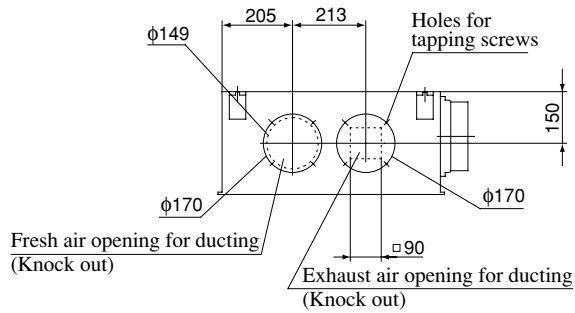
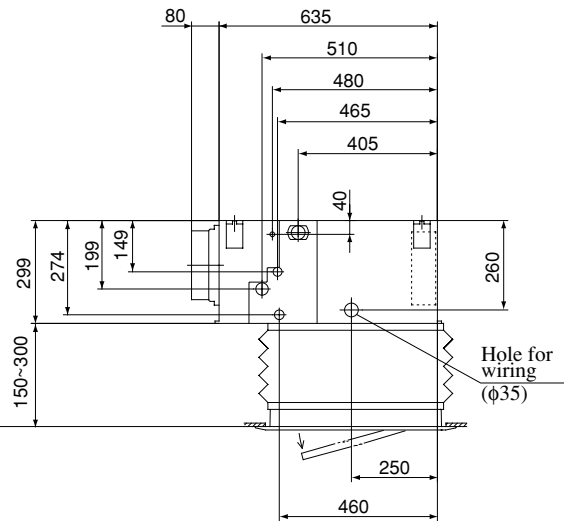
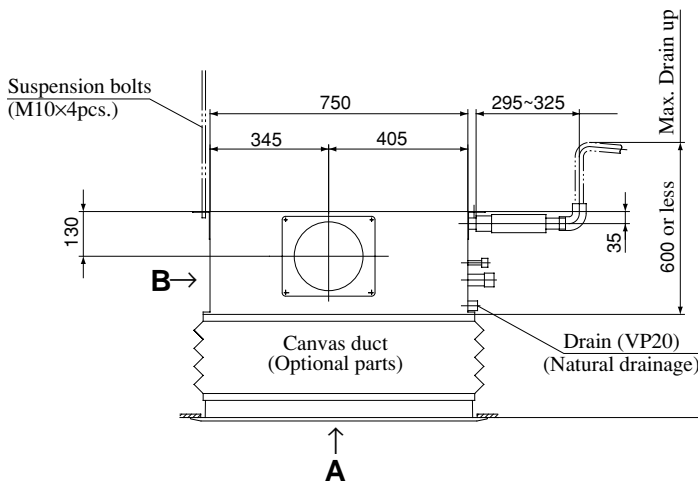
Model FDRJ22HKXE2

Canvas Panel (Model: R-PNLC -26W-E)

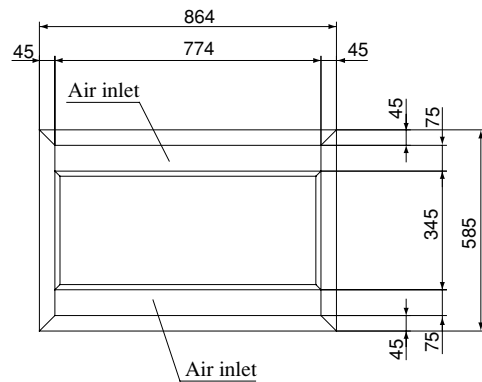
Unit : mm



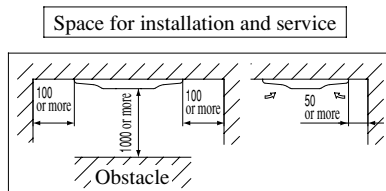
VIEW C



VIEW B



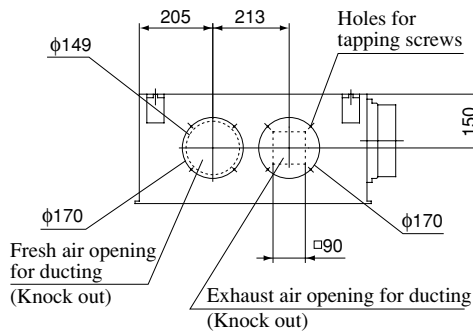
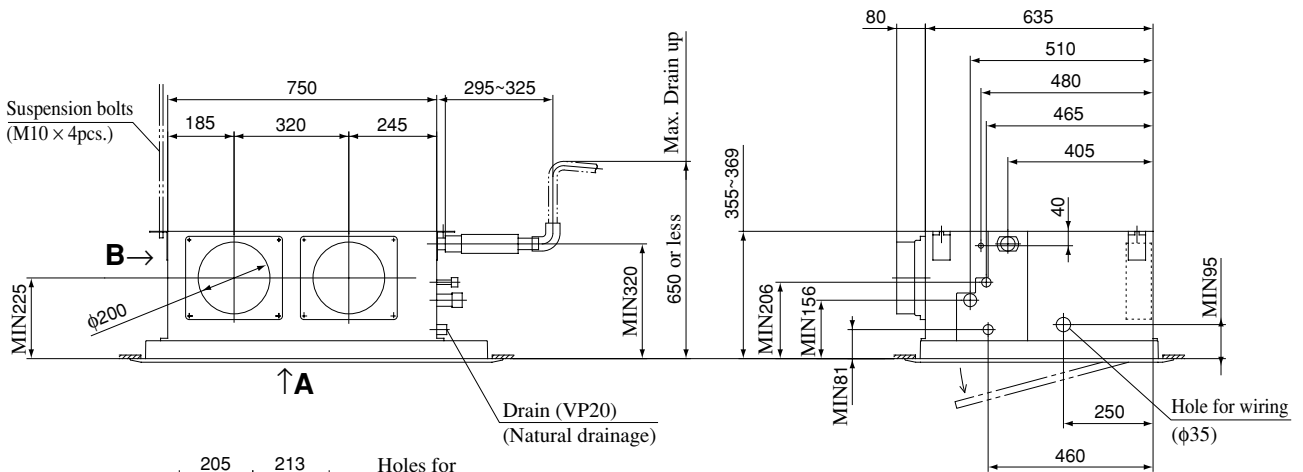
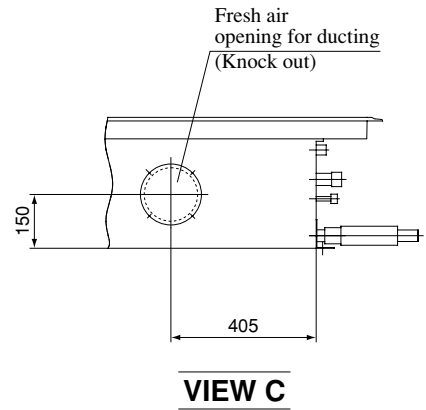
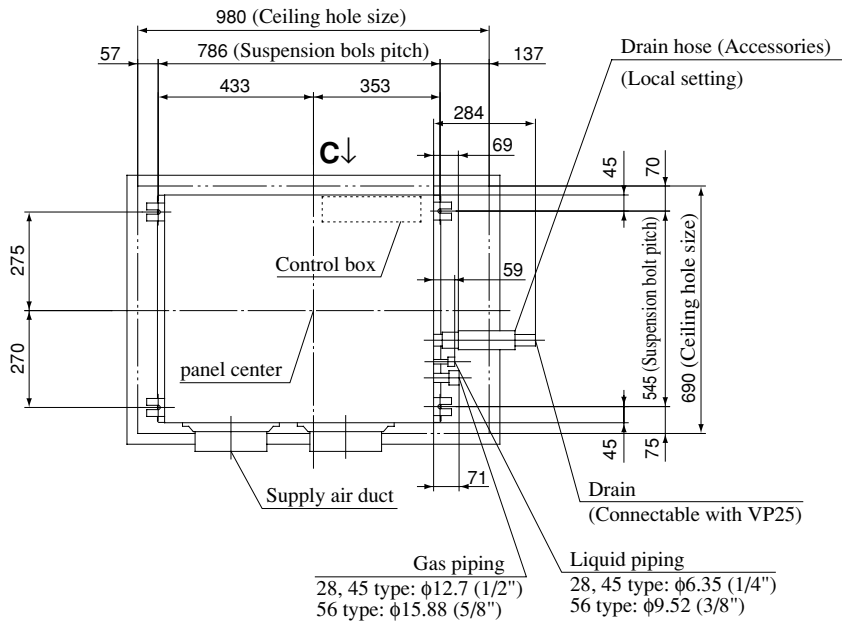
VIEW A



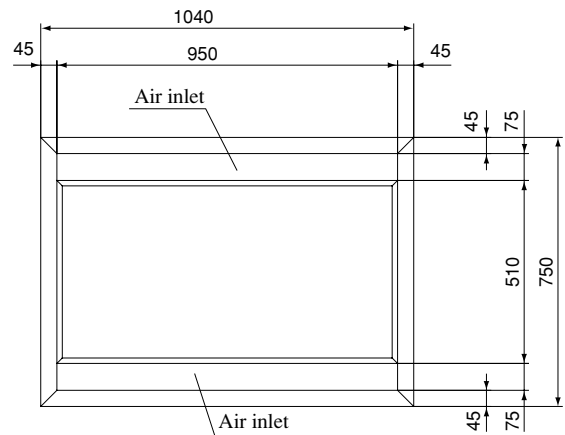
Models FDRJ28HKXE2, 45HKXE2, 56HKXE2

Silent Panel (Model: R-PNLS-26W-E)

Unit : mm

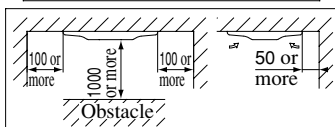


VIEW B



VIEW A

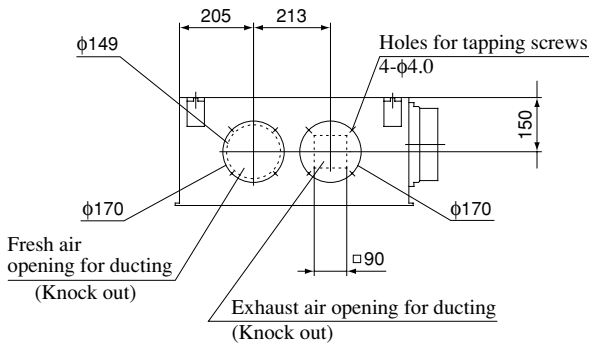
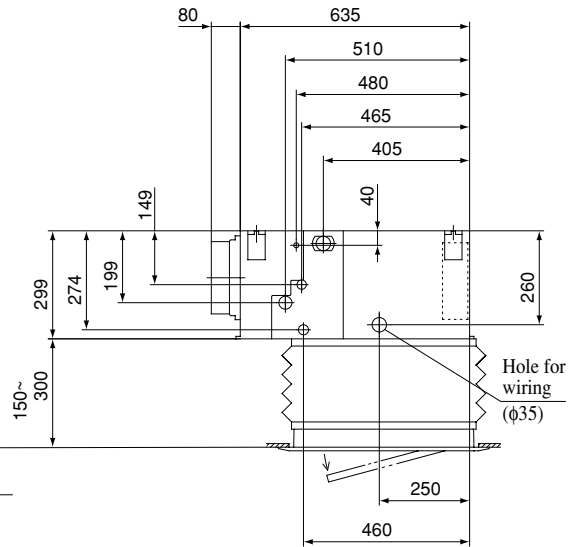
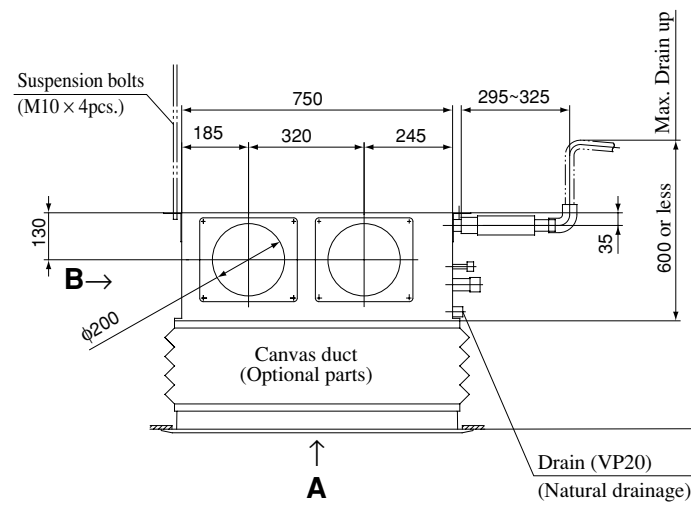
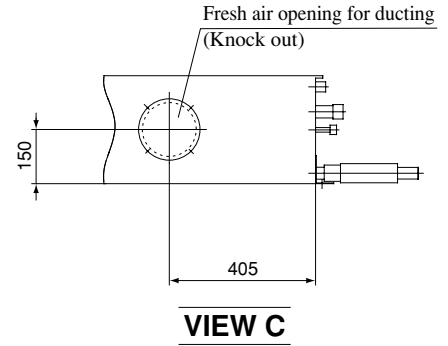
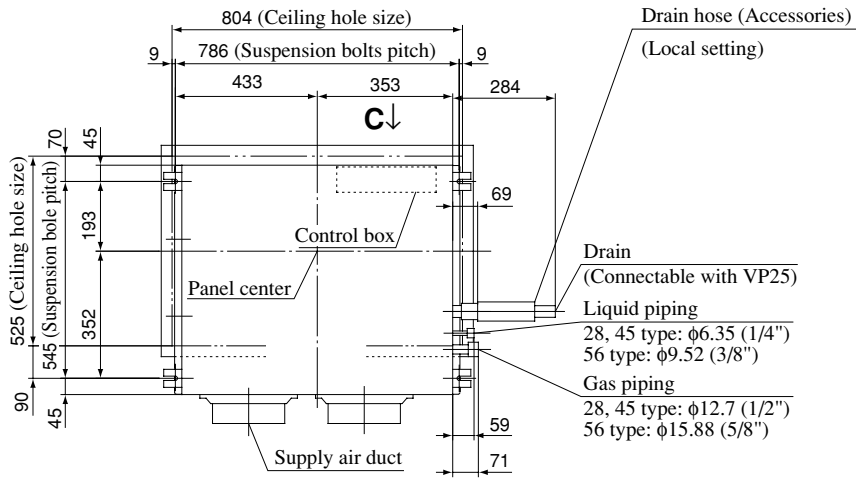
Space for installation and service



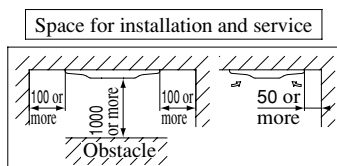
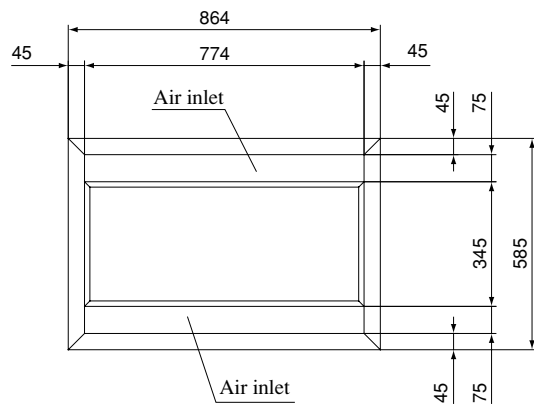
Models FDRJ28HKXE2, 45HKXE2, 56HKXE2

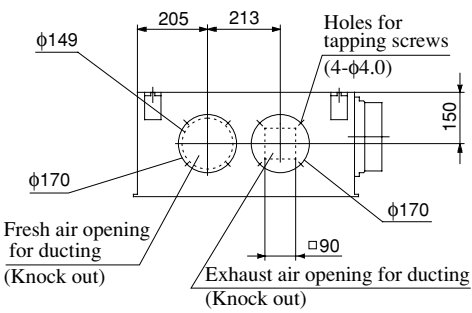
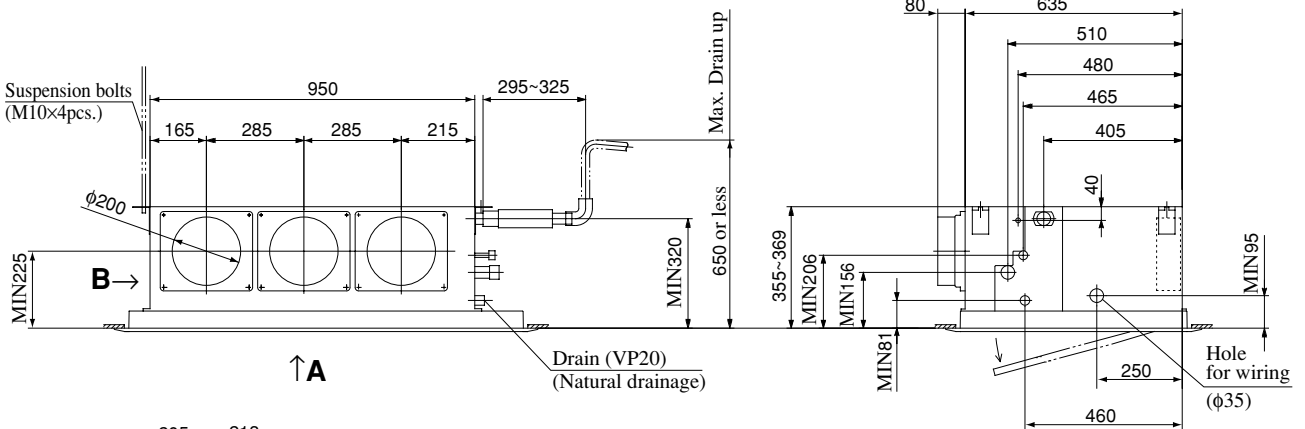
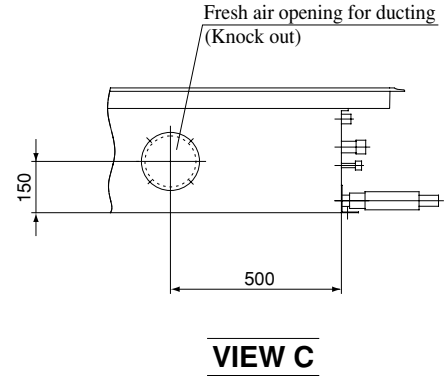
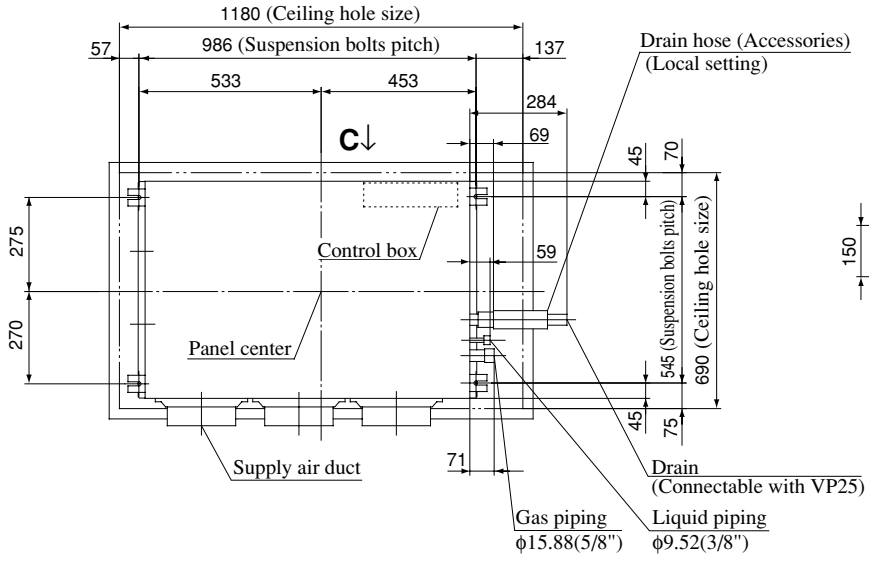
Canvas Panel (Model: R-PNLC-26W-E)

Unit : mm

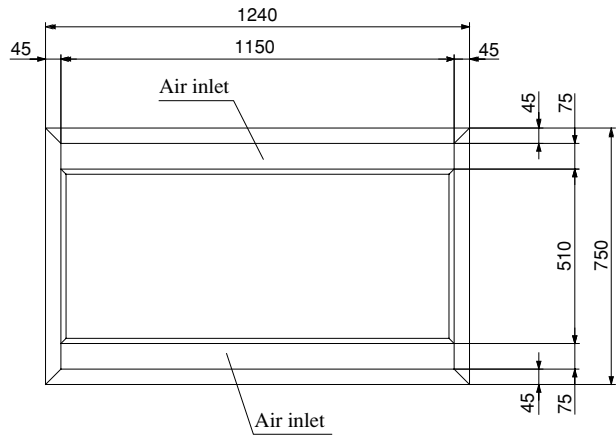


VIEW B

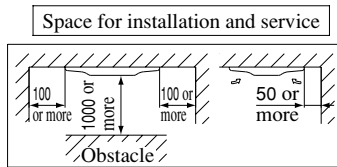




VIEW B



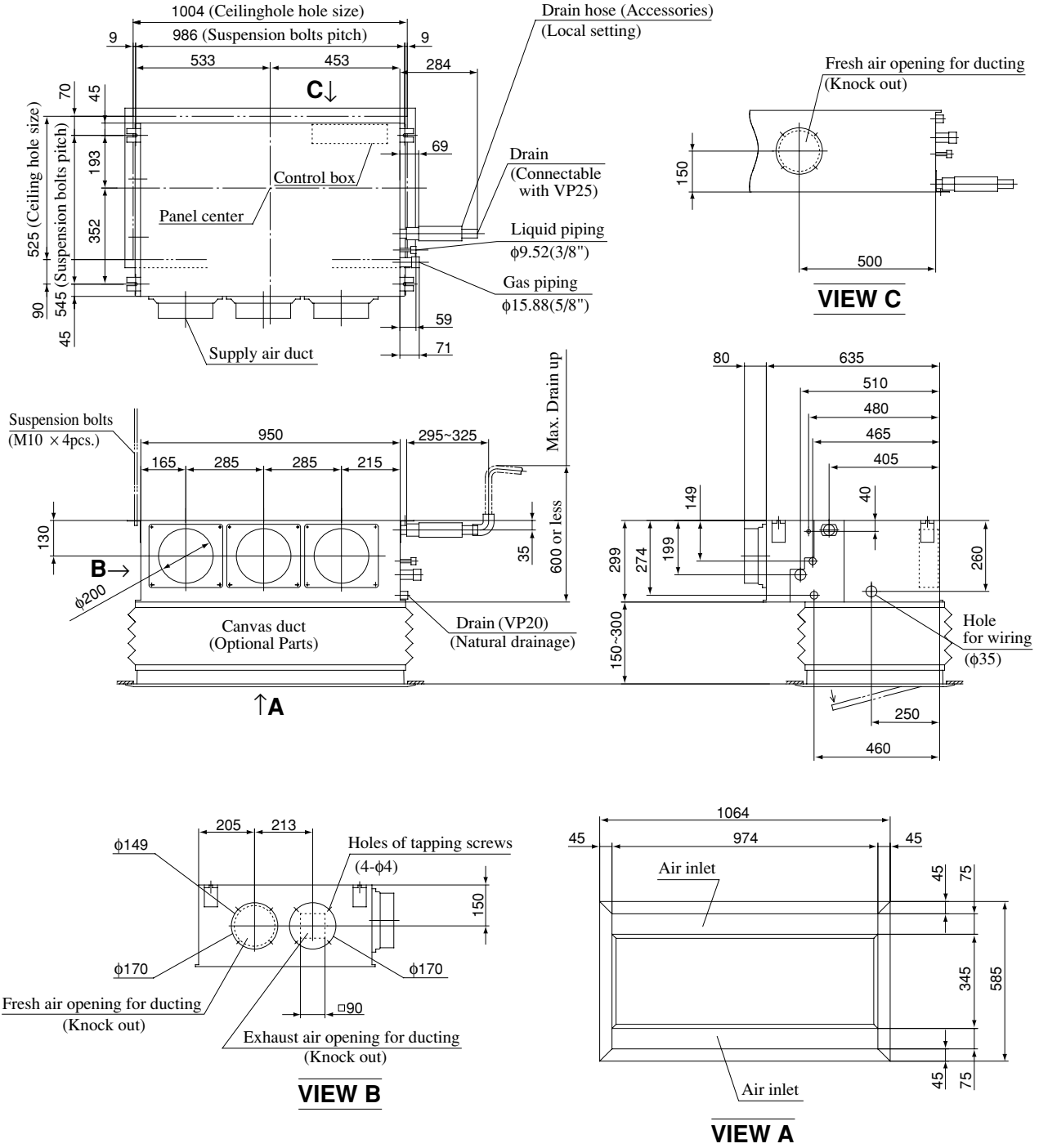
VIEW A



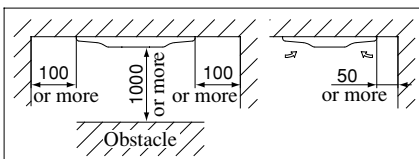
Models FDRJ71HKXE2, 90HKXE2

Canvas Panel (Model: R-PNLC-36W-E)

Unit : mm



Space for installation and service

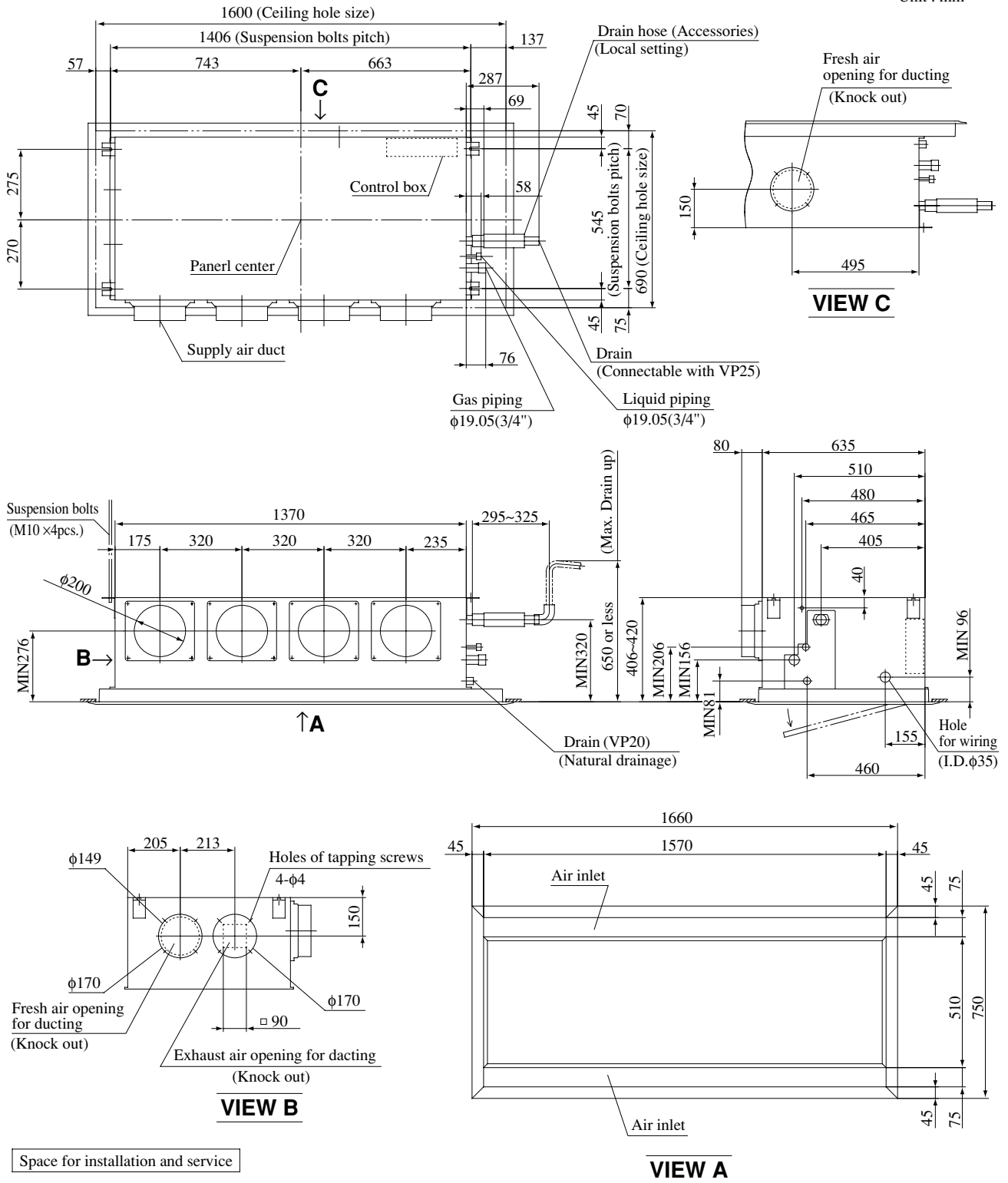


FDC-HKXR

Models FDRJ112HKXE2, 140HKXE2

Silent Panel (Model: R-PNLS-46W-E)

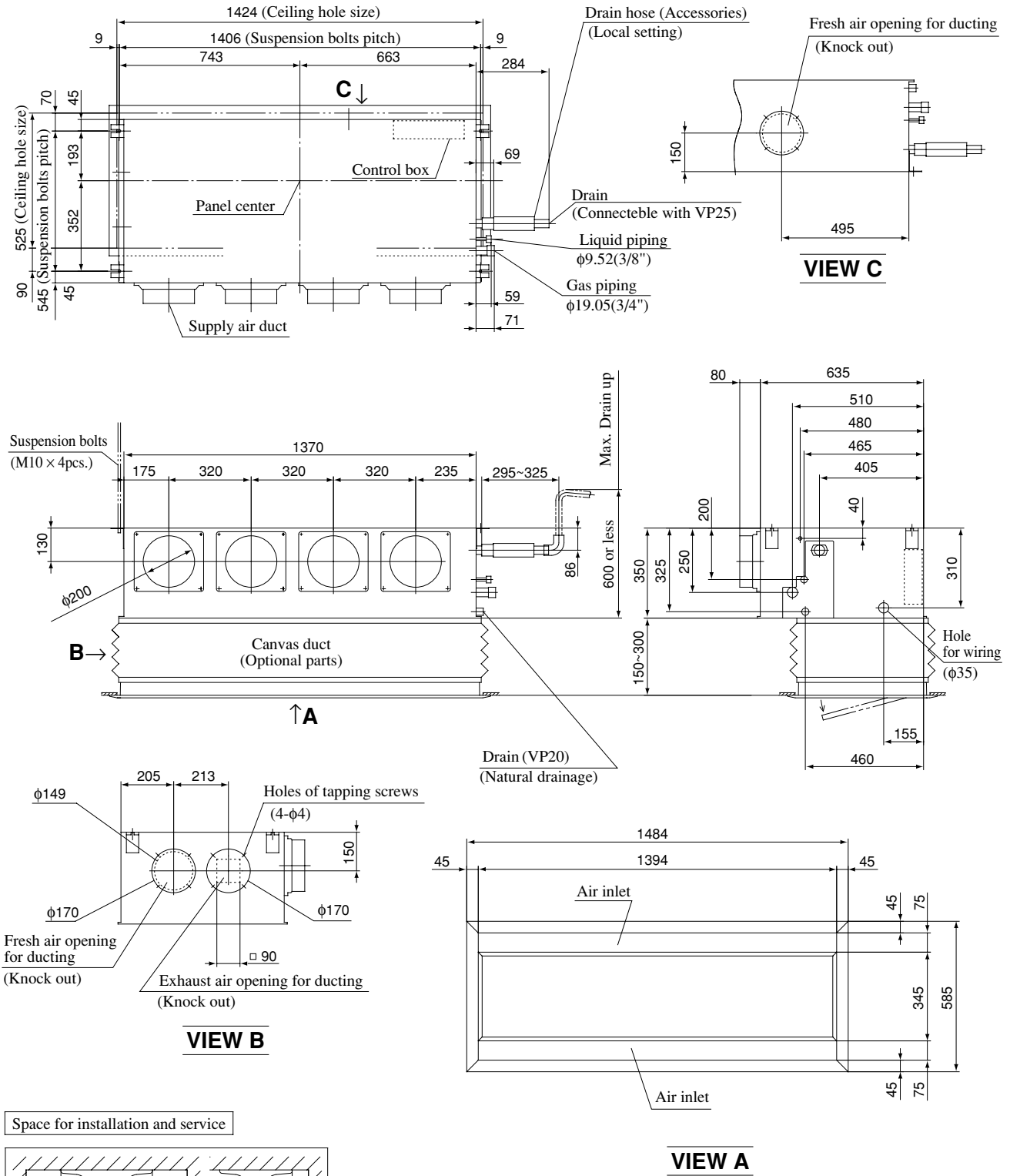
Unit : mm



Models FDRJ112HKXE2, 140HKXE2

Canvas Panel (Model: R-PNLC-46W-E)

Unit : mm

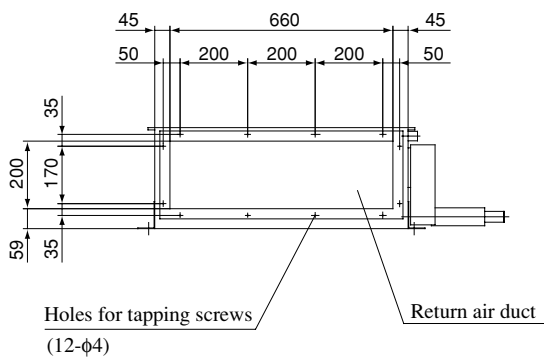
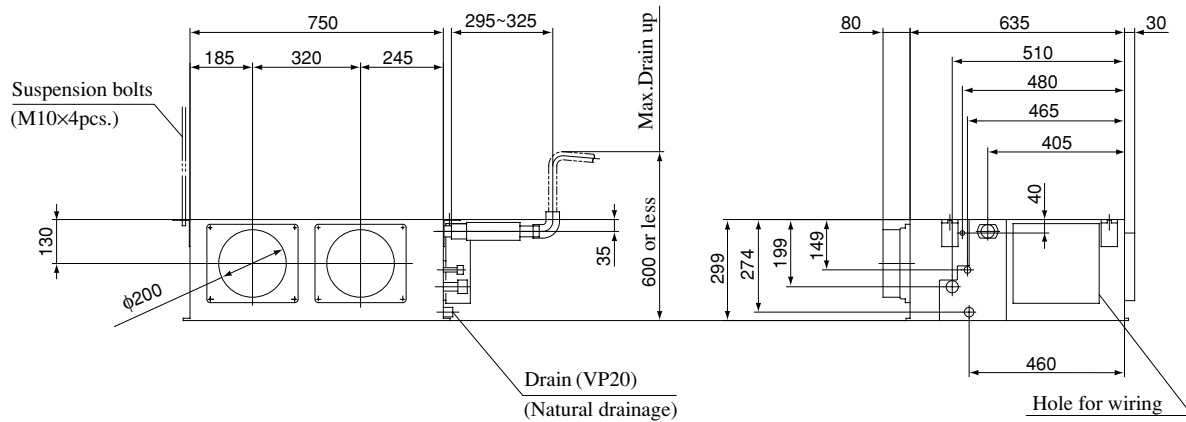
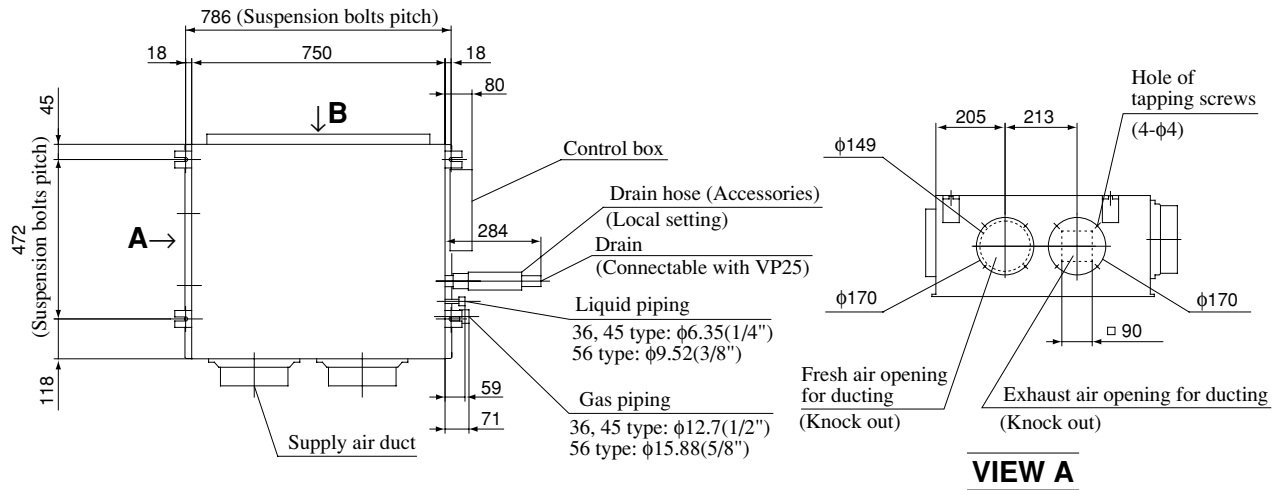


FDC-HKXR

(e) Satellite ducted type (FDUM)

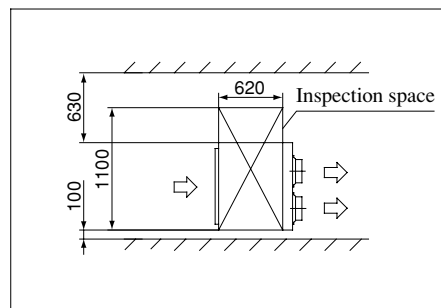
Models FDUMJ36HKXE2, 45HKXE2, 56HKXE2

Unit : mm



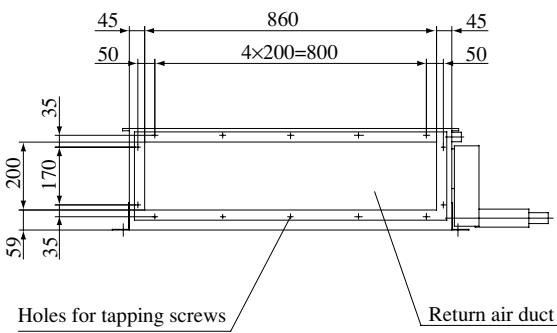
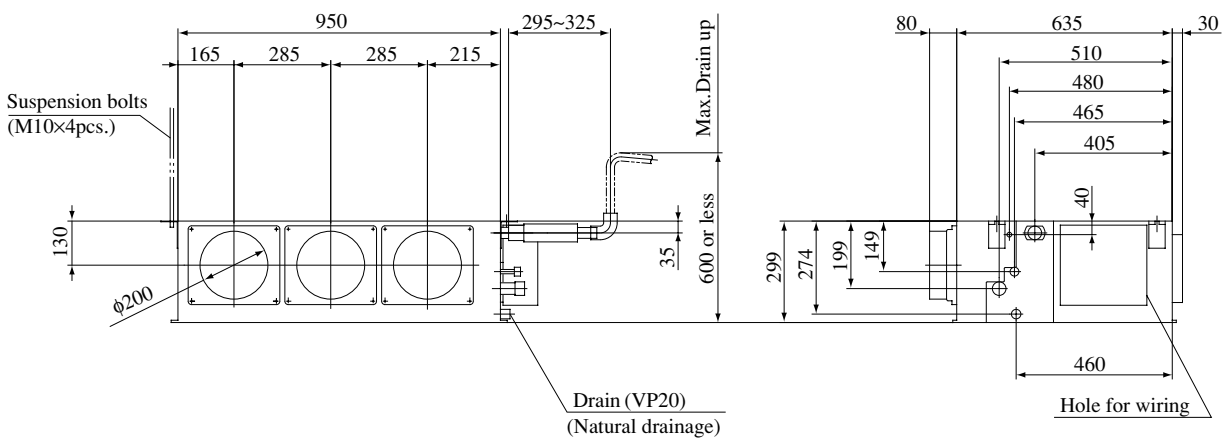
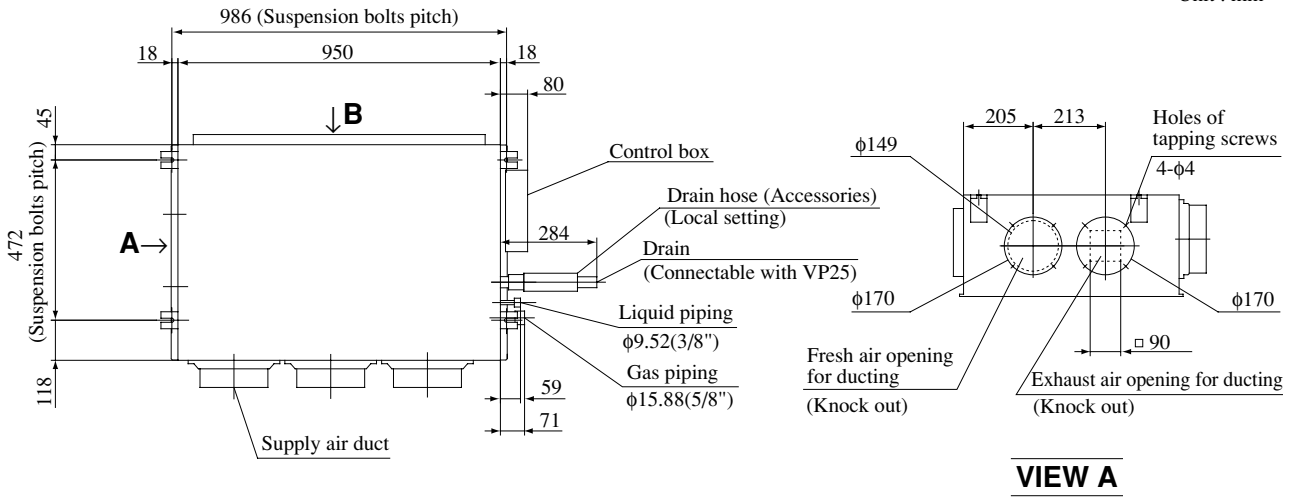
VIEW B

Space for installation and service



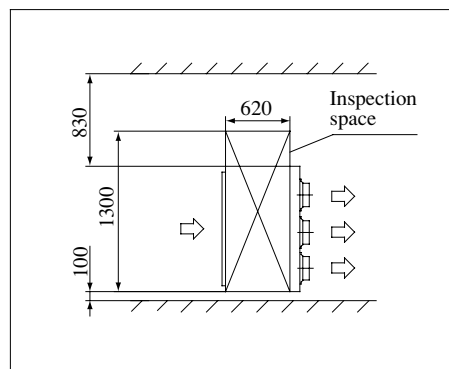
Models FDUMJ71HKXE2, 90HKXE2

Unit : mm



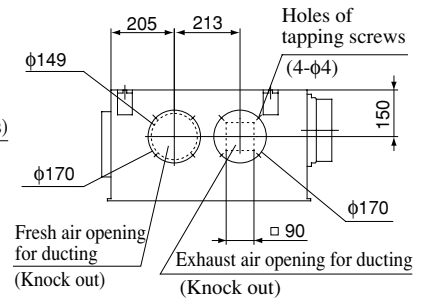
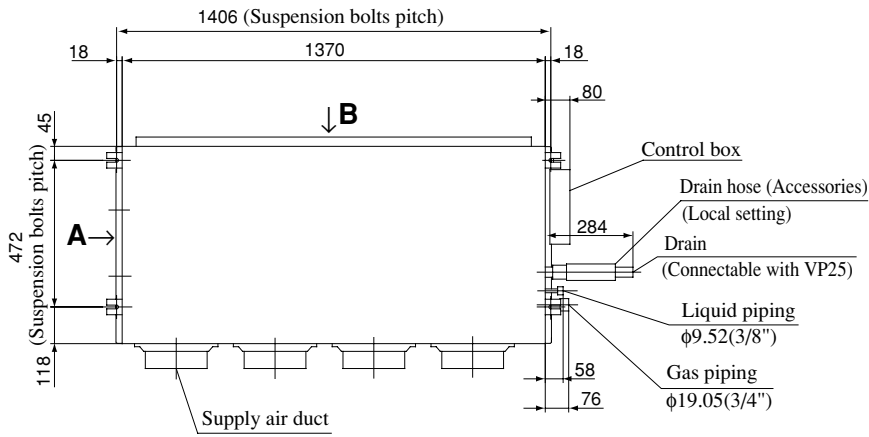
VIEW B

Space for installation and service

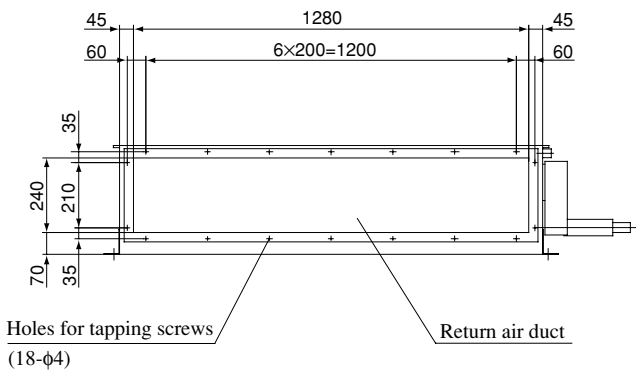
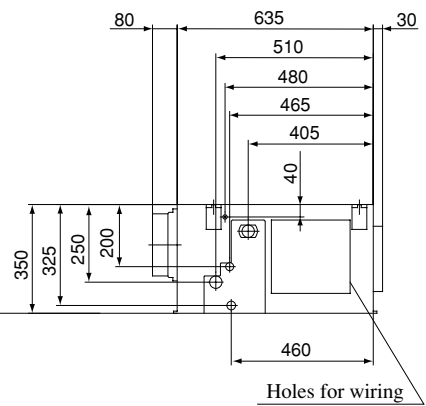
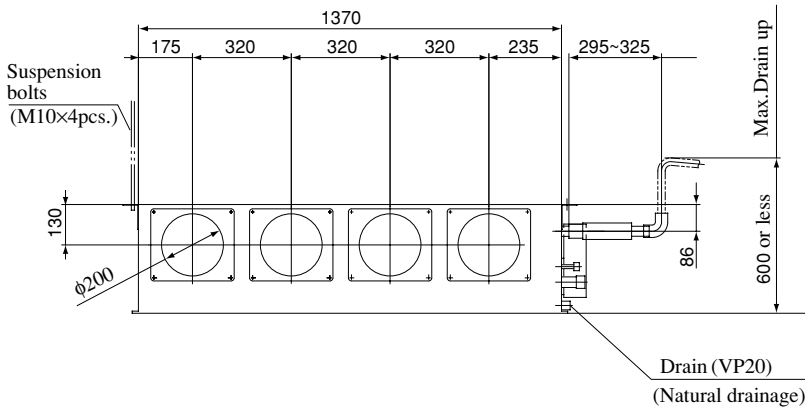


Models FDUMJ112HKXE2, 140HKXE2

Unit : mm

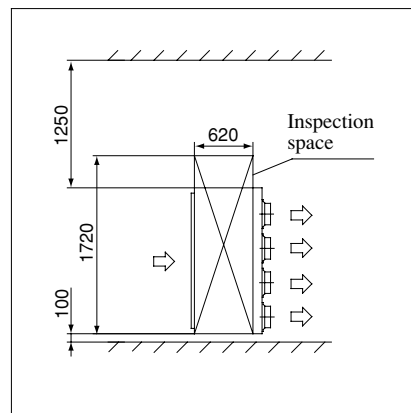


VIEW A



VIEW B

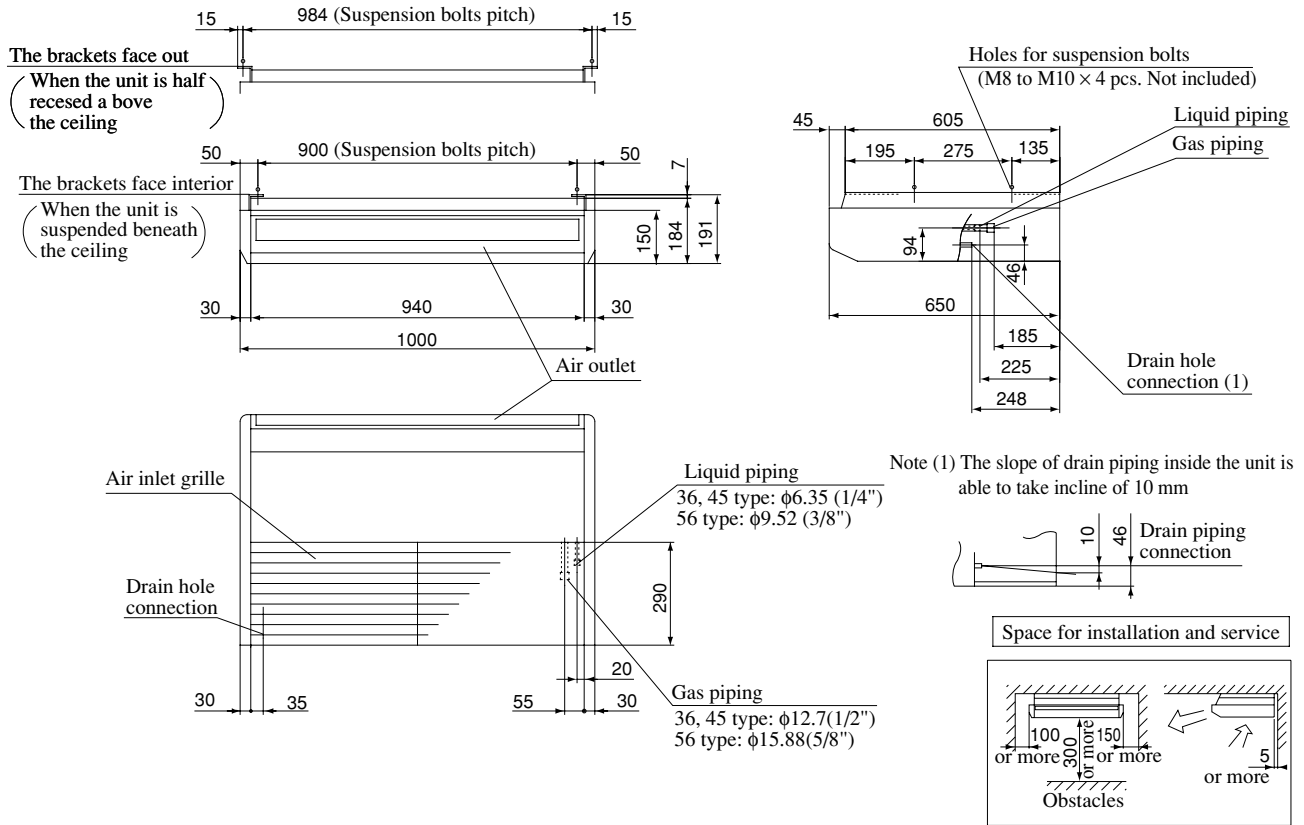
Space for installation and service



(f) Ceiling suspension type (FDE)

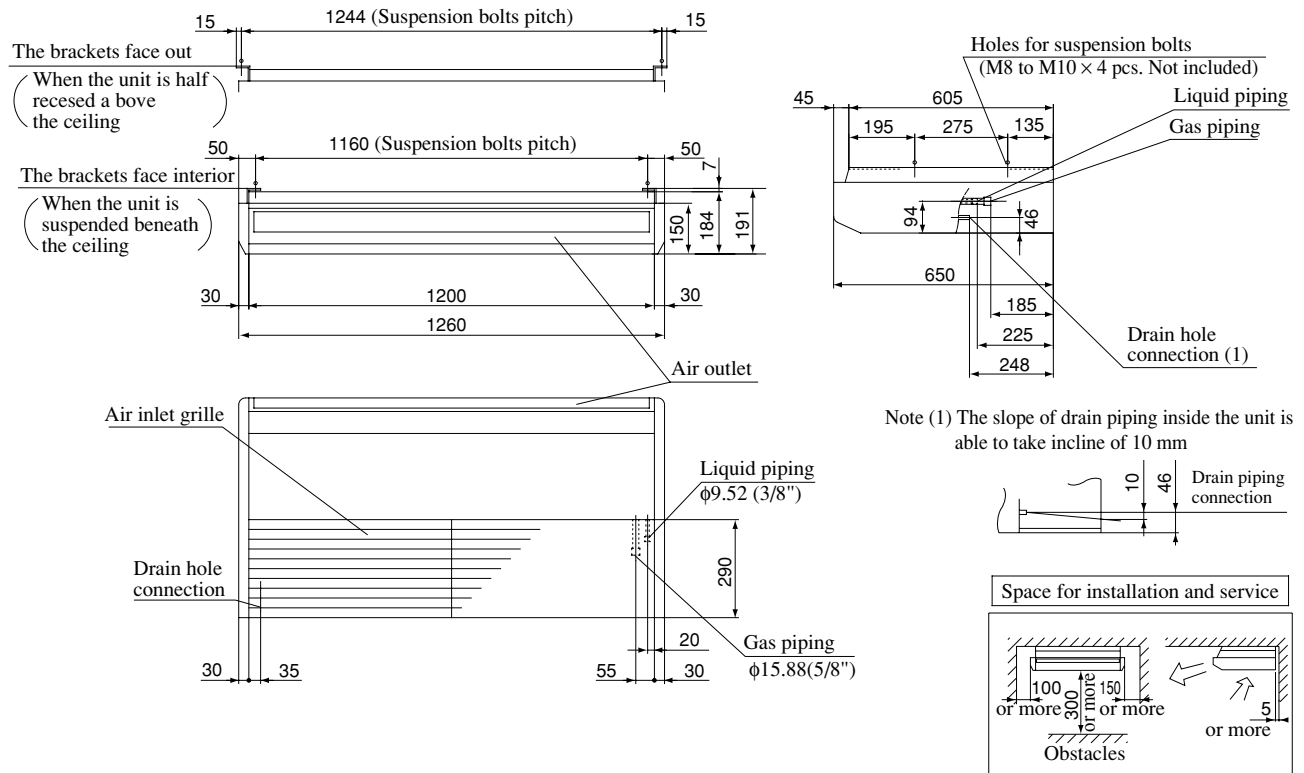
Models FDEJ36HKXE2B, 45HKXE2B, 56HKXE2B

Unit : mm



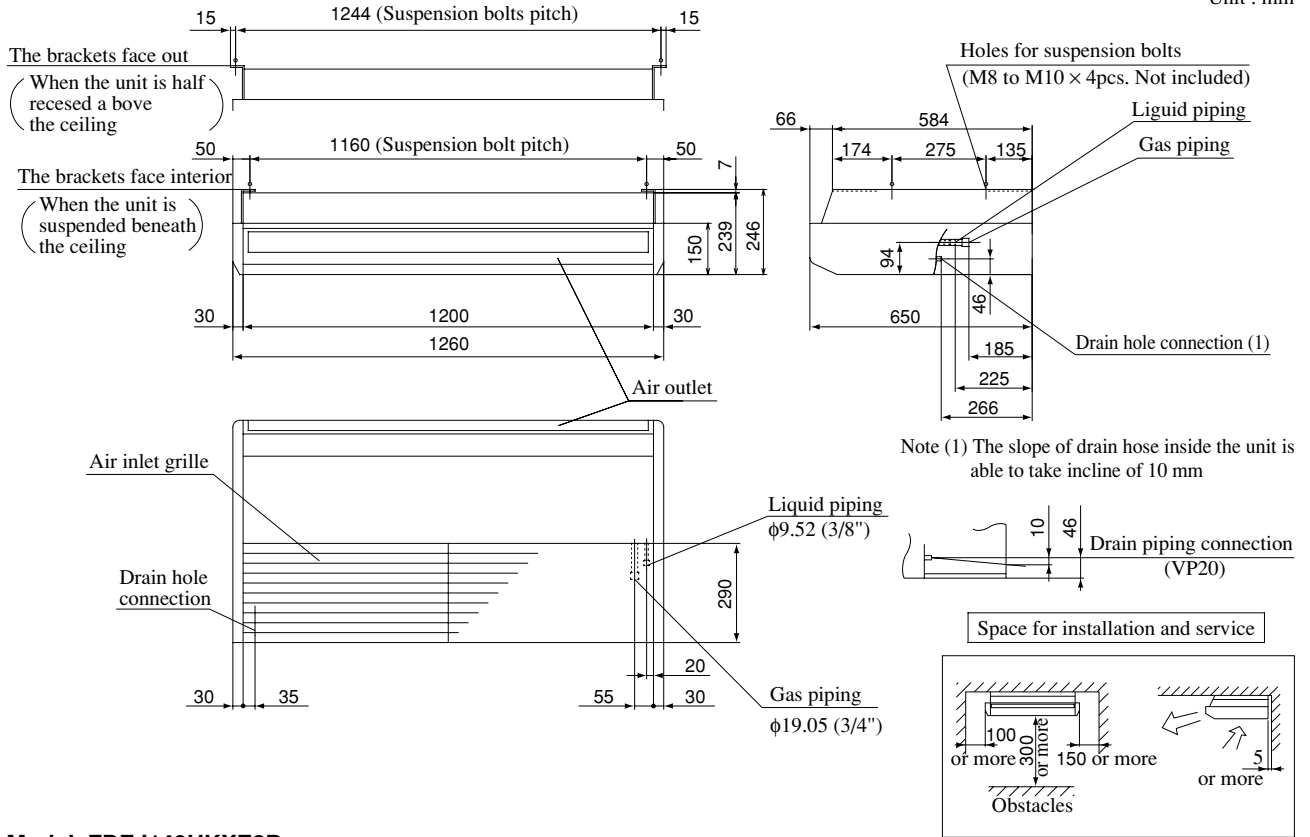
Model FDEJ71HKXE2B

Unit : mm



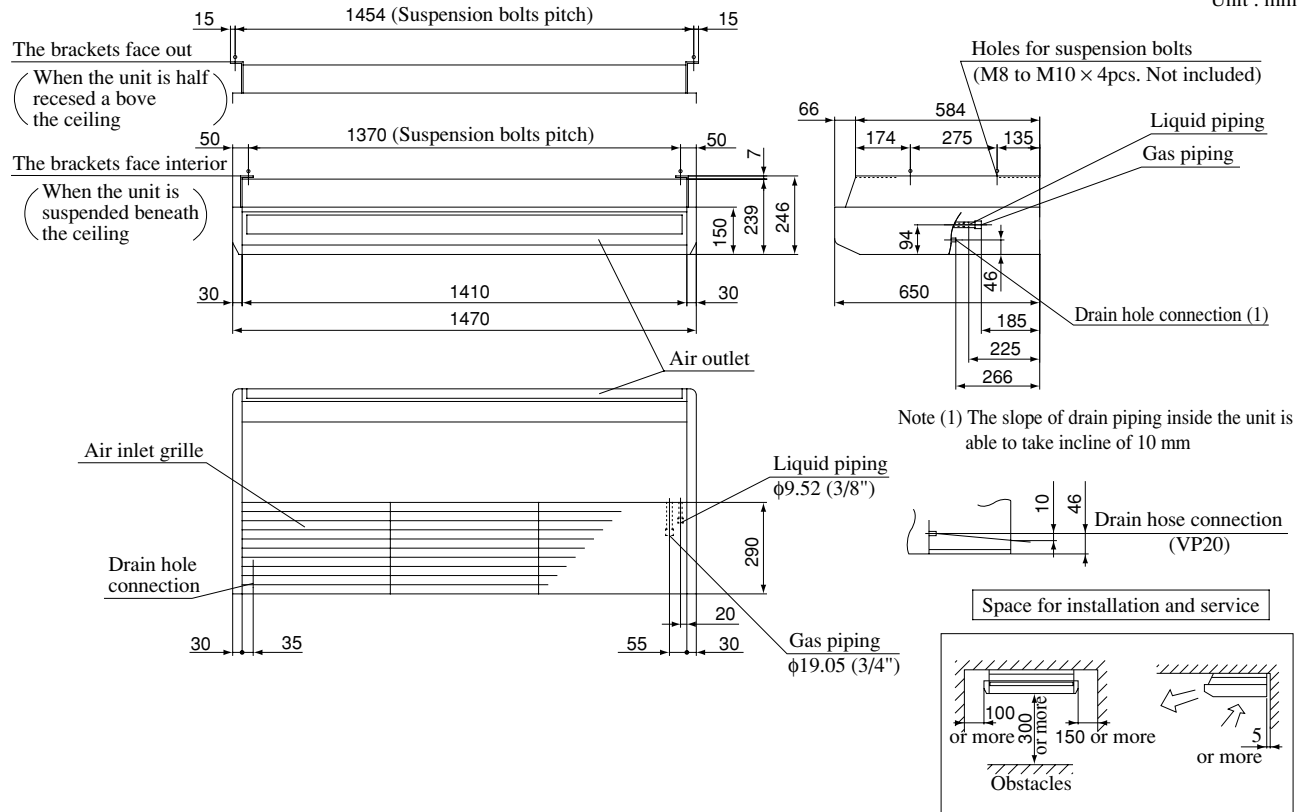
Model FDEJ112HKXE2B

Unit : mm



Model FDEJ140HKXE2B

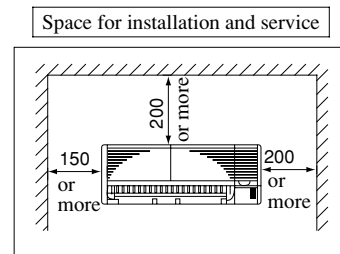
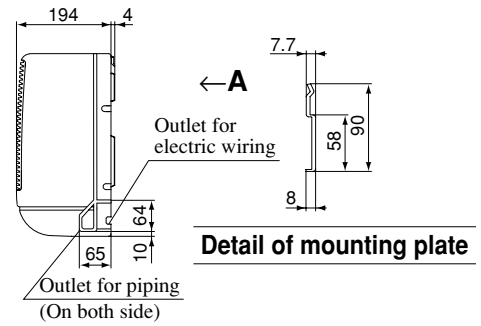
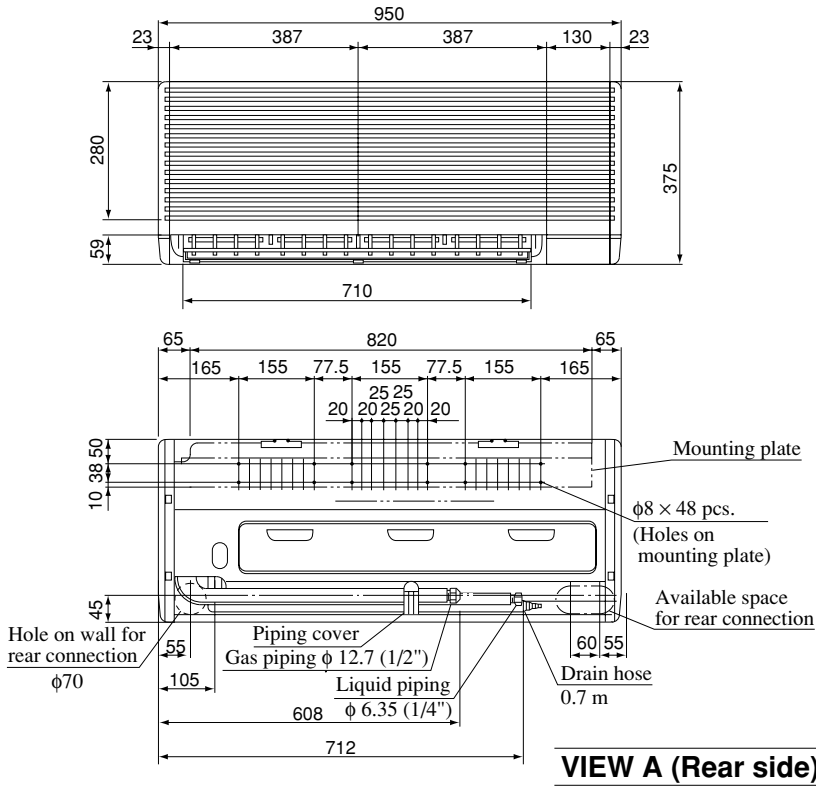
Unit : mm



(g) Wall mounted type (FDK)

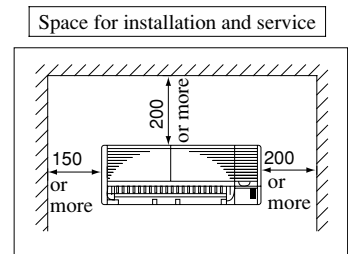
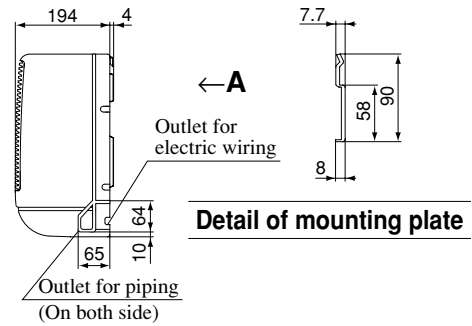
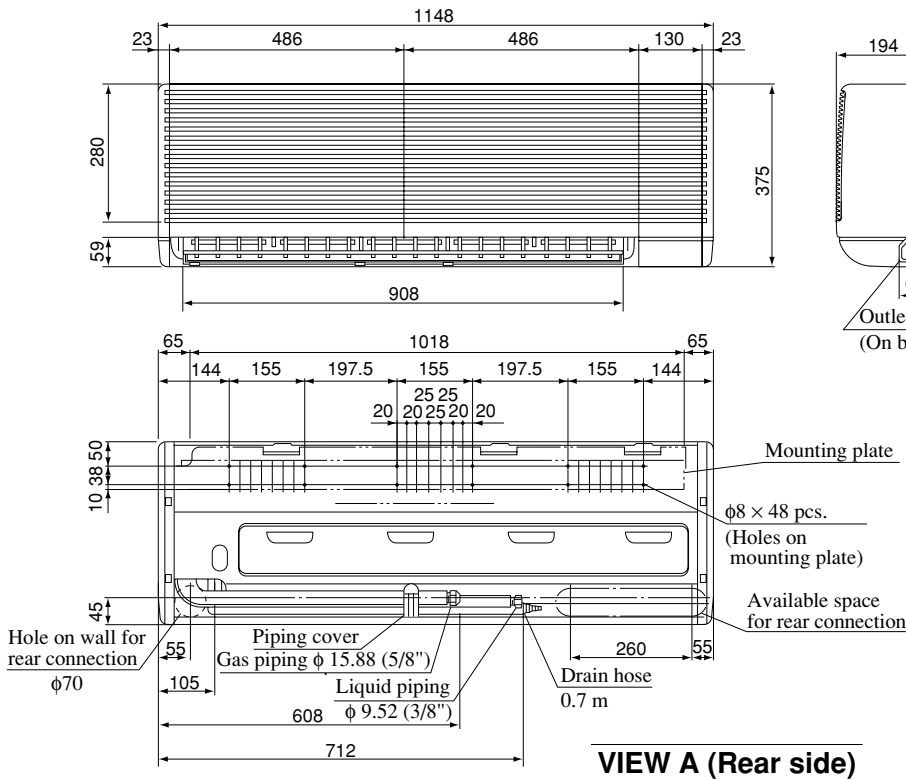
Models FDKJ22HKXE2, 28HKXE2, 36HKXE2, 45HKXE2

Unit : mm



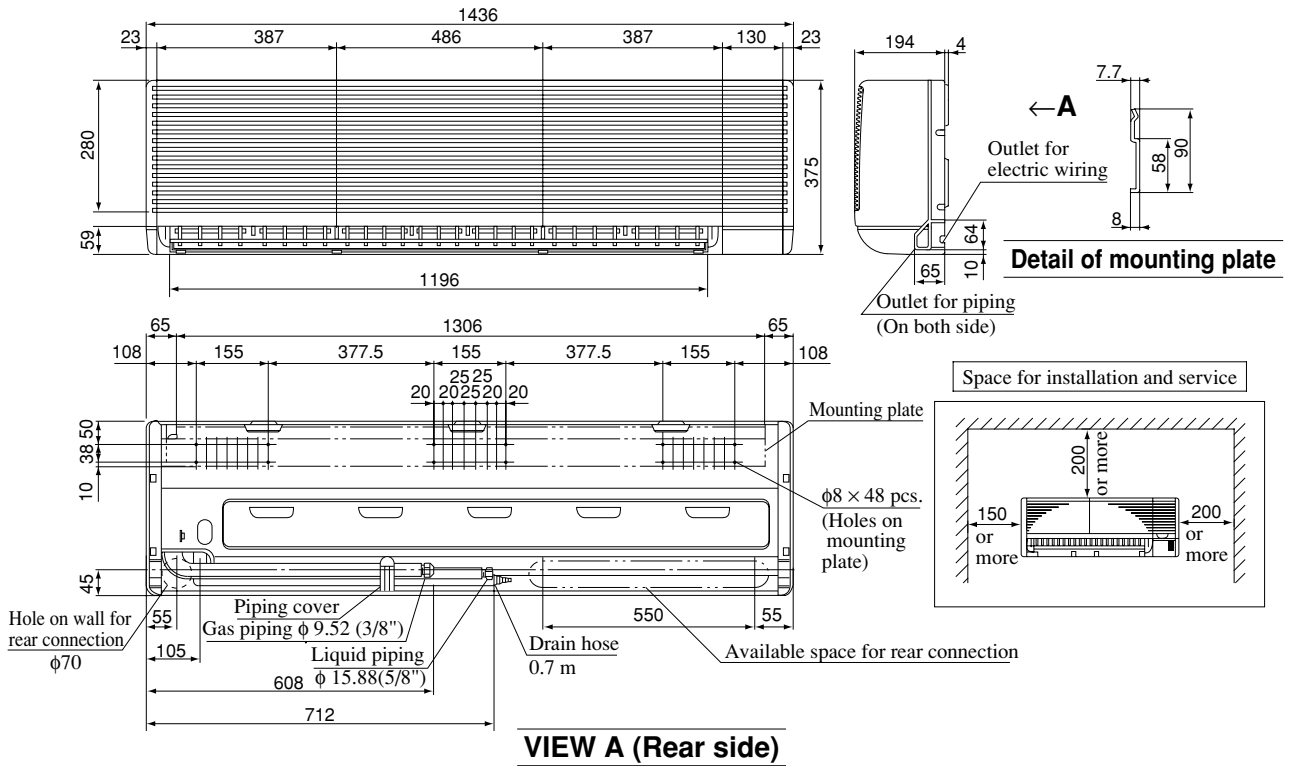
Model FDKJ56HKXE2

Unit : mm



Model FDKJ71HKXE2

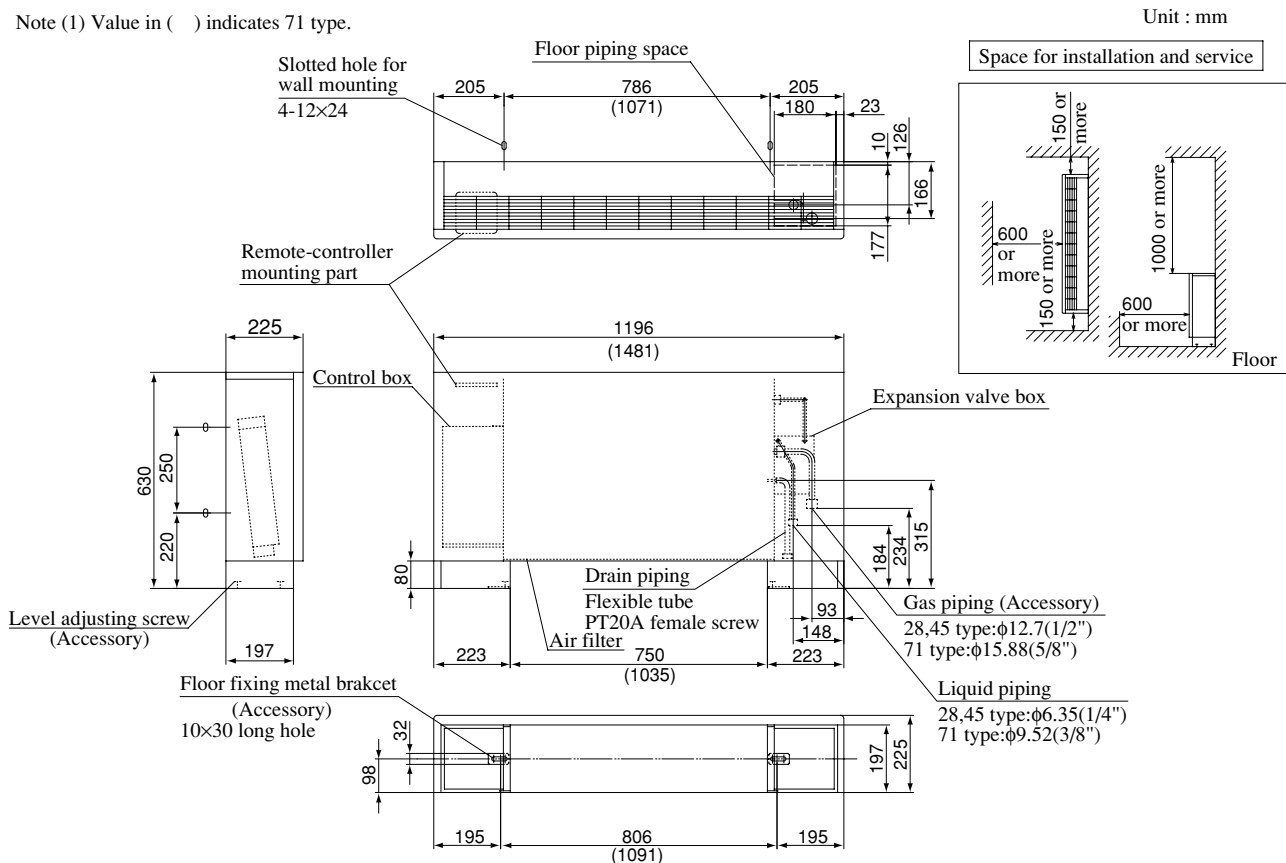
Unit : mm



(h) Floor standing exposed type (FDFL)

Models FDFLJ28HKXE2, 45HKXE2, 71HKXE2

Note (1) Value in () indicates 71 type.

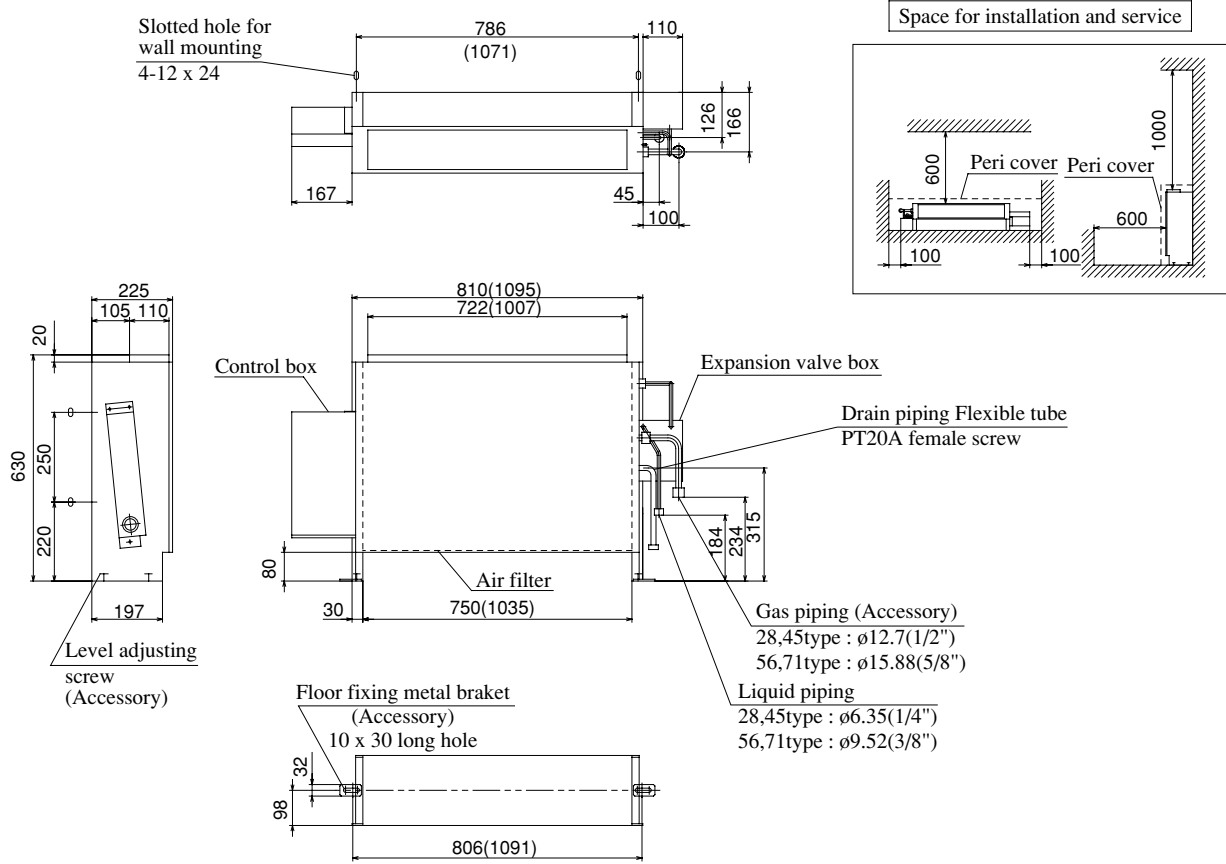


(i) Floor standing hidden type (FDFU)

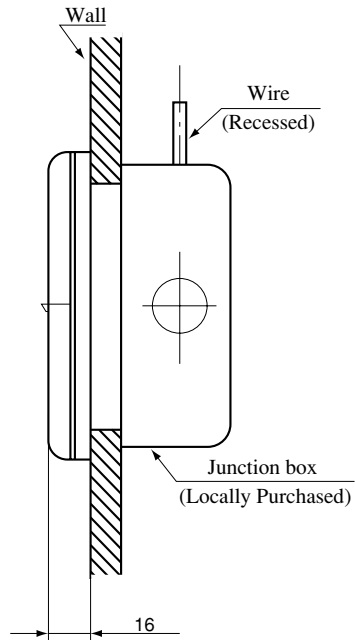
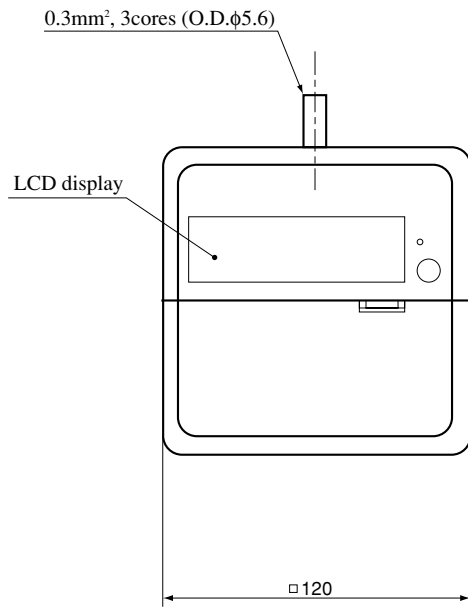
Models FDFUJ28HKXE2, 45HKXE2, 56HKXE2, 71HKXE2

Note (1) Value in () indicates 71 type.

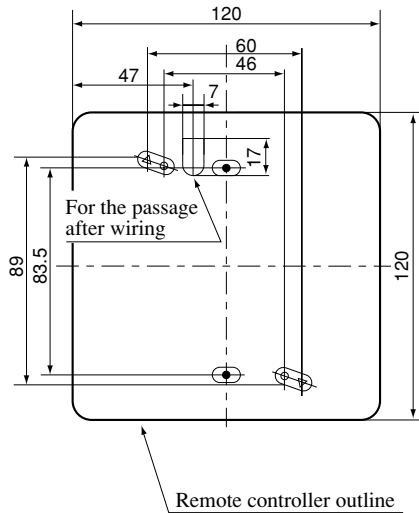
Unit : mm



(2) Remote controller (Optional parts)



Remote controller mounting dimensions



- ◆ Usable JIS box, JIS C 8336
 - Switch box for 1 piece (without cover)
(use of the ● mark hole as illustrated on the left)
 - Switch box for 2 pieces
(use of the ○ mark hole as illustrated on the left)
(without cover)
(use of the △ mark hole as illustrated on the left)
(when installing the cover)

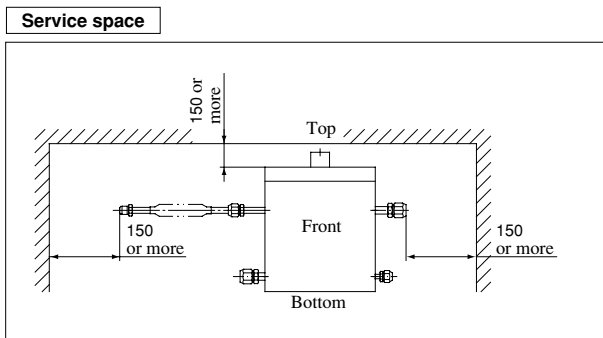
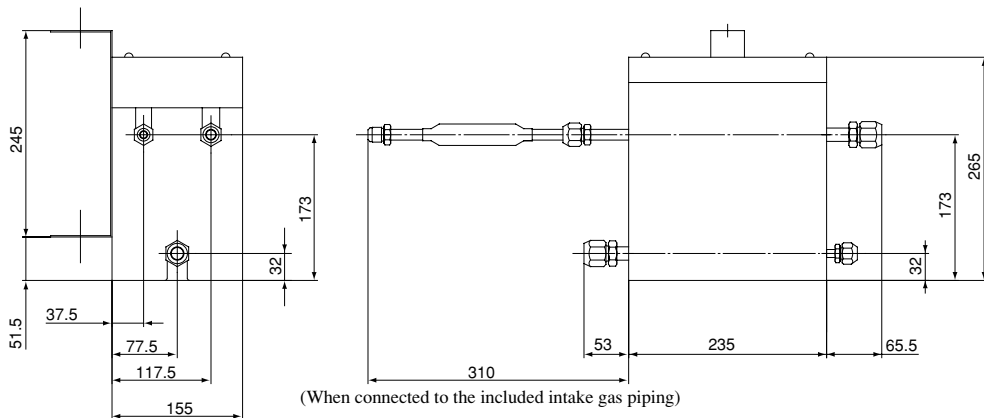
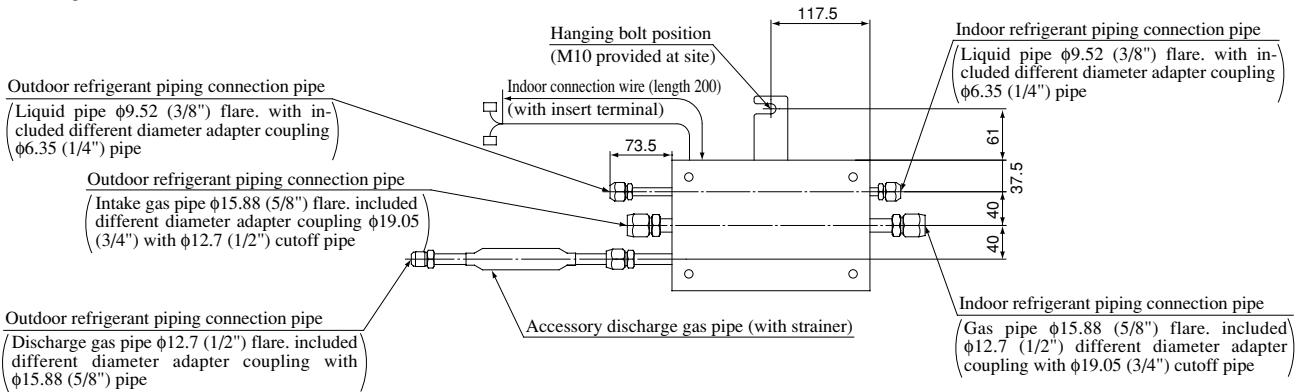
Notes (1) Allowable length of remote controller cable: 600 m

Allowable rang of wire thickness and length

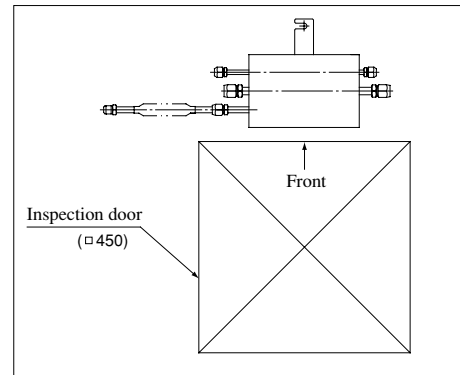
Standard Within	0.3 mm ²	× Within 100 m
	0.5 mm ²	× Within 200 m
	0.75 mm ²	× Within 300 m
	1.25 mm ²	× Within 400 m
	2 mm ²	× Within 600 m

(3) Individual flow divide controller (Optional Part)

HPFD01R-E



• Inspection door



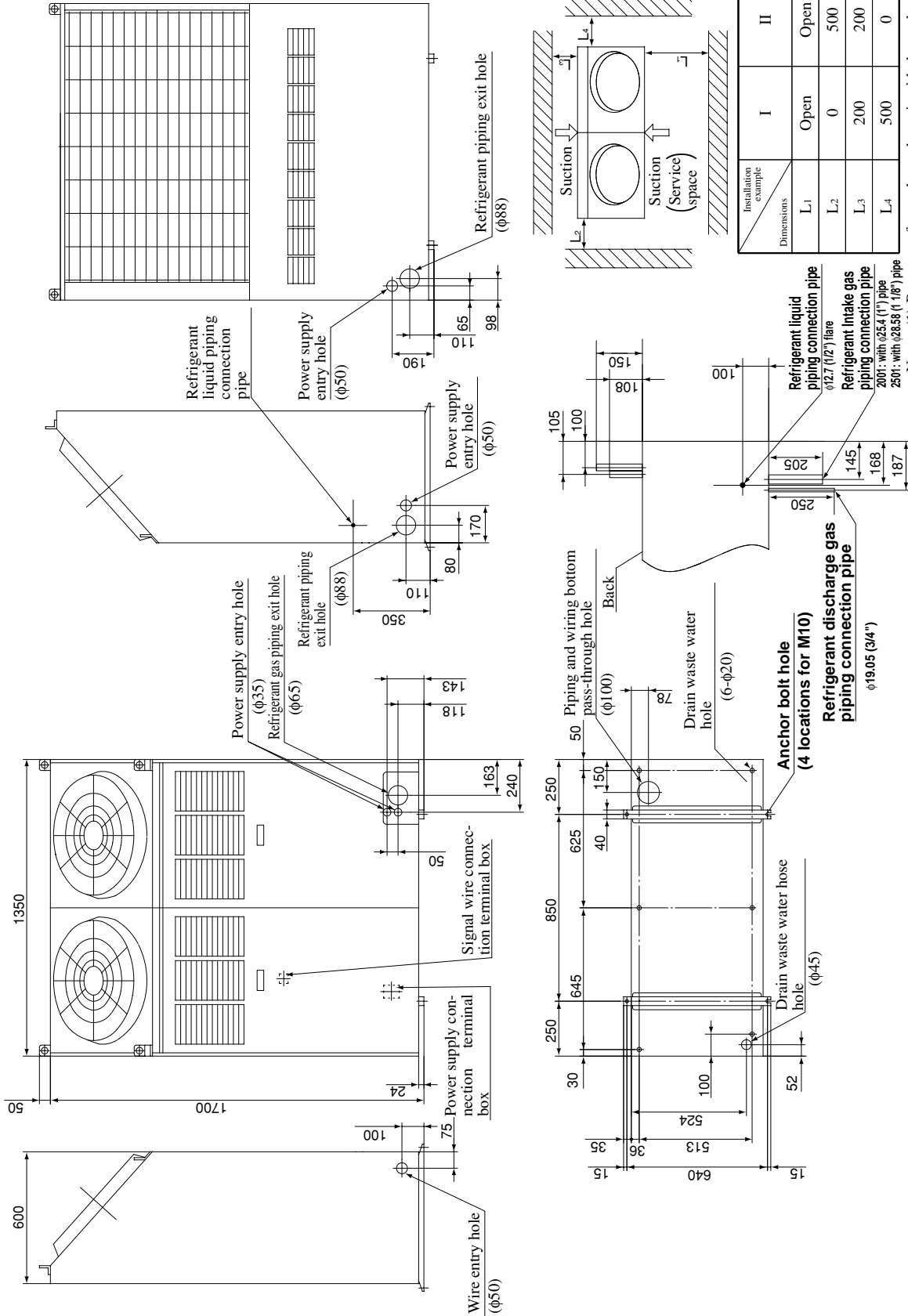
- Notes (1) Do not operate the unit without the indoor unit connected to the individual flow divide controller.
 (2) Be sure to install the included strainer in the outdoor discharge gas connection pipe.
 (3) Do not install the flow divide controller upside down. Install so that the body is level.
 (4) Weight: 6 kg

- (5) Use the indoor unit connection capacity to select a different diameter adapter coupling from the following table. (Use the flare nuts that are included with the flow divide controller.)

Different diameter adapter coupling				
For indoor gas piping	For indoor liquid piping	For outdoor intake gas piping	For outdoor discharge gas piping	For outdoor liquid piping
1 unit	1 unit	1 unit	1 unit	1 unit

(4) Outdoor unit

Models FDCP2001HKXRE2, 2501HKXRE2



- Notes (1) Be sure to fasten down the unit with the anchor bolts.
- (2) If in a location with strong winds, position the air discharge outlet perpendicular to the wind direction.
- (3) Provide at least 1 m of space above the unit.

Dimensions after connecting included refrigerant piping (Top view)

Unit: mm

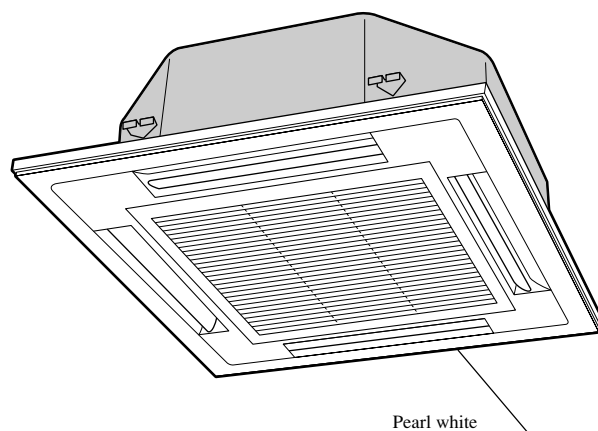
Installation example	Dimensions			
	I	II	III	III
L-1	Open	Open	500	500
L-2	0	500	500	500
L-3	200	200	200	200
L-4	500	0	500	500

20.2.4 Exterior appearance

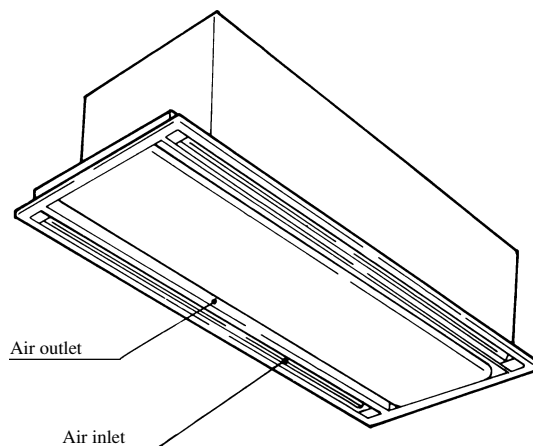
(1) Indoor unit

(a) Ceiling recessed type (FDT)

- Decorative panel



(b) 2-way outlet ceiling recessed type (FDTW)



- Decorative panel

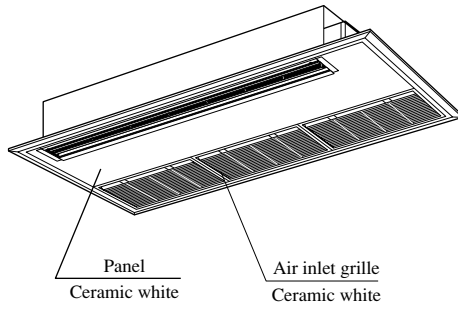
(i) Standard type

Panel part No.	Type	Panel color	Applicable model
TW-PSA-22W-E	With Auto swing	Pearl white	FDTW28, 45, 56 type
TW-PSA-32W-E			FDTW71, 90 type
TW-PSA-42W-E			FDTW112, 140 type

(ii) Attachment of ceiling material type

Panel part No.	Type	Panel color	Applicable model
TW-PSB-28W-E	With Auto swing	Misty white	FDTW28, 45, 56 type
TW-PSB-38W-E			FDTW71, 90 type
TW-PSB-48W-E			FDTW112, 140 type

(c) 1-way outlet ceiling recessed type (FDTS)

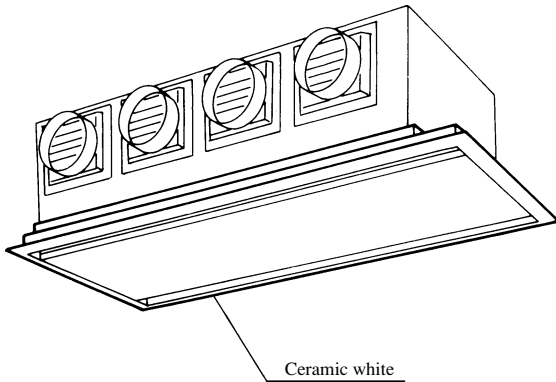


- Decorative panel

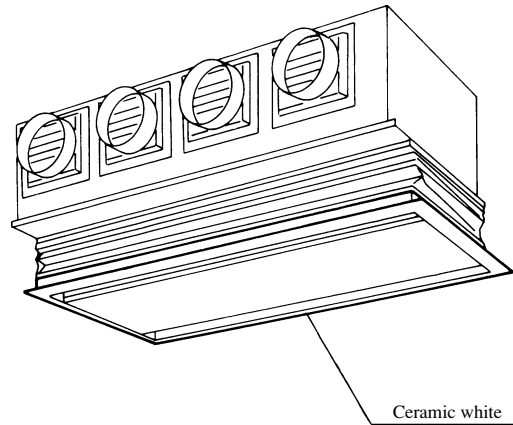
Panel part No.	Type	Panel color	Applicable model
TS-PSA-26W-E	With Auto swing	Misty white	FDTS22, 28, 36, 45 type
TS-PSA-36W-E			FDTS71 type

(d) Cassetteria type (FDR)

Silent panel type

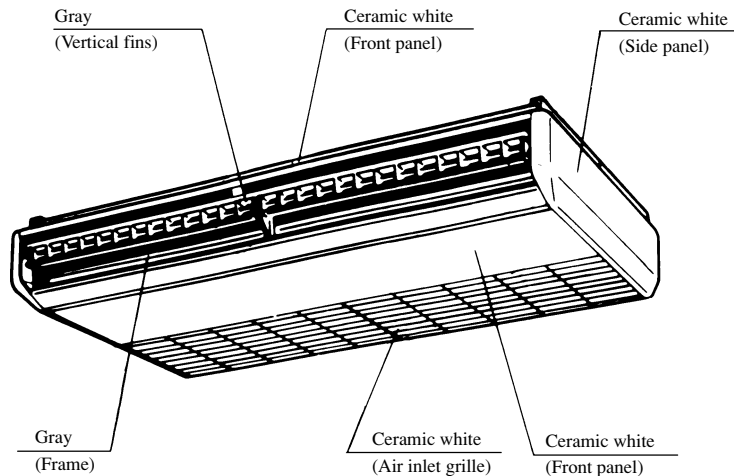


Canvas-duct panel type

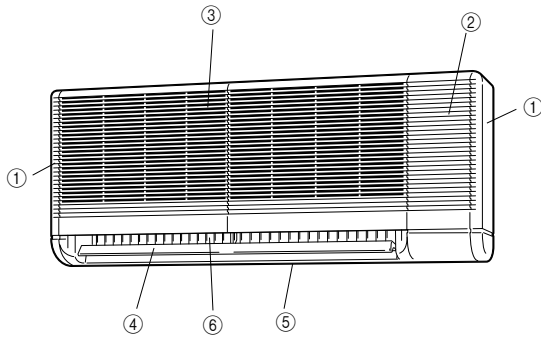


(e) Satellite ducted type (FDUM) Zinc steel plate

(f) Ceiling suspension type (FDE)

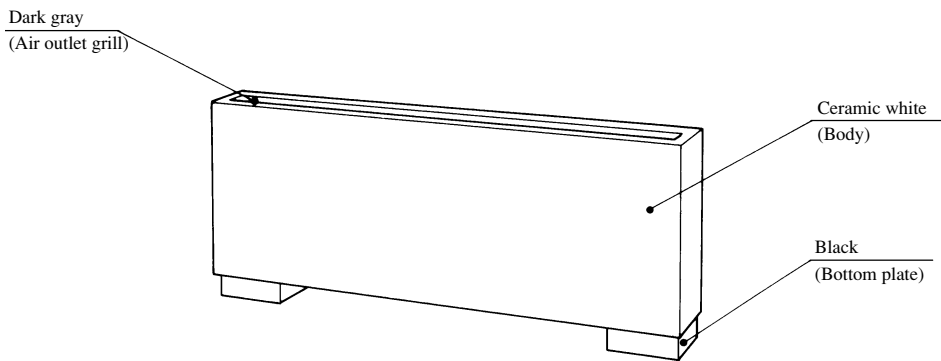


(g) Wall mounted type (FDK)



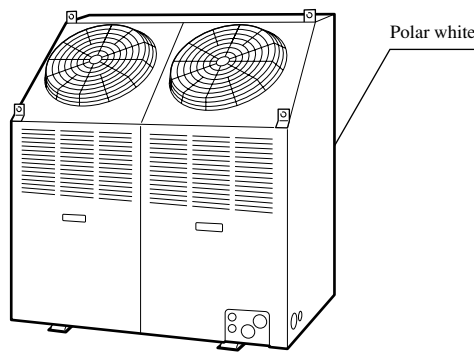
No.	Parts name	Color
①	Side plate	Ceramic white
②	Front panel	
③	Air inlet grill	
④	Air outlet louver	
⑤	Bottom plate	
⑥	Right and Left louvers	Light gray

(h) Floor standing exposed type (FDL)



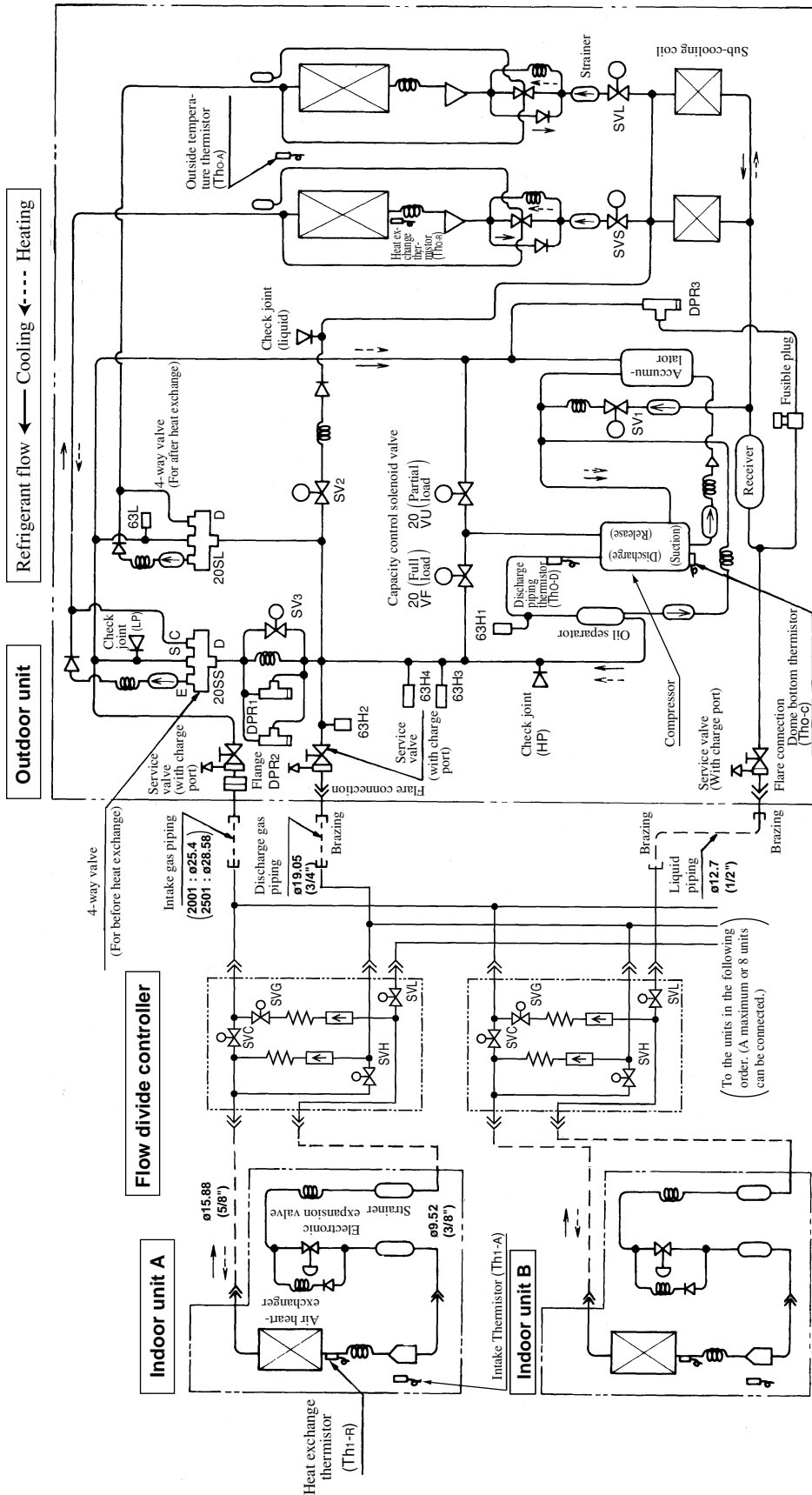
(i) Floor standing hidden type (FDU) Zinc steel plate

**(2) Outdoor unit
Models FDCP224HKXRE2, 280HKXRE2**



20.2.5 Piping System

Models FDCP2001HKXRE2, 2501HKXRE2



(2) Preset point of protective devices

- 63H₁: 3.24 open, 2.65 closed MPa (33 open, 27 closed kgf/cm²) [for protective]
- 63H₂: 2.26 open, 2.84 closed MPa (23 open, 29 closed kgf/cm²) [for high-pressure control (Hz decrease)]
- 63H₃: 2.50 open, 2.11 closed MPa (25.5 open, 21.5 closed kgf/cm²) [for high-pressure decrease control]
- 63H₄: 1.67 open, 1.86 closed MPa (17 open, 19 closed kgf/cm²) [for high-pressure increase control]
- 63L: 1.96 open, 2.75 closed MPa (20 open, 28 closed kgf/cm²) [for low-pressure increase control]
- DPR_{1,2}: 1.77 open MPa (18 open kgf/cm²) DPR₃: 2.35 open MPa (24 open kgf/cm²)

(3) Function of thermostat

- Th-A: For low outside air cooling/heating, frost removal control
 - Th-R: For frost removal control
 - Th-D: For Discharge piping temperature control
 - Th-C: For dome bottom temperature control
 - Th-R: For fan control during heating
- For frost prevention during cooling

(1) Solenoid valve operation chart

	During compressor capacity control		During discharge temperature and dome bottom temperature control
	Full load	Partial load	
SV ₁	—	—	Open
20VF	Open	Closed	—
20VU	Closed	Open	—

Note (1) The solenoid valve is open during magnetic induction and closed when there is not magnetic induction.

(4) Flow divide controller solenoid valve action chart

	Power supply OFF	Power supply ON	Cooling ⁽¹⁾	Heating ⁽¹⁾	Blower	Detrost
SVH	Closed	Closed	Closed	Open	Closed	Closed
SVL	Closed	Open	Open	Closed	Open	Open

Note (1) Including for pauses, stops, and errors.

20.2.6 Selection chart

(1) 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.

Indoor unit

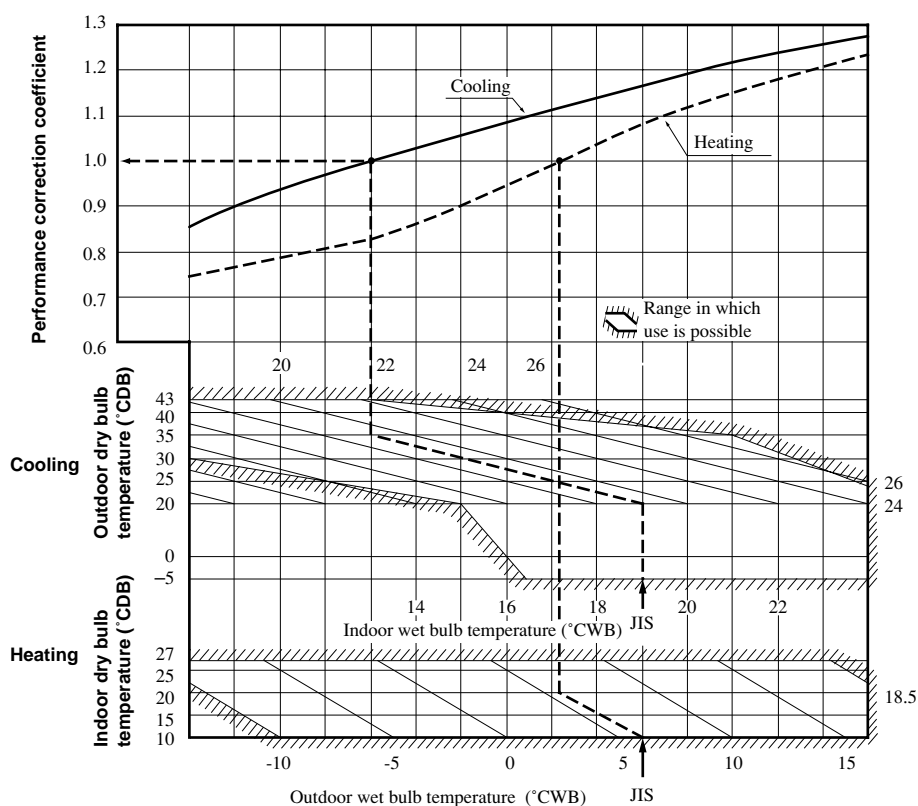
$$\text{Each indoor unit} = \text{System performance} \times \frac{\text{Indoor unit capacity}}{\text{Indoor unit capacity when operating simultaneously.}}$$

Outdoor unit

$$\text{System performance} = \text{Performance from connected capacity} \times \text{correction coefficient from indoor and outdoor temperature conditions} \times (\text{correction coefficient from piping distance} - \text{correction coefficient from difference between indoor and outdoor temperature}) \times (\text{correction coefficient from condensation when heating}).$$

Note: Refer to page 997 and 998 for the correction coefficient.

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



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

Equivalent piping length [m] ⁽¹⁾	5	10	15	20	25	30	35	40	45	50
Cooling	1.0	0.99	0.975	0.965	0.95	0.94	0.925	0.915	0.9	0.89
Heating	1.0	1.0	1.0	1.0	1.0	0.995	0.995	0.99	0.99	0.985
Equivalent piping length [m]	55	60	65	70	75	80	85	90	95	100
Cooling	0.875	0.865	0.85	0.84	0.825	0.815	0.8	0.79	0.775	0.765
Heating	0.985	0.98	0.98	0.975	0.975	0.97	0.97	0.965	0.965	0.96
Equivalent piping length [m]	105	110	115	120	125					
Cooling	0.745	0.74	0.725	0.715	0.7					
Heating	0.96	0.955	0.955	0.95	0.95					

Note (1) Equivalent piping length can be obtained by calculating as follows.

$$\text{Equivalent piping length} = \text{Real gas piping length} + \text{Number of bends in gas piping} \times \text{Equivalent piping length of bends.}$$

Equivalent length of each joint	Unit : m/one part				
Gas piping size	φ12.7	φ15.88	φ19.05	φ25.4	φ28.58
Joint (90°elbow)	0.10	0.10	0.15	0.15	0.20

- (c) When the outdoor unit is located at a lower height than the indoor unit in cooling operation and when the outdoor unit is located at a higher height than the indoor unit in heating operation, the following values should be subtracted from the values in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	5 m	10 m	15 m	20 m	25 m	30 m
Adjustment coefficient	0.01	0.02	0.03	0.04	0.05	0.06

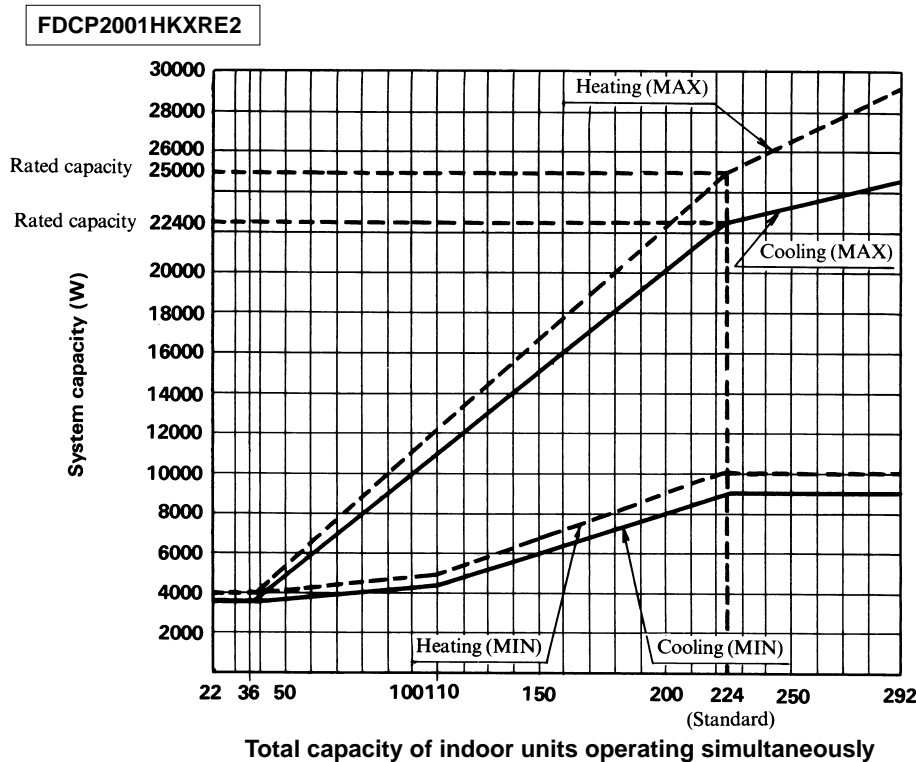
Height difference between the indoor unit and outdoor unit in the vertical height difference	35 m	40 m	45 m	50 m
Adjustment coefficient	0.07	0.08	0.09	0.10

- (d) Correction of heating capacity in relation to the frost on the outdoor unit heat exchanger

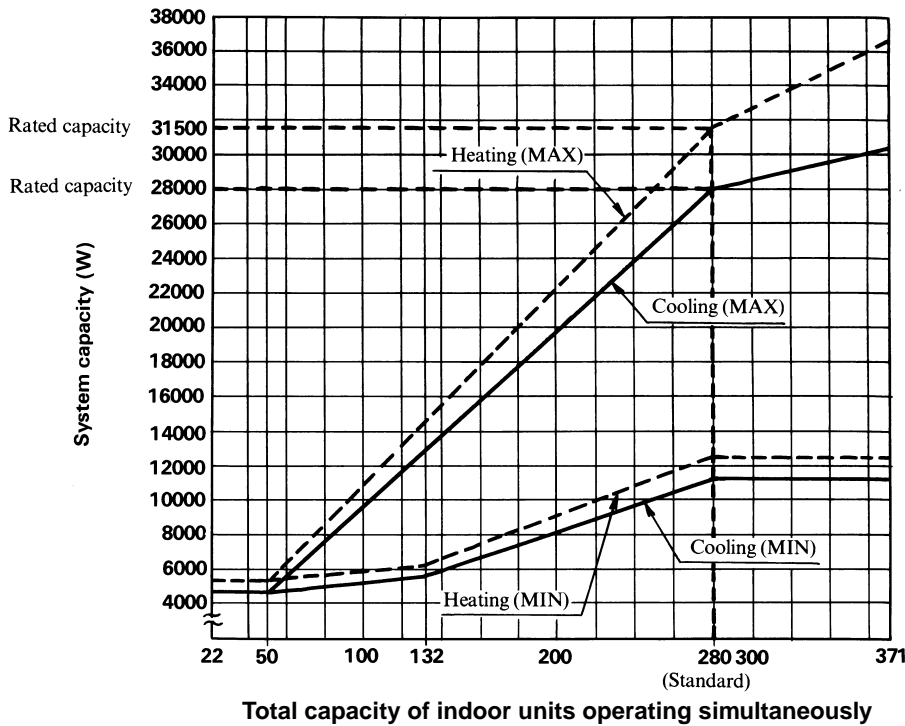
Air inlet temperature of outdoor unit in °C WB	-11	-9	-7	-5	-3	-1	1	3	5
Adjustment coefficient	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

The correction factors will change drastically according to weather conditions. So necessary adjustment should be made empirically according to the weather data of the particular area.

- (2) Correction of outdoor unit capacity according to capacity of indoor unit to be operated simultaneously



FDCP2501HKXRE2



Capacity Correction Calculations

(The procedure for both cooling and heating is the same.)

Example

Conditions

• Unit (50 Hz)

Outdoor unit FDCP2501HKXRE2 1 unit

Indoor unit FDTJ90HKXE2 - 1 unit

FDTJ140HKXE2 - 1 unit

FDTWJ28HKXE2B - 1 unit

FDTSJ22HKXE2B - 1 unit

• Piping length (Shall be common among units) 60 meters (suitable length)

• Difference in height between indoor and outdoor units 15 meters

(Outdoor unit is lower)

• Air conditions Outdoor air temperature 33°CDB

Indoor temperature 26°CDB 19 °CWB

Correction when cooling?

Outdoor unit performance correction

① Total connection capacity from indoor unit ... $90 \times 1 \text{ unit} + 140 \times 1 \text{ unit} + 28 \times 1 \text{ unit} + 22 \times 1 \text{ unit} = 280$
 $\approx 28\text{kW}$ (From table above)

② Performance correction from indoor and outdoor temperatures
 $28 \times 1.02 \approx 28.5\text{kW}$

③ Performance correction from piping length and difference in height between indoor and outdoor units
 $28.5 (0.865 - 0.03) \approx 23.8\text{kW}$ (Actual performance)

Performance correction of indoor unit

$$\text{Performance correction of indoor unit} = \text{System performance} \times \frac{\text{Indoor unit capacity}}{\text{Total capacity of indoor units operating simultaneously}}$$

[Example] FDTJ90HKXE2

$$23.8 \times \frac{90}{280} \approx 7.65\text{kW}$$

Performance of indoor unit

FDTJ90HKXE2 7.65kW (Actual performance)

FDTJ140HKXE2 11.9kW (Actual performance)

FDTWJ28HKXE2B 2.38kW (Actual performance)

FDTSJ22HKXE2B 1.87kW (Actual performance)

(3) Sensible heat capacity

(a) FDT Series

Model FDTJ28HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	2.89	2.58	2.98	2.60	3.05	2.61	3.13	2.63	3.21	2.64	3.28	2.6
	29	2.83	2.55	2.91	2.57	2.99	2.59	3.07	2.61	3.15	2.62	3.22	2.6
	31	2.76	2.52	2.85	2.55	2.92	2.56	3.01	2.58	3.09	2.60	3.16	2.6
	33	2.68	2.49	2.77	2.52	2.86	2.54	2.95	2.56	3.02	2.58	3.10	2.5
	35	2.60	2.46	2.70	2.49	2.80	2.52	2.88	2.54	2.95	2.55	3.04	2.5
	37	2.53	2.43	2.63	2.46	2.72	2.49	2.81	2.51	2.89	2.53	2.98	2.5
	39	2.46	2.40	2.56	2.43	2.64	2.46	2.74	2.49	2.83	2.51	2.91	2.5

Model FDTJ36HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	3.72	3.19	3.83	3.22	3.93	3.24	4.02	3.25	4.12	3.27	4.21	3.2
	29	3.64	3.16	3.75	3.19	3.84	3.20	3.95	3.22	4.05	3.24	4.14	3.2
	31	3.55	3.12	3.66	3.15	3.76	3.17	3.87	3.20	3.97	3.21	4.06	3.2
	33	3.45	3.08	3.57	3.11	3.68	3.14	3.79	3.17	3.88	3.18	3.99	3.2
	35	3.35	3.04	3.47	3.08	3.60	3.11	3.71	3.14	3.80	3.15	3.91	3.1
	37	3.25	3.00	3.38	3.04	3.50	3.07	3.61	3.10	3.72	3.13	3.83	3.1
	39	3.16	2.96	3.29	3.00	3.40	3.04	3.52	3.07	3.64	3.10	3.75	3.1

Model FDTJ45HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
15	27	4.65	3.99	4.78	4.02	4.91	4.05	5.03	4.07	5.15	4.09	5.27	4.1
	29	4.55	3.95	4.68	3.98	4.80	4.01	4.93	4.03	5.06	4.05	5.18	4.0
	31	4.44	3.90	4.58	3.94	4.70	3.97	4.83	3.99	4.96	4.02	5.08	4.0
	33	4.31	3.85	4.46	3.89	4.60	3.93	4.73	3.96	4.86	3.98	4.98	4.0
	35	4.19	3.80	4.34	3.85	4.50	3.89	4.64	3.92	4.75	3.94	4.88	3.9
	37	4.07	3.75	4.23	3.80	4.37	3.84	4.52	3.88	4.65	3.91	4.78	3.9
	39	3.95	3.71	4.11	3.76	4.25	3.80	4.40	3.84	4.55	3.87	4.68	3.9

Model FDTJ56HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
15	27	5.78	4.48	5.95	4.51	6.11	4.53	6.26	4.54	6.41	4.55	6.55	4.5
	29	5.66	4.43	5.83	4.46	5.98	4.47	6.14	4.49	6.30	4.51	6.44	4.5
	31	5.52	4.36	5.70	4.40	5.85	4.42	6.01	4.44	6.18	4.46	6.32	4.4
	33	5.36	4.30	5.55	4.34	5.72	4.37	5.89	4.40	6.04	4.41	6.20	4.4
	35	5.21	4.23	5.40	4.28	5.60	4.32	5.77	4.35	5.91	4.36	6.08	4.3
	37	5.06	4.17	5.26	4.22	5.44	4.26	5.62	4.29	5.78	4.32	5.95	4.3
	39	4.92	4.10	5.11	4.16	5.29	4.19	5.48	4.24	5.66	4.27	5.83	4.2

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

Model FDTJ71KHXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
16	27	7.33	5.31	7.55	5.34	7.75	5.35	7.94	5.36	8.13	5.36	8.31	5.3
	29	7.18	5.24	7.39	5.27	7.58	5.28	7.78	5.29	7.99	5.30	8.17	5.3
	31	7.00	5.15	7.22	5.19	7.41	5.21	7.63	5.23	7.83	5.24	8.02	5.2
	33	6.80	5.06	7.04	5.11	7.26	5.14	7.47	5.16	7.66	5.17	7.86	5.1
	35	6.60	4.97	6.85	5.03	7.10	5.07	7.31	5.10	7.49	5.11	7.70	5.1
	37	6.42	4.89	6.67	4.95	6.90	4.99	7.13	5.02	7.33	5.04	7.55	5.0
	39	6.23	4.81	6.48	4.87	6.70	4.91	6.94	4.95	7.16	4.98	7.39	5.0

Model FDTJ90HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
21	27	9.30	6.82	9.57	6.85	9.82	6.87	10.06	6.88	10.31	6.89	10.53	6.8
	29	9.10	6.72	9.37	6.76	9.60	6.78	9.86	6.80	10.13	6.82	10.35	6.8
	31	8.87	6.62	9.15	6.67	9.40	6.69	9.67	6.72	9.93	6.74	10.16	6.7
	33	8.62	6.51	8.92	6.56	9.20	6.61	9.47	6.64	9.71	6.65	9.96	6.6
	35	8.37	6.39	8.69	6.46	9.00	6.52	9.27	6.56	9.50	6.57	9.77	6.5
	37	8.14	6.29	8.45	6.36	8.75	6.42	9.04	6.46	9.30	6.49	9.57	6.5
	39	7.90	6.19	8.22	6.26	8.50	6.31	8.80	6.37	9.10	6.42	9.37	6.4

Model FDTJ112HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
28	27	11.57	8.71	11.91	8.76	12.22	8.79	12.52	8.81	12.82	8.82	13.10	8.8
	29	11.32	8.60	11.66	8.65	11.95	8.68	12.28	8.71	12.60	8.74	12.88	8.7
	31	11.04	8.47	11.39	8.54	11.69	8.57	12.03	8.61	12.35	8.64	12.64	8.6
	33	10.73	8.33	11.10	8.41	11.45	8.47	11.78	8.51	12.08	8.54	12.40	8.5
	35	10.42	8.20	10.81	8.29	11.20	8.37	11.54	8.42	11.82	8.44	12.15	8.4
	37	10.12	8.07	10.52	8.16	10.89	8.24	11.24	8.30	11.57	8.34	11.91	8.3
	39	9.83	7.94	10.23	8.04	10.57	8.11	10.95	8.19	11.32	8.25	11.66	8.2

Model FDTJ140HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
30	27	14.46	10.29	14.88	10.34	15.27	10.36	15.65	10.37	16.03	10.37	16.38	10.3
	29	14.15	10.15	14.57	10.20	14.94	10.21	15.34	10.24	15.75	10.26	16.10	10.2
	31	13.80	9.98	14.24	10.04	14.62	10.07	15.04	10.11	15.44	10.13	15.81	10.1
	33	13.41	9.80	13.87	9.88	14.31	9.94	14.73	9.98	15.11	10.00	15.50	10.0
	35	13.02	9.62	13.51	9.72	14.00	9.81	14.42	9.85	14.77	9.86	15.19	9.8
	37	12.66	9.45	13.15	9.55	13.61	9.64	14.06	9.70	14.46	9.74	14.88	9.7
	39	12.29	9.28	12.78	9.40	13.22	9.47	13.69	9.55	14.15	9.62	14.57	9.6

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

(b) FDTS Series

Model FDTSJ22HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11	27	2.27	2.04	2.34	2.06	2.40	2.08	2.46	2.09	2.52	2.10	2.57	2.11
	29	2.22	2.02	2.29	2.04	2.35	2.06	2.41	2.07	2.48	2.08	2.53	2.09
	31	2.17	2.00	2.24	2.02	2.30	2.04	2.36	2.05	2.43	2.07	2.48	2.08
	33	2.11	1.98	2.18	2.00	2.25	2.02	2.31	2.03	2.37	2.05	2.44	2.06
	35	2.05	1.95	2.12	1.98	2.20	2.00	2.27	2.02	2.32	2.03	2.39	2.04
	37	1.99	1.93	2.07	1.95	2.14	1.98	2.21	2.00	2.27	2.01	2.34	2.03
	39	1.93	1.91	2.01	1.93	2.08	1.95	2.15	1.98	2.22	2.00	2.29	2.01

Model FDTSJ28HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	2.90	2.58	2.98	2.60	3.06	2.62	3.12	2.63	3.21	2.64	3.29	2.66
	29	2.83	2.55	2.92	2.57	3.00	2.59	3.07	2.61	3.14	2.62	3.23	2.64
	31	2.77	2.52	2.85	2.55	2.93	2.57	3.02	2.59	3.09	2.60	3.16	2.61
	33	2.69	2.49	2.78	2.52	2.87	2.54	2.95	2.56	3.04	2.58	3.10	2.59
	35	2.60	2.46	2.72	2.49	2.80	2.52	2.88	2.54	2.97	2.56	3.05	2.58
	37	2.54	2.43	2.63	2.46	2.73	2.49	2.82	2.52	2.90	2.54	2.98	2.55
	39	2.45	2.40	2.55	2.43	2.65	2.46	2.75	2.49	2.83	2.51	2.92	2.53

Model FDTSJ36HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	3.73	3.20	3.84	3.22	3.94	3.24	4.02	3.25	4.13	3.27	4.23	3.28
	29	3.64	3.16	3.75	3.19	3.86	3.21	3.95	3.23	4.04	3.24	4.15	3.26
	31	3.56	3.13	3.66	3.15	3.77	3.18	3.88	3.20	3.97	3.21	4.06	3.23
	33	3.46	3.09	3.58	3.12	3.69	3.15	3.79	3.17	3.90	3.19	3.98	3.20
	35	3.35	3.04	3.49	3.08	3.60	3.11	3.71	3.14	3.82	3.16	3.92	3.18
	37	3.26	3.01	3.38	3.04	3.51	3.08	3.62	3.11	3.73	3.13	3.84	3.15
	39	3.15	2.96	3.28	3.00	3.41	3.04	3.54	3.07	3.64	3.10	3.75	3.12

Model FDTSJ45HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	4.66	3.86	4.80	3.89	4.92	3.91	5.02	3.92	5.16	3.94	5.28	3.95
	29	4.55	3.82	4.69	3.85	4.82	3.87	4.94	3.89	5.05	3.90	5.18	3.92
	31	4.45	3.77	4.58	3.80	4.72	3.83	4.85	3.85	4.96	3.87	5.08	3.88
	33	4.33	3.72	4.47	3.76	4.61	3.79	4.74	3.81	4.88	3.84	4.98	3.85
	35	4.19	3.66	4.37	3.71	4.50	3.75	4.64	3.77	4.77	3.80	4.91	3.82
	37	4.08	3.62	4.22	3.66	4.39	3.70	4.53	3.73	4.66	3.76	4.80	3.78
	39	3.94	3.56	4.10	3.61	4.26	3.65	4.42	3.69	4.55	3.72	4.69	3.75

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

Model FDT SJ71HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
18	27	7.36	5.56	7.57	5.59	7.77	5.61	7.92	5.61	8.14	5.63	8.34	5.64
	29	7.19	5.49	7.40	5.52	7.61	5.55	7.80	5.56	7.97	5.57	8.18	5.58
	31	7.01	5.41	7.23	5.45	7.44	5.48	7.65	5.50	7.82	5.51	8.01	5.52
	33	6.83	5.33	7.06	5.37	7.27	5.41	7.48	5.44	7.70	5.46	7.85	5.46
	35	6.60	5.23	6.89	5.30	7.10	5.34	7.31	5.37	7.53	5.40	7.74	5.42
	37	6.43	5.15	6.66	5.21	6.93	5.27	7.14	5.30	7.36	5.33	7.57	5.36
	39	6.22	5.06	6.48	5.13	6.72	5.18	6.97	5.24	7.19	5.27	7.40	5.30

(c) FDR Series

Model FDRJ22HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
10	27	2.28	2.05	2.35	2.06	2.41	2.08	2.46	2.09	2.52	2.10	2.58	2.11
	29	2.23	2.02	2.29	2.04	2.36	2.06	2.42	2.07	2.47	2.08	2.53	2.09
	31	2.17	2.00	2.24	2.02	2.31	2.04	2.37	2.06	2.42	2.06	2.48	2.08
	33	2.12	1.98	2.19	2.00	2.25	2.02	2.32	2.04	2.38	2.05	2.43	2.06
	35	2.05	1.95	2.13	1.98	2.20	2.00	2.27	2.02	2.33	2.03	2.40	2.05
	37	1.99	1.93	2.06	1.95	2.15	1.98	2.21	2.00	2.28	2.01	2.35	2.03
	39	1.93	1.90	2.01	1.93	2.08	1.96	2.16	1.98	2.23	2.00	2.29	2.01

Model FDRJ28HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	2.90	2.58	2.98	2.60	3.06	2.62	3.12	2.63	3.21	2.64	3.29	2.66
	29	2.83	2.55	2.92	2.57	3.00	2.59	3.07	2.61	3.14	2.62	3.23	2.64
	31	2.77	2.52	2.85	2.55	2.93	2.57	3.02	2.59	3.09	2.60	3.16	2.61
	33	2.69	2.49	2.78	2.52	2.87	2.54	2.95	2.56	3.04	2.58	3.10	2.59
	35	2.60	2.46	2.72	2.49	2.80	2.52	2.88	2.54	2.97	2.56	3.05	2.58
	37	2.54	2.43	2.63	2.46	2.73	2.49	2.82	2.52	2.90	2.54	2.98	2.55
	39	2.45	2.40	2.55	2.43	2.65	2.46	2.75	2.49	2.83	2.51	2.92	2.53

Model FDRJ45HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	4.66	3.86	4.80	3.89	4.92	3.91	5.02	3.92	5.16	3.94	5.28	3.95
	29	4.55	3.82	4.69	3.85	4.82	3.87	4.94	3.89	5.05	3.90	5.18	3.92
	31	4.45	3.77	4.58	3.80	4.72	3.83	4.85	3.85	4.96	3.87	5.08	3.88
	33	4.33	3.72	4.47	3.76	4.61	3.79	4.74	3.81	4.88	3.84	4.98	3.85
	35	4.19	3.66	4.37	3.71	4.50	3.75	4.64	3.77	4.77	3.80	4.91	3.82
	37	4.08	3.62	4.22	3.66	4.39	3.70	4.53	3.73	4.66	3.76	4.80	3.78
	39	3.94	3.56	4.10	3.61	4.26	3.65	4.42	3.69	4.55	3.72	4.69	3.75

Note (1) Symbols are as follows :

- TC** : Total cooling capacity (kW)
- SHC** : Sensible heat capacity (kW)

Model FDRJ56HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	5.80	4.36	5.97	4.39	6.13	4.40	6.25	4.40	6.42	4.41	6.57	4.42
	29	5.67	4.30	5.84	4.33	6.00	4.35	6.15	4.36	6.28	4.36	6.45	4.37
	31	5.53	4.24	5.70	4.27	5.87	4.29	6.04	4.32	6.17	4.32	6.32	4.32
	33	5.39	4.18	5.57	4.21	5.73	4.24	5.90	4.26	6.07	4.28	6.19	4.28
	35	5.21	4.10	5.43	4.16	5.60	4.18	5.77	4.21	5.94	4.23	6.10	4.25
	37	5.07	4.04	5.25	4.08	5.47	4.13	5.63	4.16	5.80	4.18	5.97	4.20
	39	4.91	3.97	5.11	4.02	5.30	4.06	5.50	4.10	5.67	4.13	5.84	4.15

Model FDRJ71HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
18	27	7.36	5.56	7.57	5.59	7.77	5.61	7.92	5.61	8.14	5.63	8.34	5.64
	29	7.19	5.49	7.40	5.52	7.61	5.55	7.80	5.56	7.97	5.57	8.18	5.58
	31	7.01	5.41	7.23	5.45	7.44	5.48	7.65	5.50	7.82	5.51	8.01	5.52
	33	6.83	5.33	7.06	5.37	7.27	5.41	7.48	5.44	7.70	5.46	7.85	5.46
	35	6.60	5.23	6.89	5.30	7.10	5.34	7.31	5.37	7.53	5.40	7.74	5.42
	37	6.43	5.15	6.66	5.21	6.93	5.27	7.14	5.30	7.36	5.33	7.57	5.36
	39	6.22	5.06	6.48	5.13	6.72	5.18	6.97	5.24	7.19	5.27	7.40	5.30

Model FDRJ90HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	27	9.32	6.71	9.59	6.74	9.85	6.76	10.04	6.75	10.31	6.76	10.57	6.76
	29	9.11	6.61	9.38	6.64	9.65	6.67	9.88	6.68	10.10	6.67	10.37	6.69
	31	8.89	6.51	9.16	6.55	9.43	6.58	9.70	6.60	9.92	6.60	10.15	6.60
	33	8.66	6.40	8.95	6.45	9.22	6.49	9.49	6.52	9.76	6.54	9.95	6.53
	35	8.37	6.27	8.73	6.36	9.00	6.39	9.27	6.43	9.54	6.45	9.81	6.47
	37	8.15	6.17	8.44	6.23	8.78	6.30	9.05	6.34	9.32	6.37	9.59	6.39
	39	7.88	6.05	8.21	6.13	8.51	6.19	8.84	6.25	9.11	6.28	9.38	6.31

Model FDRJ112HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
28	27	11.60	8.72	11.94	8.77	12.25	8.80	12.50	8.80	12.84	8.83	13.15	8.84
	29	11.33	8.60	11.67	8.66	12.01	8.70	12.30	8.72	12.57	8.72	12.90	8.75
	31	11.07	8.48	11.40	8.54	11.74	8.59	12.07	8.63	12.34	8.64	12.63	8.65
	33	10.77	8.35	11.13	8.42	11.47	8.48	11.80	8.52	12.14	8.56	12.39	8.56
	35	10.42	8.20	10.86	8.31	11.20	8.37	11.54	8.42	11.87	8.46	12.21	8.49
	37	10.15	8.08	10.51	8.16	10.93	8.26	11.27	8.31	11.60	8.36	11.94	8.39
	39	9.81	7.93	10.21	8.04	10.60	8.12	11.00	8.20	11.33	8.26	11.67	8.30

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

Model FDRJ140HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
34	27	14.50	10.78	14.92	10.84	15.32	10.88	15.62	10.87	16.04	10.90	16.44	10.91
	29	14.17	10.63	14.59	10.69	15.01	10.75	15.37	10.77	15.71	10.77	16.13	10.80
	31	13.83	10.48	14.25	10.55	14.67	10.60	15.09	10.65	15.43	10.66	15.79	10.67
	33	13.47	10.31	13.92	10.40	14.34	10.46	14.76	10.52	15.18	10.56	15.48	10.56
	35	13.02	10.12	13.58	10.26	14.00	10.32	14.42	10.38	14.84	10.43	15.26	10.47
	37	12.68	9.97	13.13	10.07	13.66	10.19	14.08	10.25	14.50	10.30	14.92	10.35
	39	12.26	9.78	12.77	9.91	13.24	10.01	13.75	10.12	14.17	10.18	14.59	10.23

(d) FDUM Series

Model FDUMJ36HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	3.73	3.20	3.84	3.22	3.94	3.24	4.02	3.25	4.13	3.27	4.23	3.28
	29	3.64	3.16	3.75	3.19	3.86	3.21	3.95	3.23	4.04	3.24	4.15	3.26
	31	3.56	3.13	3.66	3.15	3.77	3.18	3.88	3.20	3.97	3.21	4.06	3.23
	33	3.46	3.09	3.58	3.12	3.69	3.15	3.79	3.17	3.90	3.19	3.98	3.20
	35	3.35	3.04	3.49	3.08	3.60	3.11	3.71	3.14	3.82	3.16	3.92	3.18
	37	3.26	3.01	3.38	3.04	3.51	3.08	3.62	3.11	3.73	3.13	3.84	3.15
	39	3.15	2.96	3.28	3.00	3.41	3.04	3.54	3.07	3.64	3.10	3.75	3.12

Model FDUMJ45HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	4.66	3.86	4.80	3.89	4.92	3.91	5.02	3.92	5.16	3.94	5.28	3.95
	29	4.55	3.82	4.69	3.85	4.82	3.87	4.94	3.89	5.05	3.90	5.18	3.92
	31	4.45	3.77	4.58	3.80	4.72	3.83	4.85	3.85	4.96	3.87	5.08	3.88
	33	4.33	3.72	4.47	3.76	4.61	3.79	4.74	3.81	4.88	3.84	4.98	3.85
	35	4.19	3.66	4.37	3.71	4.50	3.75	4.64	3.77	4.77	3.80	4.91	3.82
	37	4.08	3.62	4.22	3.66	4.39	3.70	4.53	3.73	4.66	3.76	4.80	3.78
	39	3.94	3.56	4.10	3.61	4.26	3.65	4.42	3.69	4.55	3.72	4.69	3.75

Model FDUMJ56HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	5.80	4.36	5.97	4.39	6.13	4.40	6.25	4.40	6.42	4.41	6.57	4.42
	29	5.67	4.30	5.84	4.33	6.00	4.35	6.15	4.36	6.28	4.36	6.45	4.37
	31	5.53	4.24	5.70	4.27	5.87	4.29	6.04	4.32	6.17	4.32	6.32	4.32
	33	5.39	4.18	5.57	4.21	5.73	4.24	5.90	4.26	6.07	4.28	6.19	4.28
	35	5.21	4.10	5.43	4.16	5.60	4.18	5.77	4.21	5.94	4.23	6.10	4.25
	37	5.07	4.04	5.25	4.08	5.47	4.13	5.63	4.16	5.80	4.18	5.97	4.20
	39	4.91	3.97	5.11	4.02	5.30	4.06	5.50	4.10	5.67	4.13	5.84	4.15

Note (1) Symbols are as follows :

- TC** : Total cooling capacity (kW)
- SHC** : Sensible heat capacity (kW)

Model FDUMJ71HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
18	27	7.36	5.56	7.57	5.59	7.77	5.61	7.92	5.61	8.14	5.63	8.34	5.64
	29	7.19	5.49	7.40	5.52	7.61	5.55	7.80	5.56	7.97	5.57	8.18	5.58
	31	7.01	5.41	7.23	5.45	7.44	5.48	7.65	5.50	7.82	5.51	8.01	5.52
	33	6.83	5.33	7.06	5.37	7.27	5.41	7.48	5.44	7.70	5.46	7.85	5.46
	35	6.60	5.23	6.89	5.30	7.10	5.34	7.31	5.37	7.53	5.40	7.74	5.42
	37	6.43	5.15	6.66	5.21	6.93	5.27	7.14	5.30	7.36	5.33	7.57	5.36
	39	6.22	5.06	6.48	5.13	6.72	5.18	6.97	5.24	7.19	5.27	7.40	5.30

Model FDUMJ90HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
20	27	9.32	6.71	9.59	6.74	9.85	6.76	10.04	6.75	10.31	6.76	10.57	6.76
	29	9.11	6.61	9.38	6.64	9.65	6.67	9.88	6.68	10.10	6.67	10.37	6.69
	31	8.89	6.51	9.16	6.55	9.43	6.58	9.70	6.60	9.92	6.60	10.15	6.60
	33	8.66	6.40	8.95	6.45	9.22	6.49	9.49	6.52	9.76	6.54	9.95	6.53
	35	8.37	6.27	8.73	6.36	9.00	6.39	9.27	6.43	9.54	6.45	9.81	6.47
	37	8.15	6.17	8.44	6.23	8.78	6.30	9.05	6.34	9.32	6.37	9.59	6.39
	39	7.88	6.05	8.21	6.13	8.51	6.19	8.84	6.25	9.11	6.28	9.38	6.31

Model FDUMJ112HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
28	27	11.60	8.72	11.94	8.77	12.25	8.80	12.50	8.80	12.84	8.83	13.15	8.84
	29	11.33	8.60	11.67	8.66	12.01	8.70	12.30	8.72	12.57	8.72	12.90	8.75
	31	11.07	8.48	11.40	8.54	11.74	8.59	12.07	8.63	12.34	8.64	12.63	8.65
	33	10.77	8.35	11.13	8.42	11.47	8.48	11.80	8.52	12.14	8.56	12.39	8.56
	35	10.42	8.20	10.86	8.31	11.20	8.37	11.54	8.42	11.87	8.46	12.21	8.49
	37	10.15	8.08	10.51	8.16	10.93	8.26	11.27	8.31	11.60	8.36	11.94	8.39
	39	9.81	7.93	10.21	8.04	10.60	8.12	11.00	8.20	11.33	8.26	11.67	8.30

Model FDUMJ140HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
34	27	14.50	10.78	14.92	10.84	15.32	10.88	15.62	10.87	16.04	10.90	16.44	10.91
	29	14.17	10.63	14.59	10.69	15.01	10.75	15.37	10.77	15.71	10.77	16.13	10.80
	31	13.83	10.48	14.25	10.55	14.67	10.60	15.09	10.65	15.43	10.66	15.79	10.67
	33	13.47	10.31	13.92	10.40	14.34	10.46	14.76	10.52	15.18	10.56	15.48	10.56
	35	13.02	10.12	13.58	10.26	14.00	10.32	14.42	10.38	14.84	10.43	15.26	10.47
	37	12.68	9.97	13.13	10.07	13.66	10.19	14.08	10.25	14.50	10.30	14.92	10.35
	39	12.26	9.78	12.77	9.91	13.24	10.01	13.75	10.12	14.17	10.18	14.59	10.23

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

(e) FDE Series

Model FDEJ36HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	3.73	3.34	3.84	3.36	3.94	3.39	4.02	3.40	4.13	3.42	4.23	3.44
	29	3.64	3.30	3.75	3.33	3.86	3.36	3.95	3.38	4.04	3.39	4.15	3.41
	31	3.56	3.26	3.66	3.30	3.77	3.32	3.88	3.35	3.97	3.37	4.06	3.38
	33	3.46	3.23	3.58	3.26	3.69	3.29	3.79	3.32	3.90	3.34	3.98	3.35
	35	3.35	3.18	3.49	3.23	3.60	3.26	3.71	3.29	3.82	3.31	3.92	3.34
	37	3.26	3.15	3.38	3.18	3.51	3.23	3.62	3.26	3.73	3.28	3.84	3.31
	39	3.15	3.10	3.28	3.15	3.41	3.19	3.54	3.23	3.64	3.25	3.75	3.28

Model FDEJ45HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	4.66	3.86	4.80	3.89	4.92	3.91	5.02	3.92	5.16	3.94	5.28	3.95
	29	4.55	3.82	4.69	3.85	4.82	3.87	4.94	3.89	5.05	3.90	5.18	3.92
	31	4.45	3.77	4.58	3.80	4.72	3.83	4.85	3.85	4.96	3.87	5.08	3.88
	33	4.33	3.72	4.47	3.76	4.61	3.79	4.74	3.81	4.88	3.84	4.98	3.85
	35	4.19	3.66	4.37	3.71	4.50	3.75	4.64	3.77	4.77	3.80	4.91	3.82
	37	4.08	3.62	4.22	3.66	4.39	3.70	4.53	3.73	4.66	3.76	4.80	3.78
	39	3.94	3.56	4.10	3.61	4.26	3.65	4.42	3.69	4.55	3.72	4.69	3.75

Model FDEJ56HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	5.80	4.36	5.97	4.39	6.13	4.40	6.25	4.40	6.42	4.41	6.57	4.42
	29	5.67	4.30	5.84	4.33	6.00	4.35	6.15	4.36	6.28	4.36	6.45	4.37
	31	5.53	4.24	5.70	4.27	5.87	4.29	6.04	4.32	6.17	4.32	6.32	4.32
	33	5.39	4.18	5.57	4.21	5.73	4.24	5.90	4.26	6.07	4.28	6.19	4.28
	35	5.21	4.10	5.43	4.16	5.60	4.18	5.77	4.21	5.94	4.23	6.10	4.25
	37	5.07	4.04	5.25	4.08	5.47	4.13	5.63	4.16	5.80	4.18	5.97	4.20
	39	4.91	3.97	5.11	4.02	5.30	4.06	5.50	4.10	5.67	4.13	5.84	4.15

Model FDEJ71HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
18	27	7.36	5.56	7.57	5.59	7.77	5.61	7.92	5.61	8.14	5.63	8.34	5.64
	29	7.19	5.49	7.40	5.52	7.61	5.55	7.80	5.56	7.97	5.57	8.18	5.58
	31	7.01	5.41	7.23	5.45	7.44	5.48	7.65	5.50	7.82	5.51	8.01	5.52
	33	6.83	5.33	7.06	5.37	7.27	5.41	7.48	5.44	7.70	5.46	7.85	5.46
	35	6.60	5.23	6.89	5.30	7.10	5.34	7.31	5.37	7.53	5.40	7.74	5.42
	37	6.43	5.15	6.66	5.21	6.93	5.27	7.14	5.30	7.36	5.33	7.57	5.36
	39	6.22	5.06	6.48	5.13	6.72	5.18	6.97	5.24	7.19	5.27	7.40	5.30

Note (1) Symbols are as follows :

- TC** : Total cooling capacity (kW)
- SHC** : Sensible heat capacity (kW)

Model FDEJ112HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
28	27	11.60	8.72	11.94	8.77	12.25	8.80	12.50	8.80	12.84	8.83	13.15	8.84
	29	11.33	8.60	11.67	8.66	12.01	8.70	12.30	8.72	12.57	8.72	12.90	8.75
	31	11.07	8.48	11.40	8.54	11.74	8.59	12.07	8.63	12.34	8.64	12.63	8.65
	33	10.77	8.35	11.13	8.42	11.47	8.48	11.80	8.52	12.14	8.56	12.39	8.56
	35	10.42	8.20	10.86	8.31	11.20	8.37	11.54	8.42	11.87	8.46	12.21	8.49
	37	10.15	8.08	10.51	8.16	10.93	8.26	11.27	8.31	11.60	8.36	11.94	8.39
	39	9.81	7.93	10.21	8.04	10.60	8.12	11.00	8.20	11.33	8.26	11.67	8.30

Model FDEJ140HKXE2B

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
34	27	14.50	10.78	14.92	10.84	15.32	10.88	15.62	10.87	16.04	10.90	16.44	10.91
	29	14.17	10.63	14.59	10.69	15.01	10.75	15.37	10.77	15.71	10.77	16.13	10.80
	31	13.83	10.48	14.25	10.55	14.67	10.60	15.09	10.65	15.43	10.66	15.79	10.67
	33	13.47	10.31	13.92	10.40	14.34	10.46	14.76	10.52	15.18	10.56	15.48	10.56
	35	13.02	10.12	13.58	10.26	14.00	10.32	14.42	10.38	14.84	10.43	15.26	10.47
	37	12.68	9.97	13.13	10.07	13.66	10.19	14.08	10.25	14.50	10.30	14.92	10.35
	39	12.26	9.78	12.77	9.91	13.24	10.01	13.75	10.12	14.17	10.18	14.59	10.23

(f) FDK Series

Model FDKJ22HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
9	27	2.27	2.04	2.34	2.06	2.40	2.08	2.46	2.09	2.52	2.10	2.57	2.11
	29	2.22	2.02	2.29	2.04	2.35	2.06	2.41	2.07	2.48	2.08	2.53	2.09
	31	2.17	2.00	2.24	2.02	2.30	2.04	2.36	2.05	2.43	2.07	2.48	2.08
	33	2.11	1.98	2.18	2.00	2.25	2.02	2.31	2.03	2.37	2.05	2.44	2.06
	35	2.05	1.95	2.12	1.98	2.20	2.00	2.27	2.02	2.32	2.03	2.39	2.04
	37	1.99	1.93	2.07	1.95	2.14	1.98	2.21	2.00	2.27	2.01	2.34	2.03
	39	1.93	1.91	2.01	1.93	2.08	1.95	2.15	1.98	2.22	2.00	2.29	2.01

Model FDKJ28HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
10	27	2.90	2.58	2.98	2.60	3.06	2.62	3.12	2.63	3.21	2.64	3.29	2.66
	29	2.83	2.55	2.92	2.57	3.00	2.59	3.07	2.61	3.14	2.62	3.23	2.64
	31	2.77	2.52	2.85	2.55	2.93	2.57	3.02	2.59	3.09	2.60	3.16	2.61
	33	2.69	2.49	2.78	2.52	2.87	2.54	2.95	2.56	3.04	2.58	3.10	2.59
	35	2.60	2.46	2.72	2.49	2.80	2.52	2.88	2.54	2.97	2.56	3.05	2.58
	37	2.54	2.43	2.63	2.46	2.73	2.49	2.82	2.52	2.90	2.54	2.98	2.55
	39	2.45	2.40	2.55	2.43	2.65	2.46	2.75	2.49	2.83	2.51	2.92	2.53

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

Model FDKJ36HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
10	27	3.73	2.93	3.84	2.95	3.94	2.96	4.02	2.97	4.13	2.98	4.23	2.98
	29	3.64	2.89	3.75	2.91	3.86	2.93	3.95	2.94	4.04	2.95	4.15	2.96
	31	3.56	2.86	3.66	2.88	3.77	2.90	3.88	2.91	3.97	2.92	4.06	2.93
	33	3.46	2.82	3.58	2.84	3.69	2.86	3.79	2.88	3.90	2.89	3.98	2.90
	35	3.35	2.77	3.49	2.81	3.60	2.83	3.71	2.85	3.82	2.86	3.92	2.88
	37	3.26	2.73	3.38	2.76	3.51	2.79	3.62	2.81	3.73	2.83	3.84	2.85
	39	3.15	2.68	3.28	2.72	3.41	2.75	3.54	2.78	3.64	2.80	3.75	2.82

Model FDKJ45HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
11.5	27	4.66	3.54	4.80	3.56	4.92	3.57	5.02	3.57	5.16	3.58	5.28	3.59
	29	4.55	3.49	4.69	3.51	4.82	3.53	4.94	3.54	5.05	3.54	5.18	3.55
	31	4.45	3.44	4.58	3.46	4.72	3.48	4.85	3.50	4.96	3.51	5.08	3.51
	33	4.33	3.39	4.47	3.42	4.61	3.44	4.74	3.46	4.88	3.47	4.98	3.47
	35	4.19	3.33	4.37	3.37	4.50	3.40	4.64	3.42	4.77	3.43	4.91	3.45
	37	4.08	3.28	4.22	3.31	4.39	3.35	4.53	3.37	4.66	3.39	4.80	3.41
	39	3.94	3.22	4.10	3.26	4.26	3.30	4.42	3.33	4.55	3.35	4.69	3.37

Model FDKJ56HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
17	27	5.80	4.75	5.97	4.78	6.13	4.81	6.25	4.82	6.42	4.84	6.57	4.86
	29	5.67	4.69	5.84	4.73	6.00	4.76	6.15	4.78	6.28	4.79	6.45	4.81
	31	5.53	4.64	5.70	4.67	5.87	4.71	6.04	4.74	6.17	4.75	6.32	4.77
	33	5.39	4.57	5.57	4.62	5.73	4.65	5.90	4.69	6.07	4.71	6.19	4.72
	35	5.21	4.50	5.43	4.56	5.60	4.60	5.77	4.64	5.94	4.66	6.10	4.69
	37	5.07	4.44	5.25	4.49	5.47	4.55	5.63	4.59	5.80	4.62	5.97	4.65
	39	4.91	4.37	5.11	4.43	5.30	4.48	5.50	4.54	5.67	4.57	5.84	4.60

Model FDKJ71HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
21	27	7.36	5.95	7.57	5.99	7.77	6.02	7.92	6.03	8.14	6.06	8.34	6.07
	29	7.19	5.87	7.40	5.92	7.61	5.96	7.80	5.98	7.97	5.99	8.18	6.02
	31	7.01	5.80	7.23	5.85	7.44	5.89	7.65	5.93	7.82	5.94	8.01	5.96
	33	6.83	5.72	7.06	5.78	7.27	5.82	7.48	5.86	7.70	5.89	7.85	5.90
	35	6.60	5.63	6.89	5.71	7.10	5.75	7.31	5.80	7.53	5.83	7.74	5.86
	37	6.43	5.56	6.66	5.62	6.93	5.69	7.14	5.73	7.36	5.77	7.57	5.81
	39	6.22	5.47	6.48	5.54	6.72	5.61	6.97	5.67	7.19	5.71	7.40	5.75

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

(g) FDFL, FDFU Series

Models FDFLJ28HKXE2, FDFUJ28HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
12	27	2.90	2.58	2.98	2.60	3.06	2.62	3.12	2.63	3.21	2.64	3.29	2.66
	29	2.83	2.55	2.92	2.57	3.00	2.59	3.07	2.61	3.14	2.62	3.23	2.64
	31	2.77	2.52	2.85	2.55	2.93	2.57	3.02	2.59	3.09	2.60	3.16	2.61
	33	2.69	2.49	2.78	2.52	2.87	2.54	2.95	2.56	3.04	2.58	3.10	2.59
	35	2.60	2.46	2.72	2.49	2.80	2.52	2.88	2.54	2.97	2.56	3.05	2.58
	37	2.54	2.43	2.63	2.46	2.73	2.49	2.82	2.52	2.90	2.54	2.98	2.55
	39	2.45	2.40	2.55	2.43	2.65	2.46	2.75	2.49	2.83	2.51	2.92	2.53

Models FDFLJ45HKXE2, FDFUJ45HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
14	27	4.66	3.86	4.80	3.89	4.92	3.91	5.02	3.92	5.16	3.94	5.28	3.95
	29	4.55	3.82	4.69	3.85	4.82	3.87	4.94	3.89	5.05	3.90	5.18	3.92
	31	4.45	3.77	4.58	3.80	4.72	3.83	4.85	3.85	4.96	3.87	5.08	3.88
	33	4.33	3.72	4.47	3.76	4.61	3.79	4.74	3.81	4.88	3.84	4.98	3.85
	35	4.19	3.66	4.37	3.71	4.50	3.75	4.64	3.77	4.77	3.80	4.91	3.82
	37	4.08	3.62	4.22	3.66	4.39	3.70	4.53	3.73	4.66	3.76	4.80	3.78
	39	3.94	3.56	4.10	3.61	4.26	3.65	4.42	3.69	4.55	3.72	4.69	3.75

Models FDFLJ71HKXE2, FDFUJ71HKXE2

Air flow (m ³ /min)	Outdoor air temp. (°CDB)	Indoor air temperature											
		17.0°CWB		18.0°CWB		19.0°CWB		20.0°CWB		21.0°CWB		22.0°CWB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
18	27	7.36	5.56	7.57	5.59	7.77	5.61	7.92	5.61	8.14	5.63	8.34	5.64
	29	7.19	5.49	7.40	5.52	7.61	5.55	7.80	5.56	7.97	5.57	8.18	5.58
	31	7.01	5.41	7.23	5.45	7.44	5.48	7.65	5.50	7.82	5.51	8.01	5.52
	33	6.83	5.33	7.06	5.37	7.27	5.41	7.48	5.44	7.70	5.46	7.85	5.46
	35	6.60	5.23	6.89	5.30	7.10	5.34	7.31	5.37	7.53	5.40	7.74	5.42
	37	6.43	5.15	6.66	5.21	6.93	5.27	7.14	5.30	7.36	5.33	7.57	5.36
	39	6.22	5.06	6.48	5.13	6.72	5.18	6.97	5.24	7.19	5.27	7.40	5.30

Note (1) Symbols are as follows :

TC : Total cooling capacity (kW)

SHC : Sensible heat capacity (kW)

20.2.7 Characteristics of fan

(1) Cassetteria type (FDR)

- External static pressure table Unit : Pa (mmAq)

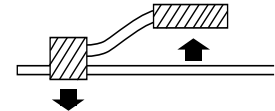
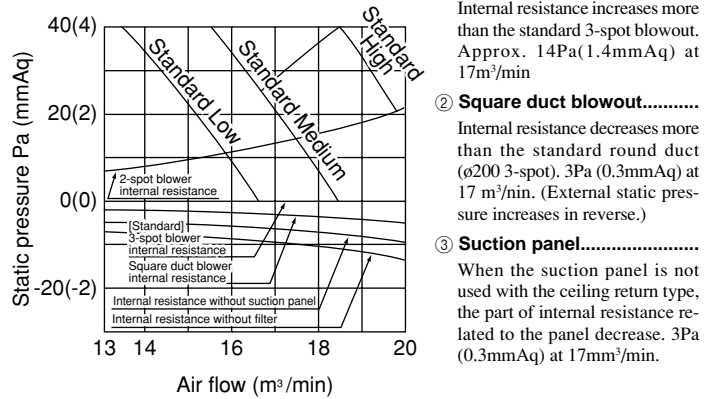
Type	Duct specs. Air flow (m ³ /min)	1 spot closing ⁽¹⁾		Standard ⁽²⁾		Square duct ⁽³⁾	
		Standard	High ⁽⁴⁾ speed	Standard	High ⁽⁴⁾ speed	Standard	High ⁽⁴⁾ speed
FDR22 type	10	-	-	45(4.5)	85(8.5)	50(5)	90(9)
FDR28 type	12	-	-	45(4.5)	85(8.5)	45(4.5)	85(8.5)
FDR45 56 type	14	-	-	50(5)	85(8.5)	50(5)	90(9)
FDR71 type	18	30(3)	65(6.5)	45(4.5)	80(8)	50(5)	85(8.5)
FDR90 type	20	25(2.5)	60(6)	45(4.5)	80(8)	50(5)	85(8.5)
FDR112 type	28	40(4)	70(7)	50(5)	80(8)	55(5.5)	85(8.5)
FDR140 type	34	40(4)	70(7)	50(5)	80(8)	55(5.5)	85(8.5)

Notes (1) 1 spot closing: Round duct flange at center is removed and shield with a special panel (option).

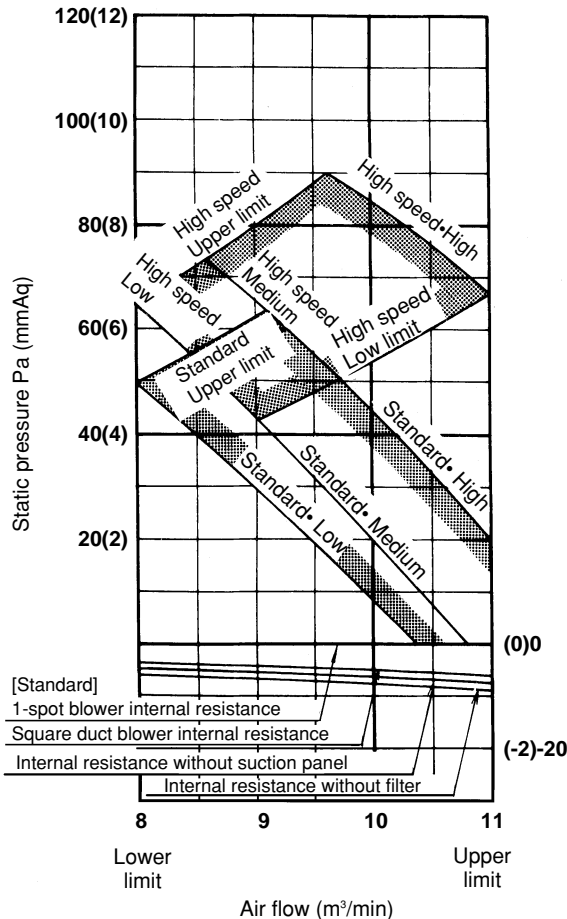
- (2) Standard: Ø200 duct are installed at all blowout holes.
- (3) Square duct: All round ducts are removed and replaced with special square duct flanges (option).
- (4) When operating at a high speed, invert the connection of white and red connectors on the flank of control box.

How to interpret the blower characteristics table

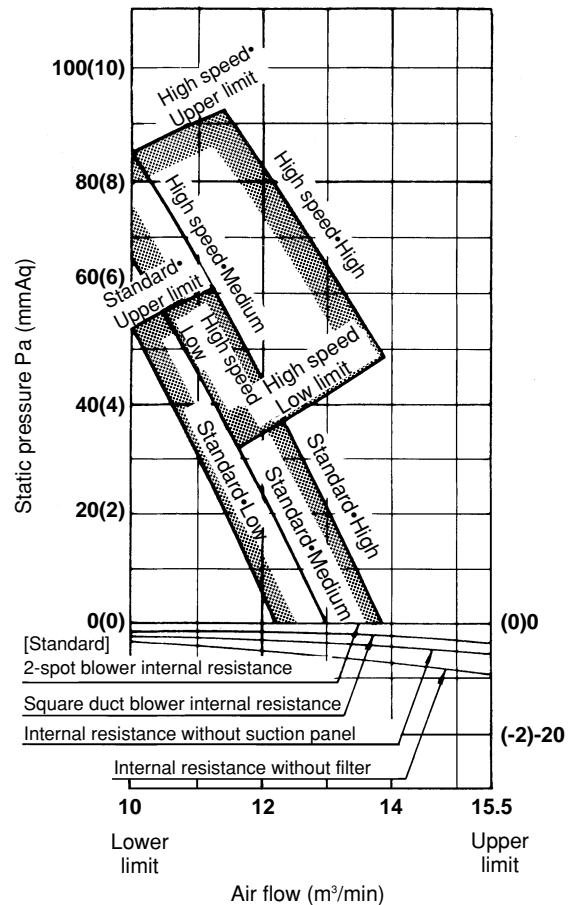
Example : Case of FDRJ71HKXE2



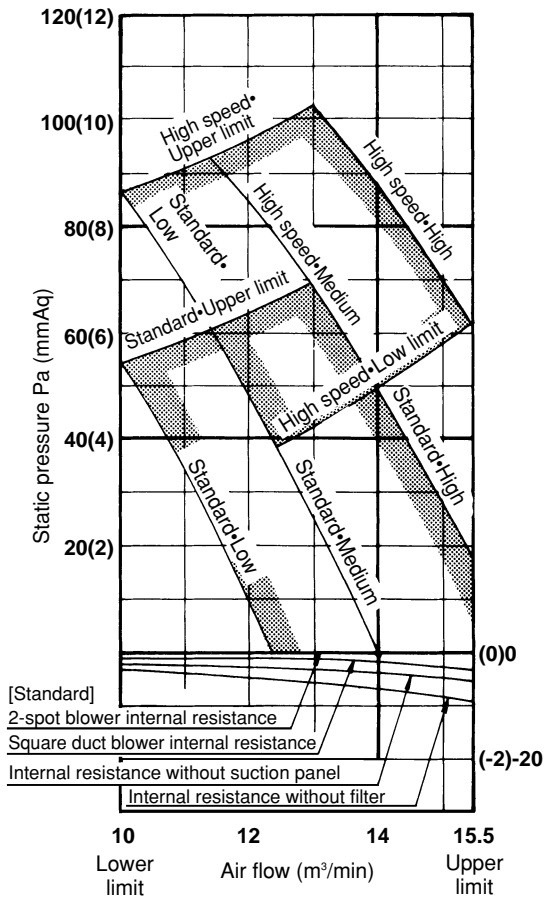
Model FDRJ22HKXE2



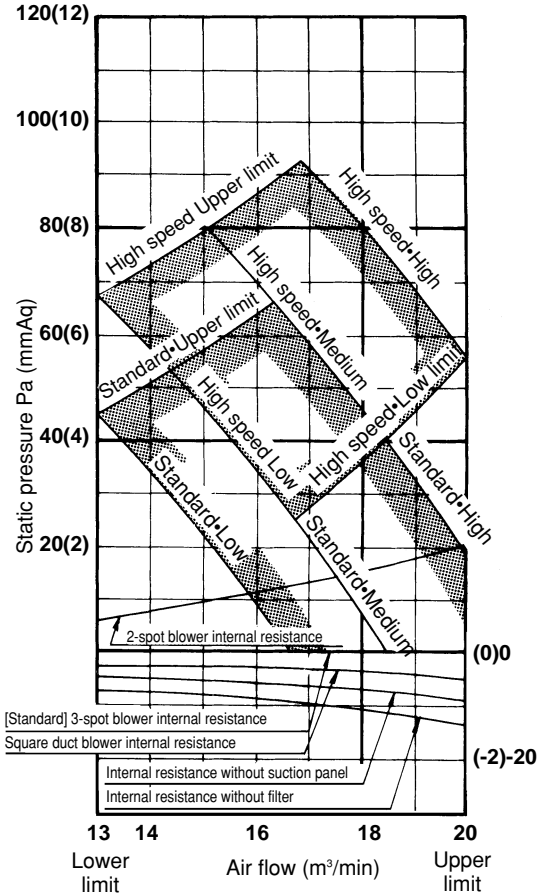
Model FDRJ28HKXE2



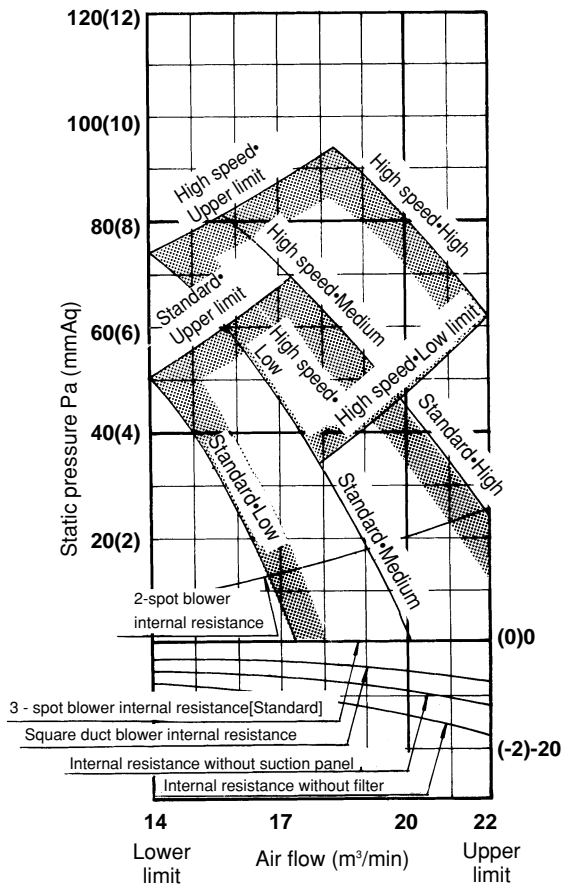
Models FDRJ45HKXE2, 56HKXE2



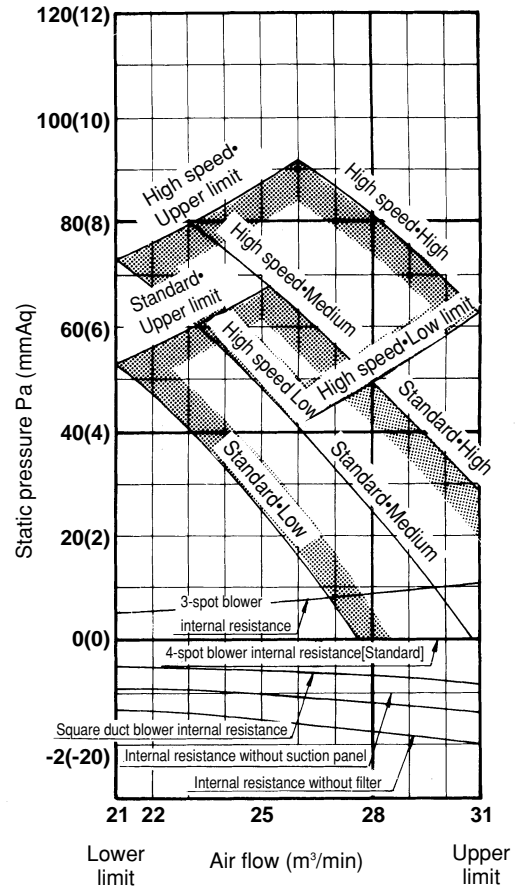
Model FDRJ71HKXE2



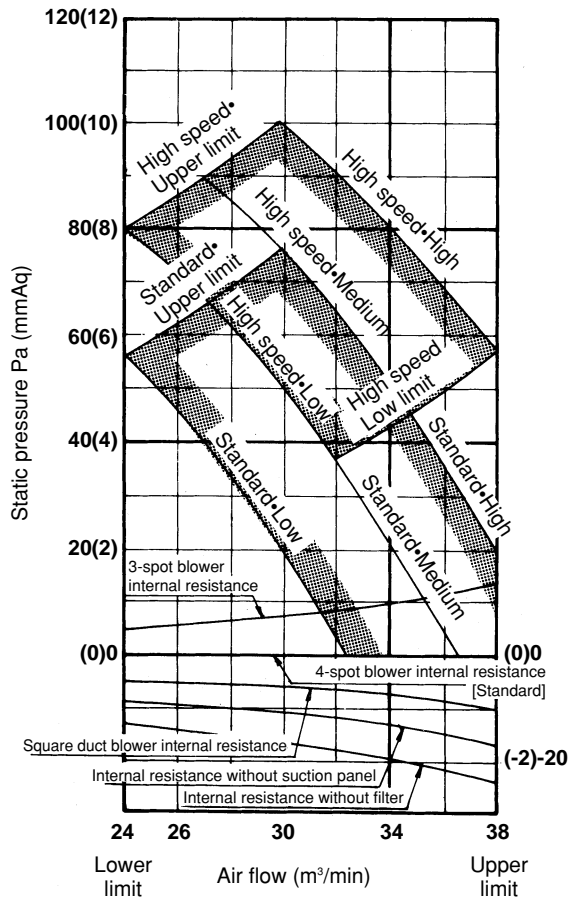
Model FDRJ90HKXE2



Model FDRJ112HKXE2



Model FDRJ140HKXE2



(2) Satellite ducted type (FDUM)

- External static pressure table

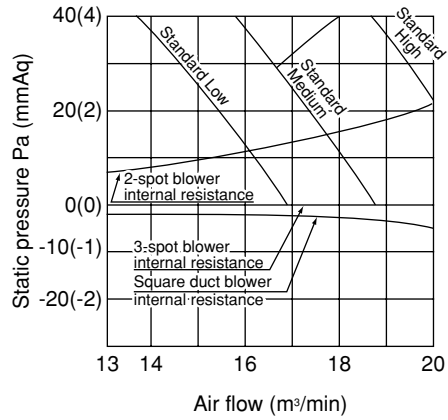
Unit : Pa (mmAq)

Type	Duct specs. Air flow (m ³ /min)	1 spot closing		Standard		Square duct	
		Standard	High ⁽⁴⁾ speed	Standard	High ⁽⁴⁾ speed	Standard	High ⁽¹⁾ speed
FDUM36 type	12	-	-	50(5)	85(8.5)	50(5)	90(9)
FDUM45 56 type	14	-	-	50(5)	85(8.5)	50(5)	90(9)
FDUM71 type	18	35(3.5)	70(7)	50(5)	85(8.5)	55(5.5)	90(9)
FDUM90 type	20	30(3)	65(6.5)	50(5)	85(8.5)	55(5.5)	90(9)
FDUM112 type	28	50(5)	80(8)	60(6)	90(9)	65(6.5)	95(9.5)
FDUM140 type	34	50(5)	75(7.5)	60(6)	85(8.5)	65(6.5)	95(9.5)

Note (1) For high speed operation, insert the white connector and the red connector beside the control box in other places respectively.

How to interpret the blower characteristics table

Example : Case of FDUMJ71HKXE2



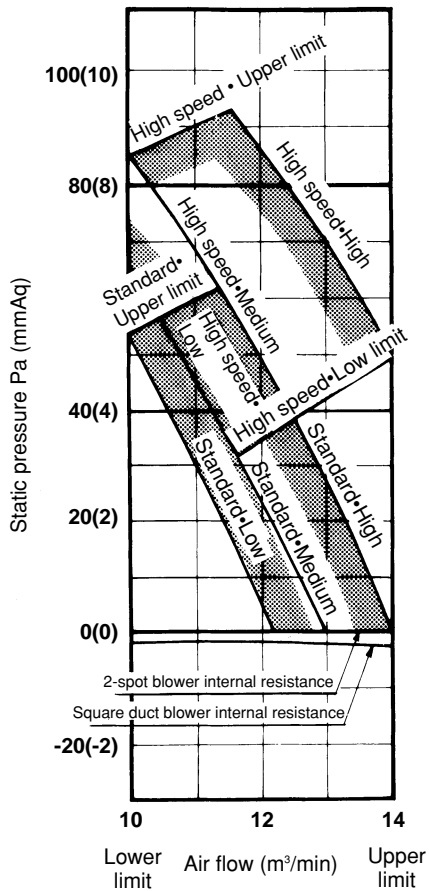
1 2-spot blowout.....

Internal resistance increases more than the standard 3-spot blowout. Approx. 14Pa(1.4mmAq) at 17m³/min

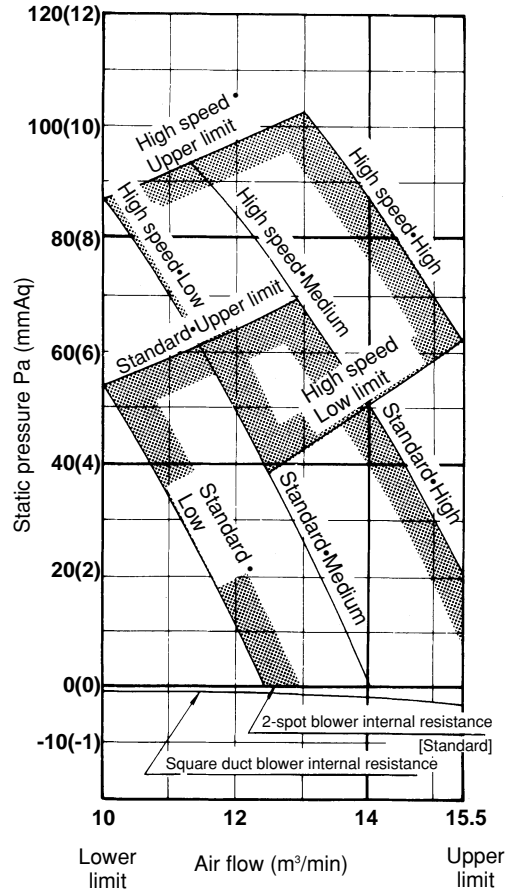
2 Square duct blowout.....

Internal resistance decreases more than the standard round duct (ø200 3-spot). 3Pa(0.3mmAq) at 17 m³/min. (External static pressure increases in reverse.)

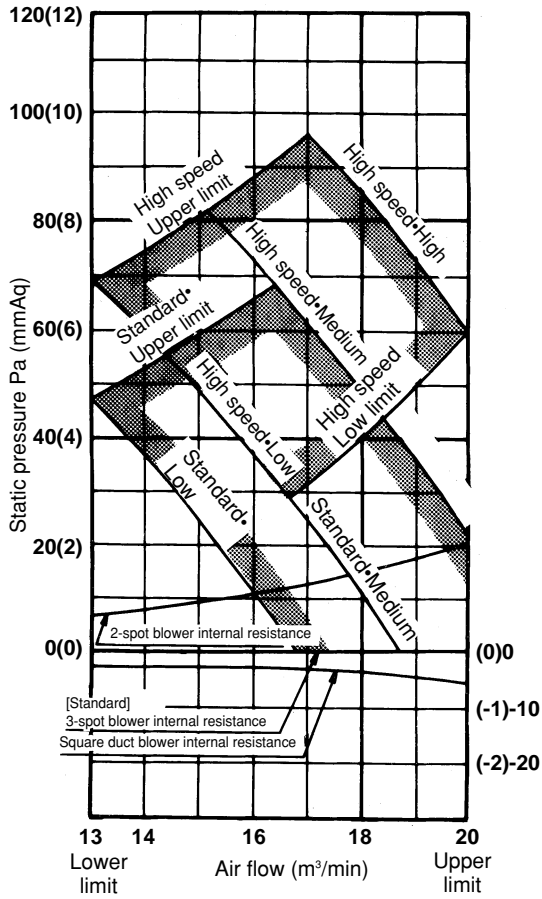
Model FDUMJ36HKXE2



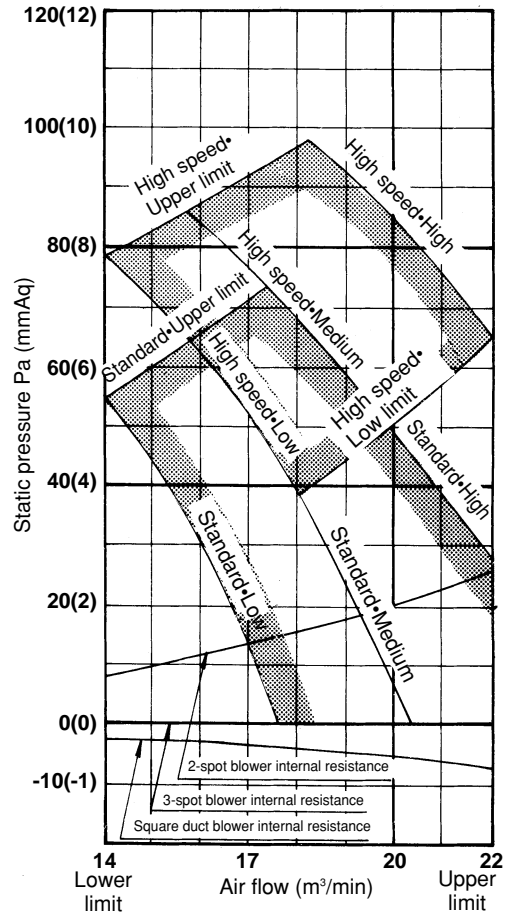
Models FDUMJ45HKXE2, 56HKXE2



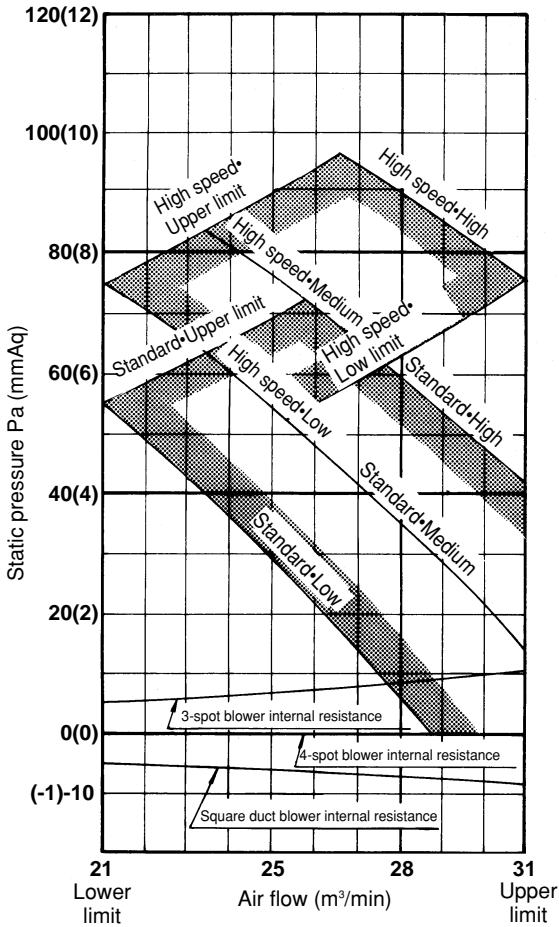
Model FDUMJ71HKXE2



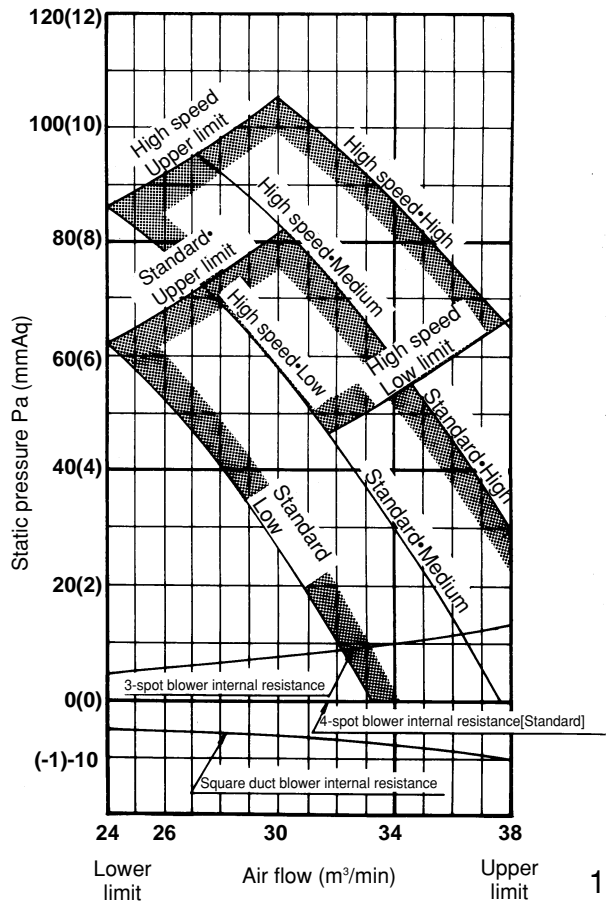
Model FDUMJ90HKXE2



Model FDUMJ112HKXE2



Model FDUMJ140HKXE2



20.2.8 Noise level

Notes (1) The data are based on the following conditions.

Ambient air temperature: Indoor unit 27°C DB, 19°C WB. Outdoor unit 35°C DB

(2) The data in the chart are measured in an anechoic room.

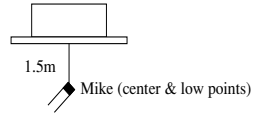
(3) The noise levels measured in the field are usually higher than the data because of reflection.

(1) Indoor unit

(a) Ceiling recessed type (FDT)

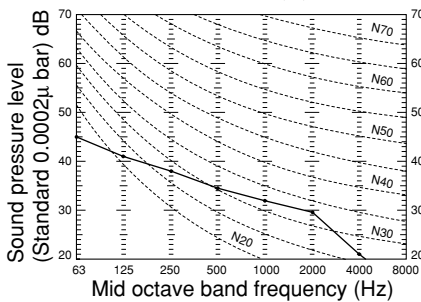
Measured based on JIS B 8616

Mike position as below Mike position as below



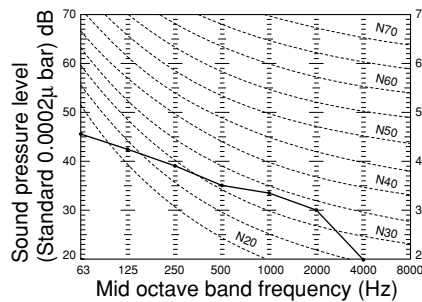
Models FDTJ28HKXE2, 36HKXE2

Noise level 37 dB (A) at HIGH
34 dB (A) at MEDIUM
33 dB (A) at LOW



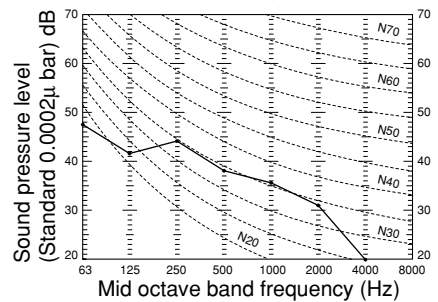
Models FDTJ45HKXE2, 56HKXE2

Noise level 38 dB (A) at HIGH
35 dB (A) at MEDIUM
34 dB (A) at LOW



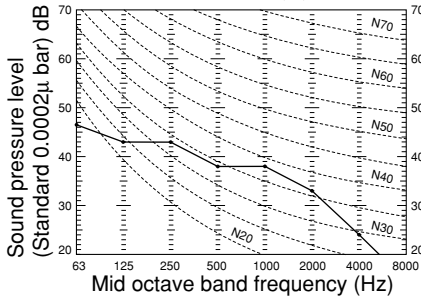
Model FDTJ71HKXE2

Noise level 40 dB (A) at HIGH
38 dB (A) at MEDIUM
36 dB (A) at LOW



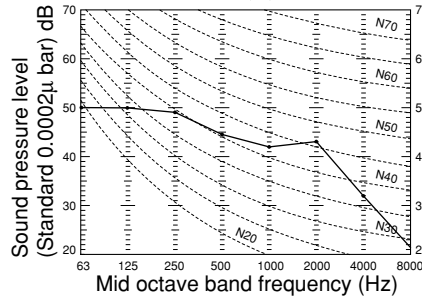
Model FDTJ90HKXE2

Noise level 42 dB (A) at HIGH
40 dB (A) at MEDIUM
38 dB (A) at LOW



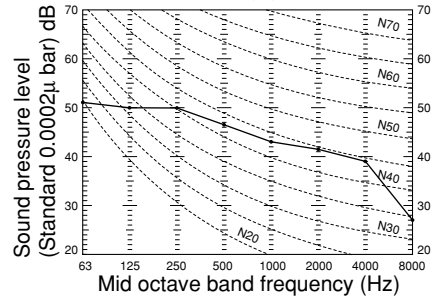
Model FDTJ112HKXE2

Noise level 49 dB (A) at HIGH
46 dB (A) at MEDIUM
42 dB (A) at LOW



Model FDTJ140HKXE2

Noise level 50 dB (A) at HIGH
47 dB (A) at MEDIUM
45 dB (A) at LOW



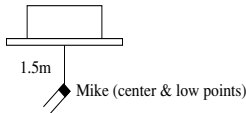
(b) 2-way outlet ceiling recessed type (FDTW)

Models FDTWJ28HKXE2B, 45HKXE2B 56HKXE2B Model FDTWJ71HKXE2B

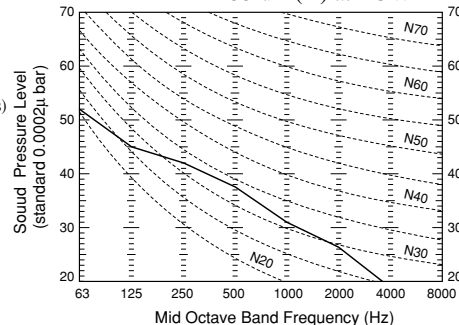
Measured based on JIS B 8616

Mike position as below

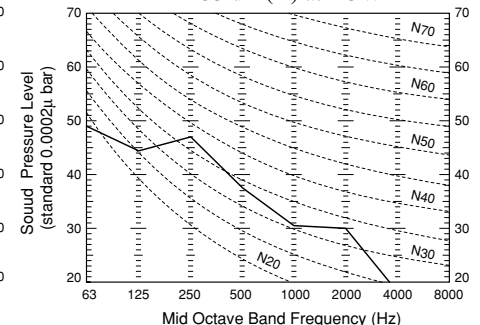
Mike position as below



Noise level 39 dB (A) at HIGH
36 dB (A) at MEDIUM
33 dB (A) at LOW

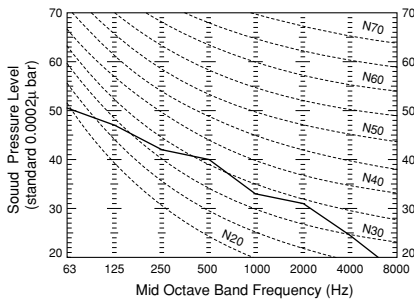


Noise level 41 dB (A) at HIGH
38 dB (A) at MEDIUM
35 dB (A) at LOW



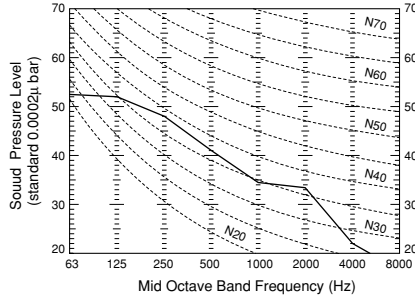
Model FDTWJ90HKXE2B

Noise level 41 dB (A) at HIGH
39 dB (A) at MEDIUM
36 dB (A) at LOW



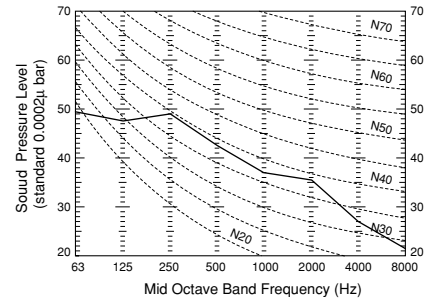
Model FDTWJ112HKXE2B

Noise level 44 dB (A) at HIGH
41 dB (A) at MEDIUM
38 dB (A) at LOW



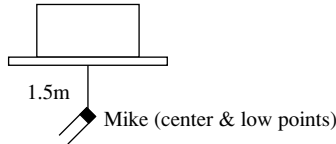
Model FDTWJ140HKXE2B

Noise level 45 dB (A) at HIGH
42 dB (A) at MEDIUM
39 dB (A) at LOW



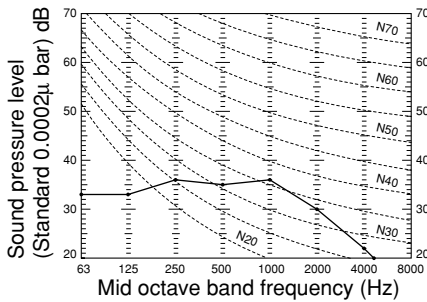
(c) 1-way outlet ceiling recessed type (FDTs)

Measured based on JIS B 8616
Mike position as below



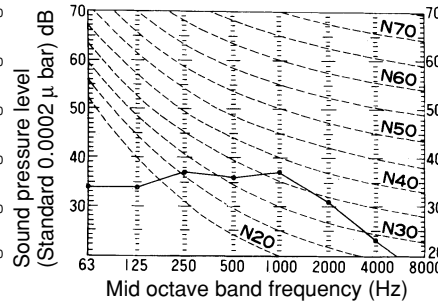
Model FDTsJ22HKXE2B

Noise level 39 dB (A) at MEDIUM
38 dB (A) at LOW



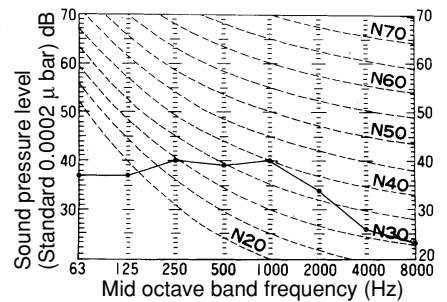
Models FDTsJ28HKXE2B, 36HKXE2B

Noise level 40 dB (A) at HIGH
39 dB (A) at MEDIUM
38 dB (A) at LOW



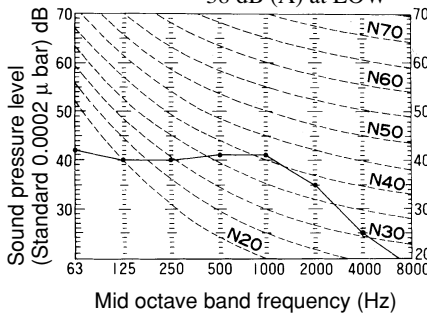
Model FDTsJ45HKXE2B

Noise level 43 dB (A) at HIGH
40 dB (A) at MEDIUM
38 dB (A) at LOW



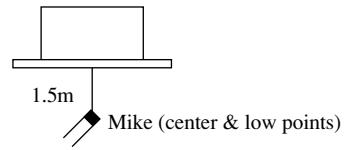
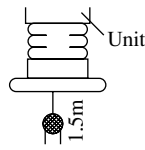
Model FDTsJ71HKXE2B

Noise level 44 dB (A) at HIGH
40 dB (A) at MEDIUM
38 dB (A) at LOW



(d) Cassetteria type (FDR)

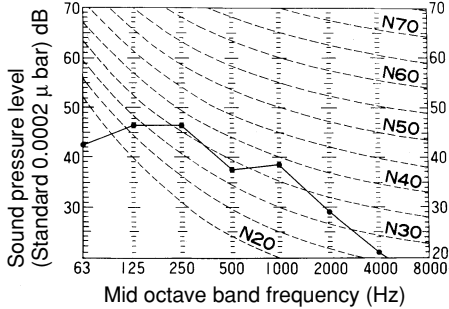
Measured based on JIS B 8616
Mike position as below



(i) Canvas duct Panel type

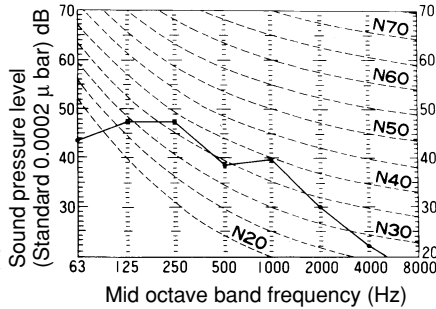
Model FDRJ22HKXE2

Noise level 42 dB (A) at HIGH
40 dB (A) at MEDIUM
37 dB (A) at LOW



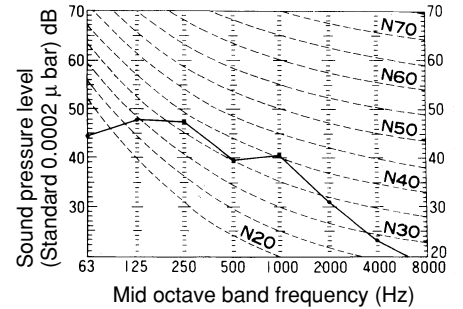
Model FDRJ28HKXE2

Noise level 43 dB (A) at HIGH
41 dB (A) at MEDIUM
38 dB (A) at LOW



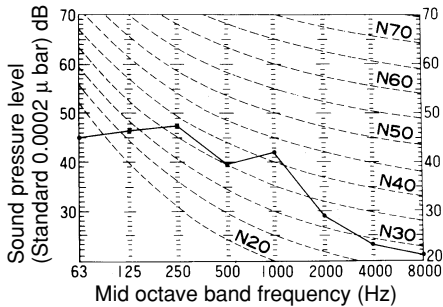
Models FDRJ45HKXE2, 56HKXE2

Noise level 44 dB (A) at HIGH
41 dB (A) at MEDIUM
38 dB (A) at LOW



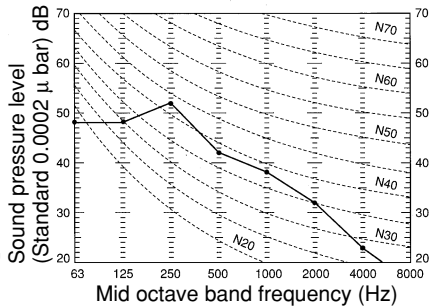
Models FDRJ71HKXE2, 90HKXE2

Noise level 44 dB (A) at HIGH
41 dB (A) at MEDIUM
38 dB (A) at LOW



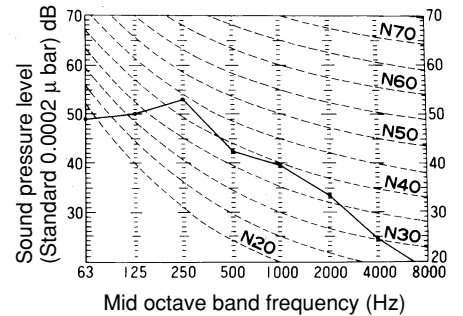
Model FDRJ112HKXE2

Noise level 46 dB (A) at HIGH
43 dB (A) at MEDIUM
39 dB (A) at LOW



Model FDRJ140HKXE2

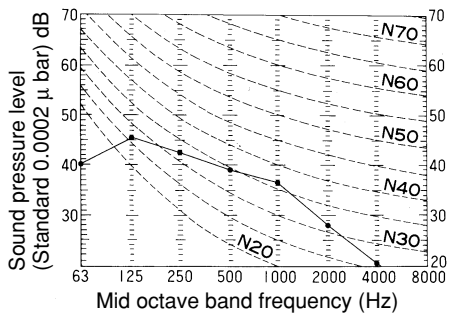
Noise level 47 dB (A) at HIGH
44 dB (A) at MEDIUM
40 dB (A) at LOW



(ii) Silent Panel type

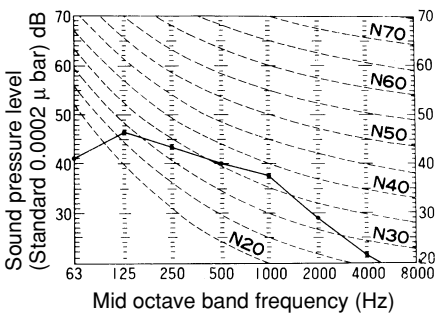
Model FDRJ22HKXE2

Noise level 41 dB (A) at HIGH
39 dB (A) at MEDIUM
36 dB (A) at LOW



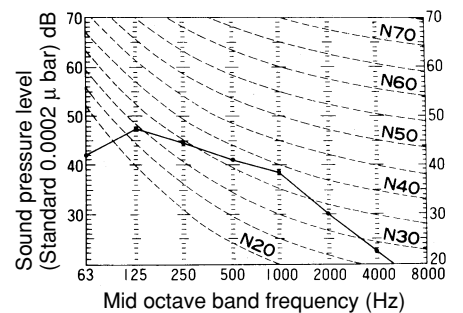
Model FDRJ28HKXE2

Noise level 42 dB (A) at HIGH
40 dB (A) at MEDIUM
37 dB (A) at LOW



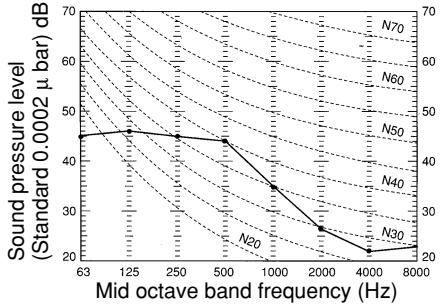
Models FDRJ45HKXE2, 56HKXE2

Noise level 43 dB (A) at HIGH
40 dB (A) at MEDIUM
37 dB (A) at LOW



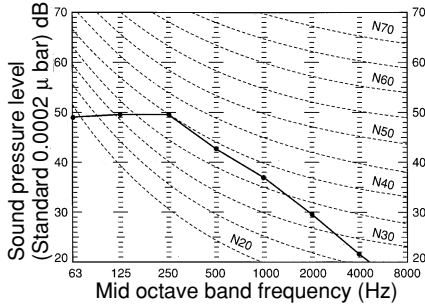
Models FDRJ71HKXE2, 90HKXE2

Noise level 43 dB (A) at HIGH
40 dB (A) at MEDIUM
37 dB (A) at LOW



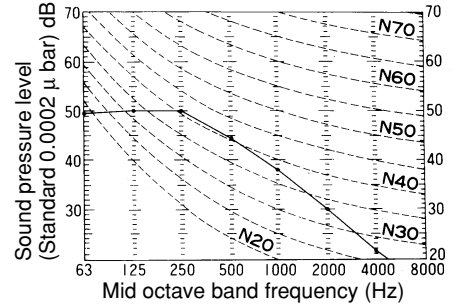
Model FDRJ112HKXE2

Noise level 45 dB (A) at HIGH
42 dB (A) at MEDIUM
38 dB (A) at LOW



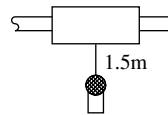
Model FDRJ140HKXE2

Noise level 46 dB (A) at HIGH
43 dB (A) at MEDIUM
39 dB (A) at LOW



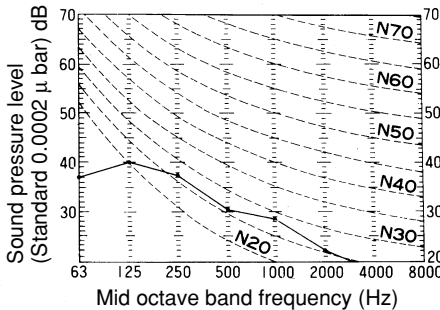
(d) Satellite ducted type (FDUM)

Measured based on JIS B 8616
Mike position as below



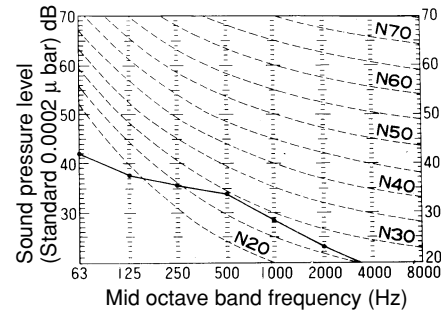
Model FDUMJ36HKXE2

Noise level 34 dB (A) at HIGH
32 dB (A) at MEDIUM
29 dB (A) at LOW



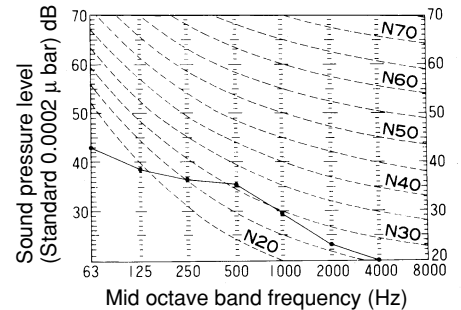
Models FDUMJ45HKXE2, 56HKXE2, 71HKXE2

Noise level 35 dB (A) at HIGH
32 dB (A) at MEDIUM
29 dB (A) at LOW



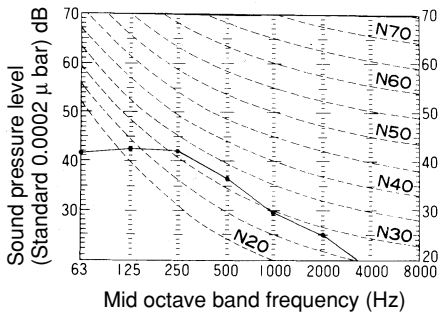
Model FDUMJ90HKXE2

Noise level 36 dB (A) at HIGH
33 dB (A) at MEDIUM
30 dB (A) at LOW



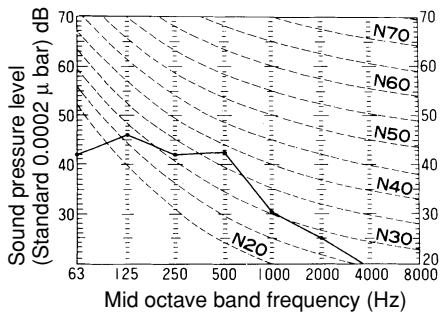
Model FDUMJ112HKXE2

Noise level 38 dB (A) at HIGH
35 dB (A) at MEDIUM
32 dB (A) at LOW



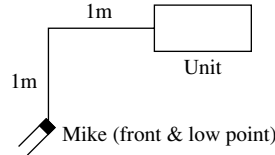
Model FDUMJ140HKXE2

Noise level 39 dB (A) at HIGH
37 dB (A) at MEDIUM
34 dB (A) at LOW



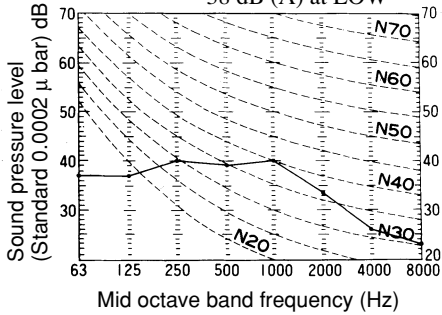
(f) Ceiling suspension type (FDE)

Measured based on JIS B 8616
Mike position as below



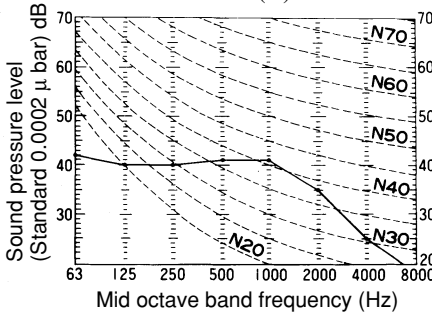
Models FDEJ36HKXE2B, 45HKXE2B, 56HKXE2B

Noise level 43 dB (A) at HIGH
40 dB (A) at MEDIUM
38 dB (A) at LOW



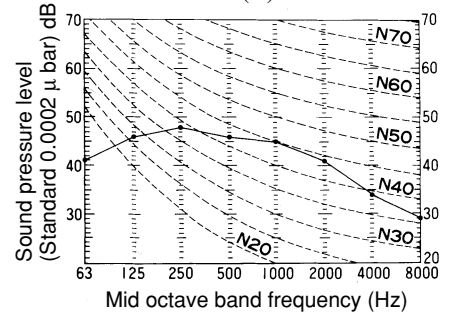
Model FDEJ71HKXE2B

Noise level 44 dB (A) at HIGH
40 dB (A) at MEDIUM
38 dB (A) at LOW



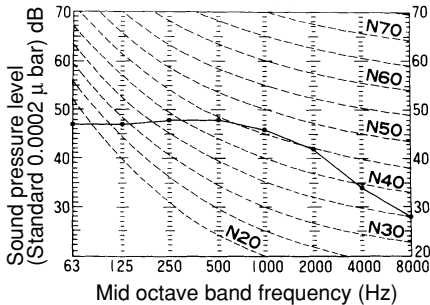
Model FDEJ112HKXE2B

Noise level 49 dB (A) at HIGH
46 dB (A) at MEDIUM
42 dB (A) at LOW



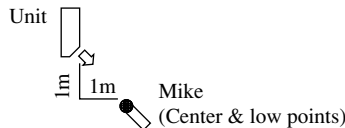
Model FDEJ140HKXE2B

Noise level 50 dB (A) at HIGH
47 dB (A) at MEDIUM
42 dB (A) at LOW



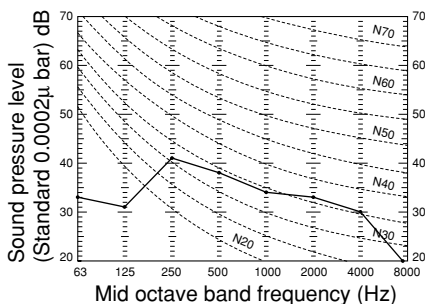
(g) Wall mounted type (FDK)

Measured based on JIS B 8616
Mike position as below



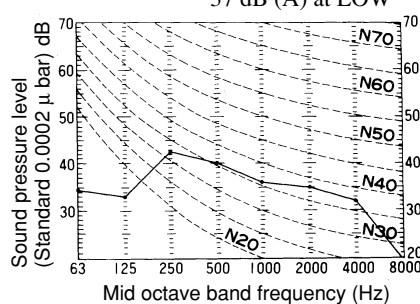
Model FDKJ22HKXE2

Noise level 40 dB (A) at HIGH
37 dB (A) at LOW



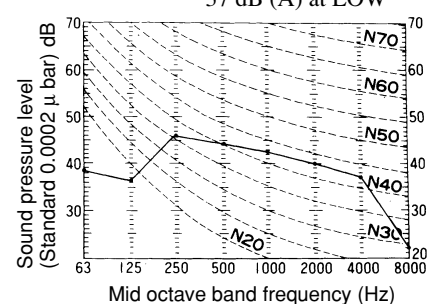
Models FDKJ28HKXE2, 36HKXE2

Noise level 42 dB (A) at HIGH
40 dB (A) at MEDIUM
37 dB (A) at LOW



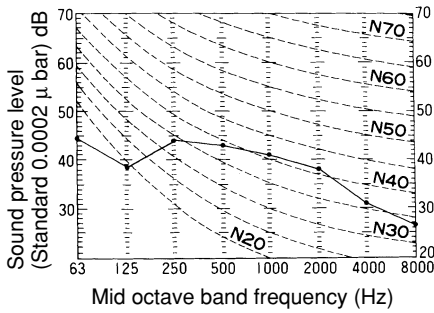
Model FDKJ45HKXE2

Noise level 44 dB (A) at HIGH
41 dB (A) at MEDIUM
37 dB (A) at LOW



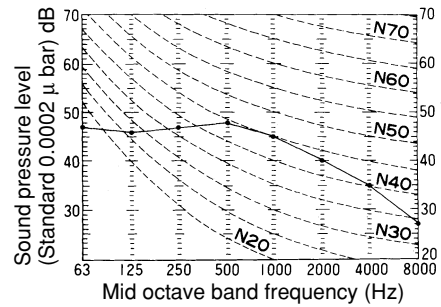
Model FDKJ56HKXE2

Noise level 46 dB (A) at HIGH
43 dB (A) at MEDIUM
39 dB (A) at LOW

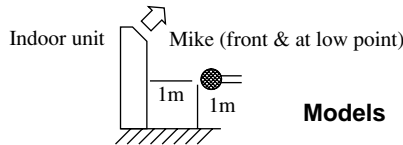


Model FDKJ71HKXE2

Noise level 47 dB (A) at HIGH
44 dB (A) at MEDIUM
40 dB (A) at LOW

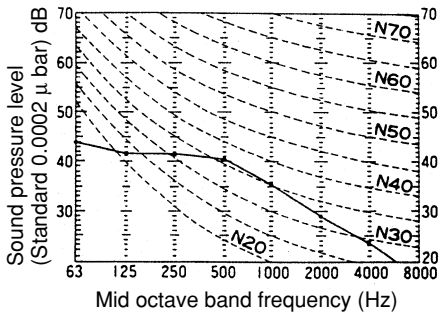


- (h) Floor standing exposed type (FDFL) Measured based on JIS B 8616
- (i) Floor standing hidden type (FDFU) Mike position as below



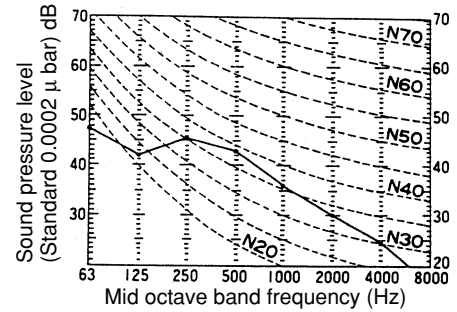
**Models FDFLJ28HKXE2
FDFUJ28HKXE2**

Noise level 41 dB (A) at HIGH
38 dB (A) at MEDIUM
36 dB (A) at LOW



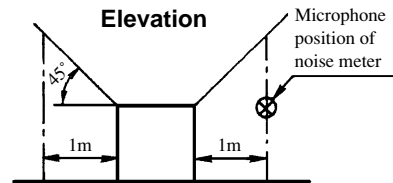
**Models FDFLJ 45HKXE2, 71HKXE2
FDFUJ45HKXE2, 56HKXE2
71HKXE2**

Noise level 43 dB (A) at HIGH
41 dB (A) at MEDIUM
40 dB (A) at LOW



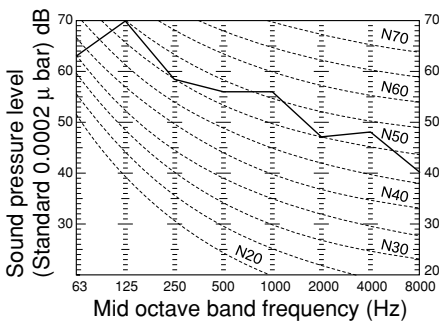
(2) Outdoor unit (FDC)

Note (1) The microphone position is as shown below.
(JIS - B8616 · Coolong)
It is the maximum noise level point which locates on the vertical face 1 m apart from unit side face.



Models FDCP2001HKXRE2, 2501HKXRE2

Noise level 60 dB (A)



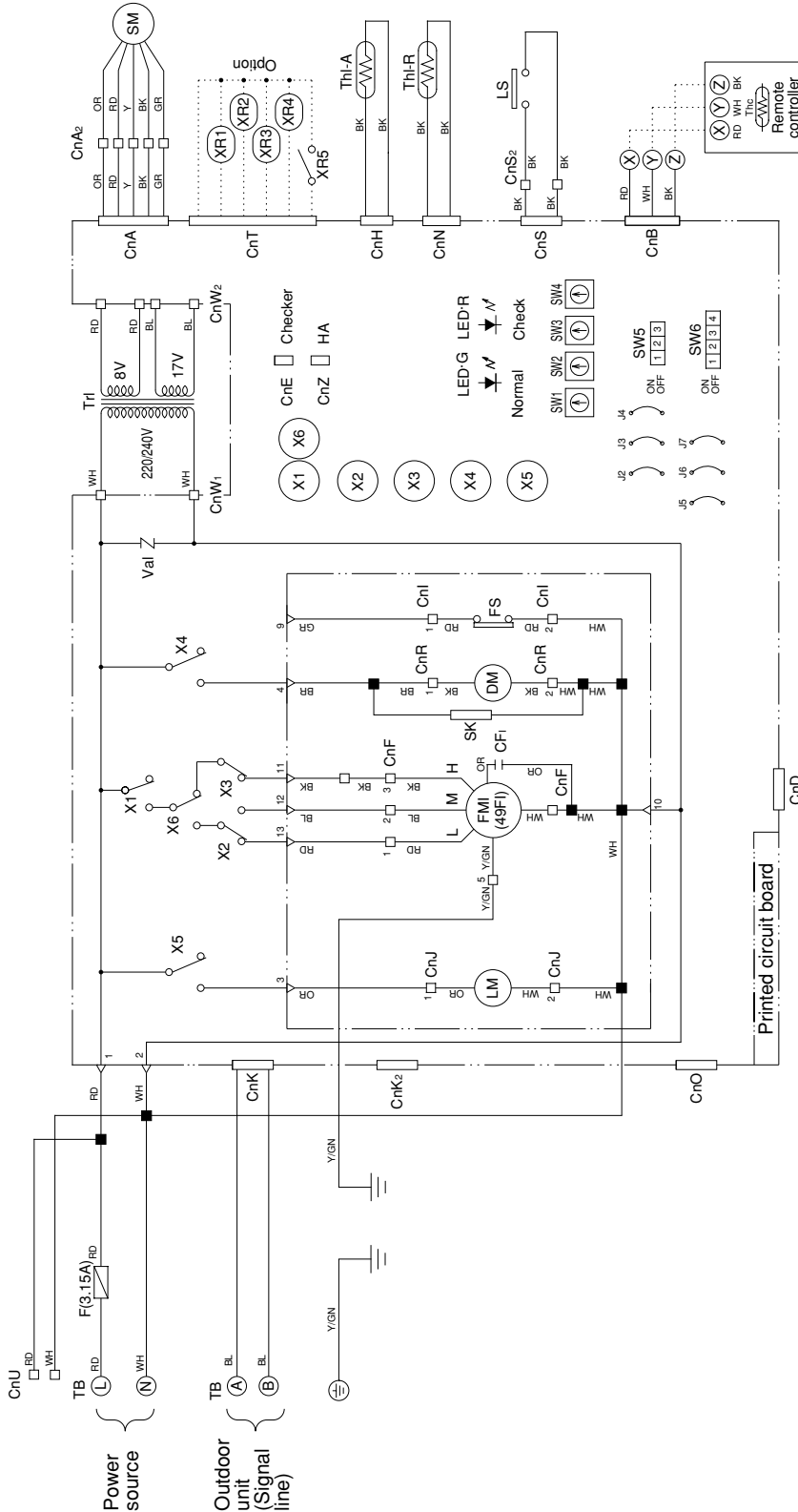
20.3 ELECTRICAL DATA

20.3.1 Electrical wiring

(1) Indoor unit

(a) Ceiling recessed type (FDT)

Models All models



Color mark

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

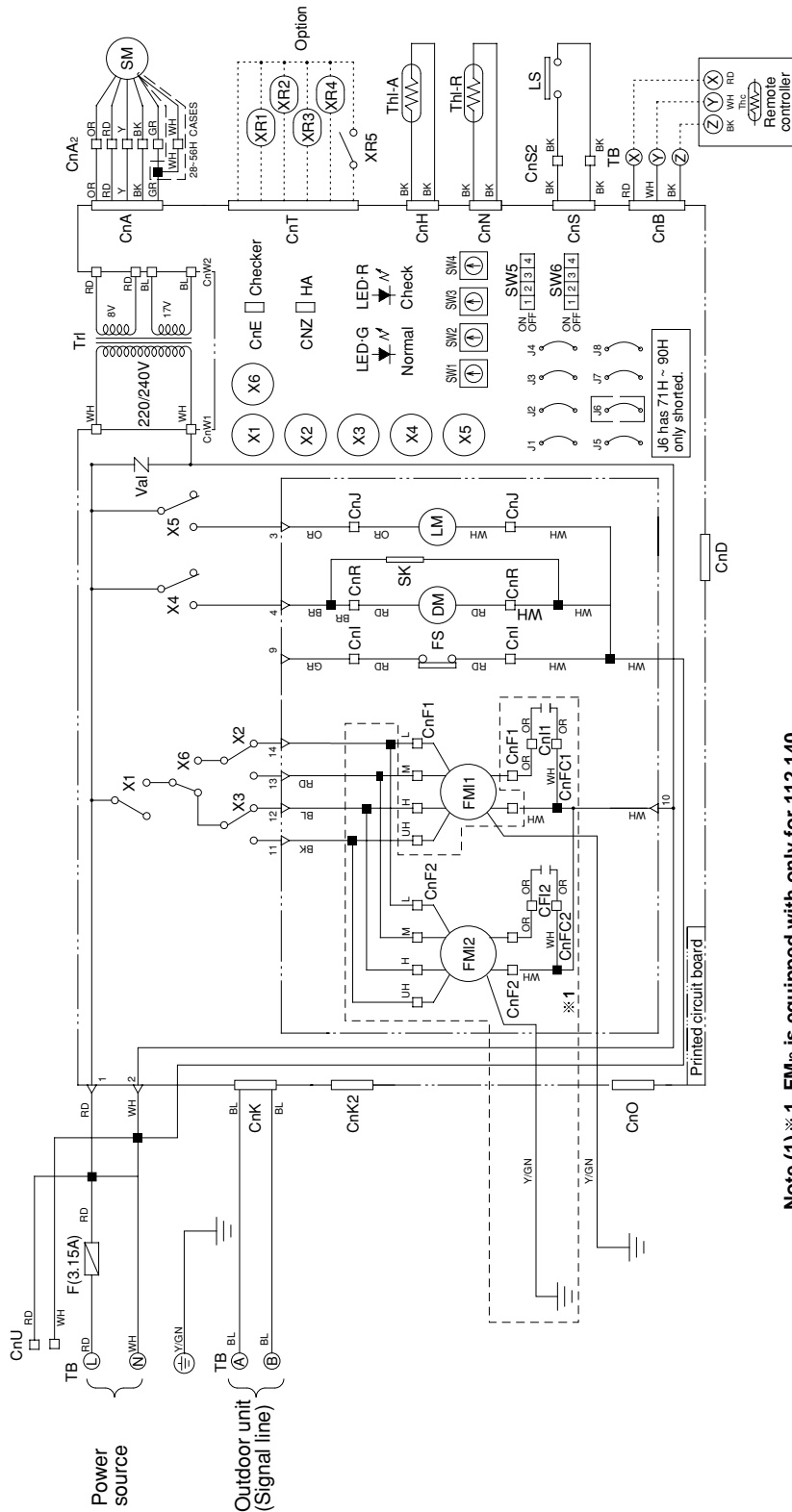
Function of switches

Mark	Function	
	Input	Reverse Invalid
SW5-1	ON	Run Stop
	OFF	Reverse Invalid
SW5-2	ON	Heating temp. shift + 3°C
	OFF	Normal
SW5-3	ON	Test run of condensate pump motor
	OFF	Normal

Meaning of marks

Mark	Parts name	Mark	Parts name
FM	Fan motor	F	Fuse
49Fi	Internal thermostat for FMI	CnA-Z	Connector (Cmark)
CF	Capacitor for FM	TB	Terminal block
DM	Drain motor	◀mark	Terminal (F)
FS	Frost switch (For overflow prevention)	■mark	Connector
LM	Lower motor	XR1	Operation indication (DC12)
LS	Limit switch	XR2	Heating indication (DC12)
SM	Stepping motor (For Exp.v)	XR3	ON indication for CM (DC12)
X1,2,3,6	Auxiliary relay (For FMI)	XR4	Check indication (DC12)
X4	Auxiliary relay (For DM)	XR5	Distant operation
X5	Auxiliary relay (For LM)	SK	Spark killer

**(b) 2-way outlet ceiling recessed type (FDTW)
Models All models**



Note (1) ※ 1. FM2 is equipped with only for 112,140.

Color mark

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

Function of switches

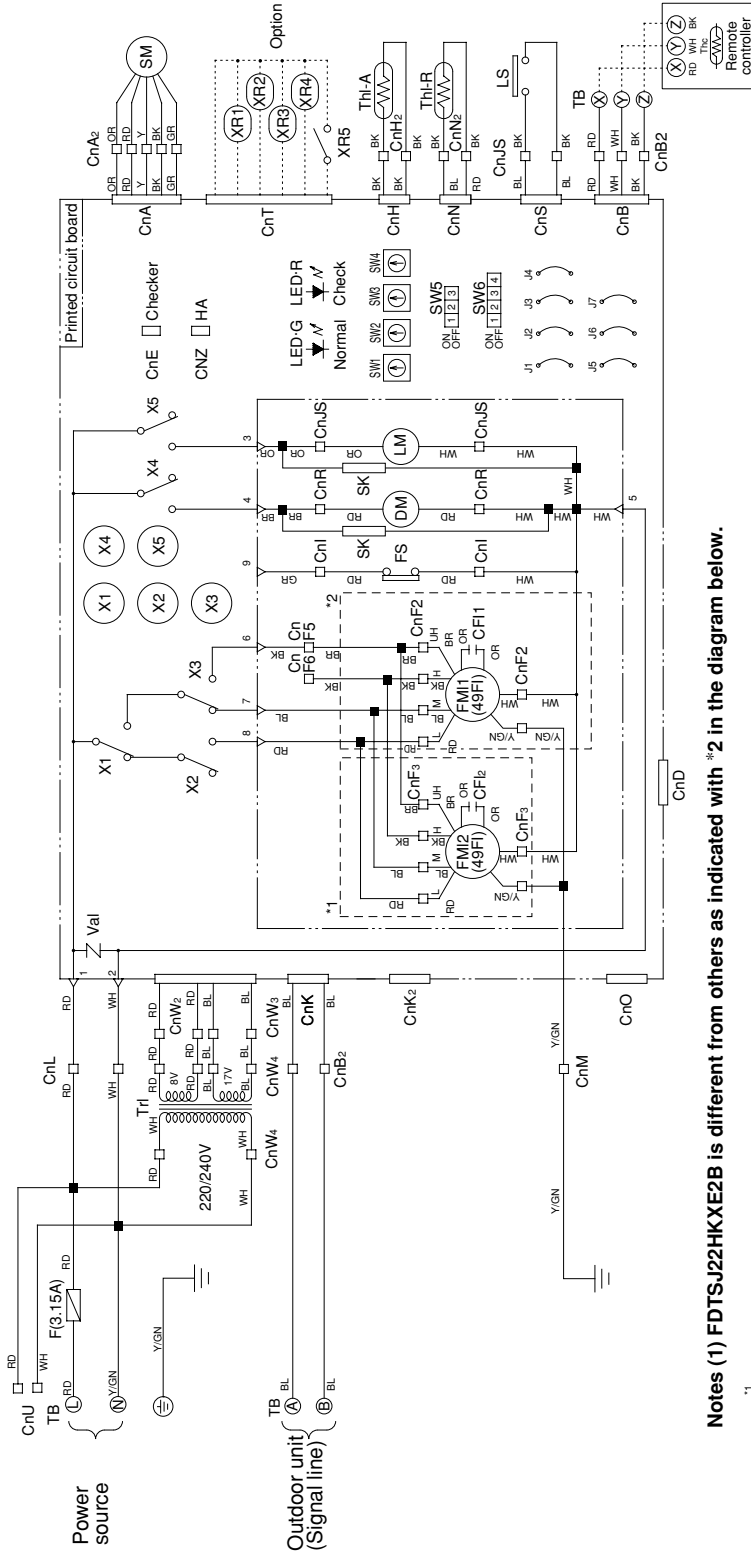
Mark	Function	
	ON	OFF
SW5-1	ON	Reverse Invalid
	OFF	Run Stop
SW5-2	ON	Heating temp. shift + 3°C
	OFF	Normal
SW5-3	ON	Test run of condensate pump motor
	OFF	Normal

Meaning of marks

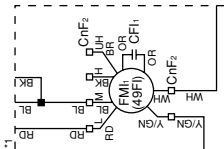
Mark	Parts name	Mark	Parts name
FM _i	Fan motor	F	Fuse
49F _i	Internal thermostat (For FM _i)	CnA-Z	Connector (G mark)
CF _i	Capacitor for FM _i	TB	Terminal block
DM	Drain motor	4mark	Connector
FS	Float switch (For overflow prevention)	#mark	Heating indication (DC12)
LM	Limit switch	XR1	Heating indication (DC12)
LS	Lower motor	XR2	ON indication for CM (DC12)
SM	Stepping motor (For Exp.v)	XR3	ON indication for CM (DC12)
X1,2,3,6	Auxiliary relay (For FM _i)	XR4	Check indication
X4	Auxiliary relay (For DM)	XR5	Distant operation
X5	Auxiliary relay (For LM)	SK	Spark killer
Thl-A	Thermistor		
Thl-R	Thermistor		
SW1	Indoor unit address unit's place		
SW2	Indoor unit address unit's place		
SW3	Indoor unit address unit's place		
SW4	Indoor unit address unit's place		
SW6	Change of heat pump type		
Tr1	Transformer		
Val	Valve		
LED-R	Indication lamp (Red)		
LED-G	Indication lamp (Green)		

(c) 1-way outlet ceiling recessed type (FDTS)

Models All models



Notes (1) FDTSJ22HKXE2B is different from others as indicated with *2 in the diagram below.



(2) *1 FM12 is equipped with only for FDTSJ71HKXE2B.

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FM _{1,2}	Fan motor	Th-A	Thermistor	F	Fuse
49F ₁	Internal thermostat for FM ₁	Th-R	Thermistor	CnA-Z	Connector (□ mark)
CF _{1,2}	Capacitor for FM ₁	SW1	Indoor unit address unit's place	TB	Terminal block
DM	Drain motor	SW2	Indoor unit address unit's place	*4mark	Terminal (F)
FS	Float switch	SW3	Outdoor unit address unit's place	X1	Connector
LM	Lower motor	SW4	Change of heat pump type	XR1	Operation indication (DC12)
LS	Limit switch	SW6	Transformer	XR2	Heating indication (DC12)
SM	Stepping motor (For Exp.v)	Tr1	Varistor	XR3	ON indication for CM (DC12)
X1,2,3	Auxiliary relay (For FM ₁)	Val	Indication lamp (Red)	XR4	Check indication (DC12)
X4	Auxiliary relay (For DM)	LED-R	Indication lamp (Green)	XR5	Distant operation
X5	Auxiliary relay (For LM)	LED-G		SK	Spark killer

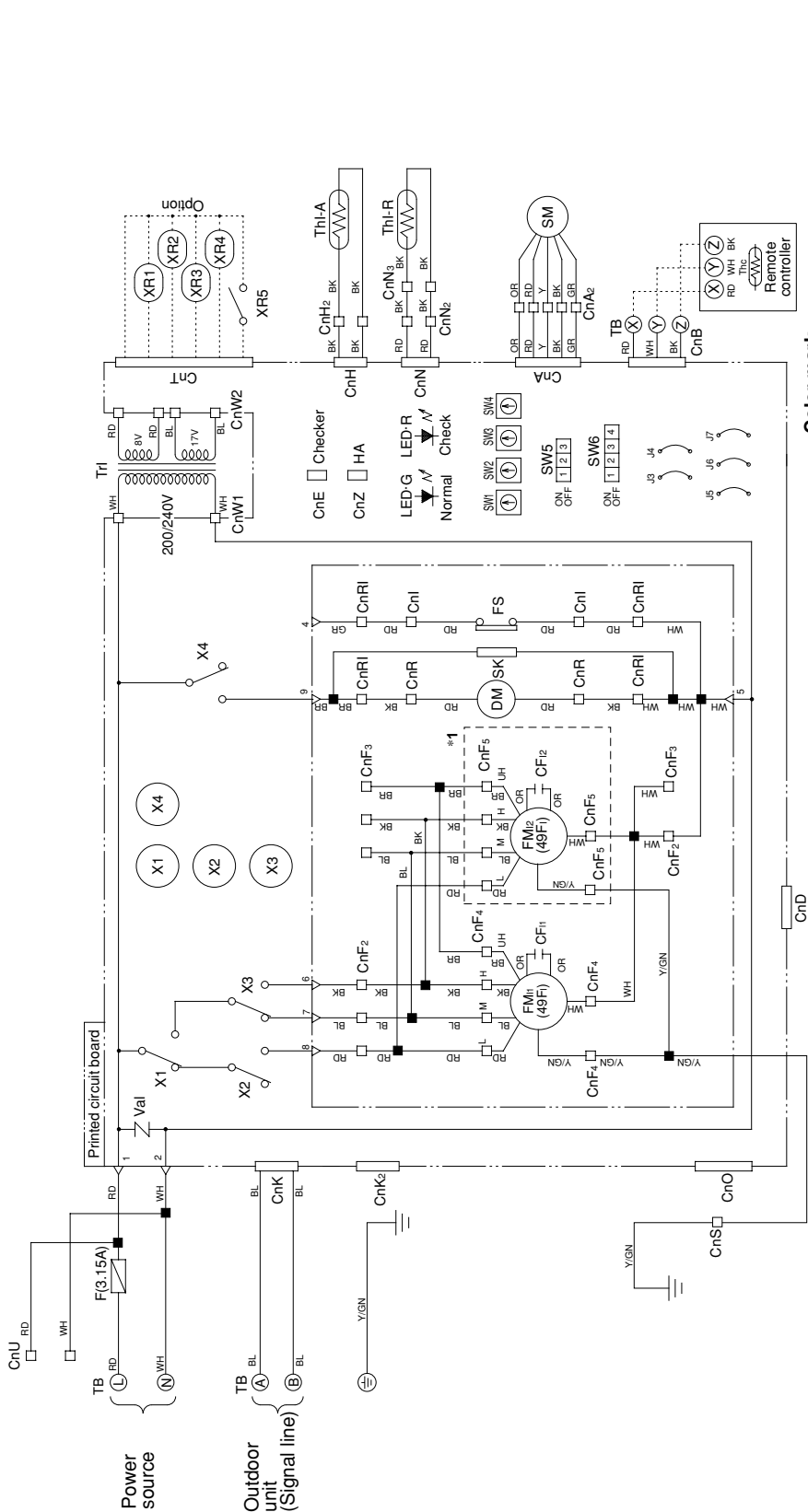
Color mark

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

Function of switches

Mark	Function	
	Input signal	Run Stop
SW5-1	ON	Reverse Invalid
	OFF	Run Stop
SW5-2	ON	Heating temp. shift + 3°C
	OFF	Normal
SW5-3	ON	Test run of condensate pump motor
	OFF	Normal

(d) Cassetteria type (FDR)
Models All models



Color mark

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

Function of switches

Mark	Function
SW5-1	ON: Input signal OFF: Reverse Invalid
SW5-2	ON: Run Stop OFF: Heating temp. shift + 3°C
SW5-3	ON: Normal OFF: Test run of condensate pump motor

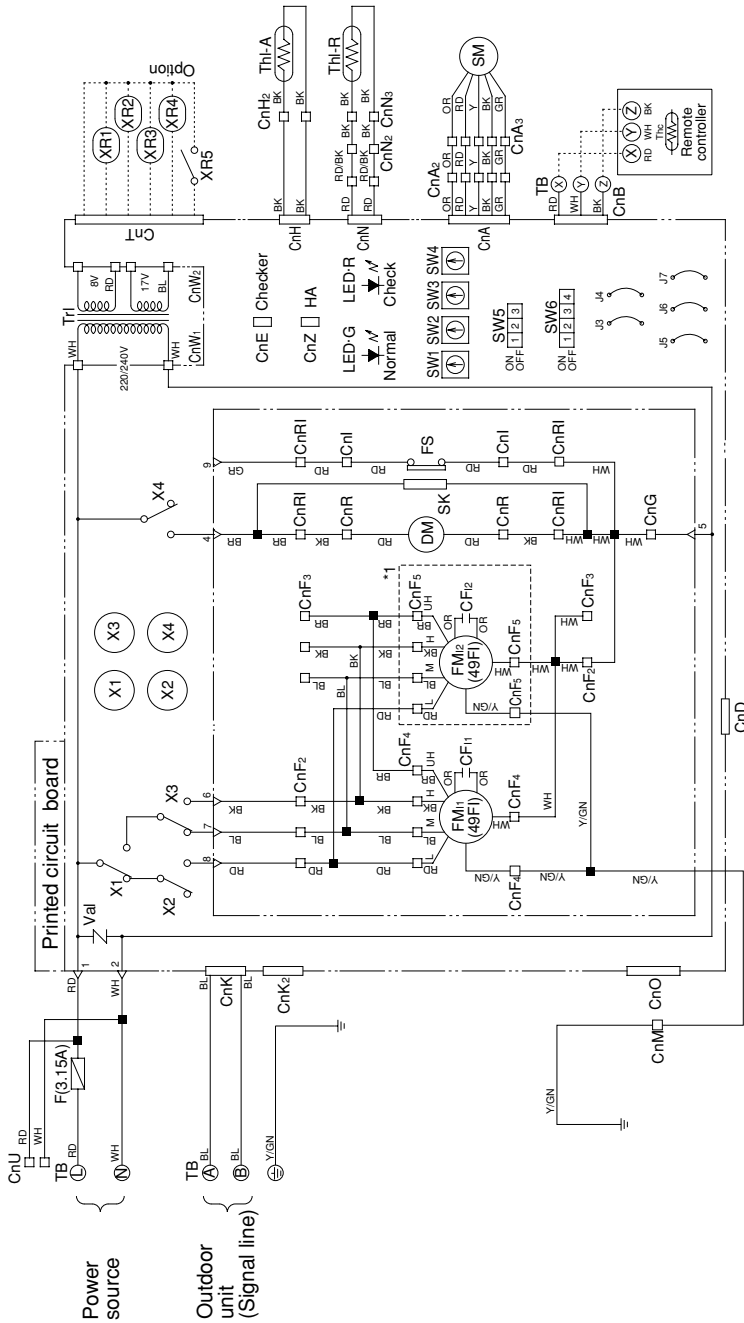
Note (1) *1 FM₁₂ is equipped with only for FDRJ112HKXE2,140HKXE2.

Meaning of marks

Mark	Parts name	Mark	Parts name
FM _{1,2}	Fan motor	CnA-Z	Connector (α mark)
CF _{1,2}	Capacitor for FM ₁	TB	Terminal block
DM	Drain motor	<mark	Terminal (F)
FS	Float switch	XR1	Connector
SM	Stepping motor (For Exp.v)	XR2	Operation indication (DC12)
X1,2,3	Auxiliary relay (For FM ₁)	XR3	Heating indication (DC12)
X4	Auxiliary relay (For DM)	XR4	ON indication for CM (DC12)
49F ₁	Internal thermostat for FM ₁	XR5	Check indication (DC12)
Th-A	Thermistor	SK	Distant operation Spark killer
Th-R	Thermistor		

(e) Satellite ducted type (FDUM)

Models All models



Color mark

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

Function of switches

Mark	Function	
	ON	OFF
SW5-1	ON	Reverse Invalid
	OFF	Run Stop
SW5-2	ON	Heating temp. shift + 3°C
	OFF	Normal
SW5-3	ON	Test run of condensate pump motor
	OFF	Normal

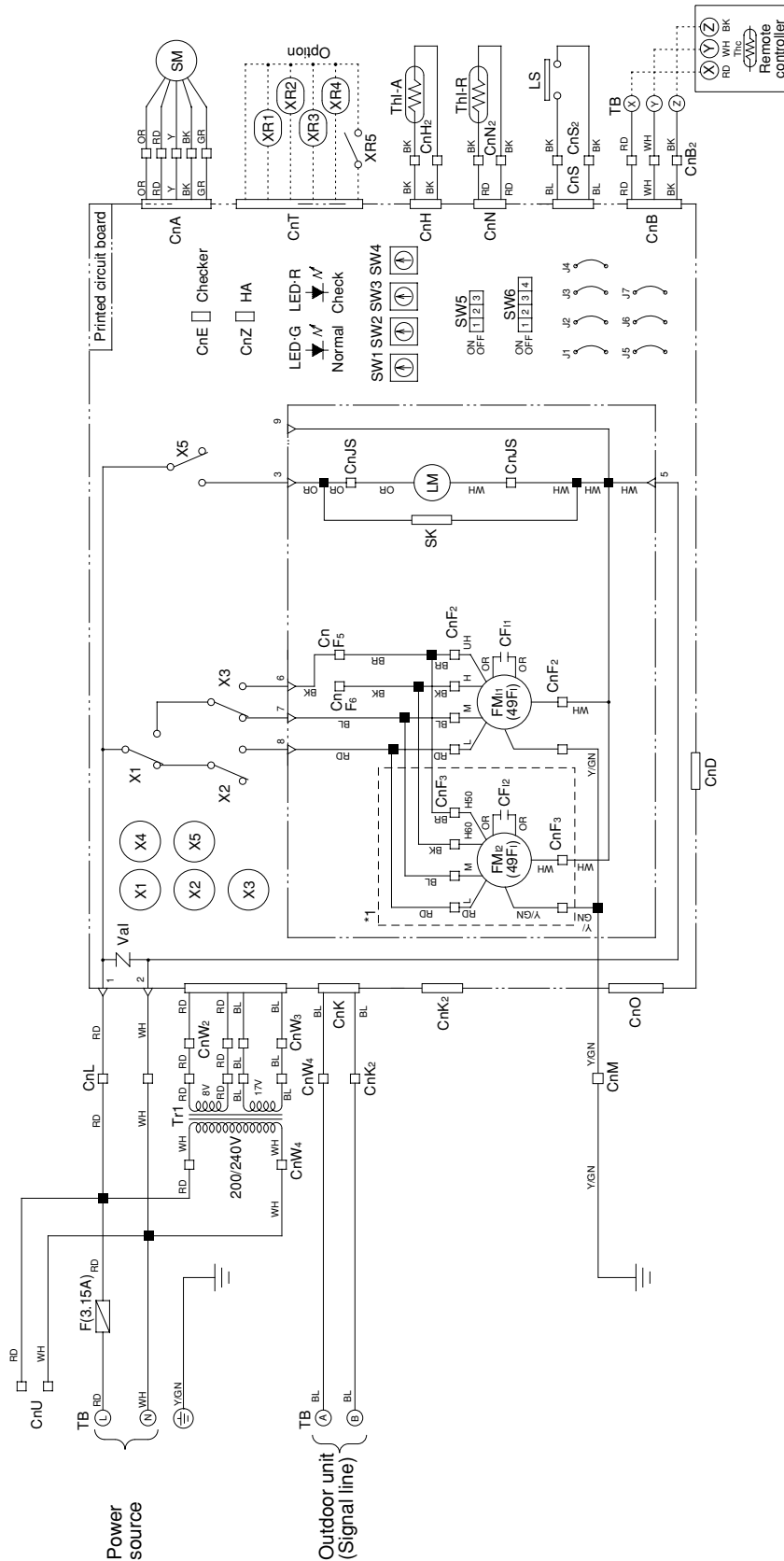
Note (1) *1 FM₂ is equipped with only for FDUMJ12HKXE2, 140HKXE2.

Meaning of marks

Mark	Parts name	Mark	Parts name
FM _{1,2}	Fan motor	CnA-Z	Connector (G mark)
CF _{1,2}	Capacitor for FM ₁	TB	Terminal block
DM	Drain motor	< mark	Terminal (F)
FS	Float switch (For overflow prevention)	■mark	Connector
SM	Stepping motor (For Exp.v)	XR1	Operation indication (DC12)
X1.2.3	Auxiliary relay (For Exp.v)	XR2	Heating indication (DC12)
X4	Auxiliary relay (For DM)	XR3	ON indication for CM (DC12)
49F ₁	Internal thermostat for FM ₁	XR4	Check indication (DC12)
Th-A	Thermistor	XR5	Distant operator
Th-R	Thermistor	SK	Spark killer
		F	Fuse

(f) Ceiling suspension type (FDE)

Models All models



Color mark

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

Meaning of marks

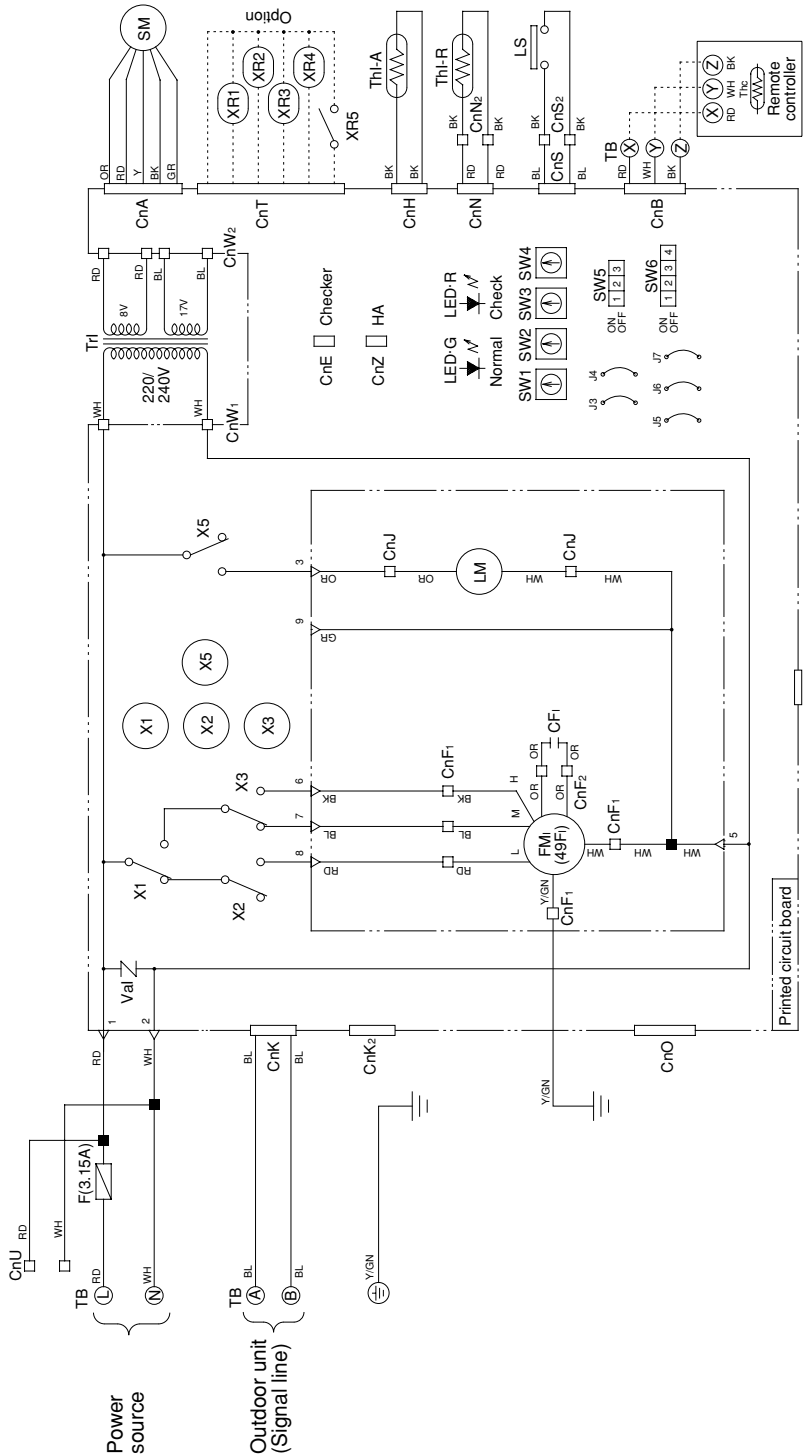
Mark	Parts name	Mark	Parts name
FM _{1,2}	Fan motor	CnA-Z	Connector (a mark)
CF _{1,2}	Capacitor for FM ₁	TB	Terminal block
49F ₁	Internal thermostat for FM ₁	<mark	Terminal (F)
LM	Lower motor	mark	Connector
LS	Limit switch	XR1	Operation indication (DC12)
SM	Stepping motor (For Exp.v)	XR2	Heating indication (DC12)
X1,2,3	Auxiliary relay (For FM ₁)	XR3	Heating indication (DC12)
Th-A	Thermistor	XR4	Check indication for CM (DC12)
Th-R	Thermistor	XR5	Distant operation
LED-R	Indication lamp (Red)	SK	Spark killer
LED-G	Indication lamp (Green)		
F	Fuse		

Function of switches

Mark	Function	
SW5-1	ON	Input signal
	OFF	Reverse Invalid
SW5-2	ON	Run Stop
	OFF	Heating temp. shift + 3°C
SW5-3	ON	Normal
	OFF	Test run of condensate pump motor
	OFF	Normal

Note (1) *1 FM₂ is equipped with only for FDEJ71HKXE2B,112HKXE2B,140HKXE2B.

(g) Wall mounted type (FDK)
Models All models



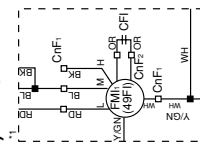
Color mark

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

Function of switches

Mark	Function	
	ON	OFF
SW5-1	ON	Reverse Invalid
	OFF	Run Stop
SW5-2	ON	Heating temp. shift + 3°C
	OFF	Normal
SW5-3	ON	Test run of condensate pump motor
	OFF	Normal

Note (1) FDKJ22HXE2 is different from others as indicated with *1 in the diagram below.



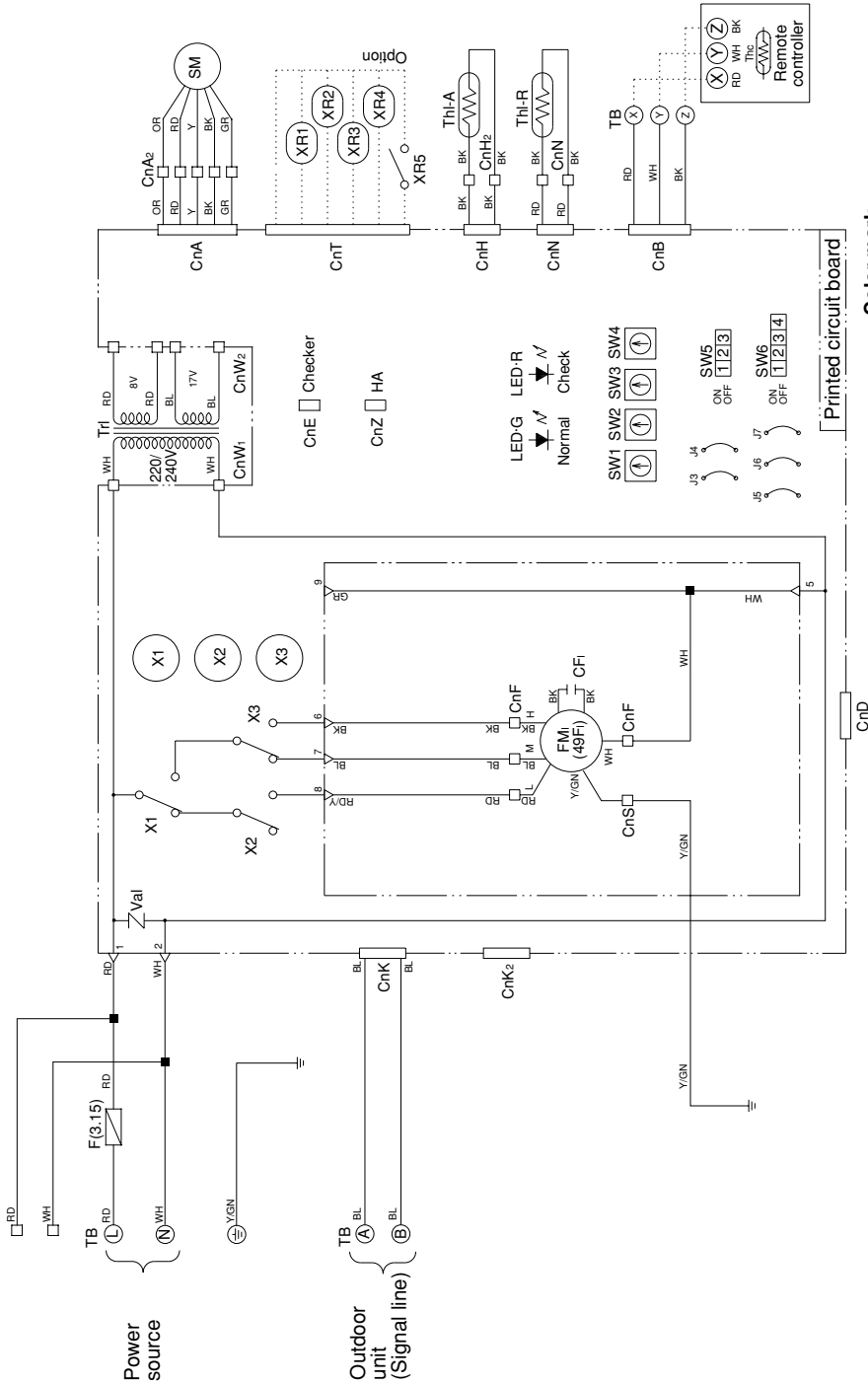
Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FM	Fan motor	SW1	Indoor unit address ten's place	CnA-Z	Connector (C mark)
CF	Capacitor for FM	SW2	Indoor unit address unit's place	TB	Terminal block
49F	Internal thermostat for FM	SW3	Outdoor unit address ten's place	<mark	Terminal (F)
LM	Louver motor	SW4	Outdoor unit address unit's place	#mark	Connector
LS	Limit switch	SW6	Change of heat pump type	XR1	Operation indication (DC12)
SM	Stepping motor (For Exp.v)	Val	Transformer	XR2	Heating indication (DC12)
X1,2,3	Auxiliary relay (For FM)	LED-R	Indication lamp (Red)	XR3	ON indication for CM (DC12)
X5	Thermistor	LED-G	Indication lamp (Green)	XR4	Check indication (DC12)
Th-A	Thermistor	F	Fuse	XR5	Distant operation

(h) Floor standing exposed type (FDFL)

(i) Floor standing hidden type (FDFU)

Models All models



Printed circuit board

Color mark

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

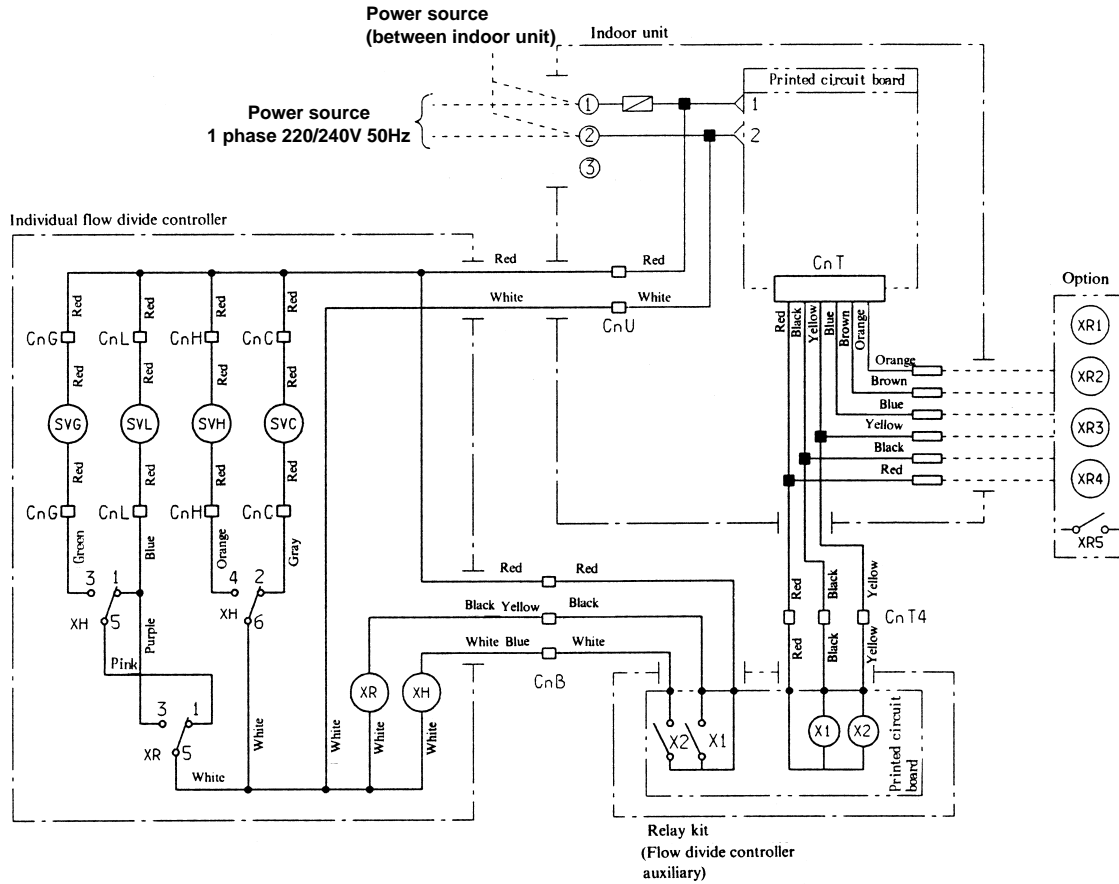
Function of switches

Mark	Function	
	ON	OFF
SW5-1	ON	Input signal
	OFF	Reverse Invalid
SW5-2	ON	Run Stop
	OFF	Heating temp. shift + 3°C
SW5-3	ON	Normal
	OFF	Test run of condensate pump motor

Meaning of marks

Mark	Parts name	Mark	Parts name
FM1	Fan motor	CnA-Z	Outdoor unit address ten's place
CF1	Capacitor for FM1	TB	Outdoor unit address unit's place
49F1	Internal thermostat for FM1	</mark	Change of heat pump type
SM	Stepping motor (For Exp.s)	mark	Transformer
X1,2,3	Auxiliary relay (For FM1)	XR1	Varistor
Th-A	Thermistor	XR2	Indication lamp (Red)
Th-R	Thermistor	XR3	Indication lamp (Green)
SW1	Indoor unit address ten's place	XR4	Fuse
SW2	Indoor unit address unit's place	XR5	Distant operation

(2) Individual flow divide controller

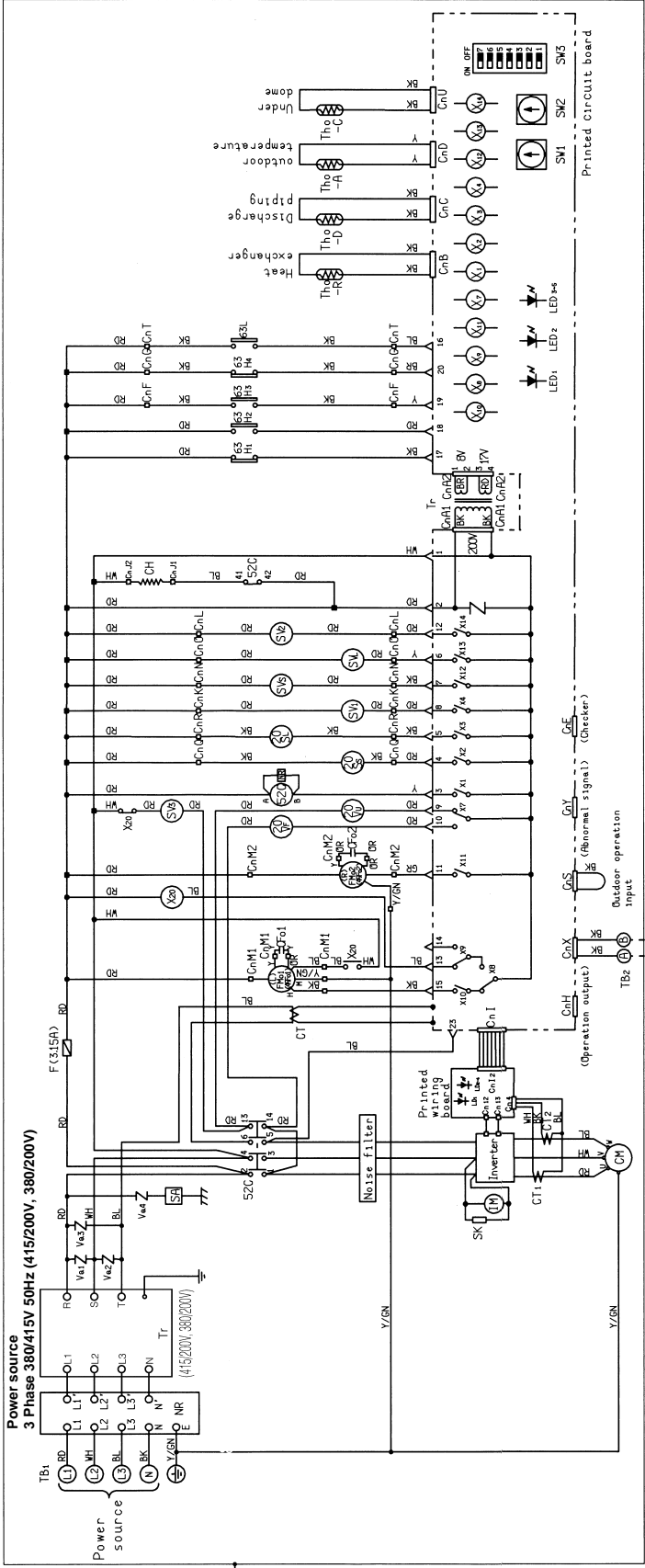


- Notes (1) This illustration shows the circuit diagram for when 1 indoor unit is connected with a central flow divide controller and relay kit (flow divide controller accessory).
 (2) "....." denotes the local wiring.
 (3) The option shows when a remote start/stop and monitoring kit is connected.

• Meaning of marks

SVH	High-pressure gas solenoid valve
SVC	Low-pressure gas solenoid valve
SVL	Liquid solenoid valve
SVG	Bypass solenoid valve
XR, X1, XR1	Operation output
XH, X2, XR2	Heat output
XR3	Thermal ON output
XR4	Inspection output

(3) Outdoor unit
 Models FDCP2001HKXRE2, 2501HKXRE2



Color mark

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

Function of switches

Mark	Function	
	ON	OFF
SW ₃₋₄	ON	Trial operation
	OFF	Regular operation
SW ₅₋₆	ON	Cooling trial operation
	OFF	Heating trial operation
SW ₂₋₆	ON	Compulsory operation
	OFF	Regular operation
SW ₃₋₇	ON	Test mode
	OFF	Regular operation

(3) Use 0.75 to 2mm² × 2 core wire for the indoor and outdoor connection signal wire.

(4) The signal wiring shall be separate from the power supply wiring.

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CM	Compressor motor	SK	Spark killer	SA	Arrestor
FM _{1,2}	Fan motor (outdoor unit)	Tr	Transformer	Va _{1,2,3,4}	Varistor
IM	Motor for cooling inverter	TB _{1,2}	Terminal block	F	Fuse
52C	Magnetic contactor for CM	CnM ₁₋₂	Connector (Cmark)	SW ₁₋₂	Unit No.10 rank of outdoor unit
49F _{1,2}	Internal thermostat for FM ₁	CnM ₁₋₂	Unit No.1 rank of outdoor unit	SW ₃₋₄	L.E.D. reset
CH	Crankcase heater	SW ₅₋₆	Defrost change	SW ₅₋₆	Prevention of snow accumulation
CF _{1,2}	Capacitor for FM ₁	SW ₅₋₆	Indication lamp (red)	LED ₁	Indication lamp (Green)
X ₁	Auxiliary relay (for 52C)	LED ₂	Indication lamp (Green)	LED ₃₋₅	Indication lamp (Yellow)
X ₂	Auxiliary relay (for 205S)	LD ₁	Indication lamp (Green)	LD ₂	Indication lamp (red)
X ₃	Auxiliary relay (for 205L)	LD ₃₋₅	Indication lamp (red)	LD ₂₋₄	Indication lamp (red)
X ₄	Auxiliary relay (for 205S)	NR	Noise killer		
X ₅	Auxiliary relay (for 205L)				
X ₆	Auxiliary relay (for 205F, 20V)				
X ₇	Auxiliary relay (for FM ₁)				
X ₈₋₁₀	Auxiliary relay (for FM ₂)				
X ₁₁	Auxiliary relay (for FM ₂)				
X ₁₂	Auxiliary relay (for SVL)				
X ₁₃	Auxiliary relay (for SVL)				
X ₁₄	Auxiliary relay (for SV2)				
X ₁₅	Auxiliary relay (for SV3)				
205S	4way valve (front heat exchanger)				

Notes (1) "....." denotes the local wiring.

(2) (A) and (B) of TB₂ are the signal wire terminal blocks (5V).

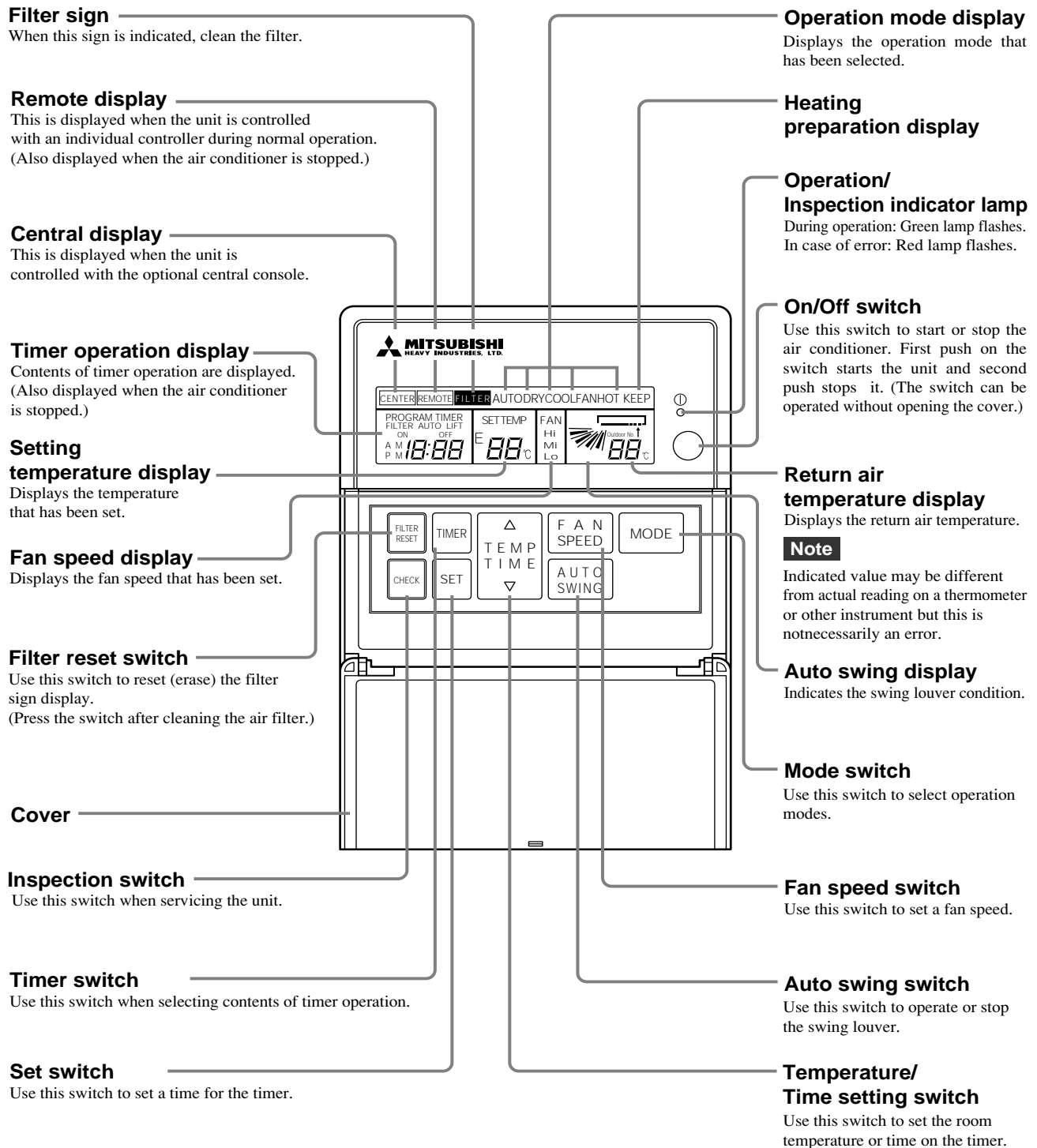
20.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Remote controller (Optional parts)

FDR,FDUM,FDL and FDFU series are not provided with AUTO SWING switch.

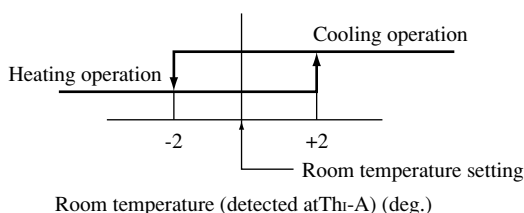
Panel shown below will appear if you open the cover. All contents of display on the LCD are indicated simultaneously for the purpose of explanation.

Pull the knob on the cover to this side to open it downward.



(2) Automatic Operation

Once the [Auto] mode is selected by remote control, the operating mode is automatically selected according to the setting temperature and the intake air temperature of the indoor unit and cooling or heating operation is performed. The determination is performed when the thermostat has been in the OFF mode for 10 minutes or more continuously.



Notes (1) No determination is made if the mode setting is cooling, dehumidify or heating and the cooling and heating thermostats have been in the off mode for 10 minutes in the automatic operation mode.

(2) If set to automatic operation mode when the intake temperature is within $\pm 2\text{ }^{\circ}\text{C}$ in relation to the setting temperature, the same operation as the previous automatic operation will be performed. (Note that it will be the heating mode when first turned on after the power has been turned off.)

(3) Operations of major functional items under each operation mode

Operation mode Functional item	Cooling		fan	Heating			Dehumidify
	Thermostat ON	Thermostat OFF		Thermostat ON	Thermostat OFF	Defrost	
Indoor unit fan	Remote controller command	Remote controller command	Remote controller command	Remote controller command	Intermittent operation	○ → ×	○ / ×
Indoor unit electronic expansion valve	According to determined frequency	Fully closed	Fully closed	According to determined frequency	Fully closed	Fully open	According to determined frequency
Compressor	○	×	×	○	×	○	○ / ×
Outdoor unit fan	○	×	×	○	×	○ → ×	○ / ×
Drain motor	○	○	×	×	×	×	○
Solenoid valve (20VU)	○ / ×	○	○	○ / ×	○	×	○ / ×
Solenoid valve (20 VF)	× / ○	×	×	× / ○	×	○	× / ○
Four-way valve (20 SL,S)	Individual definitions						
Solenoid valve (SV1, L,S)	Individual definitions						

Notes(1) ○ : ON, × : OFF, ○ / × : ON or OFF

(2) Cooling and heating also include auto mode.

(3) Off if jumper wire (J3) is short circuited (factory setting) and open.

(4) Cooling operation

(a) Cooling

1) If the sum of selected and required frequencies is not larger than the maximum frequency, the required frequencies listed in the following table apply. If the sum of required frequencies is larger than the maximum frequency, the required frequencies divided proportionally apply.

Frequency bands for indoor unit models

Model (Indoor) Category	All series								
	22 model	28 model	36 model	45 model	56 model	71 model	90 model	112 model	140 model
Required frequency (Hz)	10 ~ 15	10 ~ 20	10 ~ 25	10 ~ 25	15 ~ 30	15 ~ 40	15 ~ 50	35 ~ 60	35 ~ 70
Selected frequency (Hz)	5 ~ 15	5 ~ 20	5 ~ 25	5 ~ 25	5 ~ 30	5 ~ 40	5 ~ 50	5 ~ 60	5 ~ 70

Notes (1) Frequency during cooling is 45 Hz.

(2) The required frequency is counted in the unit of 5 Hz and the selected frequency in the unit of 1 Hz.

2) This indoor unit electronic expansion valve (EEV) controls opening of each indoor unit corresponding to decision frequency. Also, the thermostat is sampled in pitch of 20 second.

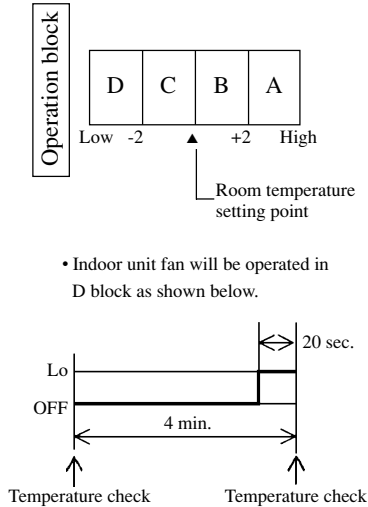
(b) Cooling thermostat off

(i) When all thermostata of indoor unit in a module are turned off, the indoor units operate in the cooling thermostat off mode per outdoor unit module.

(ii) When the decision frequency to indoor units is less than 5Hz, or when the demand frequency reaches to the OFF area according to fuzzy operation, the indoor units will select the cooling thermostat of mode.

(5) Dehumidifying (Thermal dry)

- This cooling operation is mainly for dehumidifying, with which the compressor, indoor and outdoor fans are operated in the patterns as listed in the following table and in accordance with operation blocks switched with the room temperature sensor. The operation blocks are selected by checking the return air temperature at 4-minute intervals. Respective functional items are operated in each operation block as shown by the following table.



Item		Operation block			
		A	B	C	D
Indoor unit frequency (Hz)	22 model	10	10	10	0
	28 model	15	10	10	0
	36 model	20	15	10	0
	45 model	20	15	10	0
	56 model	25	15	15	0
	71 model	30	20	15	0
	90 model	40	25	15	0
	112 model	50	40	35	0
140 model	60	45	35	0	
Compressor	Sum of frequencies on combined indoor units				
Indoor unit electronic expansion valve	Frequency adaptation				
Indoor unit fan	Me	Lo	Lo	Lo↔OFF	
Outdoor unit fan	Operation	Operation	Operation	Stop	

(6) Heating operation

(a) Heating

- This is same as the cooling operation.

(b) Heating operation with thermostat OFF

1) Intermittent fan operation control

- When the jumper wire J3 on the indoor PCB is shorted (installed at shipping), the fan of the unit of which the thermostat is turned OFF during heating is operated in the Lo mode, and the indoor fan is turned OFF if the temperature rises 1°C or more than the return air temperature at the thermostat OFF.
- Indoor fan OFF condition is maintained for 5 minutes and then the operation is reset at the Lo mode again. After operating for 2 minutes in the Lo mode, return air temperature is checked and, if it is 1°C or higher, the indoor fan is turned OFF, or if it is not higher than 1°C, the Lo mode operation continues.

Notes (1) If the heating thermostat has been turned OFF, the temperature is indicated on the remote controller only when the indoor fan is operated in the Lo mode. When it is OFF, the room temperature at the end of Lo operation is indicated.

(2) If the operation is changed to the defrosting mode while the heating thermostat is at OFF or the thermostat is turned OFF during defrosting, the indoor fan is turned OFF.

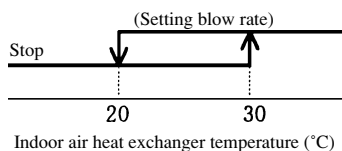
(3) Residual operation of heater is dominant over this control.

2) Fan stop control

- If the jumper wire J3 on the indoor PCB (installed at shipment) is opened or the thermostat is turned OFF during heating operation with the remote control sensor operating, the fan on the indoor unit is turned OFF.

(c) Hot start (Prevention of cold draft during heating)

If the required frequency in the room is other than 0 Hz at the start of heating operation, the indoor fan is controlled in accordance with the temperature of indoor air heat exchanger (detected with Th₁-R).



Notes(1) When the hot start (the compressor is operating and the indoor unit fan is not operating at the setting blow rate) is going on, the heating preparation is displayed (LCD on the remote controller).

(2) When the required frequency is other than 0 Hz, once the blower should start, it will not stop even if the temperature drops below 20°C.

(3) After the blower has been turned OFF for 7 minutes, the blower is operated regardless of the heat exchanger temperature. (For 7 minutes after completion of defrosting during defrosting operation)

(7) Value shift adjustment of room air temperature detection in heating

Under the standard specifications, the room temperature is adjusted at the setting temperature by controlling the indoor unit capacity based on the setting temperature of thermostat and the suction air temperature.

However, where the unit is installed in the ceiling and warm air tends to stay around the ceiling, temperature in the living space may not be adjusted at the setting temperature. In such occasion, it is recommended to change the setting of dip switch SW5-2, which is found on the PCB of the indoor unit, to ON position so that the capacity control is tripped at +3 above the setting temperature of thermostat and thus the heating feeling will improve.



Note (1) Refer to page 911 for position of SW

(8) Auto Swing Control (Excepted FDR, FDUM, FDFL, FDFU models)

- (a) Have a louver motor to move the louvers up and down for the so called "AUTO SWING" function.
- (b) The louver auto swing starts when the AUTO SWING switch is pressed once and stops when the AUTO SWING switch is pressed again. **The louver position is displayed on the LCD on the remote controller.** During auto swing, the position displayed on the LDC changes, but the positions of the louvers and the display are not coordinated. (The louvers swing 3-4 times per minute but the display changes once per second.)

(c) Stopping the louvers

When the AUTO SWING switch is pressed to stop the louver movement, the LCD louver-position display stops and the louvers stop when they come to the position displayed on the LCD. There are four louver stop position on the LCD. (When jumper wire J2 on the indoor unit printed circuit board is cut, the louvers stop immediately at the AUTO SWING switch is pressed to stop them and the LCD display changes to show this position. Refer to page 180 for position of jumper wire J2.

(d) Movement of louver when the power supply to the controller controlling 4 positions of the louver is switched on.

When power supply is switched on, the louver will automatically swing about 2 times (without operating remote controller). This is an action for the microcomputer to confirm the louver position in order to input the cycle of the louver motor (LM) to the microcomputer with the limit switch (LS) pushing the louver motor (LM). If the LS action is not input to the microcomputer, the louver will stop within 1 minute after the power supply is switched on and will not move from then on.

(e) Keeping the louvers horizontal during heating

While **HOT KEEP is displayed** (during hot start operation or when the thermostat has turned off during heating operation), the louvers stay in the horizontal position to prevent cold drafts, independent of the setting of the AUTO SWING switch (auto swing or stop). The louver position display of LCD displays continuously the original position before this control operation. When the **HOT KEEP display goes out**, both the louver and the LCD display return to their previous positions. (However, after the power supply to the unit is switched on, the louvers swing two times as a check of the power source frequency, regardless of the setting of the ON/OFF or AUTO SWING switches.)

(9) FILTER sign

When the operation time (time when the ON/OFF switch is turned to ON) is counted up at 600 hours ⁽¹⁾, the filter sign on the remote controller flickers.

This condition can be reset any time with the "Filter reset" switch. It is effective also to turn power OFF to reset.

Note (1) The function is invalidated if the jumper wire (J4) is opened. (See page 911 for the location of PCB.)

(10) Condensate pump motor (DM) control (Only FDT, FDTW, FDTS, FDR, FDUM models)

(a) Drain motor is started no sooner than the compressor is turned ON during cooling or dehumidifying operation. The drain motor continues to operate for 2 minutes after the stop of unit operation, stop with the error stop, thermostat stop and at switching from cooling or dehumidifying operation to blowing or heating operation. When there is any unit subjected to oil return control, the drain motor is operated for 3 minutes at such occasion.

Note (1) Drain motor may be operated forcibly by turning ON the dip switch SW₅₋₃ on the PCB. Turn the switch OFF to stop the drain motor.

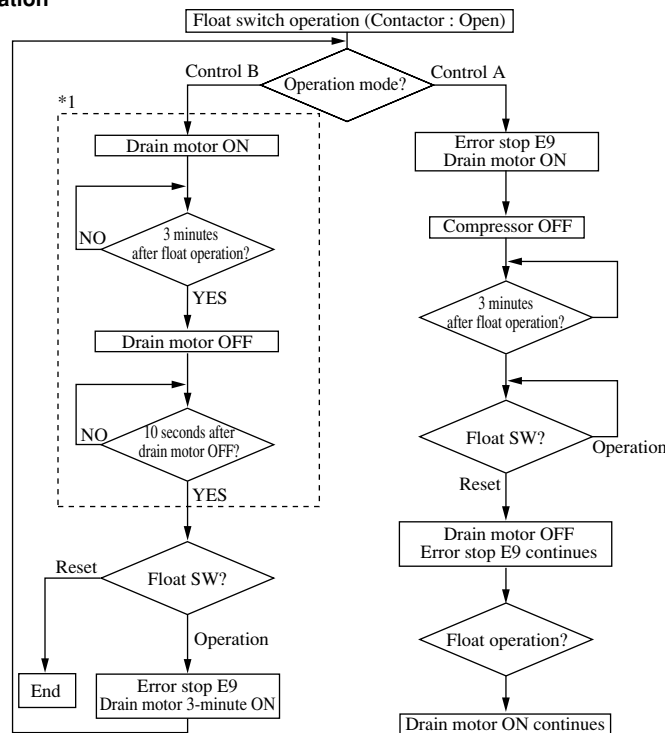
(b) Overflow detection is always operable by means of the float switch regardless of operation modes. If the overflow is detected (or when the float switch is disconnected or its wire is broken), operation is stopped with the error stopped. (FDT, FDTW, FDTS, FDR and FDUM) If the overflow is detected while the drain motor is stopped, the drain motor is operated for 3 minutes and then the overflow detection is performed to judge whether it is normal or not.

Indoor unit operation mode					
	OFF ⁽¹⁾	COOL	DRY	FAN ⁽²⁾	HEAT
During compressor ON		Control A			
During compressor OFF		Control B			

Notes (1) Including OFF and error stop during COOL, DRY, FAN and HEAT.

(2) Including "FAN" operation due to unmatch of operation mode.

• Flow chart of drain motor operation



* 1 In the flow in the frame of broken line, operations of operation mode change and thermostat reset are effective and operated immediately upon selection. However, the compressor ON command is not transmitted.

(i) Control A

- If the float switch detects the draining, operation is stopped with the error stop (E9 is displayed) and operate the drain pump.
- Float switch is checked 3 minutes later on the unit stopped by the error and, if the error persists still, the drain motor is left at ON but, if the error has already been reset, the drain motor is turned OFF. E9 is displayed till the error is reset.

(ii) Control B

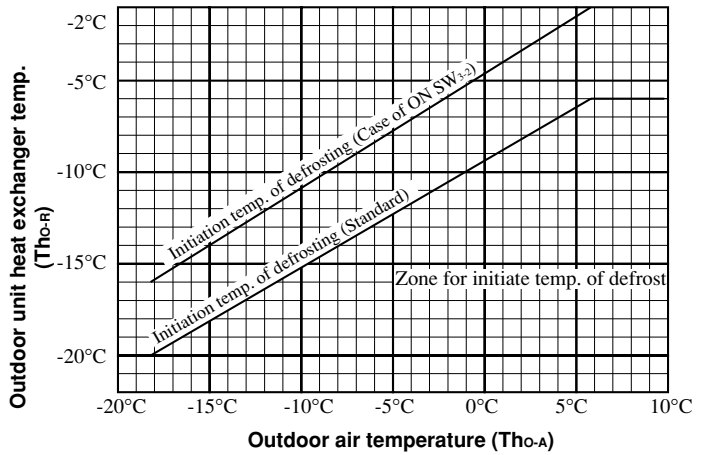
- If the float switch detects the draining, the expansion valve is closed, the drain motor is turned ON for 3 minutes and, as 10 seconds elapses after the drain motor OFF, the float switch is checked. If the result is normal, the operation stops in the normal way while, if it is not normal, E9 is displayed, the drain motor is turned ON and the operation stops with the error stop with the expansion valve being closed completely. (It is left at ON while the draining is detected.)

(11) Defrosting

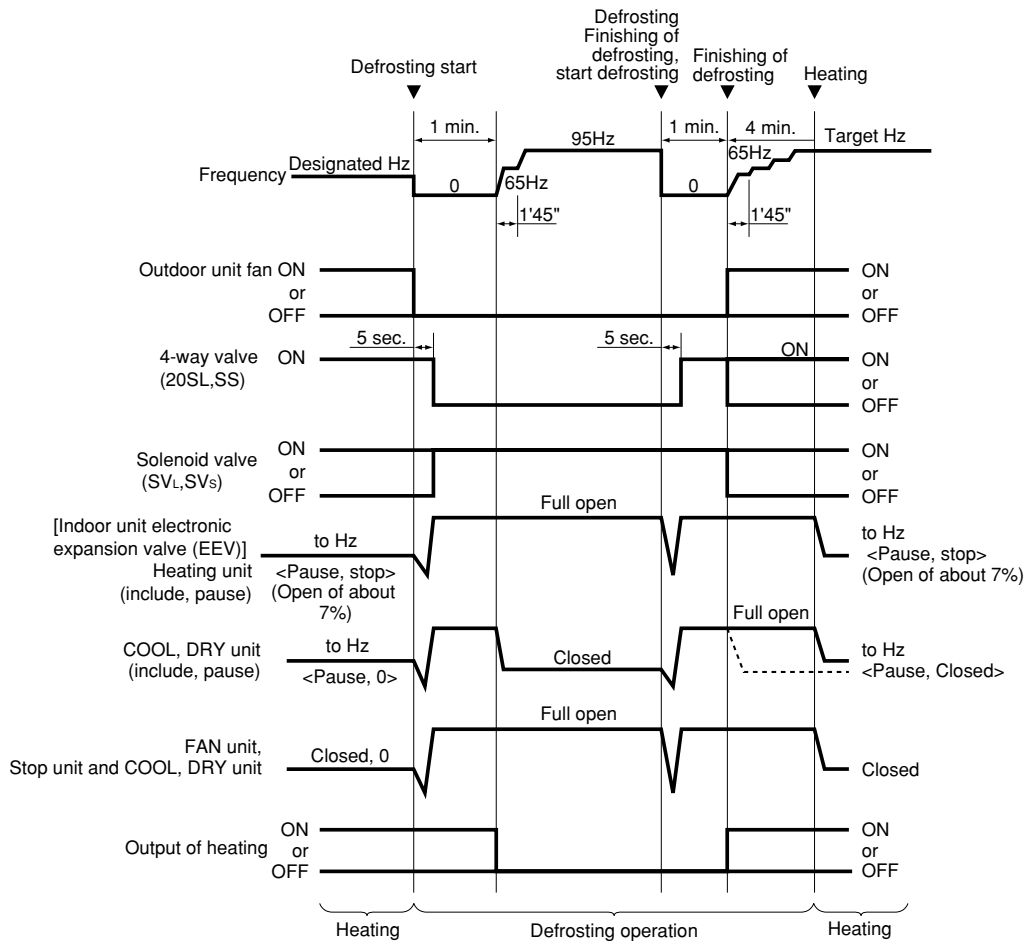
(a) Conditions for starting defrosting

When all the following conditions are met, the defrosting operation will start:

- 1) The cumulative operating time of the compressor comes up to 45 minutes after completion of a defrosting operation, or it comes up to 30 minutes after a heating operation starts (the remote controller is turned on).
- 2) Five minutes has passed after the compressor was turned off and on.
- 3) Five minutes has passed after end of outdoor unit fan motor control.
- 4) After all the above conditions have been met, the temperature of the heat exchanger sensor (Tho-R) has been below the defrosting start temperature for three minutes in succession.



(b) Operation of functional components in defrosting



(c) Conditions for finishing Defrosting

When any of the following conditions is met, the defrosting finishing operation will start.

- 1) When the temperature of the heat exchanger sensor (Tho-R) increases above 20°C
- 2) When 12 minutes has passed after start of defrosting.

(12) Multiple Units Control-Simultaneous Control of 16 unit with one remote controller

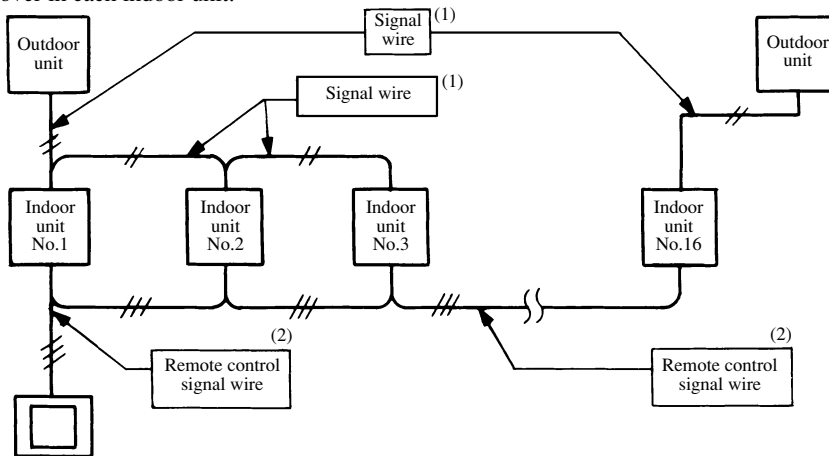
(a) Function

Multiple units (even of outdoor different systems, 16 units maximum) can be simultaneously controlled by using a remote control switch (a special order item). The remote control switch is used to set the “operation mode”, and all the unit can be operated and stopped at intervals of 0.5 to 1 second in the order of unit number. Thermostat and protective functions of each unit functions independently.

Note(1) When part of the group gets out of order (the protective device operates), the relevant unit comes to an abnormal stop, but other normal units keep operating.

(b) Wiring Procedures

- (i) Lay power cable of each unit and signal wire as usual. (Remove the remote control switches from all units excluding only one unit.) Lay wiring for the remote controller separately from power cable and wires for all other electrical equipment.
- (ii) Arrange the terminal block (X, Y, Z) of the remote controller as shown next page for the simultaneous control, and lay cross over in each indoor unit.



Notes (1) The overall length of the signal wire shall be less than 1000m.

(2) The length of remote control signal wire and crossover for remote controller between room shall be less than 600m.

(13) External control (remote display)/control of input signal

(a) External control (remote display) output

Following output connectors (CNT) are provided on the control circuit board of indoor unit.

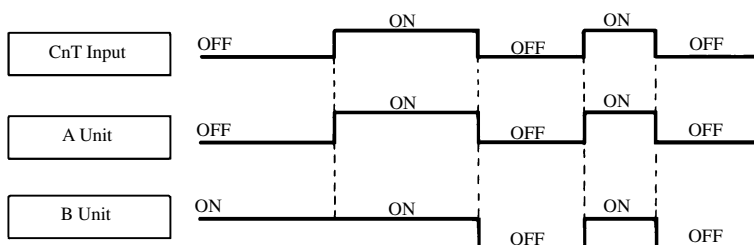
- (i) Operation output: Power to engage DC 12V relay (provided by the customer) is outputted during operation.
- (ii) Heating output: Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.
- (iii) Compressor ON output: Power to engage DC 12V relay (provided by the customer) is outputted while the compressor is operating.
- (iv) Error output: When any error occurs, the power to engage DC 12V relay (provided by the customer) is outputted.

(b) Control of input signal

(Make sure to connect the standard remote control unit. Control of input signal is not available without the standard remote control unit.) Control of input signal (switch input, timer input) connectors (CNT) are provided on the control circuit board of the indoor unit. However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

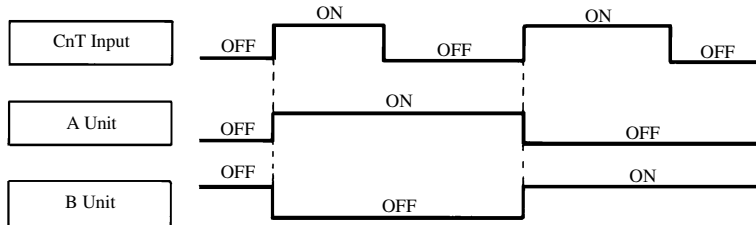
- (i) At shipping from factory (SW₅₋₁ on PCB OFF)

- 1) Input signal to CnT OFF → ON [Edge input] Air conditioner ON
- 2) Input signal to CnT ON → OFF [Edge input] Air conditioner OFF



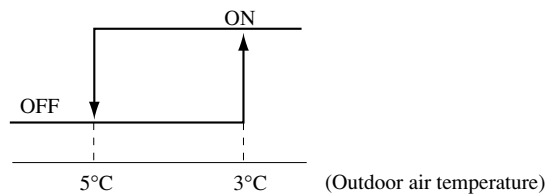
(ii) When SW₅₋₁ on the PCB of indoor unit is turned on at the field.

Input signal to CnT becomes valid at OFF → ON only and the motion of air conditioner [ON/OFF] is inverted.



(14) Snow Fan Control

Set the dip switch SW₃₋₃ (See page 1075) on the outdoor unit control circuit board to ON, and the outdoor fan of a standing unit is operated at the Hi speed for 10 seconds every 10 minutes when the outdoor air temperature drops below 3°C.

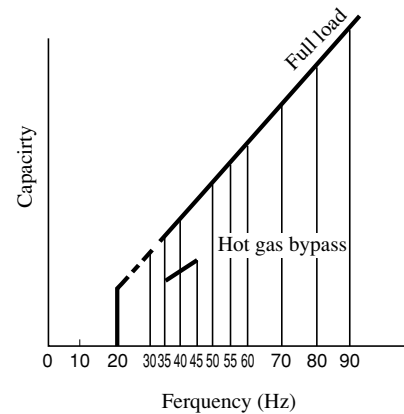


(15) Control of Compressor Capacity

When the load is set as low as less than 35Hz of full load operation frequency ⁽¹⁾ to expand the capacity control range in the low load area, a hot gas bypass ⁽²⁾ (full load conversion frequency:23Hz to 35Hz) is selected. (20VF: OFF, 20VU: ON)

Also, when the full load conversion frequency comes to over 35Hz during a hot gas bypass operation, a full load operation is selected. The compressor starts with a hot gas bypass all the time and, after 15 seconds, selects the load and the frequency according to the demand(decision) frequency.

- Notes (1) Full load operation frequency:
35Hz~95Hz(every 5Hz)
- (2) Hot gas bypass operation frequency:
35Hz~45Hz(every 5Hz)
- (3) The change-over occurs when 5 minutes of more operation time has passed.



(16) High pressure control

The high pressure control consists of the HP protection, HP-A control, HP-B control and LP control and the order of priority among them is assigned as HP protection > HP-A > LP > HP-B down > HP-B up.

HP protection

Pressure switch [If 63H1: 3.24 open/2.65 close MPa (33 Open/27 close kgf/cm²) is actuated twice within 45 minutes, the operation is stopped due to the error and the check and indication (Remote controller: E40, indoor LED-green; repeated flickers, red: dark, outdoor LED-green; repeated flickers, red; 3 flickers) are performed. In case of initial operation, however, the compressor is stopped and after a delay of 3 minutes it returns to the normal operation.]

HP-A control

- If the pressure switch (63H₂) is actuated, the outdoor blower is operated in the Hi mode (for the operations of patterns A₁ to C₁) or stopped (for the operations of patterns C₂ to E₂) and, if it is still actuated 2 minutes after a drop of 10 Hz in the inverter frequency, the frequency is dropped further by 10 Hz. (Minimum frequency is specified at the partial load of 35 Hz.)
- Operation returns to the normal mode after operating with the frequency control at off⁽¹⁾ 6 minutes after the 63H₂ having been reset.

Note (1): If the high pressure A control is released, the frequency is raised by 5 Hz and retained at the level for 3 minutes. The frequency is then raised by 5 Hz at 3-minute intervals till it returns to the normal operation.

LP,HP-B controls

Under these controls, the high and low level pressures are controlled with the solenoid valves, outdoor fan and other so as to operate the outdoor unit in the optimum condition in accordance with changing load on the indoor unit.

Operation patterns consist of the following 12 types and respective functional parts are controlled per each pattern.

Table of operation patterns and operations of functional parts

Operation Pattern	Four-way valve		Solenoid Valve				Fan motor	
	20SS	20SL	SVS	SVL	SV2	SV3	FM01	FM02
A1	×	×	○	○	×	○	HI	HI
A2	×	×	○	○	×	○	HI	×
B1	×	○	○	×	×	○	HI	HI
B2	×	○	○	×	×	○	HI	×
B3	×	○	○	×	×	×	Me	×
C1	○	○	×	×	○	○	HI	HI
C2	○	○	×	×	×	×	Me	×
D1	○	○	○	×	×	×	Me	×
D2	○	○	○	×	×	○	HI	×
D3	○	○	○	×	×	○	HI	HI
E1	○	○	○	○	×	○	HI	×
E2	○	○	○	○	×	○	HI	HI

Notes (1) ○ and × mean ON and OFF respectively.

(2) Hi and Me mean the high and medium temperature operations respectively.

(3) When the fan motor FM01 is in the Me mode, the solenoid valve SV3 is interlocked via a relay. (SV2 open)

• LP control

If the pressure switch [63L: 1.96 close/2.75 open MPa (20 close/28 open kgf/cm²)] is actuated, the operation pattern is changed by one step in the direction of A1 to E2 so as to raise the low level pressure by controlling the heat exchanger capacity.

• HP-B down control

If the pressure switch [63H₃: 2.11 close/2.50 open MPa (21.5 close/25.5 open kgf/cm²)] is actuated, it enters the HP-B down control and the operation pattern is changed by one step in the direction of E2 to A1 so as to lower the high level pressure by controlling the heat exchanger capacity.

• HP-B up control

If the pressure switch [63H₄: 1.86 close/1.67 open MPa (19.0 close/17.0 open kgf/cm²)] is actuated, it enters the HP-B up control and the operation pattern is changed by one step in the direction of A1 to E2 so as to raise the high level pressure by controlling the heat exchanger capacity.

• Setting the initial operation pattern

When the compressor is started, the operation starts with one of the following operation patterns in accordance with the indoor load.

Indoor load	Initial operation pattern
Cooling only	A1
Cooling > Heating	A1
Cooling = Heating	B1
Heating < Cooling	C2
Heating only	D1

• Timing to change operation pattern

Operation pattern is changed by one step at the actuation of the pressure switch (63L, 63H₃ or 63H₄). Once the operation pattern is changed, the same operation pattern is maintained for 2 minutes.

However, when the frequency which was requested from the indoor side has changed 20 Hz or more, the operation pattern is changed by one step at the actuation of the pressure switch even if it is within 2 minutes.

• Changing of operation pattern after a larger change of load

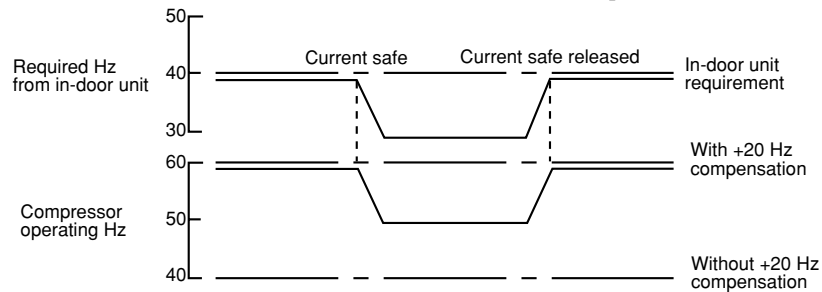
When the indoor load has changed largely like a case when scales of heating/cooling loads have been inverted, for example, the operation pattern is changed as follows.

	Operation pattern
Change from heating large to cooling large	To A1
Change from cooling large to heating large	To D3

(17) Compressor operating frequency increase control

- (a) In the case that at least one in-door unit requires the maximum frequency supply during cooling or heating operation for 6 minutes continuously, the compressor operating frequency is increased by 10 Hz. After that, the maximum frequency is increased by 10 Hz every continuous 6 minutes; however, the upper limit is 30 Hz.
- (b) When requirement of the maximum frequency ceases, the control is released.
- (c) When the protective function of frequency suppressing is activated during control, the protective motion is performed at the condition of increased frequency as the base.

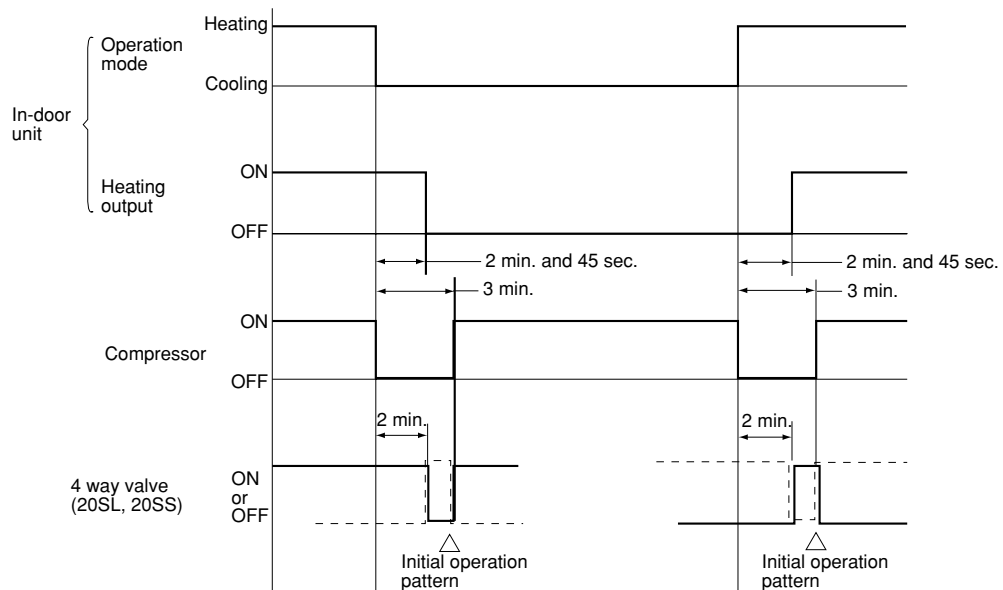
(Example: When the current safe is activated at the condition of +20 Hz compensation)



(18) Control at heating change over

When one of the in-door units is changed over from "Cooling (including automatic), dehumidification and ventilating mode" to "Heating (including automatic) mode", or from "Heating mode" to "Cooling, dehumidification and ventilating mode", the following control is performed.

- (a) During compressor is operating
 - 1) The heating output is kept at the output condition just before cooling/heating change over for 2 minutes and 45 seconds, after that the heating output of in-door unit where cooling/heating has been changed is changed over.
 - 2) The 4 way valve (20SL, 20SS) is changed over at 2 minutes after the compressor stopped.
 - 3) The compressor starts operation with the operation pattern shown in the following diagram after 3 minutes' stop.



- (b) When the compressor has kept on stopping for 2 minutes and 45 seconds or more:
 - 1) The heating output is changed over immediately.
 - 2) The motion of compressor and 4 way valve is the same manner as described in Article (a).
- (c) When the stop time of compressor is less than 2 minutes and 45 seconds:
 - 1) The heating output is changed over after 2 minutes and 45 seconds has passed since the compressor stop.
 - 2) The motion of compressor and 4 way valve is the same manner as described in Article (a).

(19) Devices related to unit protection and maintenance

(a) Test Run Mode

The test run mode can be set from the outside by using the switch SW3-4,5 on the outdoor unit control circuit board

(i) Switch function

Switch		Function
SW3-4	ON	<ul style="list-style-type: none"> To operate all connected indoor units. Indoor units demands the maximum frequency and outdoor units are operated with the maximum frequency according to request from the indoor unit.
	OFF	<ul style="list-style-type: none"> Normal operation
SW3-5	ON	<ul style="list-style-type: none"> When SW3-4 is set to ON: Cooling operation
	OFF	<ul style="list-style-type: none"> When SW3-4 is set to ON: Heating operation

(ii) The maximum frequency of outdoor unit in test run operation (At the time of rated capacity)

Model	FDCP2001,2501 type
Maximum operation frequency (Hz)	95

Remarks : Fuzzy control is not performed in test run operation.
(Operation is executed.) Other controls are effective.

(b) Expansion Valve Control for oil Return

After the compressor operated for 10 hours, and when the compressor is turned, stop the compressor to collect refrigerant oil, turn off the thermostat, and fully open indoor unit expansion valves of FAN and adnormally stopped units one by one. (Open expansion valves in the sequence that addresses were registered to outdoor units and not of the address number.

(c) High Pressure Control in Heating Operation

When (63H2) [2.84 close/2.26 open MPa (29.0 close/23.0 open kgf/cm²)] operates, the compressor revolution decrease 10 Hz, and outdoor unit fan stops preventing pressure increase. Frequency control is canceled after 6 minutes from reset of 63H2, then the compressor returns to the normal operation.

Note (1) Detail of Frequency Control Canceling Operation

When a high pressure control is canceled, the frequency increases 5 Hz, and the frequency is retained for 3 minutes. The frequency increases 5 Hz every 3 minutes to the normal operation.

(d) Discharge gas Temperature Control (All Operation Modes)

When the discharge gas temperature (discharge gas thermistor : Tho-D) increases above the set point, the temperature (detected with Tho-D) is controlled by opening and closing the liquid bypass solenoid valve (SV1) and by lowering the frequency.

Note (1) Tho-D > 115°CSV1-Open [Tho-D < 108°C Closes]

The expansion valve of operating indoor unit open 5% approx.

Tho-D > 120°CThe frequency is lowered 10Hz each time at intervals of 2 minutes (Lower Limit: 35 Hz of the full load or a hot gas bypass.) (Tho-D = < 115°C are canceled)

Tho-D > 130°C.....abnormal stop

[The operation can be resumed at a temperature bellow 90°C]

(e) Compressor Control at the during of startup

(i) Inrush Current the compressor with 5Hz to the starting.

Also, at the time of startup, fully open the expansion valve of the indoor unit in the operator cab for 4 minutes.

(ii) Protective Start of Compressor

When the inverter starts, the compressor start under protection.

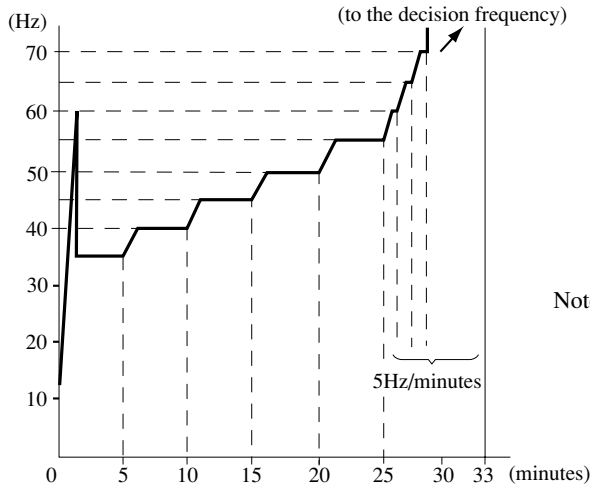
Operate with hot gas bypass up to 35 Hz after the start, operate with full loads of 60 Hz for 15 seconds, then operate with the decision frequency. When the frequency is higher than 65 Hz, they operate with 65 Hz for one minute 45 seconds after the start. But when the compressor starts first time after the power is turned on, and when the compressor starts after stop for more than 6 hours, it increases the frequency 5 Hz each minute for 13 minutes.

(iii) Three minutes delay timer

The compressor (inverter) will remain in stop state for 3 minutes, when the compressor is stopped by thermostat, ON/OFF switch, and /or by occurrence of trouble. When the power source is turned ON, the 3-minutes delay timer is cancelled.

(f) Detection Control of Electricity Supply to Crank Case Heater

When an operation starts less than 6 hours after the power is turned on (electricity is supplied to CH), the frequency is controlled as follows:



- Notes (1) When the operation stops within 33 minutes, this control is executed at the time of the second or later startup.
- (2) Operate with hot gas bypass up to 35 Hz, then with 60 Hz for 15 seconds.

(g) Open-phase Protection

When the T-phase voltage of the secondary side of 52C is 0V, an abnormal stop will occur and the inspection displays (Remote controller : E34, indoor unit green LED : Continuous flashing, red LED : OFF, outdoor unit green LED : red LED : 2 times flash) will appear.

(h) Current Safe Control

The operation current is automatically controlled.

When the operation current at the converter inlet increases, the frequency is lowered 5 Hz by 5 Hz so that the operation current does not increase above the set point.

Lower limit frequency: Hot gas bypass 35 Hz

- 1) Retain the operations with hot gas bypass of 35 Hz for 3 minutes, and when it is found to be the current safe value, stop the inverter, operate them with hot gas bypass 3 minutes later for 3 minutes. When the frequency is below the current safe value, operate them with full loads of 35 Hz, cancel the frequency control to bring them back to the normal operation.
- 2) When the decision frequency under the fuzzy control get lower than the current safe frequency during a current safe control, bring them back to the normal operation. When the current value comes to the current cancel value during a current safe control, retain the frequency for 3 minutes, then cancel the frequency control.

(i) Current Cut Control

This control aims to prevent over current in the converter. When the current increases above the set point, stop the inverter immediately, then let it reset by itself 3 minutes later. After the self-reset, start the inverter with 35 Hz, and increase the frequency 5 Hz every 3 minutes to let it return to the fuzzy indication frequency. When the current is cut four times in 15 minutes, turn off 52C bring it to an abnormal stop and the inspection displays (Remote controller : E42, indoor unit green LED : Continuous flashing, red LED : OFF, outdoor green LED : Continuous flashing, and red LED : 1 time flash) will appear.

(j) Protection of Power Transistor from Overheat

When the temperature of the power transistor increases to the set temperature, stop the inverter immediately and let it reset by itself 3 minutes later. If the power transistor is overheated again within 2 hours, turn off 52C, bring it to an abnormal stop and the inspection displays (Remote controller : E41, indoor unit green LED : Continuous flashing, red LED : OFF, outdoor unit green LED : Continuous flashing, red LED : 4 times flash) will appear.

(k) Protection of Power Transistor from Overheat

When the temperature of the power transistor increases to the set temperature, stop the inverter immediately and let it reset by itself 3 minutes later. If the power transistor is overheated again within 2 hours, turn off 52C, bring it to an abnormal stop and the inspection displays (Remote controller : E41, indoor unit green LED : Continuous flashing, red LED : OFF, outdoor unit green LED : Continuous flashing, red LED : 4 times flash) will appear.

(l) Protection of Number of Connected indoor Units

When the number of connected indoor units exceeds the quantities shown in the table below, they will come to an abnormal stop, and the inspection displays (Remote controller E43, indoor unit green LED : Continuous flashing, red LED : OFF, outdoor unit green LED : Continuous flashing, red LED : 7 times flash) will appear.

	FDCP2001 type	FDCP2501 type
Number of connected units	8 units	8 units

(m) Frost prevention during cooling

To prevent frost during a cooling operation, check temperature (to be detected with TH1-R) of the indoor unit heat exchanger and lower the frequency of indoor unit (opening of expansion valve) when the temperature drops below 3°C.

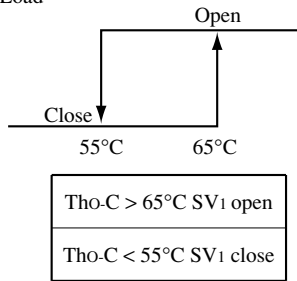
When the heat exchanger temperature is below 2°C for more than 2 minutes, turn off the thermostat and start a ventilating operation. If the heat exchanger temperature rises above 16°C after the thermostat is turned off, reset it to a cooling operation. But this operation shall not be executed for 10 minutes after the thermostat is turned on.

Also when temperatures of standing units have been below 2°C for an hour in succession, turn off the compressor for 3 minutes.

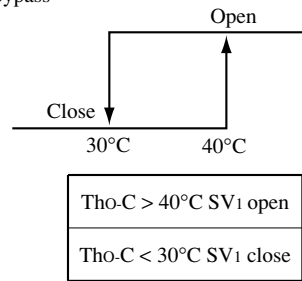
(n) Control of Temperature under Dome

The liquid bypass solenoid valve (SV1) is controlled according to the temperature of the thermistor (Tho-C) under the dome fitted to the compressor.

● Full Load



● Hot gas bypass



20.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these “Safety Precautions” first then accurately execute the installation work.
 - Though the precautionary points indicated herein are divided under two headings, **⚠ WARNING** and **⚠ CAUTION**, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the **⚠ WARNING** section. However, there is also a possibility of serious consequences in relationship to the points listed in the **⚠ CAUTION** section as well.
- In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner’s manual. Moreover, ask the customer to keep this sheet together with the owner’s manual.



WARNING

- This system should be applied to places of office, restaurant, residence and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- When a large air-conditioning system is installed to a small room, it is necessary to have a prior planned countermeasure for the rare case of a refrigerant leakage, to prevent the exceeding of threshold concentration.
In regards to preparing this countermeasure, consult with the company from which you purchased the equipment, and make the installation accordingly. In the rare event that a refrigerant leakage and exceeding of threshold concentration does occur, there is the danger of a resultant oxygen deficiency accident.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- Execute the prescribed installation construction to prepare for earthquakes and the strong winds of typhoons and hurricanes, etc. Improper installations can result in accidents due to a violent falling over of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used.
Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it. Improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward, and accurately install the lid/service panel. Its improper installation can also result in heat generation or fire.
- When setting up or moving the location of the air-conditioner, do not mix air etc. or anything other than the designated refrigerant within the refrigeration cycle.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.



CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire. Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary depending on the established location of the unit. Not installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas.
The rare event of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

20.5.1 Installation of indoor unit

This is same as multi KX series. Refer to page 841~881.

20.5.2 Installation of the remote controller (Optional parts)

This is same as multi KX series. Refer to page 882.

20.5.3 Installation of outdoor unit

(1) Selection of installation location

- (a) A place where air will not be stagnant.
- (b) A place where the exhaust air will not be shorteysed.
- (c) A place with enough space for air flow around the unit.
- (d) A place where the unit will not be affected by other heat sources.
(when there are multiple units installed or when units have another heat source)
- (e) A void installing the unit in places that are subject to sea air, sulfurous gas of the type found in hot springs, or any other corrosive or flammable gas.
- (f) A place where smooth drainage of rain water and water formed by defrosting is acceptable.
- (g) **In heating operation**, snow deposit on the heat-exchanger of outdoor unit must be prevented for keeping the normal performance capacity.

- **Snow-hood no outdoor unit as in drawing, will reduce the frequency of defrost operation.**

When installing the snow hood, take care so that the air outlet of the snow hood will not face directly into the most windy direction.

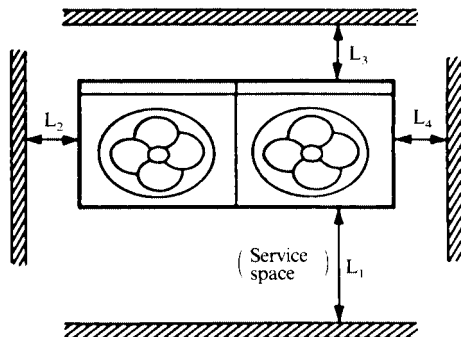
- **Design the base higher than possible snow deposit.**

- (h) A place where air outlet port is not exposed to strong wind.

(2) Installation space

A place with enough space for air inlet, air outlet and service space.

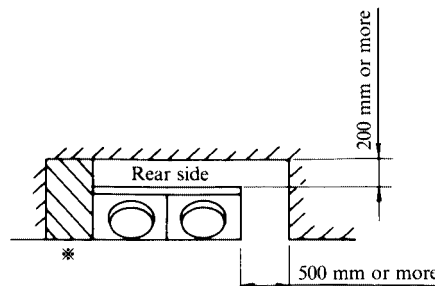
(a) Independent installation



Unit: mm

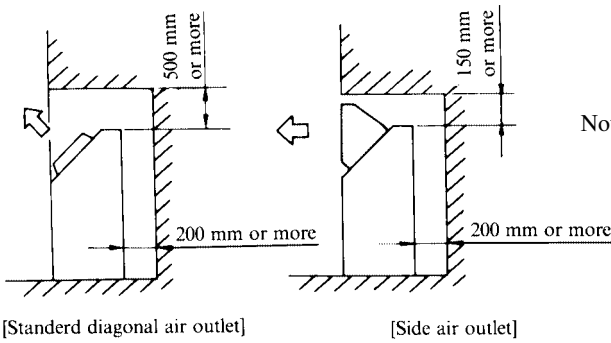
Dimension	Unit: mm		
Installation example	I	II	III
Distance			
L ₁	open	open	500
L ₂	0	500	500
L ₃	200	200	200
L ₄	500	0	500

1) When there are obstacles on the sides and at the rear side of the unit



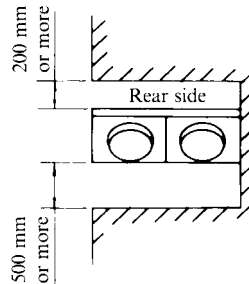
Note (1) The unit can be installed bringing the right side close to the obstacle. In that case, provide a space over 500 mm to the left side.

2) When there is an obstacle above the unit

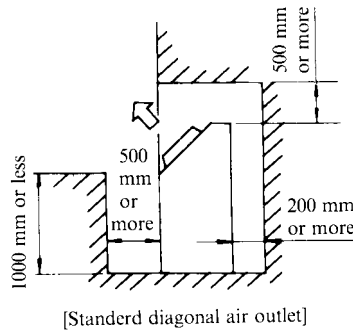


Note (1) The side air outlet indicates that a wind direction variable adapter available on the optional parts is fitted to the unit.

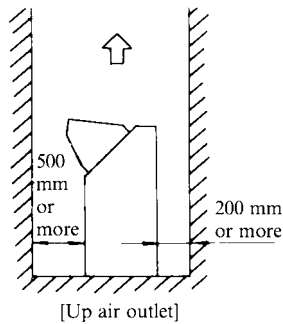
3) When there is an obstacle (are obstacles) on the side (in front side of and at the rear side) of the unit



4) When there is an obstacle above the unit as well

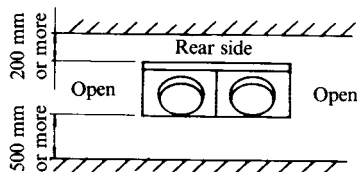


5) When there is no obstacle above the unit



Note (1) The side air outlet and the up air outlet indicate that wind direction variable adapters available on the optional parts are fitted to the unit.

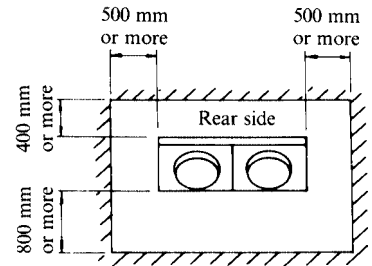
6) When installed in a narrow space (there are obstacles in front side of and at the rear side of the unit.)



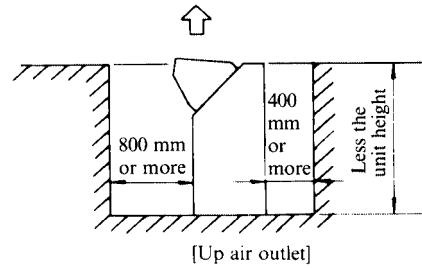
[Remarks]

When there is a space above the unit, install the unit in the same way as you do when there is an obstacle (are obstacles) on a side (in front side of and at the rear side) of the unit.

7) Installation where there is obstacle on all four sides.



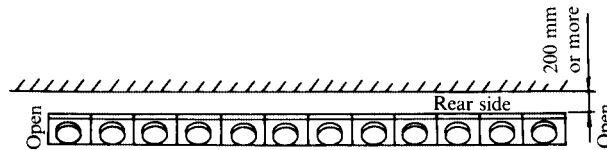
Note (1) The up air outlet indicates that a wind direction variable adaptor available on the optional parts is fitted on the unit.



(b) Installation of multiple units

1) Continuous installation on side-to-side [The front side is open]

[Keep a space of more than 10 mm between the units]

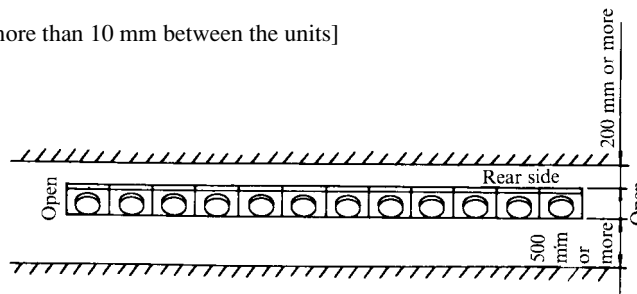


Note (1) There shall be no obstacle above the unit.

[Remarks] When the unit is installed continuously side by side, any multiple units can be installed.

2) Continuous Installation on side-to-side [There are obstacles in front side of and at the rear side of the unit.]

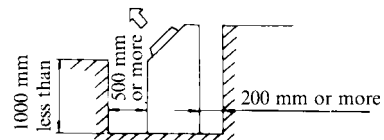
[Keep a space of more than 10 mm between the units]



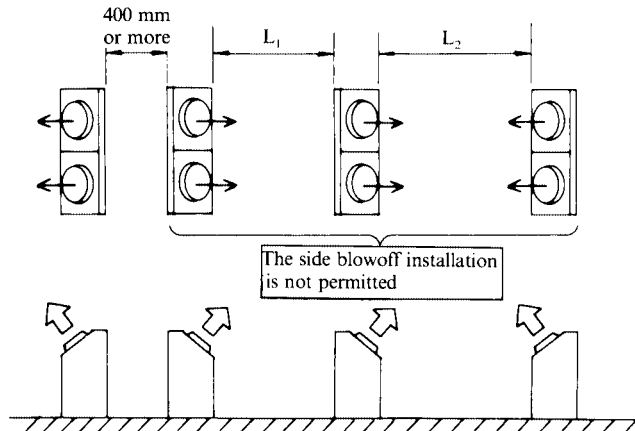
Note (1) The obstacle at the rear side shall be lower than the unit, and the obstacle in front side shall be less than 1000 mm.

[Remarks] When the unit is installed continuously side by side, any multiple units can be installed.

Note (1) When an up air outlet is selected optionally, the obstacle in front can be made lower than the unit.



3) Face-to-face installation

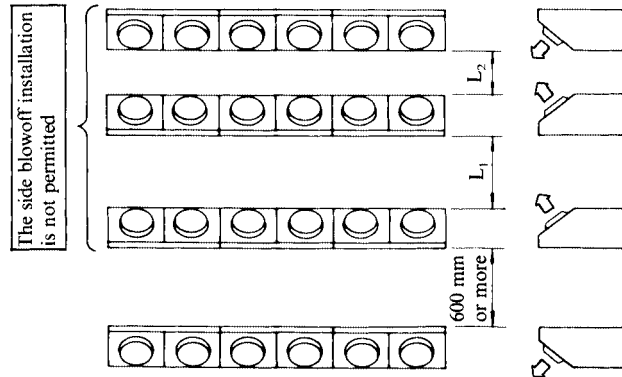


Dimension		Unit: mm	
Item \ Distance	L ₁	L ₂	
Diagonal	1500 or more	1000 or more	
Up air outlet	500 or more	500 or more	

Note (1) Make the air outlet the diagonal air outlet (standard) or the up air outlet (option).

4) Side-to-side & face-to-face installation

[Keep a space of more than 10 mm between the unit]

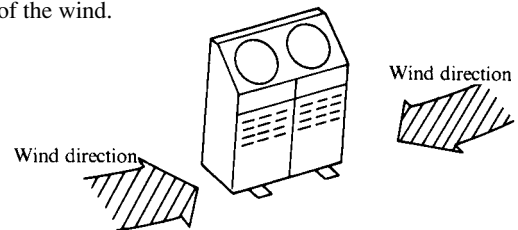


Dimension		Unit: mm	
Item \ Distance	L ₁	L ₂	
Diagonal	1500 or more	1000 or more	
Up air outlet	800 or more	800 or more	

Note (1) Make the air outlet the diagonal air outlet (standard) or the up air outlet (option).

5) In the case where the unit is exposed to strong wind.

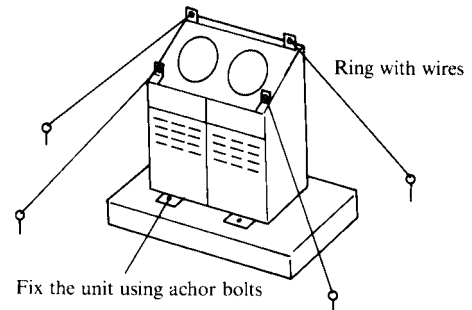
a) Face the unit air outlet at a 90° angle from the direction of the wind.



b) Securing outdoor unit (in the case of exposure to severe weather conditions)

Fix the unit in the following way.

- Use overturning prevention brackets.
- Rig with wires.

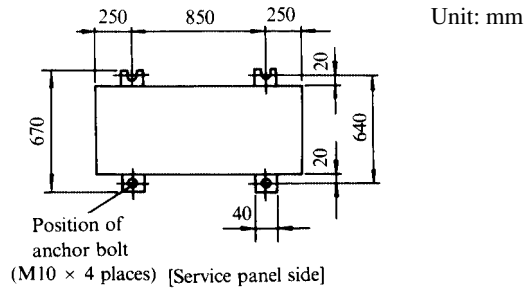


(Use rigging wires that are resistant to corrosion and sufficient in strength. For example SUS304-W1, wire thick-ness 2.9 mm)

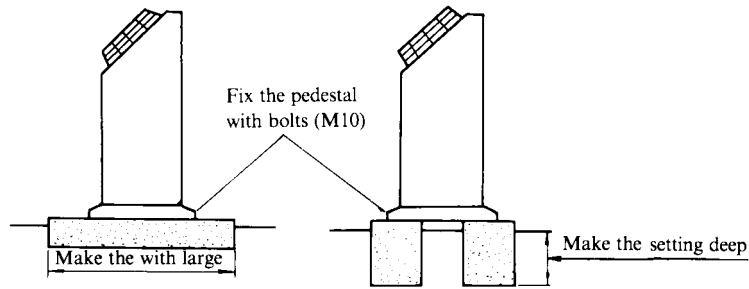
(3) Installation

Fix the unit in a proper way according to the condition of a place where it is installed by referring to the following.

- (a) Fix the unit to the foundation with anchor bolts.



- (b) When installing the unit, be sure to fix the pedestal of the unit with bolts.



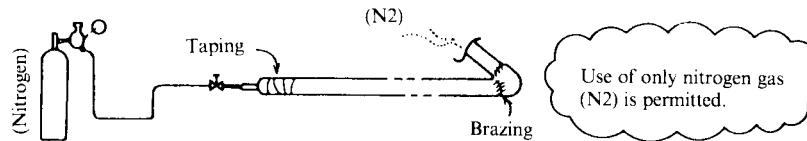
- (c) Install the unit securely not to be fallen by earthquake or strong of wind.
- (d) Prepare a concrete foundation referring to the above figure.

20.5.4 Refrigerant piping

(1) Precautions no refrigerant piping work for prevention against compressor lock

Compressor trouble including lock and motor burn-out is due to faulty parts but mainly concerned in installation and refrigerant piping conditions, The precautions for refrigerant piping are as follows.

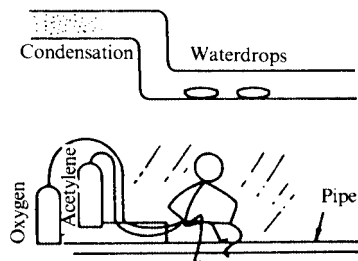
(a) Be sure to perform brazing while flowing nitrogen.



- Without flowing nitrogen gas, a lot of oxide film (Cu_2O) is generated. In particular, in case of for building with many brazed portions, oxide film is so much generated that this causes a fatal failure in the air conditioning system.
- A foreign material (oxide film) causes clogging of the capillary tube or expansion valve, leading to non-cooling (non-heating), abnormal discharge temperature, compressor lock due to a faulty oil return. In some cases, a lot of foreign materials block the oil return hole of the accumulator, thereby causing a compressor lock. (This lock trouble may occur repeatedly 2 or 3 times.)

(b) Don't admit water (waterdrops, condensation) into the piping.

- Use a copper piping that is free from water (waterdrops, condensation).
- Don't perform refrigerant piping work while it rains.
- To suspend outdoor piping work, perform curing to prevent water admission.



Bad effects of water

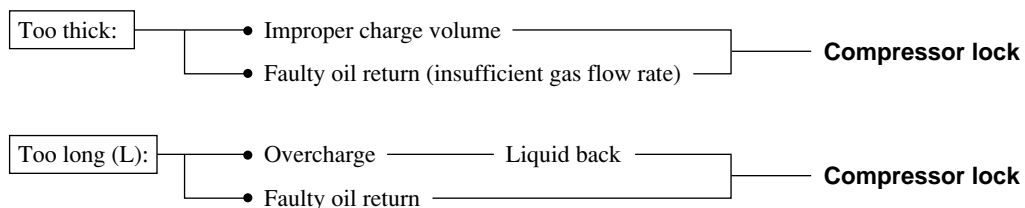
- Capillary tube and expansion valve clogging
- Refrigerant hydrolysis → "Acid" generation → Iron/copper corrosion
- Crystal foreign material (clathrate compound) generation resulting from reaction on refrigerating machine oil

There will be directly connected to serious trouble such as compressor lock or burn-out of the compressor motor.

(c) Don't admit dust or foreign particles in the pipe.

Various foreign particles are included in air conditioners that caused trouble. Be careful about them. (Concrete fragments, cement, sand, paint, metal powder (copper refuse after deburring, etc.), etc.)

(d) Adopt the specified dimensions for pipes.



(e) Be sure to support the refrigerant piping with support fittings.

- The pipe vibrates and expands/shinks during operation. Without proper supports, a load is concentrated partially and cracks and collapse occur on the piping, thereby causing a unit failure.
- A support should be provided at intervals of 2 or 3 m so as not to partially concentrate a load.

(2) Refrigerant piping size selection

	Outdoor unit connection pipe		Branch line			Indoor unit connection pipe			Flow divide controller connection pipe	
			Downstream indoor unit capacity total ⁽¹⁾							
	FDCP2001 type	FDCP2501 type	160 or more	less than 160 (not including 160) 90 or more	less than 90 (not including 90)	22,28,36,45 type	56,71,90 type	112,140 type	models Indoor side	Outdoor side
Liquid piping	φ12.7 × 1.0 mm	φ12.7 × 1.0 mm	φ12.7 × 1.0 mm	φ9.52 × 0.8 mm	φ9.52 × 0.8 mm	φ6.35 × 0.8 mm	φ9.52 × 0.8 mm	φ9.52 × 0.8 mm	φ9.52 × 0.8 mm	φ9.52 × 0.8 mm
Intake gas piping	φ25.4 × 1.4 mm	φ28.58 × 1.4 mm	φ25.4 × 1.4 mm	φ19.05 × 1.2 mm	φ15.88 × 1.0 mm	φ12.7 × 1.0 mm	φ15.88 × 1.0 mm	φ19.05 × 1.2 mm	φ15.88 × 1.0 mm	φ15.88 × 1.0 mm
Discharge gas piping	φ19.05 × 1.2 mm	φ19.05 × 1.2 mm	φ19.05 × 1.2 mm	φ15.88 × 1.0 mm	φ12.7 × 1.0 mm					φ12.7 × 1.0 mm

Notes (1) This shows the total capacity of the indoor units connected after indicated branch pipe.

(2) 1 flow divider pipe set is required for each division.

Branch pipe set part shapes (DIS-1KXR3-E)

Symbol	Name	Part shape	Quantity	Remarks
①	Branch pipe		1	Intake gas piping
②			1	Discharge gas piping
③			1	Liquid piping
a	Reducer		1	Intake gas piping (FDCP2501HKXRE2)

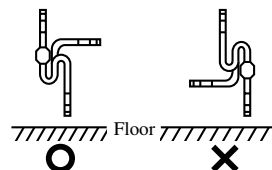
Notes (1) Each flow divider pipe is surrounded with insulation.
 (2) Each pipe is cut off in the middle of the diameter that is used in that locality.

Shapes of accessory parts for brunch pipe set for vertical divides (DIS-V1KXR3-E)

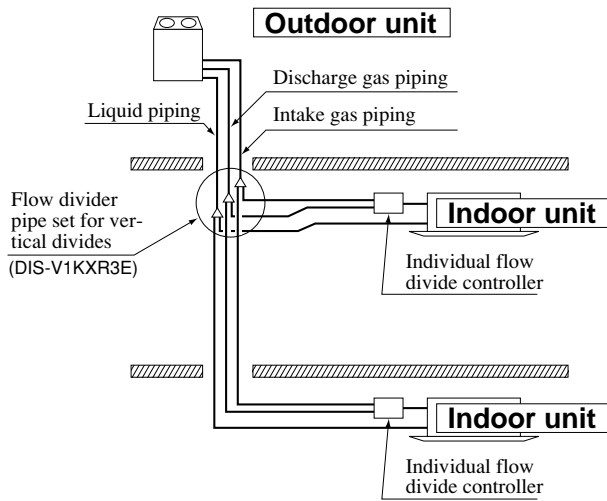
Classification	Symbol	Branch pipe	Classification	Symbol	Branch pipe
Intake gas piping	①		Intake gas piping	—	
				—	
Discharge gas piping	②				
Liquid piping	③				

Notes (1) Insulation is provided to all flow divider pipes.
 (2) Cut off the flow divider pipes in the center to match the diameter of the piping used on site.

Reference 1: Be sure to install the vertical flow divider coupling (both) for gas and liquid as "vertical divide" as illustrated below.



(Example)



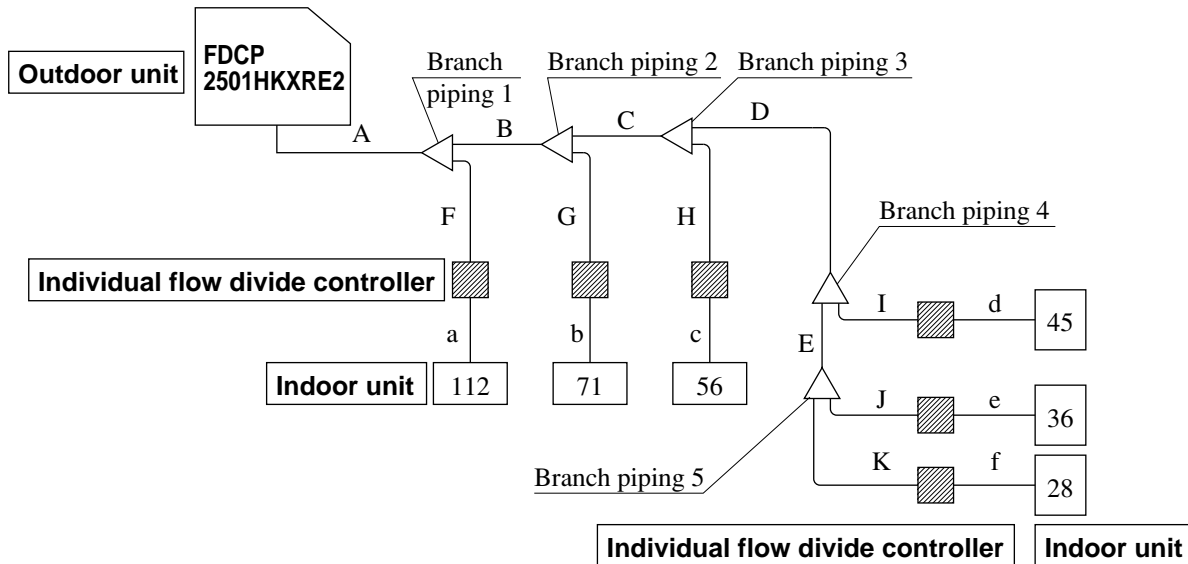
When the outdoor unit are installed at a higher level than the individual flow divide controller and a vertical flow divider is required for the piping connections of 2 or more individual flow divide controllers for 1 module, use the "flow divider pipe set" for vertical divides.
 • Flow divider pipe set for vertical divides Part No. DIS-V1KXR3-E

Shapes of individual flow divide controller accessories (HPFD1R-E)

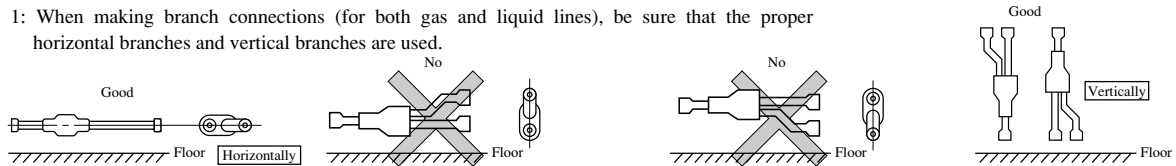
Name	Reducer			Strainer coupline	In Sulation	Relay kit
Application	For outdoor discharge gas piping	For outdoor intake and indoor gas piping	For outdoor and indoor liquid piping	For outdoor discharge gas piping	For pipe cover	For controller
Quantity	1	2	2	1	Piping connection	Number of divisions
Shape						
Code	(A)	(B)	(C)	—	—	—

Example of piping

Outdoor unit: FDCP2501HKXRE2
 [Total capacity: 348 (34800w)]



Note 1: When making branch connections (for both gas and liquid lines), be sure that the proper horizontal branches and vertical branches are used.



• Selection piping size

Item	Selection procedure	Piping size(mm)		
		Gas line	Intake gas line	Liquid line
A	Same as the outdoor unit piping size (FDCP2501HKRE2)	ø19.05	ø28.58	ø12.7
B	Total capacity of connected indoor units (236)	ø19.05	ø25.4	ø12.7
C	Total capacity of connected indoor units (165)	ø15.88	ø19.05	ø9.52
D	Total capacity of connected indoor units (109)	ø15.88	ø19.05	ø9.52
E	Total capacity of connected indoor units (64)	ø12.7	ø15.88	ø9.52
F	Total capacity of connected indoor units (112)	ø15.88	ø19.05	ø9.52
G	Total capacity of connected indoor units (71)	ø12.7	ø15.88	ø9.52
H	Total capacity of connected indoor units (56)	ø12.7	ø12.7	ø6.35
I	Total capacity of connected indoor units (45)	ø12.7	ø12.7	ø6.35
J	Total capacity of connected indoor units (36)	ø12.7	ø12.7	ø6.35
K	Total capacity of connected indoor units (28)	ø12.7	ø12.7	ø6.35
a	Indoor unit piping size (112)	ø19.05		ø9.52
b,c	Indoor unit piping size (71,56)	ø15.88		ø9.52
d-f	Indoor unit piping size (45,36,28)	ø12.7		ø6.35

• Selection of branch piping size.

Item	Selection procedure	Branch piping set
Branch piping 1	Horizontal branch piping set – down-flow indoor unit capacity total. (348)	DIS-1KXR3-E
Branch piping 2	Horizontal branch piping set – down-flow indoor unit capacity total. (236)	DIS-1KXR3-E
Branch piping 3	Horizontal branch piping set – down-flow indoor unit capacity total. (165)	DIS-1KXR3-E
Branch piping 4	Vertical branch piping set – down-flow indoor unit capacity total. (109)	DIS-V1KXR3-E
Branch piping 5	Vertical branch piping set – down-flow indoor unit capacity total. (64)	DIS-V1KXR3-E

Piping connection instructions (for the above example)

Process the included reducer as illustrated below.

Use the flare nuts included with the individual flow divide controller.

• When the indoor unit capacity is 90 or more

A type

Use reducer (A) and process the ø12.7 portion into a flare.
(OD12.7 → ID15.88)

Cut off reducer (B) using a pipe cutter as shown in the illustration and make a flare.
(OD15.88 → ID19.05)

• When the indoor unit capacity is 50 or less

B type

Cut off reducer (B) using a pipe cutter as shown in the illustration and make a flare.
(OD15.88 → ID12.7)

Reducer (B)(accessory)

(3) Specification of unit piping (Pipe diameter. Connecting method)

(a) Unit

1) Outdoor unit

Unit: mm (in)

Item	Gas line		Liquid line	
	Pipe diameter	Connecting method	Pipe diameter	Connecting method
FDCP2001HKXRE2	φ25.4 (1")	Brazing	φ12.7 (1/2")	Brazing
FDCP2501HKXRE2	φ28.58 (1 1/8")		φ12.7 (1/2")	

2) Indoor unit

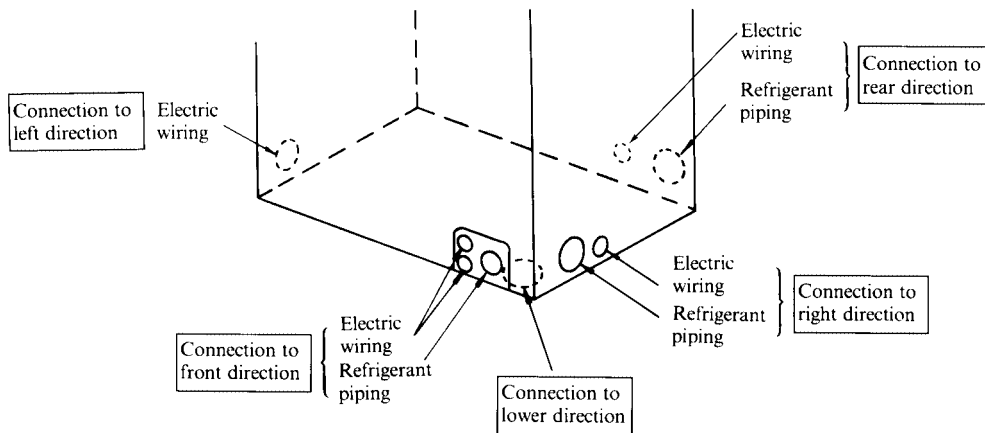
Unit: mm (in)

Item	Gas line		Liquid line	
	Pipe diameter	Connecting method	Pipe diameter	Connecting method
22, 28 type	φ12.7 (1/2")	Flare	φ6.35 (1/4")	Flare
36 type	φ12.7 (1/2")		φ6.35 (1/4")	
45 type	φ12.7 (1/2")		φ6.35 (1/4")	
56, 71, 90 type	φ15.88 (5/8")		φ9.52 (3/8")	
112, 140 type	φ19.05 (3/4")		φ9.52 (3/8")	

3) Tightening torque

φ6.35 (1/4") Flare nut	16~20N · m (1.6 ~ 2.0 kg·m)
φ9.52 (3/8") Flare nut	40~50N · m (4 ~ 5 kg·m)
φ12.7 (1/2") Flare nut	40~50N · m (4 ~ 5 kg·m)
φ15.88 (5/8") Flare nut	90~120N · m (9 ~ 12 kg·m)
φ19.05 (3/4") Flare nut	100~140N · m (10 ~ 14 kg·m)
Gas side flange bolt	30~40N · m (3 ~ 4 kg·m)

(b) Refrigerant piping connection

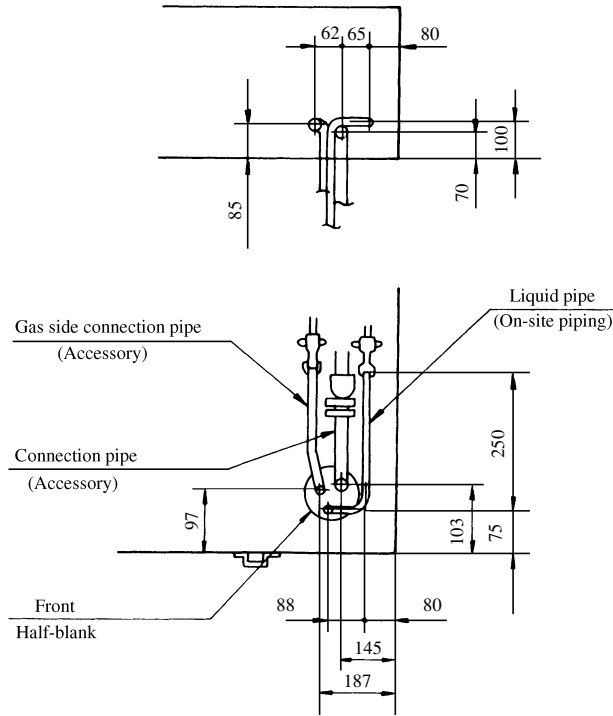


- 1) Pipes can be connected in four directions, but electric wire can be done in five directions.
- 2) Select the optimum connecting direction taking into account the installation conditions of outdoor unit and the positional relations with indoor units.
- 3) For connections to the operation valves and attendant piping, connect gas pipes first, then liquid pipes.
 - Remove the seal on the flange of the gas side service valve.
 - Place the accessory packing between the flanges of the gas side service valve and of the attendant piping for gas before connection.

(c) How to connect piping

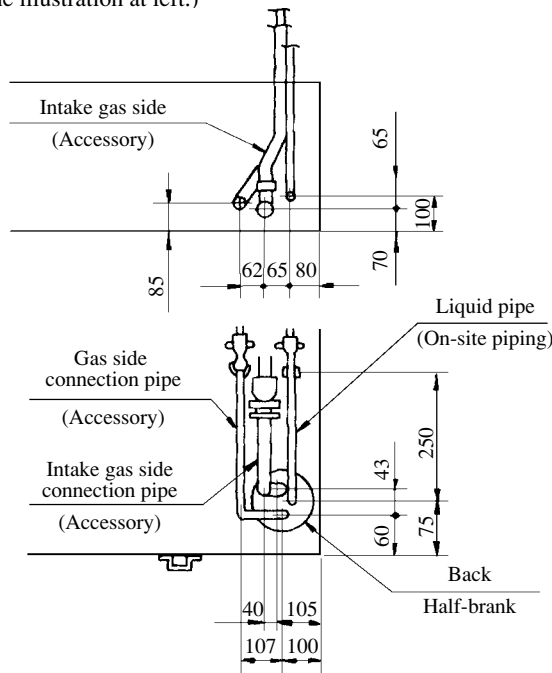
1) Connection to front directions.

- a) Remove the front hall blank, pass through the hole the intake gas side, gas side and liquid pipes. and then connect them to the service valves and the on-site piping. (Because the liquid side pipe is on-site piping, bend it to the dimensions shown in the illustration at low.)



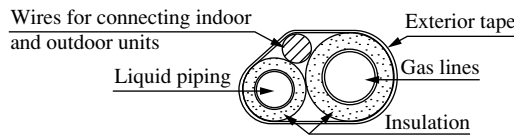
2) Connection to lower direction.

- a) Cut off the accessory intake gas side connection pipe and then connect to the intake gas side straight pipe.
- b) Remove the back hall blank, pass through the hole the intake gas side, discharge gas side, and liquid pipes, and then connect them to the operation valve and the on-site piping. (Because the liquid side pipe is on-site piping, bend it to the dimensions shown in the illustration at left.)



(4) Heat insulation

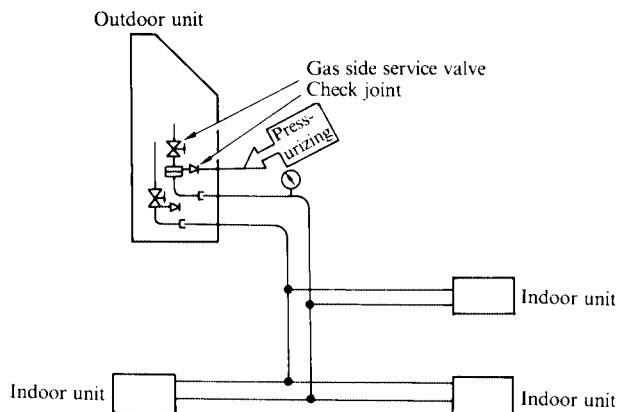
- (i) There is a need to insulate both gas and liquid piping with heat insulation for protection against heat and condensation.
 - 1) Always use heat insulation to prevent condensation on the gas piping from becoming drain water and causing leakage during cooling and to prevent people from being burned by the high temperature of the surface of the gas piping as discharge gas flows through it.
 - 2) Use heat insulation (pipe cover) on the flare connection sections of the indoor unit.
(Insulate both the gas and liquid piping.)
 - 3) Insulate both the gas and liquid piping. Apply the insulation so that is tight against the piping and free of gaps. Route the connecting wires with the insulation and wrap the entire bundle with exterior tape.



※Use insulation material with good resistance heat properties (120 °C or more).

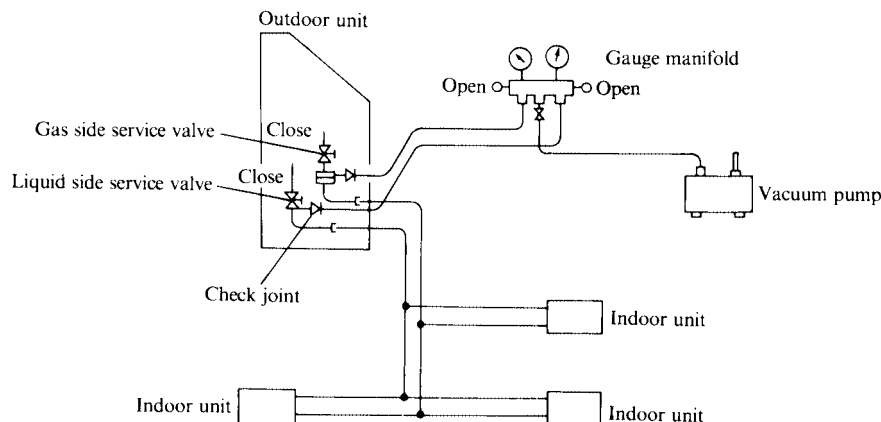
(5) Air-tight test

- (a) When conducting an air-tight test of local piping, connect the piping to the check joint of the evacuating pipe connected to the gas side service valve, and keep the service valve closed. The air-tight test pressure shall be 3.23MPa(33 kgf/cm².)
- (b) To conduct the test, pressurize the check joint of evacuating pipe by nitrogen gas as shown below. The local piping including indoor units can be tested as for airtightness.



(6) Evacuating

Evacuating can be completed faster by evacuating both the check joint on the liquid side service valve and the check joint of the evacuating gas pipe (accessory) connected to the gas side operation valve at the same time. (Of course, evacuating is possible even through the liquid side check joint only.)



(7) Refrigerant charge amount

(a) Additional; charge amount

Model	Item	Additional charge amount per 1 m of liquid pipe			Factory charge amount at time of shipment		
		φ12.7	φ9.52	φ6.35	Outdoor unit	Indoor unit	Remarks
FDCP2001HKXRE2 FDCP2501HKXRE2		0.12 kg/m	0.06 kg/m	0.03 kg/m	11.0 kg	Holding charged	Additional refrigerant Charge is not required

Notes (1) When the refrigerant piping length exceeds the length that additional refrigerant charge is not required, charge additional refrigerant based on to calculated amount of refrigerant per unit piping length.

(2) The unit is holding charge type that all of the refrigerant is charged in the outdoor unit and in the indoor unit only a small amount of refrigerant is filled for prevention of the air entry.

Calculation of amount of refrigerant to be charged in local piping

The amount refrigerant additionally charged in local piping depends on connection pipe size but not on indoor unit type.

[Amount of refrigerant to be charged in the local piping = Actual length of liquid pipe × Amount of refrigerant additionally charged per meter of liquid pipe]

[Example] Amount of refrigerant additionally changed = (I₁ × 0.12) + (I₂ × 0.06) + (I₃ × 0.03)

I₁ : Overall length (m) of φ12.7 liquid pipe

I₂ : Overall length (m) of φ9.52 liquid pipe

I₃ : Overall length (m) of φ6.35 liquid pipe

Following precautions must be observed when the model is adapted to R407C.

- (1) Tools and related components should be changed when handling a different kind of refrigerant in order to prevent mixing of different oils. Gauge manifold and charge hose, particularly, should never be used after using them for R22.
- (2) Charge cylinder should not be used. Otherwise, the refrigerant composition may change when charging R407C into the cylinder.
- (3) Refrigerant should be charged in the liquid phase from the container. Charging the refrigerant in the gaseous phase could change the refrigerant composition substantially.
- (4) Volume of refrigerant to be taken out in the liquid phase from the container should be up to 90% of necessary quantity (in weight percent) as a standard.
- (5) Refrigerant should not be replenished even if a leakage is discovered because it could change the refrigerant composition substantially. When a leakage is discovered, replace with new refrigerant in the specified volume. However, it could be replenished temporarily in case of an emergency.

20.5.5 Electrical wiring

(1) Power supply wiring

(a) Outdoor unit power supply (A separate power supply is used for the indoor unit)

Model	Item	Power supply	Power supply wiring thickness (mm ²)	Wire length (m)	Wire circuit breaker (A)		Short-circuit breaker (Use for both ground/overload and short-circuit production)	Ground wire	
					Rated current	Switch capacity		Thickness (mm)	Screw type
FDCP2001HKXRE2	3-phase 380/415V 50Hz	5.5/5.5	46/54	40/40	30/30	40A100mA 0.1sec or less	5.5/5.5	M6	
FDCP2501HKXRE2									8.0/8.0

(b) Indoor unit power supply

Supported outdoor model	Item	Power supply	Power supply wiring thickness (mm ²)	Wire length (m)	Thickness of power supply wire between indoor units (mm ²)	Circuit Breaker Switch use capacity (A)	Wire circuit breaker rated current (A)	Short-circuit breaker (Use for both ground/overload and short-circuit production)	Signal wire thickness (mm ²)	
									Between outdoor and indoor units	Between indoor units
FDCP2001HKXRE2 FDCP2501HKXRE2	1-phase 220/240V 50Hz	2.0/2.0	37/37	2.0/2.0	20/20	20/20	20A30mA 0.1sec or less	2 core × 0.75 ~ 2.0	Same as at left	

(c) Individual flow divide controller (Same power supply with the indoor units)

Supported model	Power supply	Power supply wiring thickness (mm ² × number of wires)	Signal wire thickness (mm ² × number of wires)
HPFD1R-E	1-phase 220/240V 50Hz	2.0/2.0 × 2	2.0 × 2

Note (1) Do not misconnect the central flow divide controller signal wire.

(2) Precaution in electric wiring.

(a) Use separate power supplies for the outdoor and indoor units respectively (Standard specification)

(b) Signal wiring (for indoor and outdoor units)

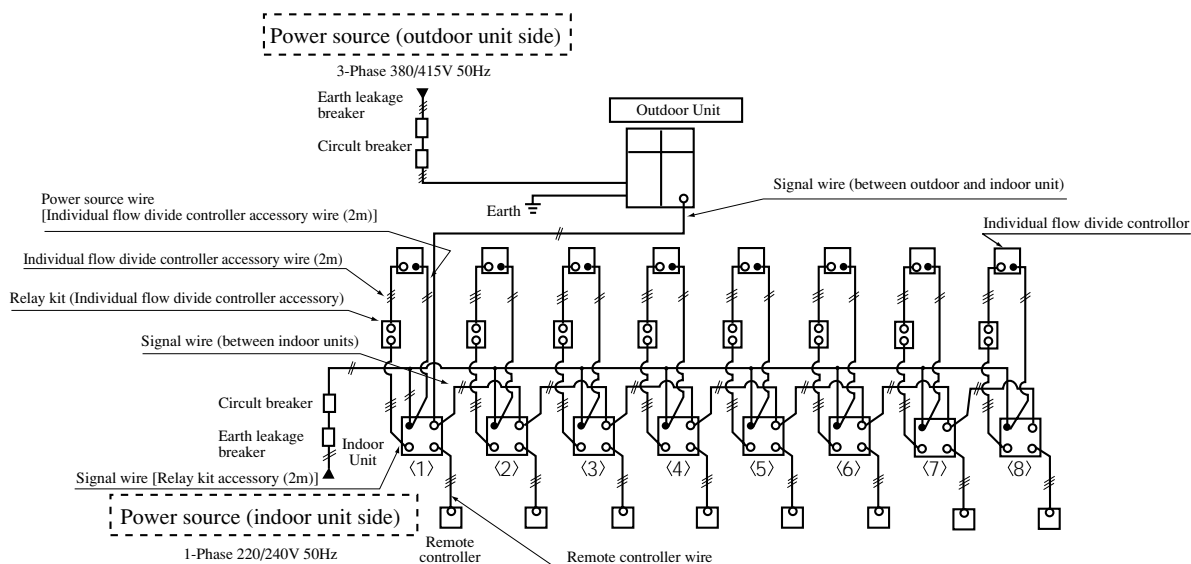
- Double-core cable with a diameter 0.75 to 2 mm² should be used for the signal wires.
- **Never make the indoor and outdoor connecting signal line use “co-axial cable” or “strand” with the power wiring for indoor and outdoor unit and other power line.**
(Never use a multiconductor wire together with power line. It may cause erroneous operation.)
- Do not connect high voltage wires 220/240 V or 380/415 V to signal wires. as these wires are DC 5V. Signal wires should be connected so that the terminal Nos. conform with each other for between outdoor and between indoor units. However, they will work properly if different polarities are connected.
(Connect (A) and (A), (B) and (B).)
- **Do not strand or run the remote control cord with power line, electric line, etc.**
- The total length of the signal wires Should be 1000m or less.

• Recommended signal wire list

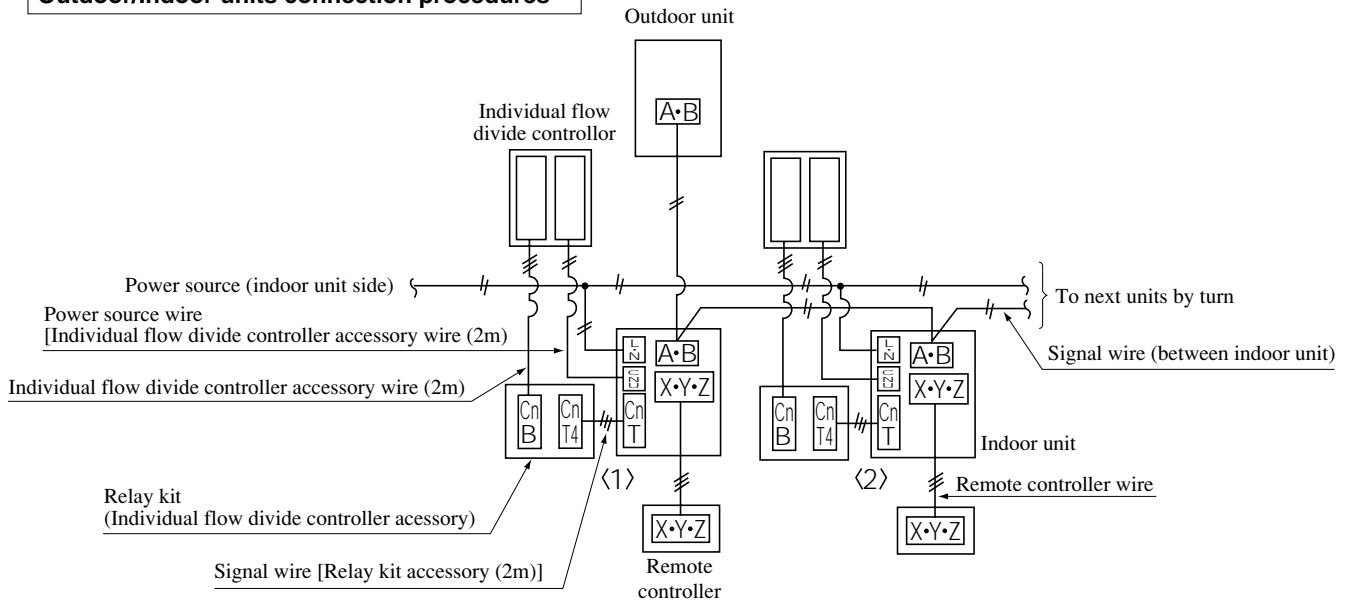
No.	Name	Symbol
1	Vinyl cabtire round cord	VCTF double-core 0.75 to 2 mm ²
2	Vinyl cabtire round cable	VCT double-core 0.75 to 2 mm ²
3	Control vinyl insulated, vinyl sheathed cable	CVV double-core 0.75 to 2 mm ²
4	Shielding wire	MVVS double-core 0.75 to 2 mm ²

When No. 4 shielding wire is used, always ground the single wire side of the shielding wire. In addition, using the shielding wire is helpful to prevent the incorrect connection between 5V DC and 220/240V or 380/415V AC because the discrimination from the power supply wire is clear.

(3) Wiring system Diagram

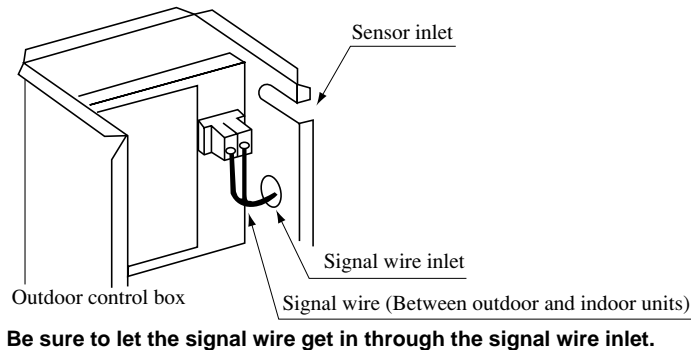


Outdoor/Indoor units connection procedures



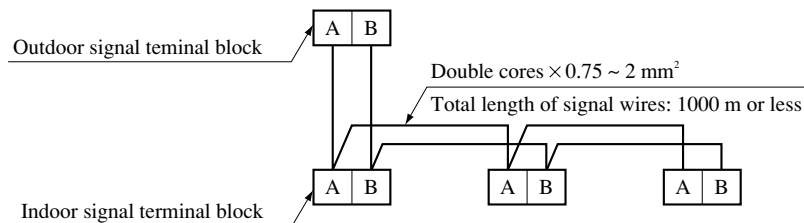
Signal wire

- Do not connect high voltage wire 380/415V to signal wires, as these wires are DC 5V. Signal wires should be connected so that the terminal Nos. conform with each other for between outdoor and between indoor units. However, they will work properly if different polarities are connected. (Connect (A) and (A), (B) and (B).)

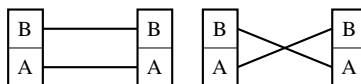


(4) Indoor and outdoor signal wiring

(a) If only one Outdoor unit is used

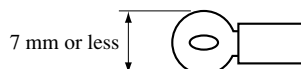


Notes (1) The indoor and outdoor signal wiring are without polarity



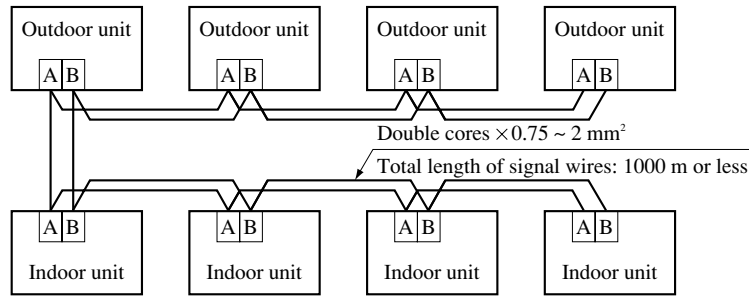
Either of the above wiring is correct.

(2) For connection to the terminal block, use as M3.5 (5/32) round eye-let terminal is shown below.

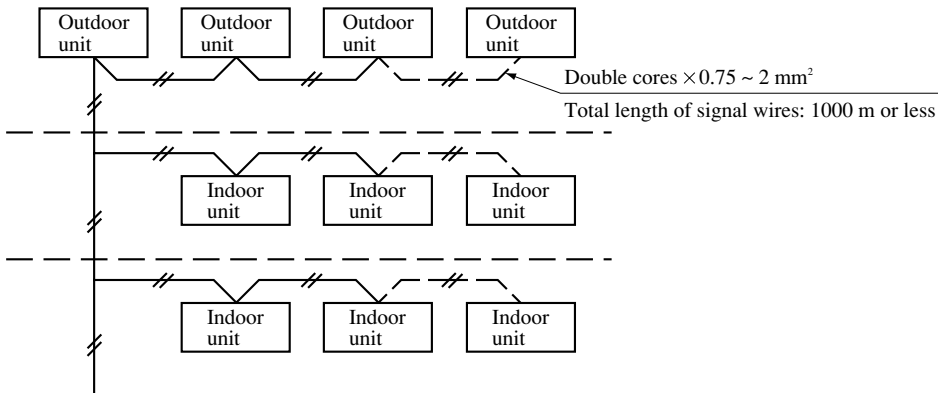


(b) If plural outdoor units are used

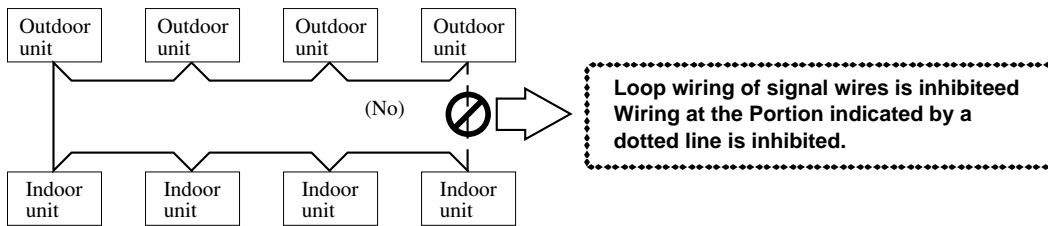
1) A maximum of 48 indoor units can be connected by using the crossover wiring method, with 2 wires for each side of the outdoor and indoor units.



2) Indoor/outdoor wiring method for multiple floors.

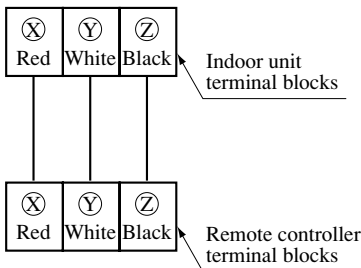


3) Loop wiring is inhibited



(5) Remote controller wiring

(a) Wiring for controlling only one indoor unit.



Note (1) Cables for the remote controller have polarity. Be sure to connect terminal blocks with the same numbers. If mis wiring occurs, E1 is displayed and disables the unit from operating.

(b) When controlling plural units.

1) Use the same procedure shown in the drawing above for the wiring of the power supply, both indoor and outdoor units and remote controller

When the wiring length for the remote controller exceeds 100 m, use the wiring procedure shown in the drawing below.

2) Connect each of the indoor units for group controlling (3 cables)

a) Connect the cables to the terminal blocks of X, Y, and Z for the indoor unit remote controller. Since the cables have polarity, be sure to connect them to terminal blocks with the same numbers.

b) Use cables of more than 0.5 mm² (Flexible and easily moved)

c) The total length of cables for crossover connection and the remote controller should be less than 600 m.

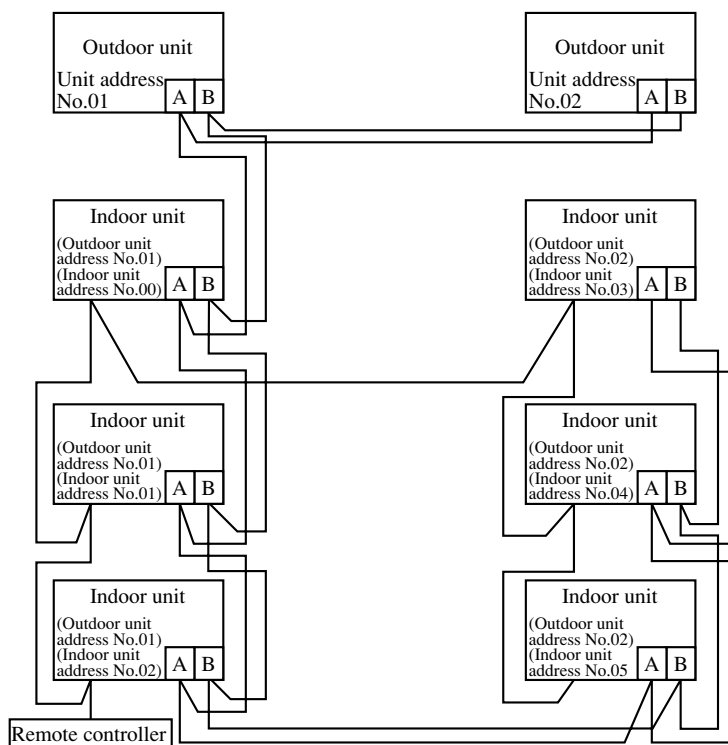
Allowable range of wire thickness and length

Standard Within	0.3mm ² × Within 100m
	0.5mm ² × Within 200m
	0.75mm ² × Within 300m
	1.25mm ² × Within 400m
	2mm ² × Within 600m

3) When there is more than one outdoor unit, they can be controlled by one remote controller.

4) One remote controller is capable of controlling up to 16 units in group.

Note (1) Use shielded cables, when wiring in parallel with cables for other power supply or when there is a possibility of being affected by outer noise such as noise from a high-frequency unit.



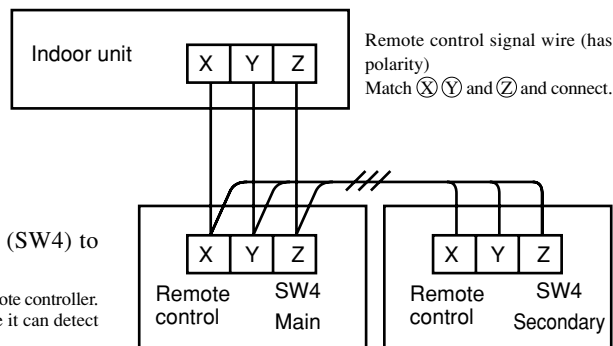
(c) Settings for main and secondary units when multiple remote controllers are used.

Up to two remote controllers can be used for each indoor unit (or each group of indoor units).

1) There are two methods for arranging this. One method is to take a remote control connection wire (3-strand) from the indoor unit for the secondary remote control. The other method is to use a jumper wire from the main remote control.

2) Set the remote control switch for the secondary unit (SW4) to secondary unit. (It was set to main unit at the factory.)

Note (1) The remote controller sensor setting is only enabled on the main remote controller. Be sure to position the main remote controller in a location where it can detect the room temperature.



(6) Setting of unit address

Addresses can be set either with the automatic address setting, remote control address setting or manual address setting depending on the combinations of address switches (see table) of the indoor and outdoor units. Operate the address switches before turning power on.

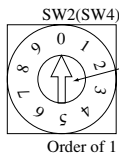
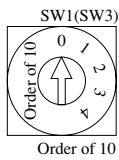
Address setting method	Outdoor unit		Indoor unit	
	Outdoor No.	Outdoor No.	Indoor No.	Indoor No.
Auto address	49	49	49	49
Remote control address	00 ~ 47	49	49	49
Manual address	00 ~ 47	00 ~ 47	00 ~ 47	00 ~ 47

At the shipment from factory, outdoor Nos. of the outdoor unit are set at 49, both the output and indoor Nos. of the indoor units are set at 49 and the setting method is set for the automatic addressing.

Address No. setting

Set the setting SW1 - 4 on the indoor PCB and the setting SW1 and 2 on the outdoor PCB as listed below.

On indoor PCB	SW1, 2 (blue)	For setting of indoor No. (orders of 10 and 1)
	SW3, 4 (green)	For setting of outdoor No. (orders of 10 and 1)
On outdoor PCB	SW1, 2 (green)	For setting of outdoor No. (orders of 10 and 1)



Insert the tip of flat head (precision) screwdriver here and point the arrow at a desired No.

		SW2 (SW4) Order of 1									
		0	1	2	3	4	5	6	7	8	9
SW1 (SW3) order of 10	0	00	01	02	03	04	05	06	07	08	09
	1	10	11	12	13	14	15	16	17	18	19
	2	20	21	22	23	24	25	26	27	28	29
	3	30	31	32	33	34	35	36	37	38	39
	4	40	41	42	43	44	45	46	47	48	49

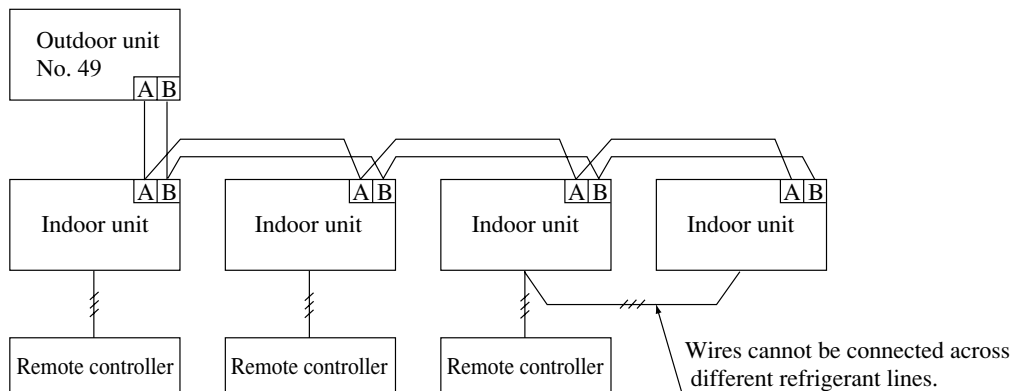
Use 48 and 49 for setting the auto or remote control address.

Notes (1) Outdoor No. is provided on the outdoor and indoor PCB's and indicates which outdoor unit is connected with which indoor unit via a refrigerant pipe. Indoor and outdoor units connected with a refrigerant pipe must have the same No.

(2) Indoor No. is used to identify a particular indoor unit. The No. should never be duplicated.

(a) Auto address setting

This setting is used when wiring on the basis of outdoor unit.



- 1) Set the address switch of outdoor unit at 49. (This is set at 49 at shipment from factory.)
- 2) Set the address switch of indoor unit at 49. (This is set at 49 at shipment from factory)
- 3) Turn power on for the indoor and outdoor units. Addresses are set automatically. (No. in a range of 0 - 11.)
For the auto address setting, power must be ON for both the indoor and outdoor units. If power is supplied to the indoor unit only, "Outdoor No." is indicated on the remote controller. In such occasion, turn power ON also for the outdoor unit.
- 4) No. will be set within approx. 1 minute after turning power on.
- 5) If you press the inspection switch of the remote controller after setting the No., the address of indoor unit will be displayed. The outdoor unit No. 49 will also be displayed.
- 6) Auto address setting is allowed also when controlling plural number of units with single remote controller. However, the connection cannot be made across different refrigeration lines.

Information 1) Once addresses are set, they are retained on the microcomputer even after turning power off.

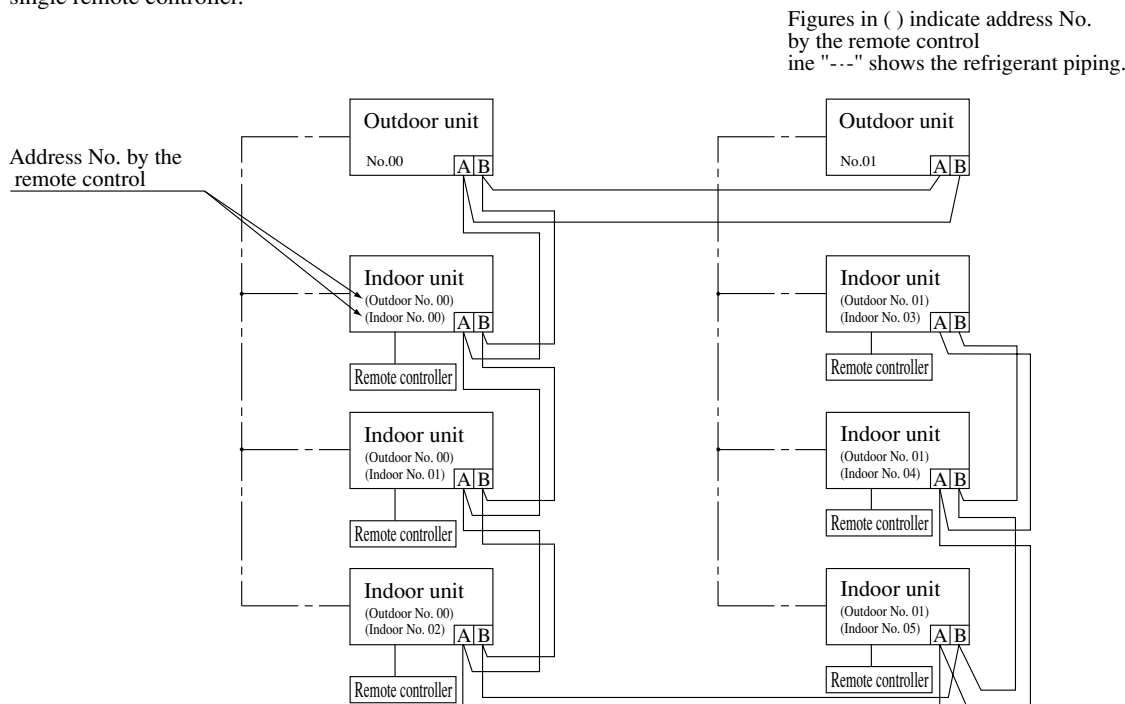
- 2) Even if the wiring is arranged on the basis of outdoor units, (2) remote control address setting and (3) manual address setting can be used.

○ **Erasing of addresses set with the automatic address setting**

On the remote controller, press the "Fan speed" switch while holding down both the switches "Check" and "Timer". Memory of address is erased. If the power supply to the indoor and outdoor units is turned off later, the system returns to the state of no address setting. Then one of the three address setting methods can be selected by changing combinations of the address switches.

(b) Setting of remote control addresses

This setting is used when connecting a plural number of indoor and outdoor units with the super link. This is applicable when using single remote controller.



- 1) Set the address of outdoor unit with a number in a range of 0 - 47 avoiding duplication with any other outdoor unit.
- 2) Leave intact the address switch on the indoor unit PCB at 49 as set at the shipment from factory.
- 3) Turn power on. Then you can proceed the remote control address setting.
- 4) Set the outdoor No. corresponding to each indoor unit, using the remote controller. Set next the indoor No. of indoor unit in a range or 0 - 47 avoiding duplication with any other unit connected in the group.

○ **Detail of setting from the remote controller**

- 1) If the power switch is turned on, the outdoor No. on the display flashes, and "--" on the return air temperature display section and "U--" on the time display section are lit.
If power is not supplied to the outdoor unit, the outdoor No. only lights and you cannot set the address. In such occasion, to turn power on also for the outdoor unit.
- 2) Indoor No. increases 0, 1, 2, ... and up at each push on the room temperature setting ▲ switch. Press the room temperature setting ▼ to reduce the outdoor No. 0, 47, 46, 45 ... and down. Stop to press the switches when a desired No. is indicated.
- 3) Press the Set switch so that the outdoor unit display changes from flashing to firm lighting and the outdoor No. is set. Simultaneously, "U" indicating the indoor unit No. starts to flash.
- 4) Set the indoor No. in the same way with the room temperature setting switches ▲ and ▼.
- 5) After completing the setting, press the Set switch so that the "U" display changes from flashing to firm lighting and the figures of outdoor No. and indoor No. on display start to flash.
- 6) Confirming the outdoor No. and indoor No. being correct, press the Set switch again.
If you like to change these Nos., press the "Check" switch so that it returns to the state of the step 2) and you can resume the address setting.
- 7) This is all for the address setting. The address display will go off 5 seconds later.
Note (1) Once the addresses are set, they are retained on the microcomputer even after turning power off. If you need to change the address, proceed as follows.

○ **Change of address**

Hold down the "Check" switch on the remote controller for more than 5 seconds. Outdoor No. on display flashes and you can set new addresses. Set the outdoor and indoor address Nos. same as described above. New addresses can be set.

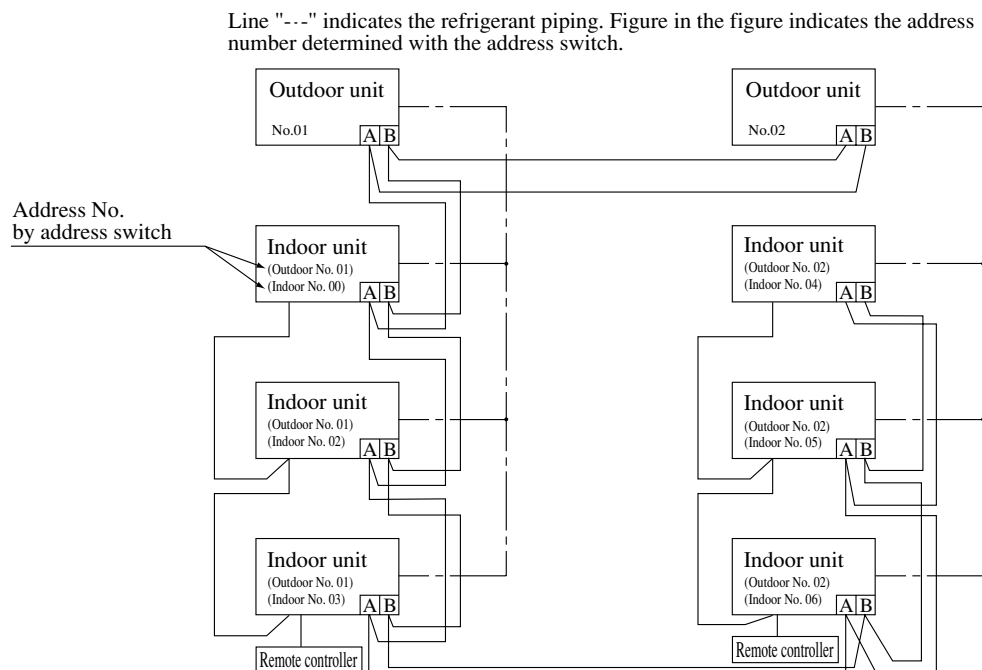
○ **Erasing the addresses set by the remote control address setting**

Holding down both the switches "Check" and "Timer", press the "Fan speed" switch. Addresses in the memory are erased. Turn power off on the indoor and outdoor units so that it returns to the no address setting condition and you can set the addresses with one of the three methods of address setting by changing combinations of the address switches.

(c) Manual address setting

This setting is used when connecting plural number of outdoor and indoor units with the super link, and is applicable when controlling with more than one remote controller. (You can use only one remote controller of course.)

- Turn power off before operating the address switches. Change of address is disabled when power is supplied.



- 1) Using the address switch (green) on the outdoor unit PCB, set the address of the outdoor unit in a range of 00 - 47 avoiding duplication with any other outdoor unit.
- 2) Using the address switch (green) on the indoor unit PCB, set the outdoor No. at the same No. as the outdoor unit which is connected with a refrigerant pipe.
- 3) Using the address switch (blue), set the indoor No. of indoor unit in a range of 00 - 47 avoiding duplication with any other unit on the connection.

20.5.6 Test run

(1) Before starting operation

- (a) Measure resistances between the electrical parts terminal block and grounded area using a 500 V Megger, insulator. Resistance must be higher than 1 MΩ.
- (b) Confirm whether the power source breaker (main switch) of the unit has been turned on for over 12 hours to energize the crankcase heater in advance of operation.
- (c) Make sure that the compressor bottom has been warmed.
- (d) Be sure to fully open the service valves (on both the gas and liquid sides) of the outdoor unit. If being operated without opening, the valve may be got out of order.

Note (1) When the service valve is closed, be sure to check that evacuation is completed or a refrigerant is charged.

(2) Test run

- (a) If it is impossible, a test run of indoor units can be conducted by using the switches No. 4 and No. 5 of [SW-3] on the outdoor unit circuit board irrespective of ON/OFF conditions of CnS and the remote controller.

No. 4 of [Sw3] Test run ↑↓ Normal	<ul style="list-style-type: none"> • All connected indoor units operate when the switch is set to ON. • Indoor units request the maximum frequency and the outdoor unit operates with the maximum frequency shown in the table below according to requests from indoor units. • Select cooling or heating according to input to No. 5 of [SW3]. 	<ul style="list-style-type: none"> • When the switch is set to OFF, these units can be operated with the remote controller or by external input.
No. 5 of [Sw3]	<ul style="list-style-type: none"> • Turn this on makes it possible to conduct cooling operation when [SW3] No. 4 is turned on. 	<ul style="list-style-type: none"> • Turning this off makes it possible to conduct heating operation when [SW3]'s No. 4 is turned off.

[Remark]

This operation has priority over other option commands with the center console.

At the time of trial operation, the maximum frequencies are follows. Protective devices are effectively controlled, and frequencies are controlled to become smaller.

Models	FDCP2001HKXRE2	FDCP2501HKXRE2
Maximum frequency for operation (Hz)	95	95

- (b) The frequency for operation can be monitored with yellow LEDs on the indoor unit circuit board. Relations between LED lighting condition and frequency are as follows.

Inverter frequency monitor

LED ₃	○	○	○	○	☀	☀	☀	☀
LED ₄	○	○	☀	☀	○	○	☀	☀
LED ₅	○	☀	○	☀	○	☀	○	☀
Operation frequency	0 ~ 35	35 ~ 45	45 ~ 55	55 ~ 65	65 ~ 75	75 ~ 85	85 ~ 95	95 ~ 110

CAUTION: After end of a test run order, set No. 4 of [SW3] to OFF

Notes (1) ☀ mark: Flashing

○ mark: Stays OFF

(2) Relation between LED_{3~5} and operation frequency

- LED₃ 40 Hz
- LED₄ 20 Hz
- LED₅ 10 Hz
- Operation frequency = Frequency indicated by LED_{3~5} + 25

(3) Cooling test run operation (Cooling test run can be performed in winter.)

- (a) Operation method
 - In the normal cooling mode, hold down the “Temperature Set” switch while pushing the “Set” switch.
 - Setting temperature is changed at 5°C and the cooling test run is operated for 30 minutes.
It stops after 30 minutes.
- (b) During cooling test run operation
 - If ON/OFF switch is pressed or a mode other than the cooling is selected by the “Mode” switch, the cooling test run operation is released or returns to the specified operation mode.
 - If the “Temperature set” switch is pressed, the setting temperature changed at 18°C and the cooling test run operation is released but the cooling operation continues.
 - It is effective when any switches other than the above are pressed.
- (c) During the cooling test run operation, the setting temperature changed at 5°C but any other control and protective functions are operable just like in the normal operation.
 - If any error occurs, the location of error is indicated on the remote controller display or with the condition of flashing of inspection lamp (red) on the main unit controller. Remove the cause of trouble before starting operation again.

(4) Delivery

- (a) Explain how to operate the indoor unit to your customer according to the accessory owner’s manual.
- (b) Persuade the customer not to turn off the power switch even if the unit is not used for along time. The air conditioner can start operation any time when your customer want to heating or cooling his room. (The bottom of the compressor is heated with the crank case heater, and compressor troubles can be prevented when the cooling or heating season sets in.)**

20.6. MAINTENANCE DATA

20.6.1 Diagnosis of Microcomputer circuit

(1) Confirmation of the error code on the remote controller (by pressing the inspection switch) and the inspection display and normal display lamps on PCBs of indoor/ outdoor units

The microcomputer detects errors on electrical components, which include the microcomputer itself, errors on the power supply line and errors (overload, etc.) on the refrigerant circuit and the location of trouble is displayed (with the combination of error symbols of remote controller, normal (green) and inspection (red) display LED on PCBs of indoor/outdoor units.) When any error occurs, check first the inspection display. It will guide you to the trouble point and assist you to complete the repair work quickly.

Error code of the remote controller is recorded on the microcomputer after the trouble has been reset automatically so that, if you press the inspection switch of remote controller, the error code and the number of unit in trouble are displayed for 10 sec., The inspection display lamp on the indoor/outdoor unit PCB keeps flashing (glowing) even after the trouble was reset automatically.

Inspection lamp on the indoor unit PCB is turned off if the remote controller is reset.

1) Inspection / normal: List of power display

Section	Display section	Display	Contents of display
Remote controller	Power supply display	LCD	At power ON: Displays always the return air temperature and Center/ Remote.
	Error code	LCD	At error: Displays E1 ~ E46 or blank depending on the kinds of error.
	Inspection display	Red-LED	At error: Flash continuously (indicates the occurrence of error).
Indoor/outdoor unit	Normal display	Green-LED	At power ON (normal): Flash continuously. At error: Off or continuous glowing or irregular illumination.
	Error display	Red-LED	At error: Flash 1 ~ 3 times/ 5 sec for indoor unit depending on the kinds of error, continuous flash, irregular illumination or off. At error: Flash 1 ~ 9 times/ 10 sec for outdoor unit. depending on the kinds of error, continuous flash, irregular illumination or off.
Inverters	Normaly display	Green-LD1	At power ON (normal): Flash continuously At error: off or continuous glowing or irregular illumination.
		Red-LD2	At error: Lights when the power transistor overheats (for 3 minutes or more).
	Error display	Red-LD3	At error: Lights upon occurrence of a current-cut (held for 3 minutes).
		Red-LD4	At error: Lights when a transmisson error occurs between outdoor unit inverters.

2) Check Indicator Table

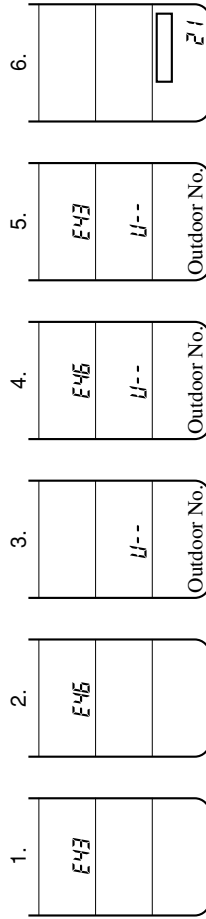
Whether a failure exists or not on the indoor unit and outdoor unit can be known by the contents of remote controller error code, indoor / outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause	
	Green	Red	Green	Red		
No-indication	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Normal	
	Lights continuously	Stays OFF	Lights continuously	Stays OFF	Indoor unit PCB fault, CPU runaway	
	Stays OFF	Stays OFF	Stays OFF	Stays OFF	Power OFF, L3 phase wiring is open, power source failure	
E1	Keeps flashing	3 time flash	Keeps flashing	Stays OFF	Remote controller wires X and Y are reversely connected.* For wire breaking at power ON, the LED is OFF. Remote controller wire is open. (X wire breaking: A beep is produced and no indication is made, Z wire breaking: No beep and no indication) The remote controller wires Y and Z are reversely connected. (32-sec time flash)	
	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	The remote controller wires are connected to A and B on the terminal block. The indoor/outdoor signal wire are connected in loop form. The indoor unit microcomputer runs away.	
	Stay OFF or Lights continuously	32-sec time flash	Keeps flashing	Stay OFF	Indoor unit PCB fault	
	Keeps flashing	3 time flash	Keeps flashing	Stays OFF	The PAC remote controller is connected to the KX. The remote controller wire Y is open. The remote controller wires X and Y are reversely connected. (The LED flash twice a second.) Two remote controllers are provided.* For wire breaking at power ON, the LED is OFF.	
	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	No. duplication at indoor unit addressing. More than 49 indoor unit are connected.	
	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	No. duplication at remote controller addressing	
	Keeps flashing	2 time flash	Stays OFF	Stays OFF	Outdoor unit power supply OFF (detected only during operation)	
	Keeps flashing	2 time flash	Keeps flashing	Stays OFF	The corresponding outdoor unit address No is not found. (Detected only during operation) Indoor/outdoor signal line wire breaking Indoor unit PCB fault.	
	Keeps flashing	2 time flash	Keeps flashing	6 time flash	Indoor/outdoor transmission error. Wire A and B swapping after power ON.	
	Keeps flashing	2 time flash	Stay OFF or Lights continuously	32-sec time flash	Outdoor unit microcomputer failure	
E6	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit heat exchanger thermistor failure	
E7	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit return air thermistor failure	
E9	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	The float SW operates (with FS only). Drain up kit wiring fault.	
E10	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	When multi-unit control by remote controller is performed, the number of units is over (more than 17 units). Two remote controllers are provided for one controller is performed.	
E11	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Remote controller addresses have been set while more than one units of remote controller are connected.	
E12	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Address No. combination error or addressing is performed with the following combinations.	
					Outdoor No.	Indoor No.
					0 ~ 47 48, 49	48, 49 0 ~ 47
E28	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Remote controller thermistor failure	

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause
	Green	Red	Green	Red	
E31	Keeps flashing	Stays OFF	Keeps flashing	8 time flash	Outdoor unit No. duplication. Outdoor unit address No. is not set for super link wiring. Outdoor unit address No. is changed in the power ON status.
E34	Keeps flashing	Stays OFF	Keeps flashing	2 time flash	52C secondary side L3-phase wiring is open. Inverters error.
E36	Keeps flashing	Stays OFF	Keeps flashing	5 time flash	Discharge temperature abnormality.
E37	Keeps flashing	Stays OFF	Keeps flashing	Keeps flashing	Outdoor unit heat exchanger thermistor failure
E38	Keeps flashing	Stays OFF	Keeps flashing	Keeps flashing	Outside temperature sensor failure
E39	Keeps flashing	Stays OFF	Keeps flashing	Keeps flashing	Discharge temperature thermistor failure
E40	Keeps flashing	Stays OFF	Keeps flashing	3 time flash	63HI operation
E41	Keeps flashing	Stays OFF	Keeps flashing	4 time flash	Power transistor overheat
E42	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Abnormal current cut of compressor (CM1)
E43	Keeps flashing	Stays OFF	Keeps flashing	7 time flash	The number of connectable units is exceeded.
E45	Keeps flashing	Stays OFF	Keeps flashing	9 time flash	Transmission error between inverter and outdoor unit PCB
E46	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Automatic address setting and remote controller address setting or manual address setting coexists in the same network.

Notes (1) Even if an abnormality occurs in a part of indoor units, outdoor units continue to operate. However, in case of a drain abnormality, the outdoor units stop even when an abnormality occurs on only a unit. In this case, the remote controller for the unit in which a drain abnormality occurred does not indicate the failure but stops. It is also stopped at once by pressing the operation switch.

(2) When the following displays (6 patterns) coexist:



The above shows the case of remote controller address setting. There is a unit for which the address switch on the PCB of the outdoor unit connected on the same network is set at "49". Turn off the indoor and outdoor power supplies, and set the address switch on the PCB of the outdoor unit to any of 0 to 47. After setting, turn on the indoor and outdoor power supplies. Then, remote controller address setting can be performed.

3) Display sequence of error, inspection display lamp

a) One kind error

Display corresponding to the error is shown.

b) More than one errors.

Section	Display section
Error code of remote controller	<ul style="list-style-type: none"> • Displays the error of higher priority (When plural errors are persisting.) <p><i>E 1>E10>E 11>E2>E3>E4>E5>E7>E9>E6>E 12..... E46</i></p> <ul style="list-style-type: none"> • Displays the present errors. (When a new error has occurred after the former error was reset.)
Inspection LED(red) of indoor unit PCB	
Inspection LED (red) of outdoor unit PCB	

c) Timing of error detection

• Indoor unit side.

Error detail	Error code	Timing of error detection
Transmission error of remote controller indoor unit	<i>E 1</i>	When the transmission error continuously for 2 min.
CPU is out of control		Resetting was performed at the rate of 1 time per second. An abnormal stop occurred 120 times running.
Transmission error between indoor/outdoor units	<i>E5</i>	A check was made once every 20 second. An abnormal stop occurred 7 time running.
Broken wire of heat exchanger thermistor	<i>E6</i>	After a compressor ON command, this failure was detected for 5 second in the period of 2 minutes to 2 minutes and 20 seconds.
Broken wire of indoor unit return air thermistor	<i>E7</i>	This failure was detected continuously for 5 seconds.
Drain error(float switch motion)	<i>E9</i>	At the thermostat ON state, an abnormal stop occurred immediately after the float switch operated. - At a stop or the thermostat OFF state, the condensate motor was turned on for 3 minutes after the float switch operated. After that, an abnormal stop occurred when the float switch operated in 10 seconds.

• Outdoor unit side

Error detail	Error code	Timing of error detection
52C secondary side L3-phase wiring is open.	E34	An abnormal stop occurs when the L3-phase voltage is 0 V for 5 seconds running. (Detected with 52C ON only)
Discharge temperature abnormality	E36	A stop occurs when this abnormality occurs for 2 seconds running at 130°C. After a stop for 3 minutes, a recovery is automatically made. An abnormal stop occurs when this abnormality occurs twice for 60 minutes. (The abnormal state is held for 45 minutes.)
Broken wire of heat exchanger thermister	E37	This failure is detected when it occurs for 5 seconds running in the period of 2 minutes to 2 minutes and 20 seconds with the compressor ON. An abnormal stop occurs when this failure occurs 3 times for 40 minutes.
Broken wire of outdoor temperature thermister	E38	
Broken wire of discharge thermister	E39	This failure is detected when it occurs for 5 seconds running in the period of 10 minutes to 10 minutes and 20 seconds with the compressor ON. An abnormal stop occurs when this failure occurs 3 times for 40 minutes.
Hight pressure cut	E40	An abnormal stop occurs when this abnormality occurs 2 times for 40 minutes.
Power transistor overheat	E41	A stop occurs at 90°C or more. After 3 minutes, a recovery was automatically made at 83°C or less. Abnormal stop occurs when this abnormality occurs 2 times for 2 hours.
Current cut	E42	An abnormal stop occurs when this abnormality occurs 4 times for 15 minutes.
Excessive number of outdoor units	E43	This error is detected when the number of connectable units is set over the specified value at remote control addressing.
Transmission error between inverter and outdoor unit PCB	E45	When an transmission error continues for 10 seconds, the 52C is turned off. With a delay of 3 minutes, a recovery is automatically made. An abnormal stop occurs when this error occurs 4 times for 15 minutes.

d) Recording and reset of error

Error display	Memory	Reset
Error code	<ul style="list-style-type: none"> • Saves in memory the mode⁽¹⁾ of higher priority 	<ul style="list-style-type: none"> • Stop the unit operation by pressing the ON/OFF switch of remote controller. • Operation can be started again if the error has been reset.⁽²⁾
Indoor unit inspection lamp (red)	<ul style="list-style-type: none"> • Cannot save in memory 	
Outdoor unit inspection lamp (red)	<ul style="list-style-type: none"> • Saves in memory the mode⁽¹⁾ of higher priority 	

Notes (1) Priority is in the order of E1 > ... > E10 > ... > 45.

(2) Reset is disabled for 45 min. at the error of outdoor unit or compressor overcurrent or the discharge gas temperature error.

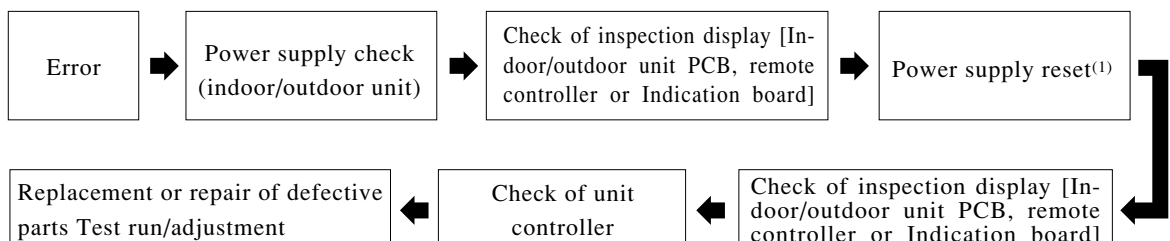
e) Reset of error code in memory (when the error has been reset.)

Indoor unit: Press the Timer switch and the Stop switch while the Inspection switch of wired remote controller is held down or detach the power supply connector (CnW₂) of indoor unit PCB and connect again or turn OFF the power.

Outdoor unit: Detach the power supply connector (CNA₂) of outdoor unit PCB and connect again or turn OFF the power supply or turn on and off the SW3-1.

(2) Procedures of trouble diagnosis

When any error occurs, inspect in following sequence. Detailed explanation on each step is given later in this text.

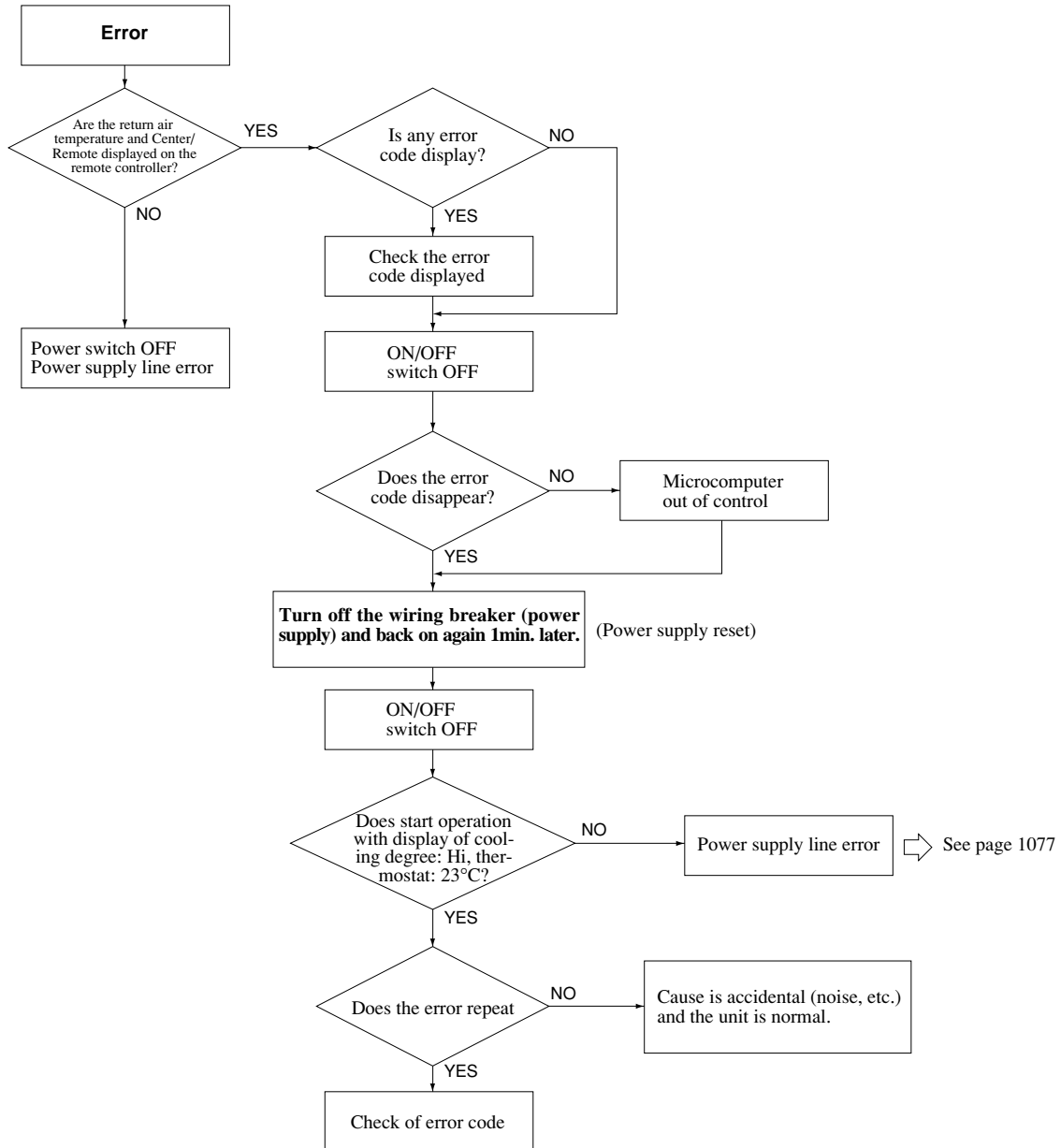


Note (1) It means the operation to turn off the power and back on again more than 1 min. later in order to reset the malfunction of microcomputer due to the effect of power supply conditions or accidental noise.

(a) Diagnosis by the power supply reset

When any error occurs, reset the power supply as described below to see if it is the result of accidental noise, etc.

► Check at the indoor unit side.



Errors due to external noise, etc.

Error code may be displayed or the error may not be displayed normally even if the controller is normal because of external noise source⁽¹⁾ or joined or parallel arrangement of power cables and signal wires. It is because the wire of remote controller, wired remote controller signal wires for multiple units or the network signal wires may be influenced by external noises which are judged as signals by the microcomputer which reacts mistakenly.

When there is any noise source, it is necessary to the shield wire for the remote controller and signal wires.

Note (1) High frequency medical machine, rectifier motor application device, thyristor, broadcast transmission tower, power transmission line, power line of electric train, automatic door motor, elevator (voltage drop), wireless telephone, high voltage power distribution line, computer, personal computer and their cables.

There do not necessarily always cause problems but they can be a source of electrical noise.

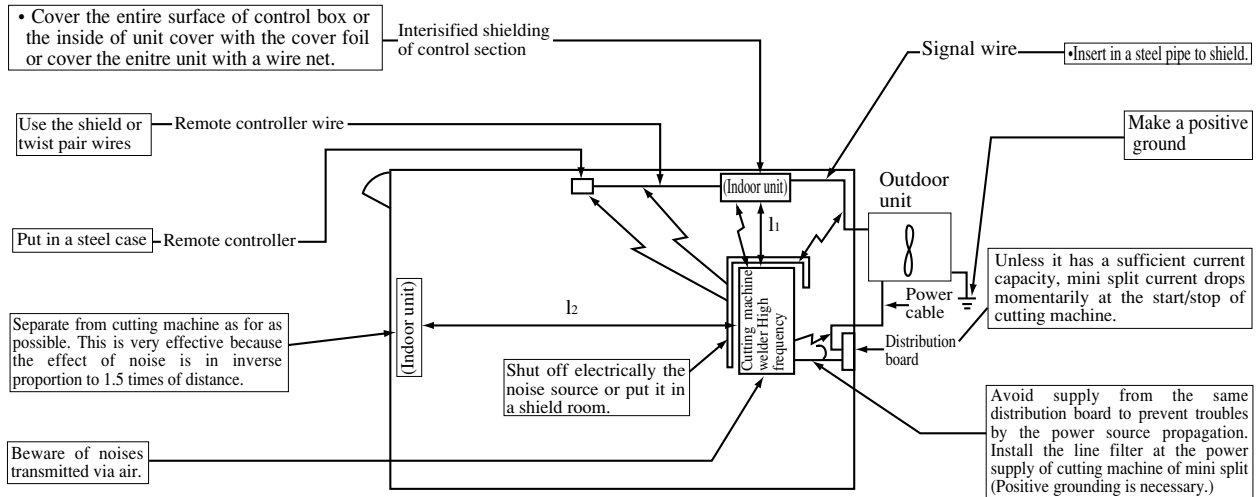
(2) **Reference** Effect of noise

- When noises intrude into the remote controller.

Abnormal or irregular display such as the flashing of irrelevant display (lamp) (for example, LEDs of cooling and heating illuminated simultaneously or the like) is observed even if the remote controller is not operated or the remote controller and, as the result, the operation of units may be disabled or similar abnormal phenomena are observed.

- When noises intruded into the microcomputer of printed circuit board; State of operation becomes abnormal such as the units perform irregular operation while the remote controller is not operated, the operation cannot be stopped with the remote controller, etc.

Electro magnetic noise prevention(example)



(b) Error diagnosis procedures at the indoor unit side

The error diagnosis for indoor units is the same as for the Multi KX Series. For details, please refer to the section for the KX Series found on pages 910 to 917.

(c) Error diagnosis procedures at the outdoor unit side

At the error diagnosis related to the outdoor unit, check at first the error code of remote controller and the illumination patterns of normal and inspection display lamps in the same manner as the case of indoor unit.

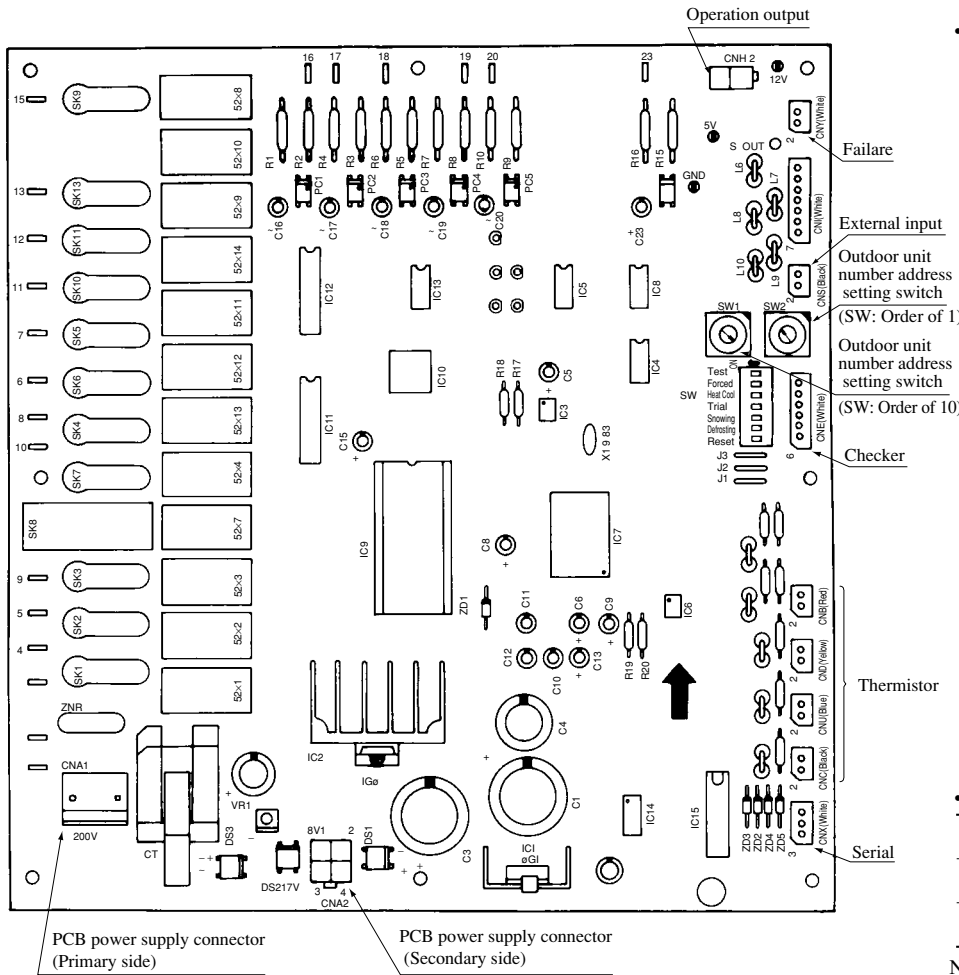
Then estimate the outline, the cause and the location of error based on the pattern and proceed to the inspection and repair. Since the self diagnosis function by means of the microcomputers of indoor/outdoor units provide the judgement of error of microcomputers themselves irregularity power supply line, overload, etc. caused by the installation space, inadequate volume of refrigerant etc., the location and cause of trouble will be discovered without difficulty.

In addition, the display lamps error code of indoor/outdoor units is kept flashing, (except when the power supply is interrupted) after the irregularity is automatically recovered to give irregularity information to the service personnel. If any mode of higher priority than the error retained in memory occurs after the reset of error, it is switched to that mode and saved in the memory.

(i) Replacement parts assembly related to the outdoor unit PCB

Outdoor unit PCB, outdoor unit inverter PCB, power transistor module, diode module, capacitor, reactor, noise filter, thermistor,

(ii) Parts layout on the outdoor unit PCB



• Function of DIP switch

Name	Function	Reference page
SW3-1	ON	Check LED reset
	OFF	Normal operation
SW3-2	ON	Easy to start defrosting
	OFF	Normal operation
SW3-3	ON	Measure against snow
	OFF	Normal operation

Name	Function	Reference page
SW3-4	ON	Trial operation
	OFF	Regular operation
SW3-5	ON	Cooling trail operation
	OFF	Heating trail operation
SW3-6	ON	Compulsory operation
	OFF	Regulat operation
SW3-7	ON	Test mode
	OFF	Regular operation

• Function of jumper wires

Model	J1	J2	J3
FDCP2001	With	With	None ⁽¹⁾
FDCP2501	With	With	None ⁽¹⁾

Note (1) "None" means that jumper wire is not provided on the PCB or the connection is cut.

• Replacement procedure of indoor unit microcomputer printed circuit board

Microcomputer printed circuit board can replaced with following procedure.

- 1) Confirm the parts numbers. (Refer to the following parts layout drawing for the location of parts number.)

Model	Parts No.
FDCP2001, 2501HKXRE2	PCB505A012L

Inverter frequency monitor

LED3	○	○	○	○	⦿	⦿	⦿	⦿
LED4	○	○	⦿	⦿	○	○	⦿	⦿
LED5	○	⦿	○	⦿	○	⦿	○	⦿
Operation frequency	0~35	35~45	45~55	55~65	65~75	75~85	85~95	95~100

Notes (1) ⦿ mark: Flashing

○ mark: Stays OFF

(2) Relation between LED3-5

and operation frequency

• LED3.....40Hz

• LED4.....20Hz

• LED5.....10Hz

• Operation frequency =

Frequency indicated by

LED3-5 + 25

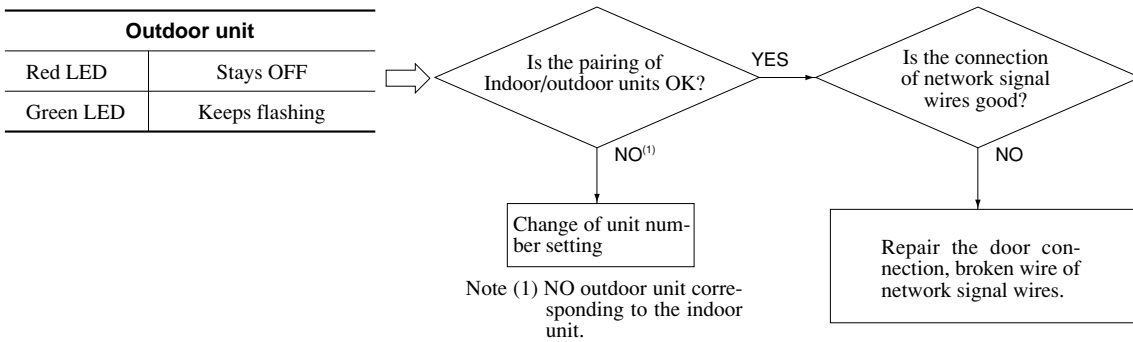
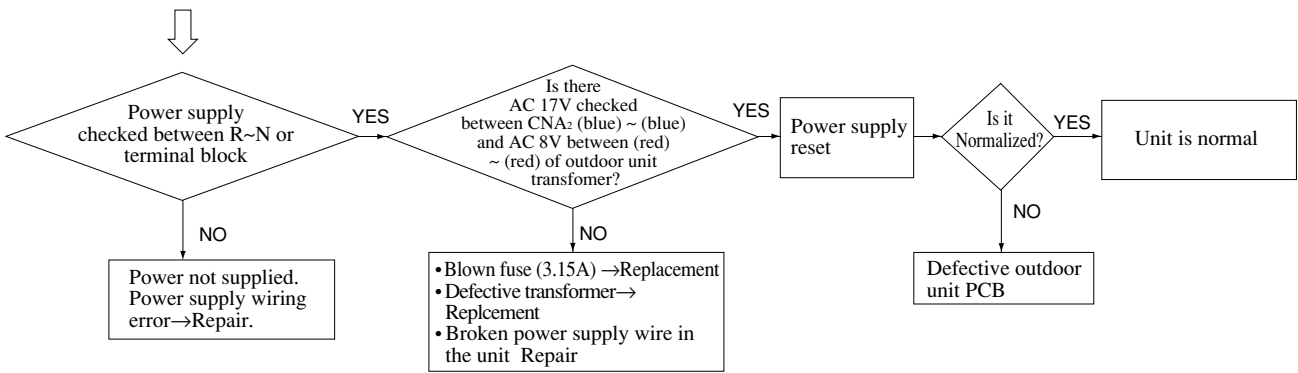
(iii) Check procedure depending on indication lamps (For the outdoor unit)

1 Error display: **E3** [Error on the outdoor unit signal line]

(Detected during operation only)

Indoor unit	
Red LED	2 time flash
Green LED	Keeps flashing

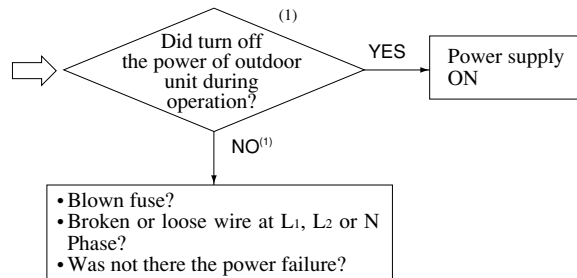
Outdoor unit	
Red LED	Stays OFF
Green LED	Stays OFF



2 Error display: **ES** [Outdoor unit signal line error, power supply error]

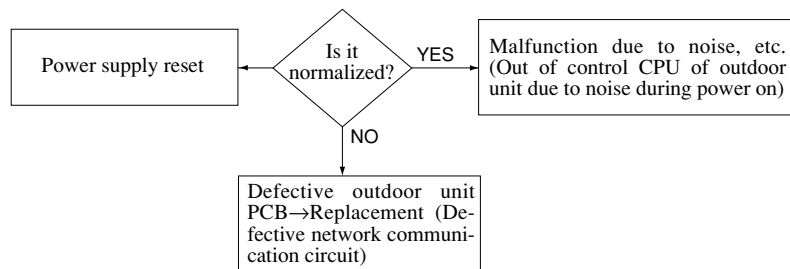
Indoor unit	
Red LED	2time flash
Green LED	Keeps flashing

Outdoor unit	
Red LED	Stays OFF
Green LED	Stays OFF

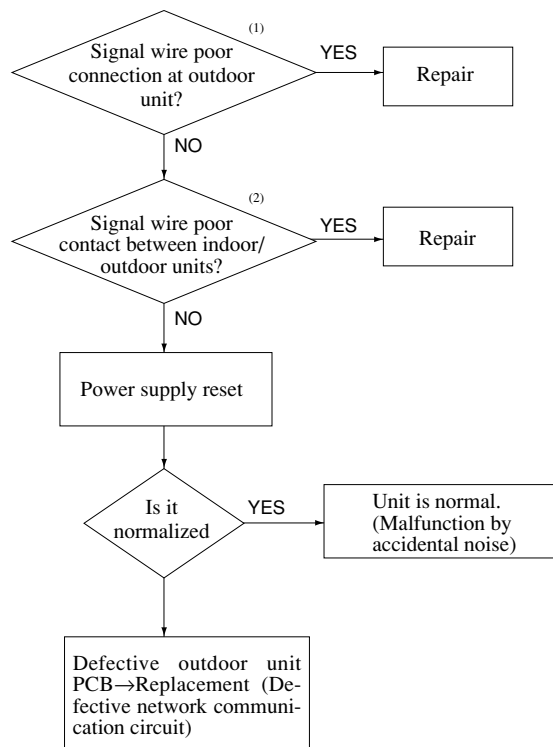


Note (1) This case is limited to the separate power supplies to indoor/outdoor units. (Combination of (indoor unit) red LED 2 time flash and (outdoor unit) green LED stays off means that the power supply to the outdoor unit has been interrupted during operation.)

Outdoor unit	
Red LED	Stays OFF or keeps flashing
Green LED	Stays OFF or Lights continuously



Outdoor unit	
Red LED	Stays OFF
Green LED	Keeps flashing

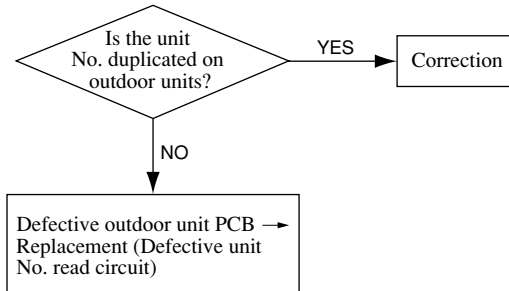


Notes (1) Check for poor connection (looseness, mis-connection) at outdoor unit terminal block and broken signal wires between outdoor units.

(2) Check the poor connection or broken signal wires between indoor/outdoor units.

3 Error display: **E31** [Duplicated unit No. of outdoor units]

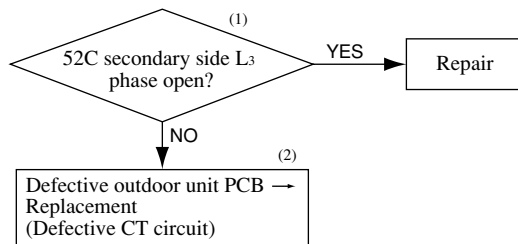
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	8 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing



Note (1) When the PCB is defective, the flash patterns of outdoor unit red LED, green LED may become irregular.

4 Error display: **E34** [Open phase at L₃ phase of 52C secondary side (CM₂)]

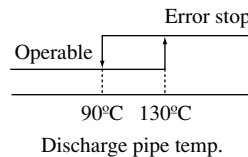
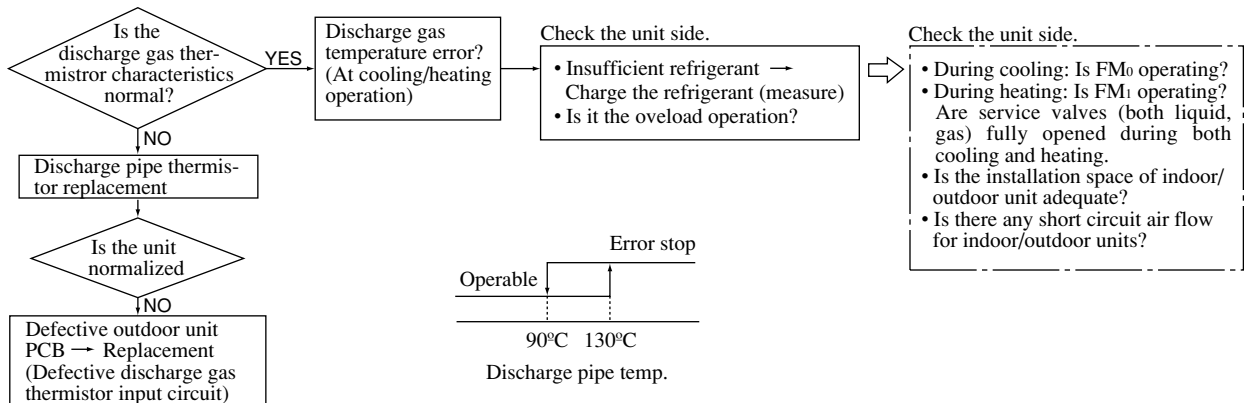
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	2 time flash ⁽¹⁾
Green LED	Keeps flashing	Green LED	Keeps flashing



Notes (1) When voltage is detected at 52C primary side but not at the secondary side, check also 52C (broken coil, poor contact).
 (2) When voltage is detected at 52C primary side L₃ phase and there is no error at 52C, the outdoor unit PCB (defective 52X₀₁ circuit or 52X₀₁) or indoor unit PCB (defective thermostat circuit) is defective.

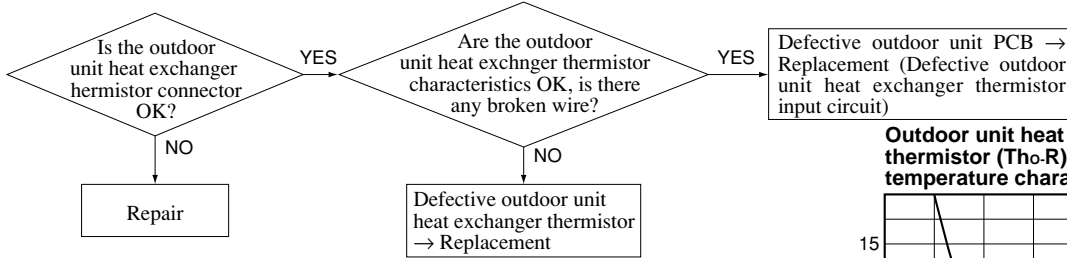
5 Error display: **E36** [Discharge temperature error]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	5 time flash ⁽¹⁾
Green LED	Keeps flashing	Green LED	Keeps flashing

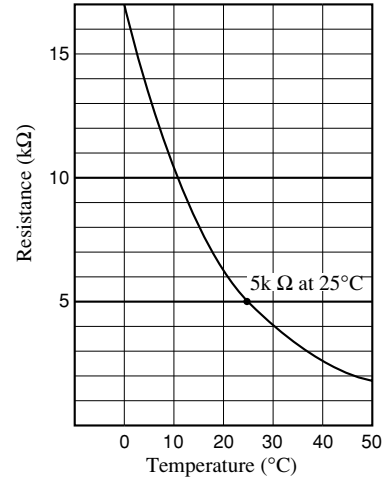


6 Error display: **E37** [Defective outdoor unit heat exchanger thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Keeps flashing
Green LED	Keeps flashing	Green LED	Keeps flashing

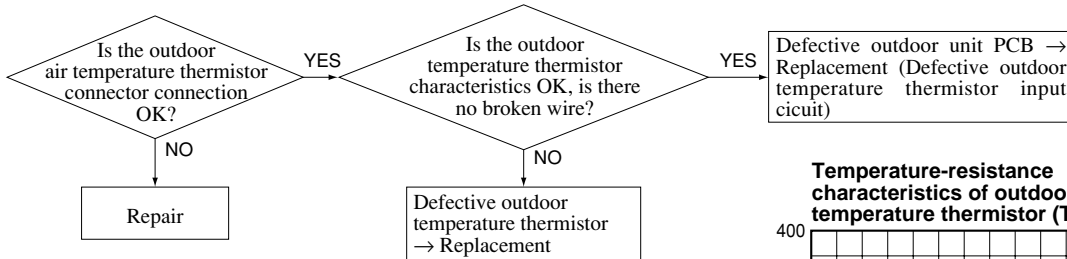


Outdoor unit heat exchanger thermistor (Tho-R) Resistance temperature characteristics

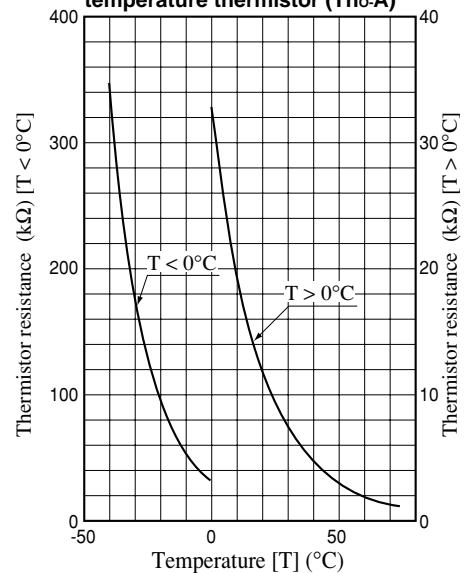


7 Error display: **E38** [Defective outdoor temperature thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Keeps flashing
Green LED	Keeps flashing	Green LED	Keeps flashing



Temperature-resistance characteristics of outdoor temperature thermistor (Tho-A)

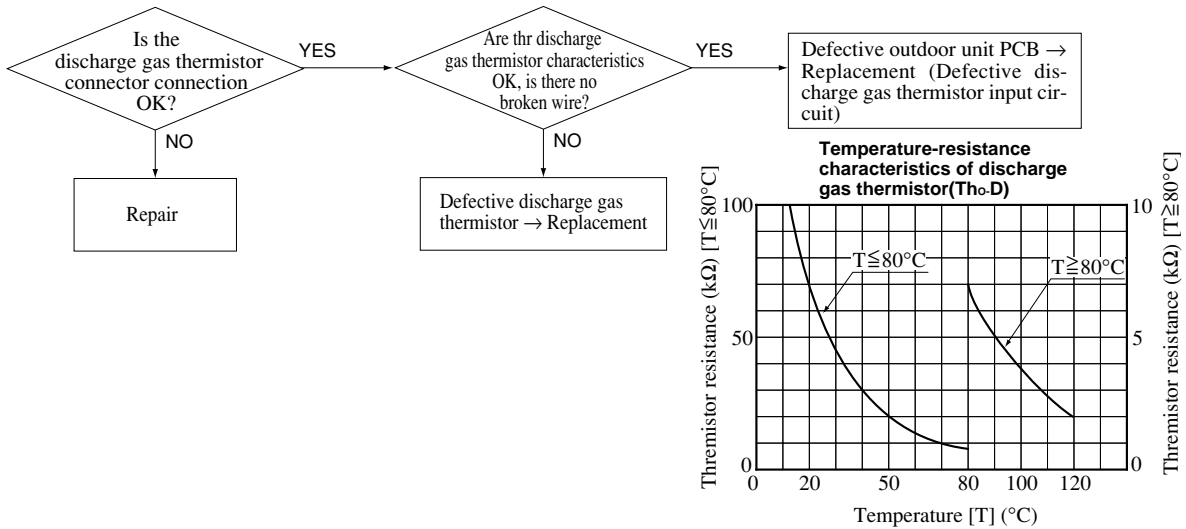


8

Error display: **E39**

[Defective discharge gas thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Keeps flashing
Green LED	Keeps flashing	Green LED	Keeps flashing

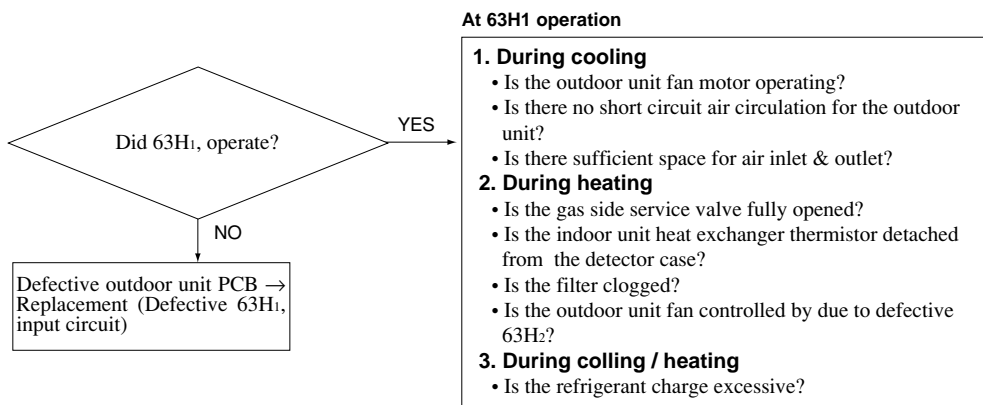


9

Error display: **E40**

[63H, motion]

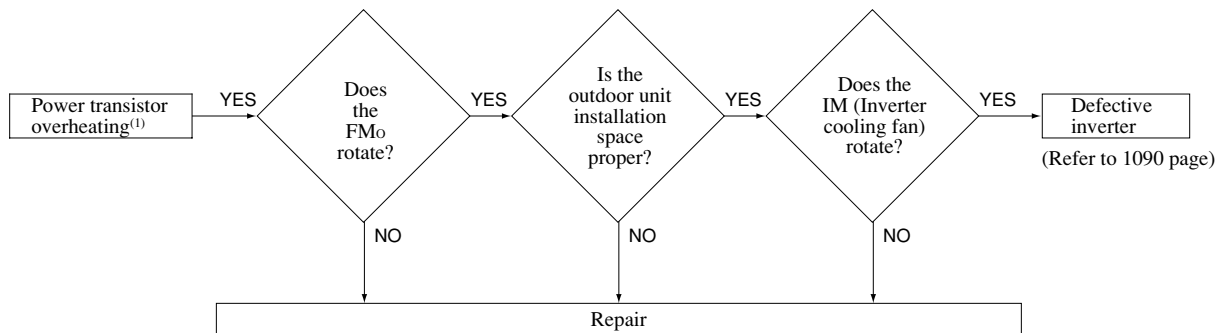
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	3 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing



Note (1) When the wire of 63H₁ is broken from the moment of power on, the error E 40 is displayed 40 minutes later. If the operation is started in this period of time, the operation changes to the thermostat OFF state during cooling, and cool wind blow stops during heating operation.

10 Error display: **E41** [Power transistor overheating]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	4 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

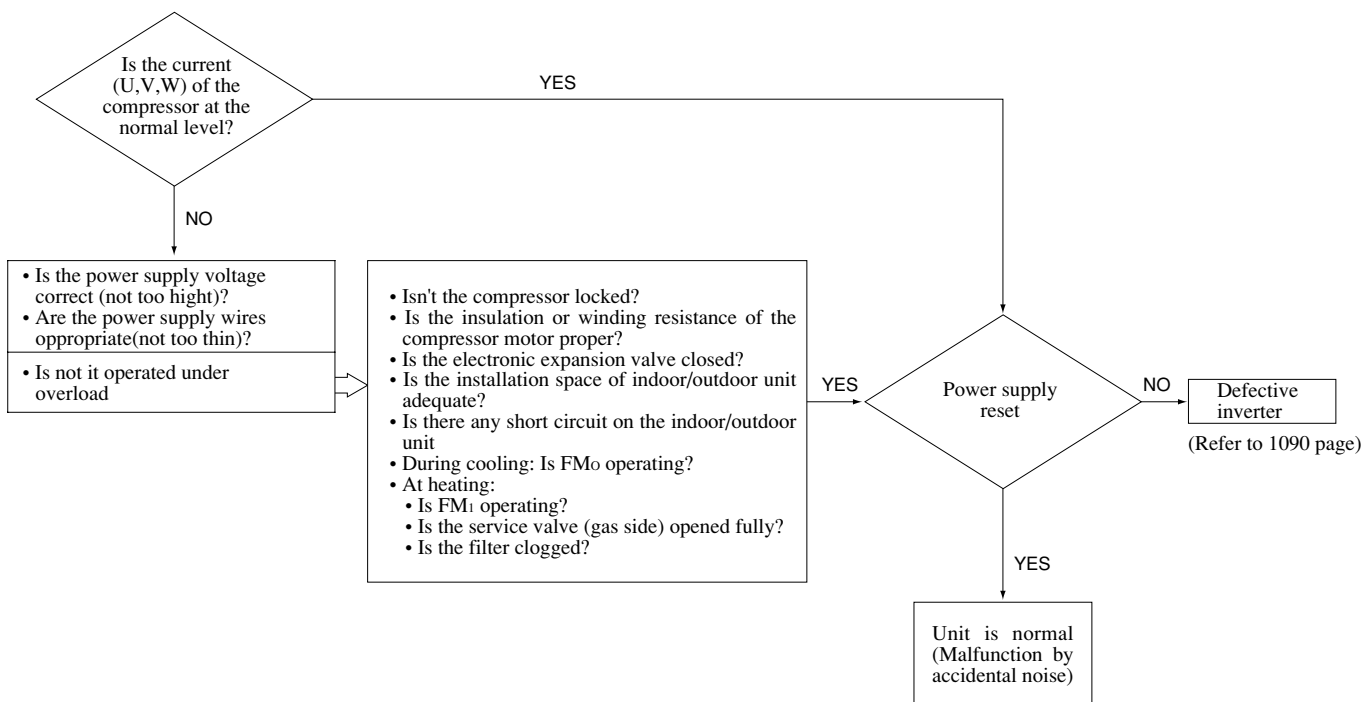


Note (1) The LD2 on the inverter control PCB lights for 3 minutes. Fin thermostat set value: 90°C open/83°C close

11 Error display: **E42** [Current cut]

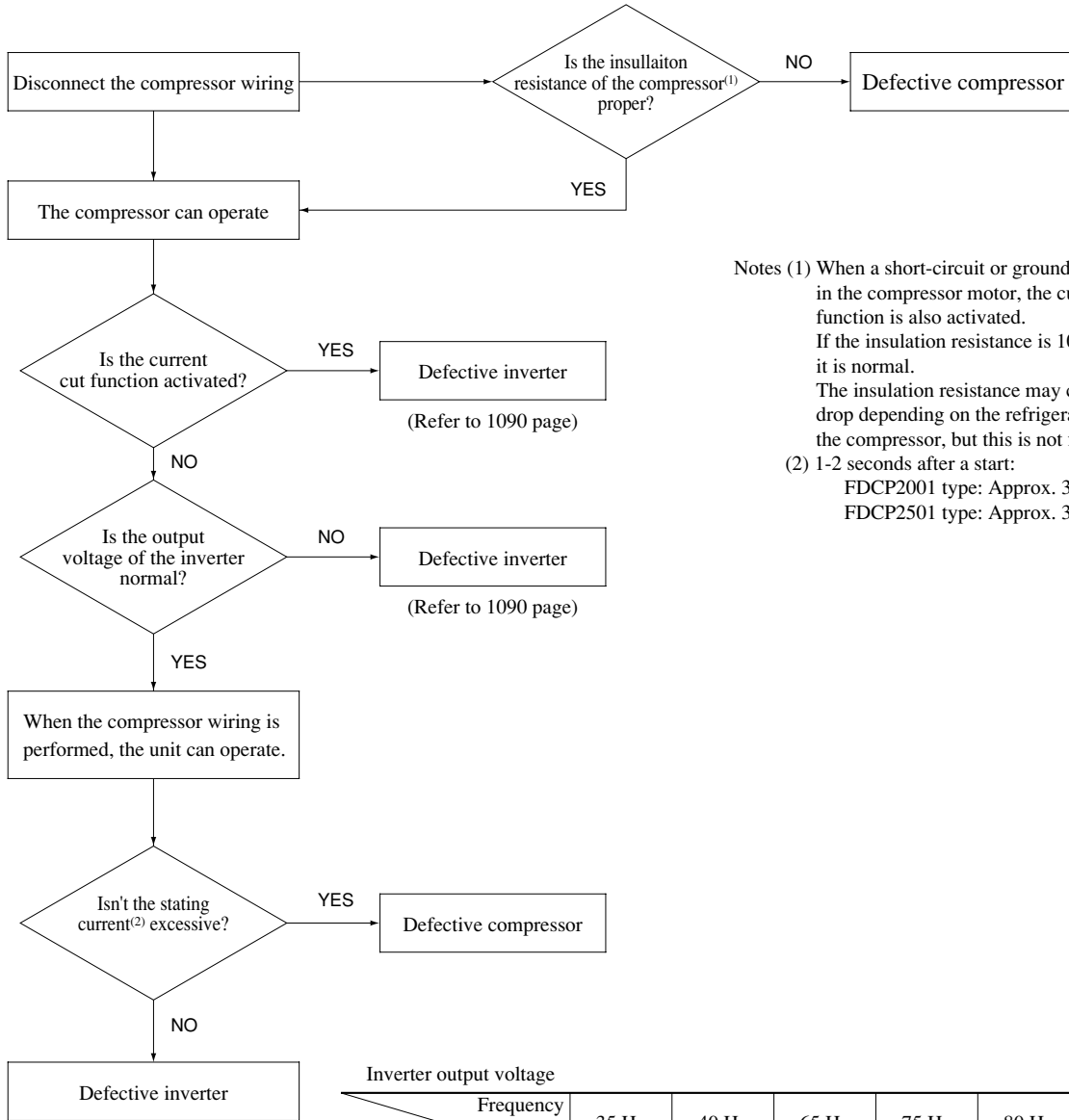
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

Remarks: When current-cut occurs immediately after a start (the Hz value does not increase), check the LD3 on the inverter PCB if an error code is not indicated on the remote controller and the compressor does not operate. When this LD3 is ON, see the next page.



Notes (1) The LD3 lights for 3 minutes.
(2) For details of the check procedure, see the next page.

Current cut is indicated and the compressor cannot operate



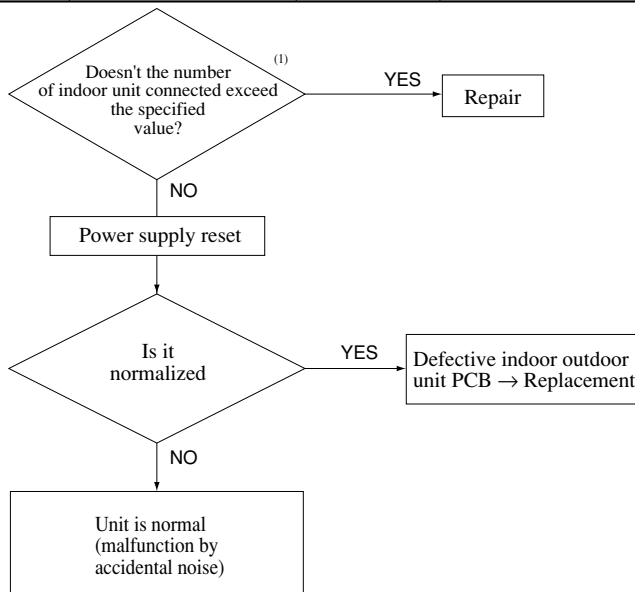
Notes (1) When a short-circuit or ground-fault occurs in the compressor motor, the current cut function is also activated. If the insulation resistance is 10MΩ or more, it is normal. The insulation resistance may considerably drop depending on the refrigerant volume in the compressor, but this is not faulty.

(2) 1-2 seconds after a start:
 FDCP2001 type: Approx. 32 A
 FDCP2501 type: Approx. 37 A

Inverter output voltage		Unit: V (AC)				
Frequency	35 Hz	40 Hz	65 Hz	75 Hz	80 Hz	95 Hz
Model						
All models (outdoor unit)	95 ~ 98	104 ~ 107	167 ~ 173	180 ~ 190	195 ~ 197	198 ~ 203

12 Error display: **E43** [Excessive number of indoor units connected]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	7 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

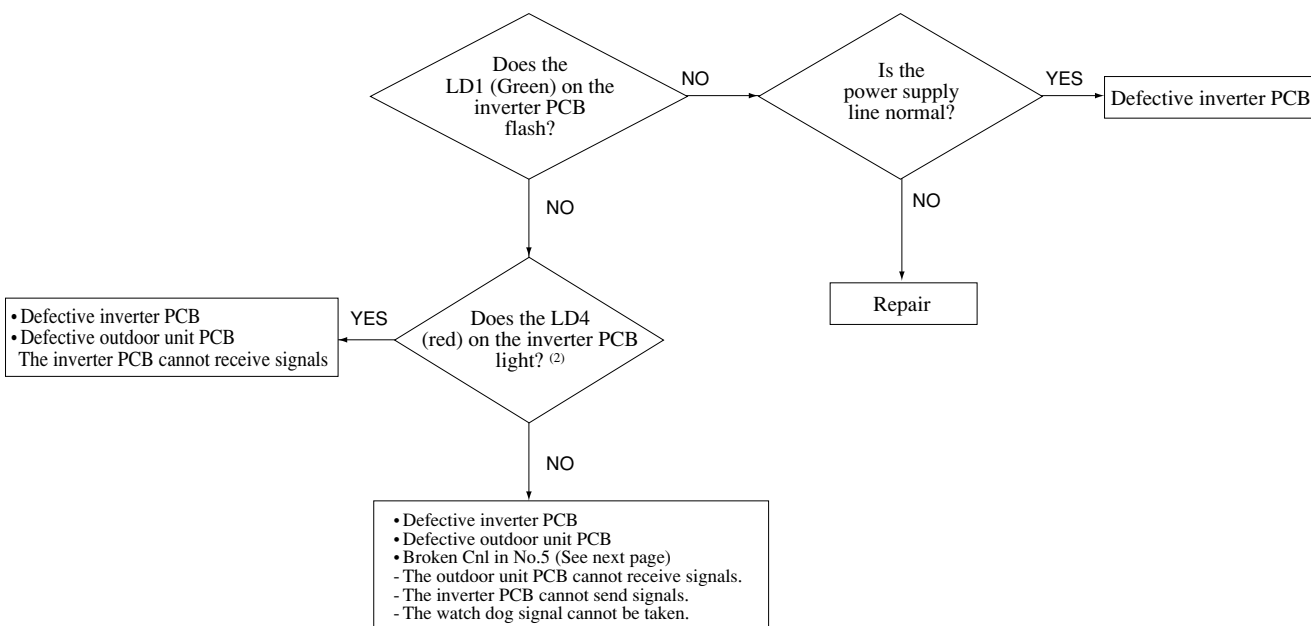


- Notes (1) The maximum number of connectable unit of each model is as follows: 9.
 (2) Outdoor No. setting check for indoor units (to see if outdoor No. is of other system)
 (3) In case of auto addressing erase the addresses stored in memory and perform re-setting.

13 Error display: **E45** [Transmission error between inverter and Outdoor unit PCB]

Check that the 52C is ON. With the 52C ON, power is supplied to the inverter PCB.

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	9 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing



Notes (1) Make a check referring to Troubleshooting for Inverter (page 1090).

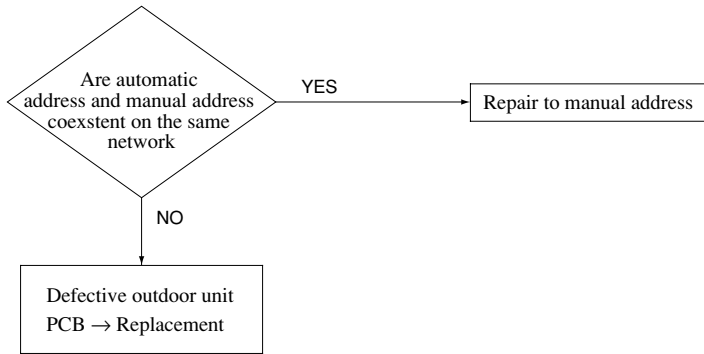
(2) When receiving fails, the LD4 comes on at once. If the outdoor unit cannot receive signals for 10 seconds, the 52C is turned OFF. Accordingly, the ON state can be checked only in this period of 10 seconds.

• When communication is checked by the connector CnI, each value will be as follows.

Connector	Contents of communication		V(analog tester)
CnI	1	Common	0V
	2	12V power supply	12V
	3	Transmission from outdoor unit	Swings at 11~11.5V
	4	Reception from outdoor unit	Swings at 4.5~5V
	5	Watch dog (communication from inverter PCB to outdoor unit PCB)	Swings at 2~4V
	6	Inverter overheat	5V: normal 0V: abnormal
	7	Current cut	

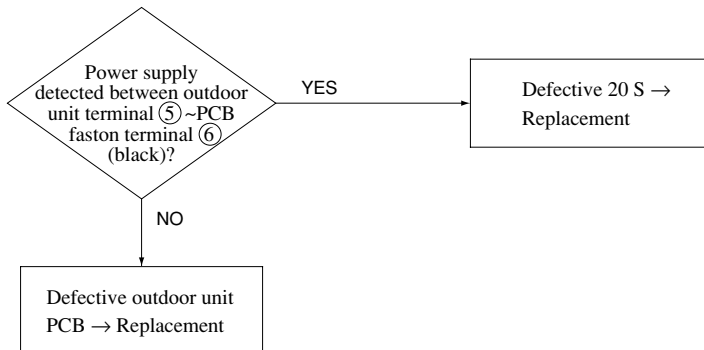
14 Error display: *E4E* [Automatic address setting and manual address setting coexistents in the same network]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing



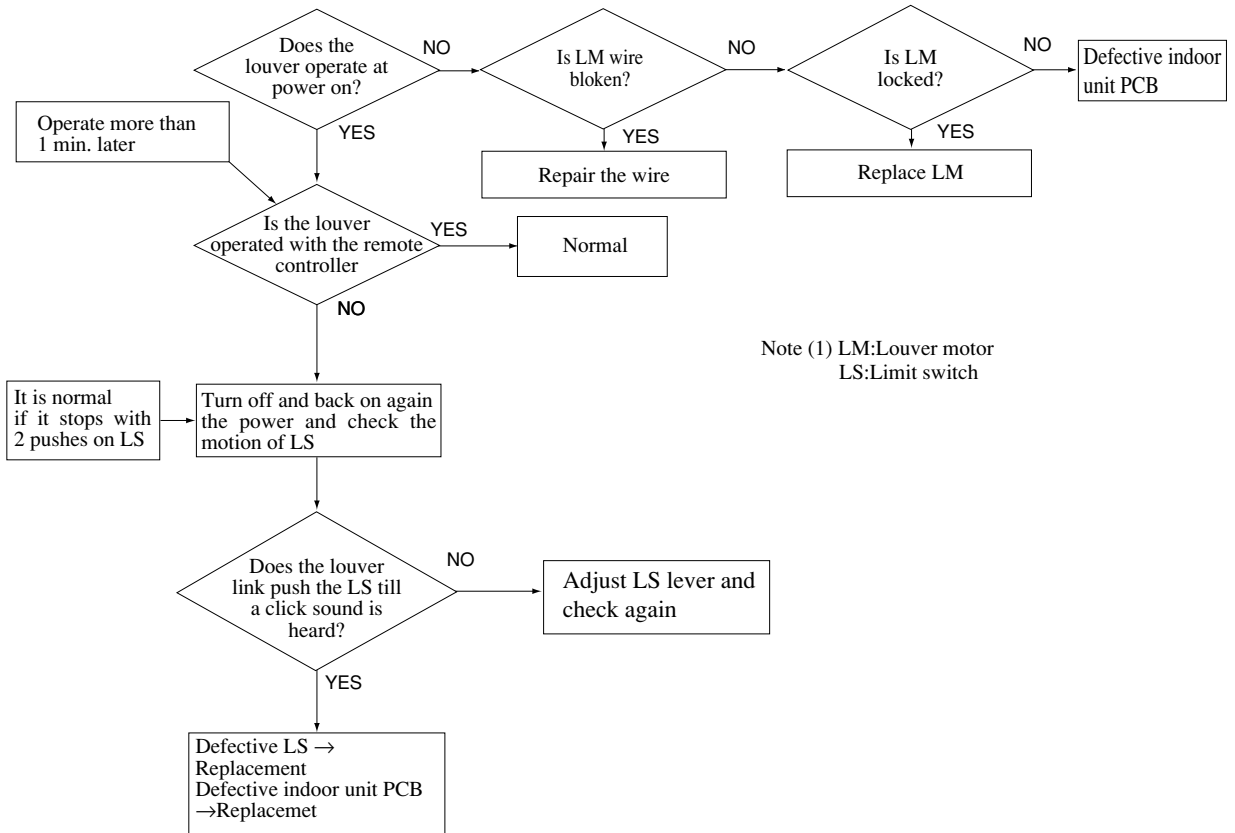
(d) How to advance checks for each faulty symptom
(i) Inspection method when there is no error display

1) Four way valve does not switch during heating operation



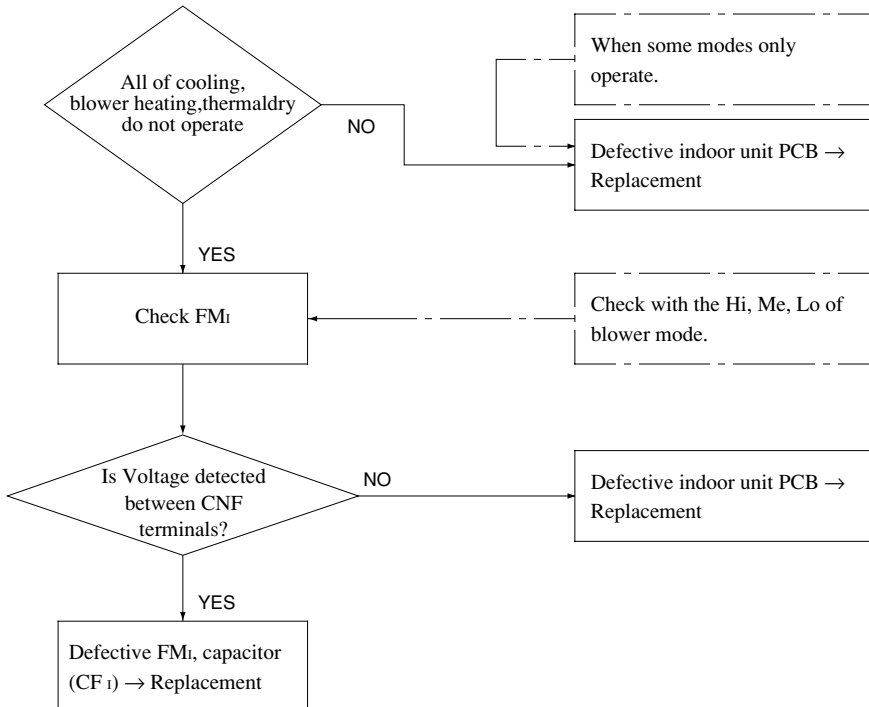
2) Louver motor does not operate

► Inspect at the indoor unit side.

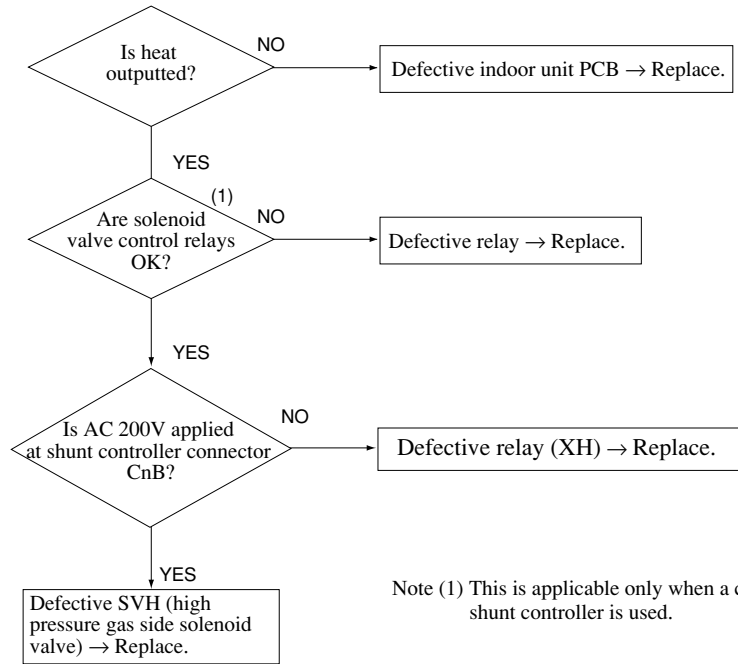


3) When the indoor unit blower does not operate

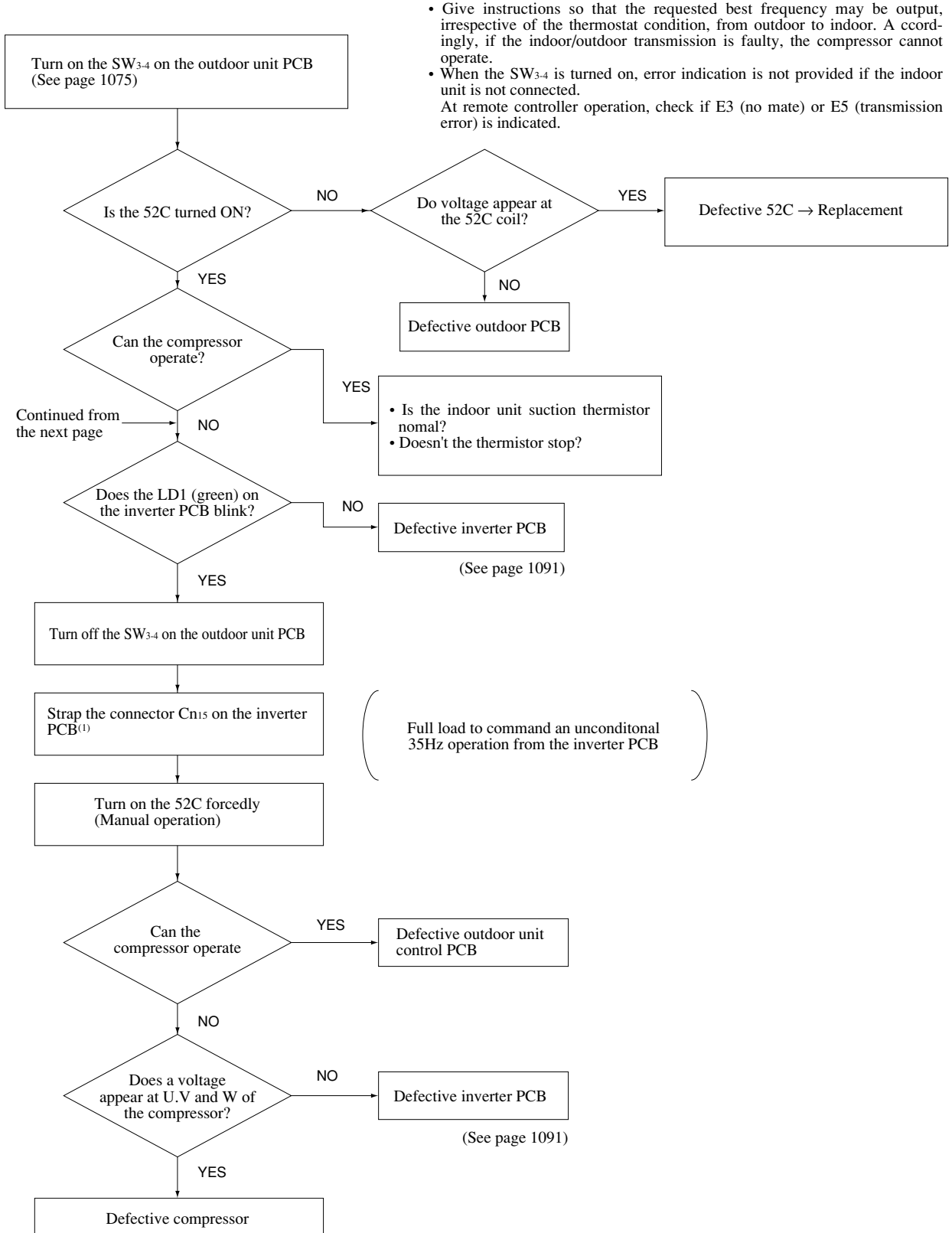
► Inspect at the indoor unit side.



4) **Heating operation does not start**



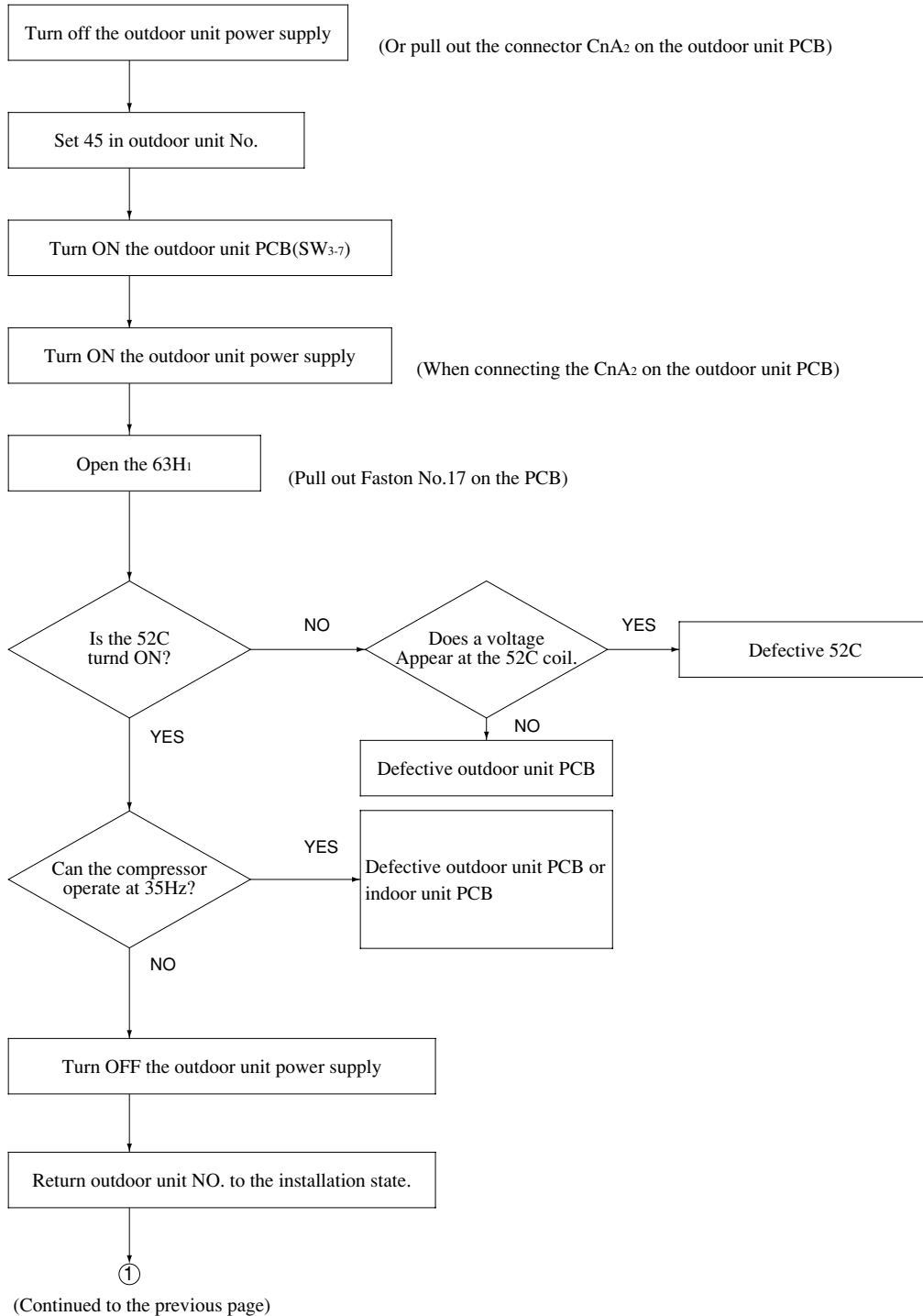
**(3) When the remote controller indication is normal but the compressor cannot operate:
(No check indication)**



- Give instructions so that the requested best frequency may be output, irrespective of the thermostat condition, from outdoor to indoor. Accordingly, if the indoor/outdoor transmission is faulty, the compressor cannot operate.
- When the SW₃₋₄ is turned on, error indication is not provided if the indoor unit is not connected.
At remote controller operation, check if E3 (no mate) or E5 (transmission error) is indicated.

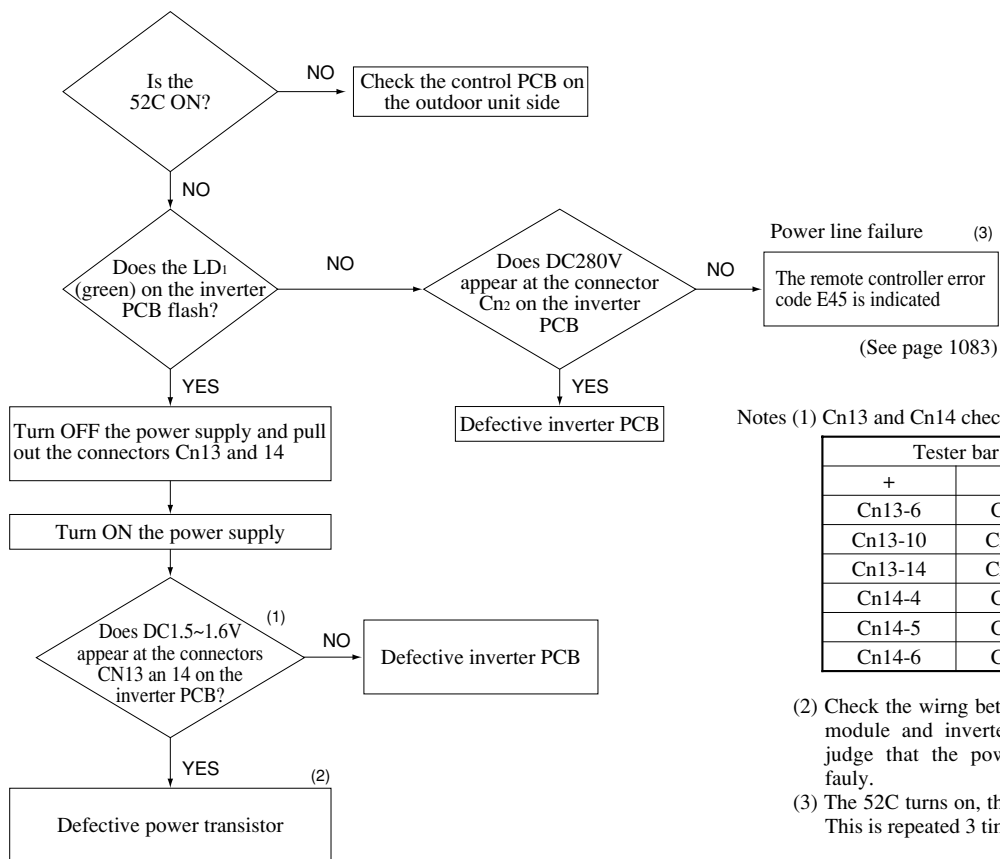
Notes (1) The expansion valve of the indoor unit may be closed or the indoor unit fan may stop. After the compressor is operated, stop it at once. Otherwise, this will cause a failure to the compressor.
(2) The next page shows a checking procedure using only the outside unit.

(4) Procedure for checking the outdoor unit irrespective of indoor/outdoor transmission



Note (1) When using this procedure, the indoor unit enters a transmission error state. In the indoor unit the expansion valve may be closed or the fan may stop.
 After the compressor is operated, stop it at once.
 Otherwise, it will cause a failure to the compressor.

(5) Procedure for checking the inverter (No output is provided at the compressor (U,V and W).)



Notes (1) Cn13 and Cn14 check points

Tester bar		Voltage
+	-	
Cn13-6	Cn13-7	1.5~1.6V
Cn13-10	Cn13-11	
Cn13-14	Cn13-15	
Cn14-4	Cn14-1	
Cn14-5	Cn14-2	
Cn14-6	Cn14-3	

- (2) Check the wiring between the power transistor module and inverter PCB. If it is normal, judge that the power transistor module is faulty.
- (3) The 52C turns on, then turn off in 10 seconds. This is repeated 3 times and E45 is indicated.

(iii) Cooling(heating) effectiveness is low. (Check the refrigerant volume and refrigerating cycle in addition to the following items.)

- 1) For low cooling effectiveness
 - a) Check if the protective function operates with the result that the operating frequency of the compressor goes below the specified frequency value.
 - Note (1) When the current safe control and discharge temperature control are activated, the frequency is lowered.
 - b) Check if the operation of the indoor unit expansion valve is normal or there is no clogging.
 - c) Check if the anti-frost function operates.

Procedure for Checking Indoor unit Electronic Expansion Valve Operation

Check the indoor unit controller to expansion valve output according to the following procedure.

- ▶ Measure the voltage value appearing at the pin on the control side of the expansion valve (SM) connector CnA (white, 6P (5-conductor), and also the duration of voltage application.

Orange~Gray, Yellow~Gray	}	Approx DC5V ⁽²⁾ for 15 seconds ⁽¹⁾ when the power supply is turned on.
Red ~Gray, Black ~Gray		

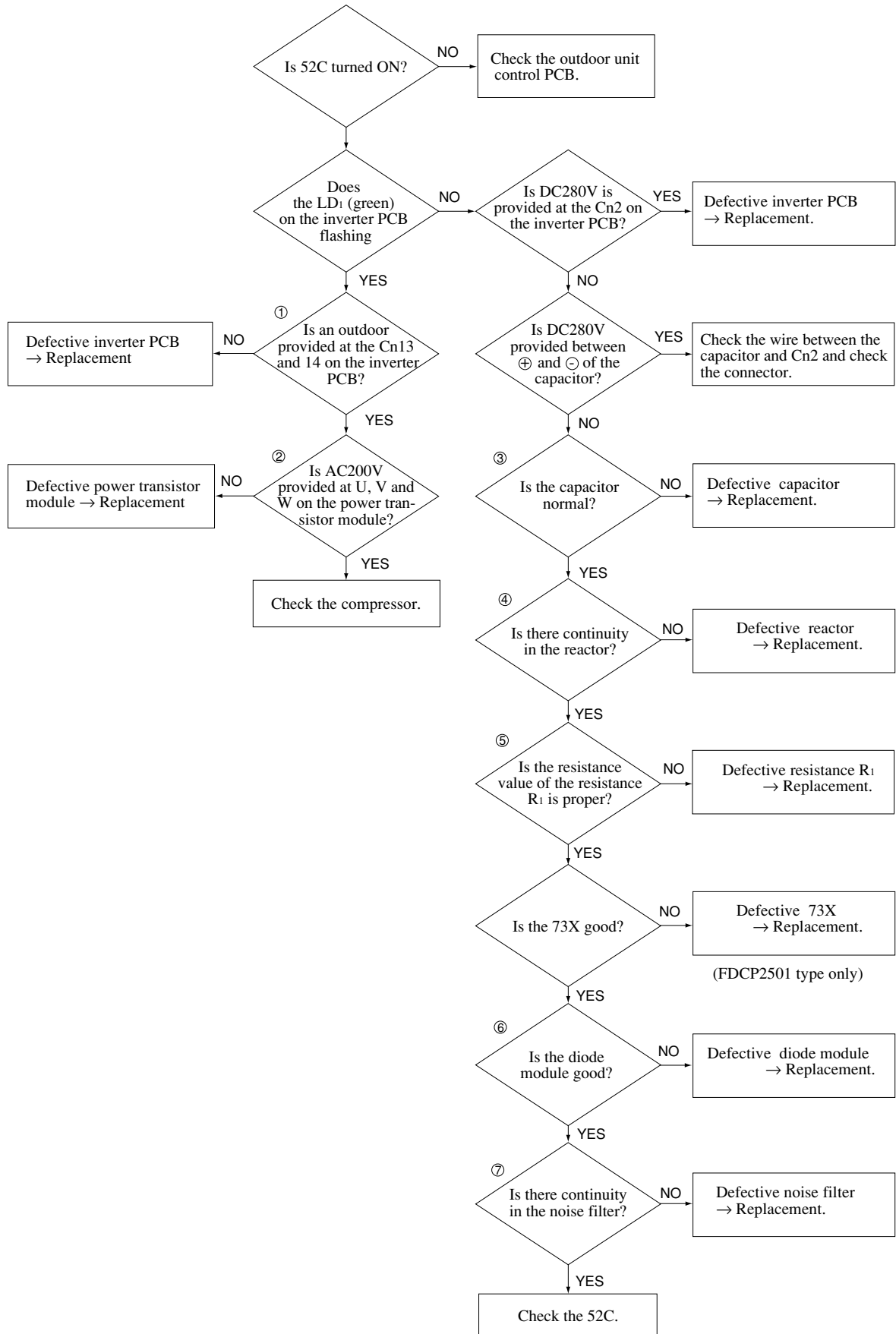
- Notes (1) After the power supply is turned on, the voltage is about 5 V for 8 seconds, decreases momentarily, and then is kept at about 5 V for about 7 seconds.
- (2) When a measurement is made with a digital multimeter, voltages of 6-3 V are output in sequence.

- ▶ When the above duration and voltage value can be verified, the indoor unit controller is normal. If the expansion valve does not operate (no operating sound is produced) though a voltage is provided, the expansion valve is faulty.
- ▶ By changing the setting of the thermostat, the expansion valve is operated in about 20 seconds. Like the above, a DC voltage of about 5 V can be checked at the connector CnA.

- 2) Low heating effectiveness.
 - a) Check if the operating frequency of the compressor is lowered below the specified frequency because the protective function is activated.
 - Note (1) When high pressure control [63H2 ON: 2.26 open/2.84 closeMPa (23 open/29 close kgf/cm²)], current safe control and discharge temperature control is exerted, the frequency is lowered.
 - b) Check if the operation of the outdoor unit expansion valve is normal, or if any clogging occurs.

◆ **Troubleshooting on the inverter side**

(1) Troubleshooting procedure (For the details of 1 to 7, refer to Outdoor Unit Check Point on the next page.)

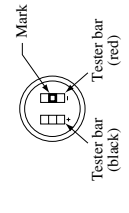


② Power transistor output check:
Disconnect the Faston terminal of the compressor and measure the output voltage.
(The output 2001 is for the case where the inverter is not loaded.)

Models	Frequency	35Hz	40Hz	45Hz	50Hz	55Hz	60Hz	65Hz	70Hz	75Hz	80Hz	85Hz	90Hz	95Hz
FDC 2001, 2501 type	95~98	104~107	107~110	110~113	113~116	116~119	119~122	122~125	125~128	128~131	131~134	134~137	137~140	140~143

Unit: V (AC)

③ Capacitor check:
Check the appearance for damage and blister and check the charging characteristic with a tester.
(The indicator swings and returns slowly. After changing the polarity, perform the same operation. If the indicator returns, this is regarded as normal.)



④ Resistor R1 inspection

FDCP2001, 2501	6.8Ω
----------------	------

⑤ Diode module check

Tester bar	When the result is OK
⊕	~
⊖	∞

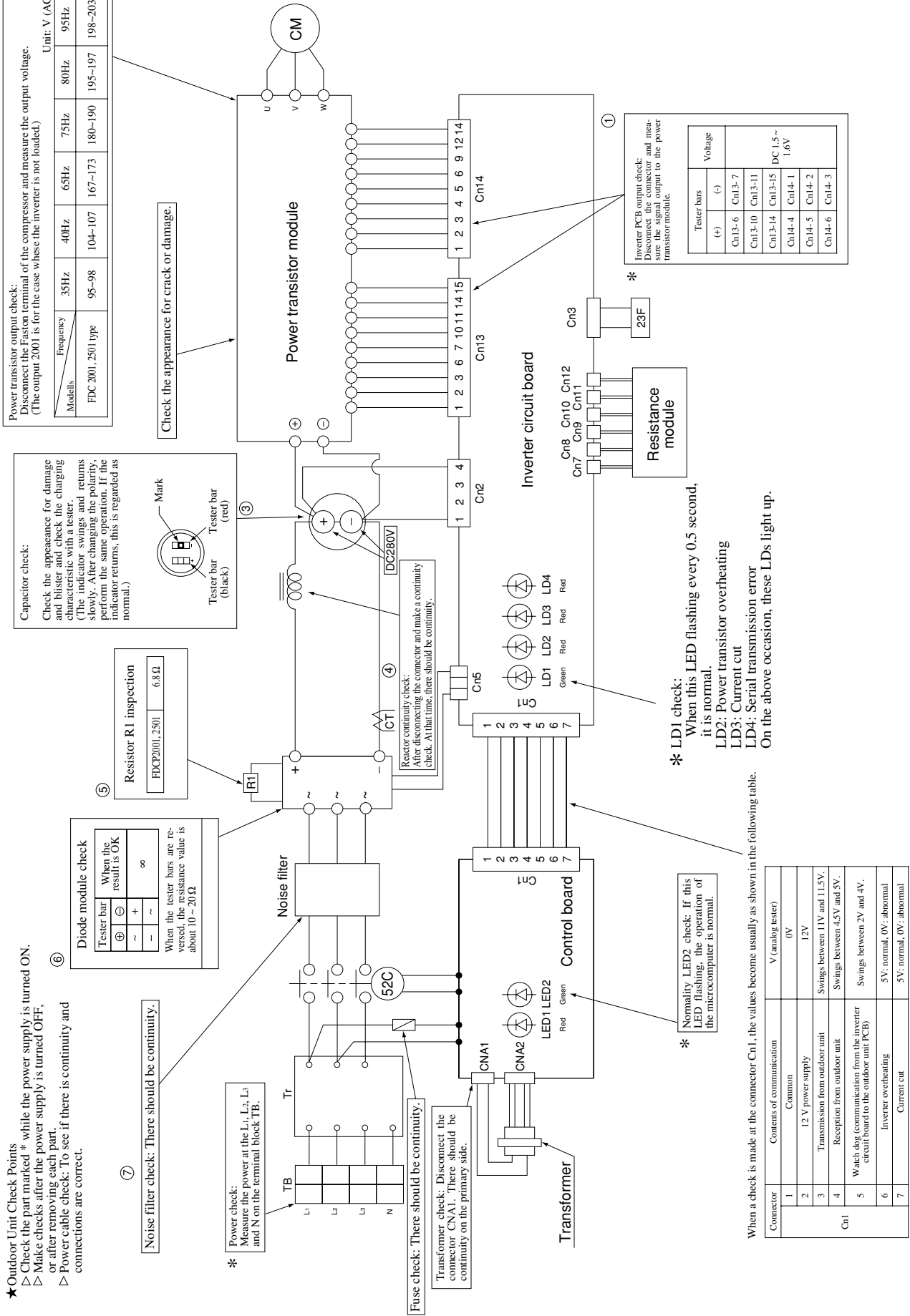
When the tester bars are reversed, the resistance value is about 10~20Ω

- ★ Outdoor Unit Check Points
- ▷ Check the part marked * while the power supply is turned ON.
- ▷ Make checks after the power supply is turned OFF, or after removing each part.
- ▷ Power cable check: To see if there is continuity and connections are correct.

⑦ Noise filter check: There should be continuity.

* **Power check:** Measure the power at the L1, L2, L3 and N on the terminal block TB.

Fuse check: There should be continuity.
Transformer check: Disconnect the connector CNA1. There should be continuity on the primary side.



Inverter PCB output check:
Disconnect the connector and measure the output to the power transistor module.

Tester bars	Voltage
(+)	
(-)	
Cn13-6	Cn13-7
Cn13-10	Cn13-11
Cn13-14	Cn13-15
Cn14-4	Cn14-1
Cn14-5	Cn14-2
Cn14-6	Cn14-3

DC 1.5 ~ 1.6V

- * **LD1 check:** When this LED flashing every 0.5 second, it is normal.
 - LD2:** Power transistor overheating
 - LD3:** Current cut
 - LD4:** Serial transmission error
- On the above occasion, these LEDs light up.

* **Normality LED2 check:** If this LED flashing, the operation of the microcomputer is normal.

When a check is made at the connector Cn1, the values become usually as shown in the following table.

Connector	Contents of communication	V (analog tester)
1	Common	0V
2	12 V power supply	12V
3	Transmission from outdoor unit	Swings between 11V and 11.5V.
4	Reception from outdoor unit	Swings between 4.5V and 5V.
5	Watch dog (communication from the inverter circuit board to the outdoor unit PCB)	Swings between 2V and 4V.
6	Inverter overheating	5V: normal, 0V: abnormal
7	Current cut	5V: normal, 0V: abnormal

19.2.1 Specifications

(1) Indoor unit

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTWJ28HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
90HKXE2B
112HKXE2B
140HKXE2B

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2
28HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2

FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

(2) Outdoor unit

Refrigerant R22 use models

FDCJ140HKXE2B
224HKXE2B
280HKXE2B

Alternative refrigerant R407C use models

FDCP140HKXE2B
224HKXE2B
280HKXE2B

19.2.3 Exterior dimensions

(1) Indoor unit

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTWJ28HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
90HKXE2B
112HKXE2B
140HKXE2B

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2 (Silent Panel) (Canvas Panel)
28HKXE2 (Silent Panel) (Canvas Panel)
45HKXE2 (Silent Panel) (Canvas Panel)
56HKXE2 (Silent Panel) (Canvas Panel)
71HKXE2 (Silent Panel) (Canvas Panel)
90HKXE2 (Silent Panel) (Canvas Panel)
112HKXE2 (Silent Panel) (Canvas Panel)
140HKXE2 (Silent Panel) (Canvas Panel)

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2
FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

(2) Remote controller (optional parts)

(3) Outdoor unit

Refrigerant
R22 use models

FDCJ140HKXE2B
224HKXE2B
280HKXE2B

Alternative refrigerant
R407C use models

FDCP140HKXE2B
224HKXE2B
280HKXE2B

19.2.6 Selection chart

(1) Correct the cooling and heating capacity in accordance with the conditions as follows.

(2) Correction of outdoor unit capacity according to capacity of indoor unit to be operated simultaneously

FDCJ/FDCP140HKXE2B
224HKXE2B
280HKXE2B

(3) Sensible heat capacity

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2
28HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2

FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

19.3.1 Electrical wiring

(1) Indoor unit

- (a) Ceiling recessed type(**FDT**) Modles All models
- (b) 2-Way outlet ceiling recessed type(**FDTW**) Models All models
- (c) 1-Way outlet ceiling recessed type(**FDTs**) Models All models
- (d) Cassetteria type(**FDR**) Models All models
- (e) Satellite ducted type(**FDUM**) Models All models
- (f) Ceiling suspension type(**FDE**) Models All models
- (g) Wall mounted type(**FDK**) Models All models
- (h) Floor standing exposed type(**FDfL**) Modles All models
- (i) Floor standing hidden type(**FDfU**) Modles All models

(2) Outdoor unit

Refrigerant R22 use models

FDCJ140HKXE2B
224HKXE2B
280HKXE2B

Alternative refrigerant R407C use models

FDCP140HKXE2B
224HKXE2B
280HKXE2B

19.5 APPLICATION DATA

SAFETY PRECAUTIONS

19.5.1 Installation of indoor unit

- (1) Ceiling recessed type(FDT)**
- (2) 2-Way outlet ceiling recessed type(FDTW)**
- (3) 1-Way outlet ceiling recessed type(FDTS)**
- (4) Cassetteria type(FDR)**
- (5) Satellite ducted type(FDUM)**
- (6) Ceiling suspension type(FDE)**
- (7) Wall mounted type(FDK)**
- (8) Floor standing exposed type(FDFL)**
- (9) Floor standing hidden type(FDFU)**

19.6 MAINTENANCE DATA

(1) Before starting troubleshooting (P904 ~ P908)

(2) Procedures of trouble diagnosis (P908 ~ P933)

(3) Trouble diagnosis at the inverter side (P933 ~ P934)

20.2.1 Specifications

(1) Indoor unit

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTWJ28HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
90HKXE2B
112HKXE2B
140HKXE2B

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2
28HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2

FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

(2) Outdoor unit

Alternative refrigerant R407C use models

FDCP2001HKXRE2
2501HKXRE2

20.2.3 Exterior dimensions

(1) Indoor unit

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTWJ28HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
90HKXE2B
112HKXE2B
140HKXE2B

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2 (Silent Panel) (Canvas Panel)
28HKXE2 (Silent Panel) (Canvas Panel)
45HKXE2 (Silent Panel) (Canvas Panel)
56HKXE2 (Silent Panel) (Canvas Panel)
71HKXE2 (Silent Panel) (Canvas Panel)
90HKXE2 (Silent Panel) (Canvas Panel)
112HKXE2 (Silent Panel) (Canvas Panel)
140HKXE2 (Silent Panel) (Canvas Panel)

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2
FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

(2) Remote controller (optional parts)

(3) Individual flow divide controller (Optional Part)

(4) Outdoor unit

Alternative refrigerant R407C use models
FDCP2001HKXRE2
2501HKXRE2

20.2.6 Selection chart

(1) Correct the cooling and heating capacity in accordance with the conditions as follows.

(2) Correction of outdoor unit capacity according to capacity of indoor unit to be operated simultaneously

Alternative refrigerant R407C use models

FDCP2001HKXRE2

2501HKXRE2

(3) Sensible heat capacity

FDTJ28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDTSJ22HKXE2B
28HKXE2B
36HKXE2B
45HKXE2B
71HKXE2B

FDRJ22HKXE2
28HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDUMJ36HKXE2
45HKXE2
56HKXE2
71HKXE2
90HKXE2
112HKXE2
140HKXE2

FDEJ36HKXE2B
45HKXE2B
56HKXE2B
71HKXE2B
112HKXE2B
140HKXE2B

FDKJ22HKXE2
28HKXE2
36HKXE2
45HKXE2
56HKXE2
71HKXE2

FDFLJ28HKXE2
45HKXE2
71HKXE2

FDFUJ28HKXE2
45HKXE2
56HKXE2
71HKXE2

20.3.1 Electrical wiring

(1) Indoor unit

- (a) Ceiling recessed type(**FDT**) Modles All models
- (b) 2-Way outlet ceiling recessed type(**FDTW**) Models All models
- (c) 1-Way outlet ceiling recessed type(**FDTS**) Models All models
- (d) Cassetteria type(**FDR**) Models All models
- (e) Satellite ducted type(**FDUM**) Models All models
- (f) Ceiling suspension type(**FDE**) Models All models
- (g) Wall mounted type(**FDK**) Models All models
- (h) Floor standing exposed type(**FDFL**) Modles All models
- (i) Floor standing hidden type(**FDFU**) Modles All models

(2) Individual flow divide controller

(3) Outdoor unit

Alternative refrigerant R407C use models

FDCP2001HKXRE2

2501HKXRE2

20.5 APPLICATION DATA

SAFETY PRECAUTIONS

20.5.1 Installation of indoor unit

- (1) Ceiling recessed type **(FDT)**
- (2) 2-Way outlet ceiling recessed type **(FDTW)**
- (3) 1-Way outlet ceiling recessed type **(FDTS)**
- (4) Cassetteria type **(FDR)**
- (5) Satellite ducted type **(FDUM)**
- (6) Ceiling suspension type **(FDE)**
- (7) Wall mounted type **(FDK)**
- (8) Floor standing exposed type **(FDFL)**
- (9) Floor standing hidden type **(DFU)**

20.6.1 Diagnosis of Microcomputer circuit

- (1) Confirmation of the error code on the remote controller (by pressing the inspection switch) and the inspection display and normal display lamps on PCBs of indoor/ outdoor units
(P1068 ~ P1072)**
- (2) Procedures of trouble diagnosis
(P1072 ~ P1087)**
- (3) When the remote controller indication is normal but the compressor cannot operate:(No check indication)
(P1087 ~ P1091)**