6. CEILING RECESSED TYPE PACKAGED AIR CONDITIONER

(Split system, Air to air heat pump type)

FDTN208HEN-S, FDTN208HEN, FDTN208HEP
FDTN258HEN-S, FDTN258HEN, FDTN258HEP
FDTN308HEN-S, FDTN308HES-S, FDTN308HEN
FDTN308HEP, FDTN308HES
FDTN408HES-S, FDTN408HES
FDTN508HES-S, FDTN508HES, FDTN508HEM

FDT208HEN-S, FDT258HEN-S, FDT308HEN-S
FDT308HES-S, FDT308HEN, FDT308HES
FDT408HES-S, FDT408HES
FDT508HES-S, FDT508HES

CONTENTS

6.1 GENERAL INFORMATION

6.1.1 Specific features

(1) Less refrigerant charge amount due to use of double phase refrigerant flow system. The total refrigerant charge amount has been reduced by more than 50%.

(2) The indoor outdoor interconnection signal wiring has been done away with. The microcomputer chip is installed in the indoor unit. There is no need for the unit to communicate between the outdoor and indoor units so the unit is more resistant to electromagnetic noise thus the incidence of microcomputer malfunction has been reduced. The compressor in the outdoor unit has its own self protection function, that reacts according to abnormal high pressure and excessive high temperature.

(3) There are only four power lines between the outdoor and indoor unit. As no signal wire is used there is no need to separate the power line from the signal line. One cab tyre cable with 6 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.

(4) All air supply ports have auto swing louvers. The indoor fan motor has two speeds of high and low.

(5) All models have service valves protruding from the outdoor unit for faster flare connection work in the field.

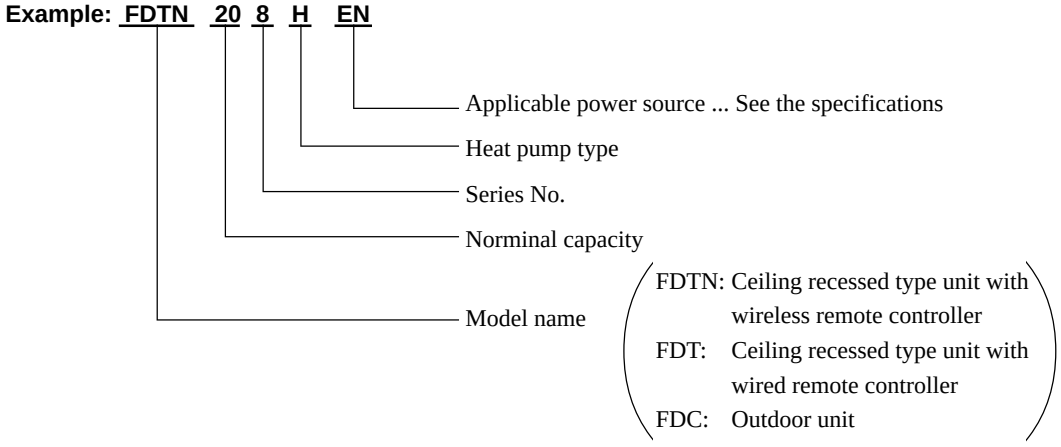
(6) Low sound level

Operating noise has been remarkably reduced due to adoption of the crescent turbo fan which cuts off wind-blowing noise and also console type of cabinet which is highly effective to protect vibration.

(7) 700mm high drain head

Adoption of drain pump with high drain head and high capacity (600cc/min) has made it possible to have maximum 700 mm(from below ceiling drain head.[In case 700mm drain head is required, set it up close to the unit. It is impossible to do piping on down slope.]

6.1.2 How to read the model name



6.2 SELECTION DATA

6.2.1 Specifications

(a) Wireless remote controller type

Model FDTN208HEN-S

Item		Model	FDTN208HEN-S	
			FDTN208H	FDC208HEN3
Nominal cooling capacity(1)		W	**5000**	
Nominal heating capacity(1)		W	**5400**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	1.78/1.87	
	Running current (Cooling)	A	8.3/8.1	
	Power factor (Cooling)	%	97/96	
	Heating input	kW	1.74/1.84	
	Running current (Heating)	A	8.1/7.9	
	Power factor (Heating)	%	98/97	
	Inrush current (L.R.A)	A	44	
	Noise level(4)	dB(A)	Hi: 38 Lo: 33	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 215 × 700 × 700 Panel 26 × 800 × 800**	**690 × 880 × 290**
Net weight		**kg**	**23 (Unit:18 Panel:5)**	**49**
Refrigerant equipment Compressor type & Q'ty			–	**RM5523GNE4 × 1**
	Motor	kW	–	**1.6**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**0.98 [Pre-charged up to the piping length of 0m]**
Refrigerant oil		ℓ	–	**0.7 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
	Motor	W	30 × 1	55 × 1
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:14 Lo:10**	**56**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermostat for discharge temperature.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) 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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN258HEN-S

Item		Model	FDTN258HEN-S	
			FDTN258H	FDC258HEN3
Nominal cooling capacity(1)		W	**5700**	
Nominal heating capacity(1)		W	**6100**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.05/2.16	
	Running current (Cooling)	A	9.4/9.4	
	Power factor (Cooling)	%	99/96	
	Heating input	kW	1.95/2.10	
	Running current (Heating)	A	9.1/9.2	
	Power factor (Heating)	%	97/95	
	Inrush current (L.R.A)	A	51	
	Noise level(4)	dB(A)	Hi: 39 Lo: 35	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**55**
Refrigerant equipment Compressor type & Q'ty			–	**RM5526GNE4 × 1**
Motor		kW	–	**1.9**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.1 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**0.7 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	25 × 1	55 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:16 Lo:11**	**56**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermostat for discharge temperature.
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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	12˚C	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN308HEN-S

Item		Model	FDTN308HEN-S	
			FDTN308H	FDC308HEN3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**8000**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.98/3.18	
	Running current (Cooling)	A	13.9/14.4	
	Power factor (Cooling)	%	97/92	
	Heating input	kW	2.84/3.00	
	Running current (Heating)	A	13.3/13.7	
	Power factor (Heating)	%	97/91	
	Inrush current (L.R.A)	A	95	
	Noise level(4)	dB(A)	Hi 41 Lo:35	52
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 260 × 840 × 840** **Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**74**
Refrigerant equipment **Compressor type & Q'ty**			–	**GT-A5534EN41 × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.4 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.45 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	30 × 1	55 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**58**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	33 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN308HES-S

Item		Model	FDTN308HES-S	
			FDTN308H	FDC308HES3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**8000**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	2.90/2.96	
	Running current (Cooling)	A	5.1/5.5	
	Power factor (Cooling)	%	86/75	
	Heating input	kW	2.54/2.60	
	Running current (Heating)	A	4.6/4.8	
	Power factor (Heating)	%	84/75	
	Inrush current (L.R.A)	A	45	
	Noise level(4)	dB(A)	Hi:41 Lo:35	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**GT-A5534ES41 × 1**
	Motor	kW	–	**2.5**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.4 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.45 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
	Motor	W	30 × 1	55 × 1
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**58**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1 JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDTN408HES-S

Item		Model	FDTN408HES-S	
			FDTN408H	FDC408HES3
Nominal cooling capacity(1)		W	**10000**	
Nominal heating capacity(1)		W	**11200**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	4.50/4.60	
	Running current (Cooling)	A	7.8/8.1	
	Power factor (Cooling)	%	88/79	
	Heating input	kW	3.88/3.92	
	Running current (Heating)	A	7.1/7.5	
	Power factor (Heating)	%	83/73	
	Inrush current (L.R.A)	A	53	
	Noise level(4)	dB(A)	Hi: 48 Lo:40	54
Exterior dimensions Height × Width × Depth		**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1050 × 920 × 340**
Net weight		**kg**	**34 (Unit:28 Panel:6)**	**90**
Refrigerant equipment Compressor type & Q'ty			–	**GU-A5550ES41 × 1**
Motor		kW	–	**2.8**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.7 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.6 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	80 × 1	40 × 2
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:26 Lo:19**	**70**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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 lines)	
Accessories			Mounting kit. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDTN508HES-S

Item		Model	FDTN508HES-S	
			FDTN508H	FDC508HES3
Nominal cooling capacity(1)		W	**12500**	
Nominal heating capacity(1)		W	**14000**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	5.30/5.55	
	Running current (Cooling)	A	9.5/10.3	
	Power factor (Cooling)	%	85/75	
	Heating input	kW	4.85/4.98	
	Running current (Heating)	A	9.0/9.9	
	Power factor (Heating)	%	82/70	
	Inrush current (L.R.A)	A	74	
	Noise level(4)	dB(A)	Hi:49 Lo:43	55
Exterior dimensions Height × Width × Depth		**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 920 × 340**
Net weight		**kg**	**36 (Unit:30 Panel:6)**	**101**
Refrigerant equipment Compressor type & Q'ty			–	**GU-A5570ES41 × 1**
Motor		kW	–	**3.75**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.9 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.6 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	130 × 1	65 × 2
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:28 Lo:20**	**110**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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 lines)	
Accessories			Mounting kit. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDTN208HEN

Item		Model	FDTN208HEN	
			FDTN208H	FDC206HEN3
Nominal cooling capacity(1)		W	**5000**	
Nominal heating capacity(1)		W	**5100**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.09/2.12	
	Running current (Cooling)	A	10.0/9.8	
	Power factor (Cooling)	%	95/90	
	Heating input	kW	1.92/1.95	
	Running current (Heating)	A	9.2/9.0	
	Power factor (Heating)	%	95/90	
	Inrush current (L.R.A)	A	47	
	Noise level(5)	dB(A)	Hi: 38 Lo: 33	56
Exterior dimensions Height × Width × Depth		**mm**	**Unit 215 × 700 × 700 Panel 26 × 800 × 800**	**615 × 850 × 290 + 30**
Net weight		**kg**	**23 (Unit:18 Panel:5)**	**56**
Refrigerant equipment Compressor type & Q'ty			–	**RC5520ENE1 × 1**
	Motor	kW	–	**1.49**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.0 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure regulator valve	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
	Motor	W	30 × 1	55 × 1
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:14 Lo:10**	**42**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) 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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN208HEP

Item				Model	FDTN208HEP	
					FDTN208H	FDC206HEP3
Nominal cooling capacity(1)			ISO-T1	W	**5200**	
			ISO-T3		**4500**	
Nominal heating capacity(1)			ISO-T1	W	**5400**	
Power source					**1 Phase, 220V, 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	2.08	
		Running current (Cooling)		A	9.7	
		Power factor (Cooling)		%	97	
		Heating input		kW	1.92	
		Running current (Heating)		A	9.1	
		Power factor (Heating)		%	96	
	ISO-T3	Cooling input		kW	2.34	
		Running current (Cooling)		A	11.0	
		Power factor (Cooling)		%	97	
	Inrush current (L.R.A)			A	50	
	Noise level(4)			dB(A)	Hi:38 Lo:33	56
Exterior dimensions Height × Width × Depth				**mm**	**Unit 215 × 700 × 700 Panel 26 × 800 × 800**	**615 × 850 × 290 + 30**
Net weight				**kg**	**23 (Unit:18 Panel:5)**	**56**
Refrigerant equipment Compressor type & Q'ty					–	**RC5520EPE1 × 1**
Motor				kW	–	**1.31**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.0 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 1
Motor				W	30 × 1	55 × 1
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:14 Lo:10**	**44**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
Installation data Refrigerant piping size				**mm (in)**	**Liquid line: ϕ6.35 (1/4″) 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. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 220V.

(4) Indicates the value at mild mode.

Model FDTN258HEN

Item		Model	FDTN258HEN	
			FDTN258H	FDC256HEN3
Nominal cooling capacity(1)		W	**5900**	
Nominal heating capacity(1)		W	**6100**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.59/2.63	
	Running current (Cooling)	A	12.6/13.2	
	Power factor (Cooling)	%	93/83	
	Heating input	kW	2.38/2.42	
	Running current (Heating)	A	11.6/12.2	
	Power factor (Heating)	%	93/83	
	Inrush current (L.R.A)	A	64	
	Noise level(4)	dB(A)	Hi: 39 Lo: 35	57
Exterior dimensions Height × Width × Depth		**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**615 × 850 × 290 + 30**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**57**
Refrigerant equipment Compressor type & Q'ty			–	**RC5527ENE1 × 1**
Motor		kW	–	**1.87**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.25 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure regulator valve	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	25 × 1	55 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:16 Lo:11**	**42**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	12˚C	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN258HEP

Item				Model	FDTN258HEP	
					FDTN258H	FDC256HEP3
Nominal cooling capacity(1)			ISO-T1	W	**6200**	
			ISO-T3		**5200**	
Nominal heating capacity(1)			ISO-T1	W	**6400**	
Power source					**1 Phase, 220V, 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	2.68	
		Running current (Cooling)		A	12.4	
		Power factor (Cooling)		%	98	
		Heating input		kW	2.47	
		Running current (Heating)		A	11.7	
		Power factor (Heating)		%	96	
	ISO-T3	Cooling input		kW	3.06	
		Running current (Cooling)		A	14.4	
		Power factor (Cooling)		%	97	
	Inrush current (L.R.A)			A	66	
	Noise level(4)			dB(A)	Hi:39 Lo:35	57
Exterior dimensions Height × Width × Depth				**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**615 × 850 × 290 + 30**
Net weight				**kg**	**30 (Unit:24 Panel:6)**	**57**
Refrigerant equipment Compressor type & Q'ty					–	**RC5528EPE1 × 1**
Motor				kW	–	**1.68**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.25 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 1
Motor				W	25 × 1	55 × 1
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:16 Lo:11**	**44**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 220V.

(4) Indicates the value at mild mode.

Model FDTN308HEN

Item		Model	FDTN308HEN	
			FDTN308H	FDC306HEN3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**7300**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	3.07/3.11	
	Running current (Cooling)	A	15.6/16.3	
	Power factor (Cooling)	%	89/79	
	Heating input	kW	2.82/2.86	
	Running current (Heating)	A	14.5/15.2	
	Power factor (Heating)	%	88/78	
	Inrush current (L.R.A)	A	89	
	Noise level(4)	dB(A)	Hi 41 Lo:35	56
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 260 × 840 × 840** **Panel 30 × 950 × 950**	**844 × 950 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**69**
Refrigerant equipment **Compressor type & Q'ty**			–	**RC5532ENE1 × 1**
Motor		kW	–	**2.24**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure regulator valve	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	30 × 1	60 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**54**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Wireless remote controller. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDTN308HEP

Item				Model	FDTN308HEP	
					FDTN308H	FDC306HEP3
Nominal cooling capacity(1)			ISO-T1	W	**7100**	
			ISO-T3		**5700**	
Nominal heating capacity(1)			ISO-T1	W	**7300**	
Power source					**1 Phase, 220V, 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	3.03	
		Running current (Cooling)		A	14.1	
		Power factor (Cooling)		%	98	
		Heating input		kW	2.79	
		Running current (Heating)		A	13.3	
		Power factor (Heating)		%	95	
	ISO-T3	Cooling input		kW	3.26	
		Running current (Cooling)		A	15.2	
		Power factor (Cooling)		%	97	
	Inrush current (L.R.A)			A	78	
	Noise level(4)			dB(A)	Hi:41 Lo:35	56
Exterior dimensions Height × Width × Depth				**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**844 × 950 × 340**
Net weight				**kg**	**30 (Unit:24 Panel:6)**	**69**
Refrigerant equipment Compressor type & Q'ty					–	**RC5533EPE1 × 1**
Motor				kW	–	**1.87**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 1
Motor				W	30 × 1	60 × 1
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:17 Lo:12**	**56**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 220V.

(4) Indicates the value at mild mode.

Model FDTN308HES

Item				Model	FDTN308HES	
					FDTN308H	FDC306HES3
Nominal cooling capacity(1)			ISO-T1	W	**7100/7700**	
			ISO-T3		**6000**	
Nominal heating capacity(1)			ISO-T1	W	**7300/7900**	
Power source					**3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz**	
Operation data(3)	**ISO-T1**	Cooling input		kW	2.83/2.84/3.35	
		Running current (Cooling)		A	5.3/5.3/6.0	
		Power factor (Cooling)		%	81/75/85	
		Heating input		kW	2.50/2.51/2.90	
		Running current (Heating)		A	4.9/5.0/5.6	
		Power factor (Heating)		%	78/70/79	
	ISO-T3	Cooling input		kW	3.58	
		Running current (Cooling)		A	6.5	
		Power factor (Cooling)		%	84	
	Inrush current (L.R.A)			A	43	
	Noise level(4)			dB(A)	Hi:41 Lo:35	56
Exterior dimensions Height × Width × Depth				**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**844 × 950 × 340**
Net weight				**kg**	**30 (Unit:24 Panel:6)**	**69**
Refrigerant equipment Compressor type & Q'ty					–	**RC5538ESE1 × 1**
Motor				kW	–	**2.24**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 1
Motor				W	30 × 1	60 × 1
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:17 Lo:12**	**54/56**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

Model FDTN408HES

Item				Model	FDTN408HES	
					FDTN408H	FDC406HES3
Nominal cooling capacity(1)			ISO-T1	W	**10200/11300**	
			ISO-T3		**9900**	
Nominal heating capacity(1)			ISO-T1	W	**10500/11600**	
Power source					**3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz**	
Operation data(3)	**ISO-T1**	Cooling input		kW	3.78/3.78/4.65	
		Runningcurrent (Cooling)		A	7.5/7.5/8.8	
		Power factor (Cooling)		%	77/70/80	
		Heating input		kW	3.48/3.48/4.28	
		Running current (Heating)		A	7.2/7.2/8.5	
		Power factor (Heating)		%	73/67/77	
	ISO-T3	Cooling input		kW	5.15	
		Running current (Cooling)		A	9.5	
		Power factor (Cooling)		%	82	
	Inrush current (L.R.A)			A	45	
	Noise level(4)			dB(A)	Hi:48 Lo:40	57
Exterior dimensions Height × Width × Depth				**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 950 × 340**
Net weight				**kg**	**34 (Unit:28 Panel:6)**	**86**
Refrigerant equipment Compressor type & Q'ty					–	**RC5547ESE1 × 1**
Motor				kW	–	**2.61**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.6 [Pre-charged up to the piping length of 5m]**
Refrigarant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 2
Motor				W	80 × 1	60 × 2
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi: 26 Lo: 19**	**100/110**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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					Neccessary (both Liquid & Gas lines)	
Accessories					Mounting kit. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

Model FDTN508HES

Item				Model	FDTN508HES	
					FDTN508H	FDC506HES3
Nominal cooling capacity(1)			ISO-T1	W	**12500/14000**	
			ISO-T3		**11900**	
Nominal heating capacity(1)			ISO-T1	W	**12800/14400**	
Power source					**3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	4.87/4.87/5.83	
		Running current (Cooling)		A	10.0/10.0/11.0	
		Power factor (Cooling)		%	74/68/81	
		Heating input		kW	4.49/4.51/5.41	
		Running current (Heating)		A	9.2/9.3/10.2	
		Power factor (Heating)		%	74/67/81	
	ISO-T3	Cooling input		kW	6.43	
		Running current (Cooling)		A	12.0	
		Power factor (Cooling)		%	81	
	Inrush current (L.R.A)			A	68	
	Noise level(4)			dB(A)	Hi:49 Lo:43	59
Exterior dimensions Height × Width × Depth				**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 950 × 340**
Net weight				**kg**	**36 (Unit:30 Panel:6)**	**91**
Refrigerant equipment Compressor type & Q'ty					–	**RC5563ESE2 × 1**
Motor				kW	–	**3.73**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**2.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**2.07 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 2
Motor				W	130 × 1	60 × 2
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:28 Lo:20**	**100/110**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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 lines)	
Accessories					Mounting kit. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

Model FDTN508HEM

Item				Model	FDTN508HEM	
					FDTN508H	FDC506HEM3
Nominal cooling capacity(1)			ISO-T1	W	**12500/14000**	
			ISO-T3		**11900**	
Nominal heating capacity(1)			ISO-T1	W	**12800/14400**	
Power source					**3 Phase, 230V 50Hz/220V 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	4.87/5.83	
		Running current (Cooling)		A	14.9/18.0	
		Power factor (Cooling)		%	82/85	
		Heating input		kW	4.56/5.41	
		Running current (Heating)		A	13.8/16.6	
		Power factor (Heating)		%	83/86	
	ISO-T3	Cooling input		kW	6.42	
		Running current (Cooling)		A	19.5	
		Power factor (Cooling)		%	86	
	Inrush current (L.R.A)			A	133	
	Noise level(4)			dB(A)	Hi:49 Lo:43	59
Exterior dimensions Height × Width × Depth				**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 950 × 340**
Net weight				**kg**	**36 (Unit:30 Panel:6)**	**91**
Refrigerant equipment Compressor type & Q'ty					–	**RC5563EME2 × 1**
Motor				kW	–	**3.73**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**2.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**2.07 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 2
Motor				W	130 × 1	60 × 2
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:28 Lo:20**	**100/110**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wireless remote control switch	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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 lines)	
Accessories					Mounting kit. Wireless remote controller. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 230V 50Hz/220V 60Hz respectively.

(4) Indicates the value at mild mode.

(b) Wired remote controller type
Model FDT208HEN-S

Item		Model	FDT208HEN-S	
			FDT208	FDC208HEN3
Nominal cooling capacity(1)		W	**5000**	
Nominal heating capacity(1)		W	**5400**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	1.78/1.87	
	Running current (Cooling)	A	8.3/8.1	
	Power factor (Cooling)	%	97/96	
	Heating input	kW	1.74/1.84	
	Running current (Heating)	A	8.1/7.9	
	Power factor (Heating)	%	98/97	
	Inrush current (L.R.A)	A	44	
	Noise level(4)	dB(A)	Hi: 38 Lo: 33	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 215 × 700 × 700 Panel 26 × 800 × 800**	**690 × 880 × 290**
Net weight		**kg**	**23 (Unit:18 Panel:5)**	**49**
Refrigerant equipment Compressor type & Q'ty			–	**RM5523GNE4 × 1**
	Motor	kW	–	**1.6**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**0.98 [Pre-charged up to the piping length of 0m]**
Refrigerant oil		ℓ	–	**0.7 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
	Motor	W	30 × 1	55 × 1
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:14 Lo:10**	**56**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermostat for discharge temperature.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) 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. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDT258HEN-S

Item		Model	FDT258HEN-S	
			FDT258	FDC258HEN3
Nominal cooling capacity(1)		W	**5700**	
Nominal heating capacity(1)		W	**6100**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.05/2.16	
	Running current (Cooling)	A	9.4/9.4	
	Power factor (Cooling)	%	99/96	
	Heating input	kW	1.95/2.10	
	Running current (Heating)	A	9.1/9.2	
	Power factor (Heating)	%	97/95	
	Inrush current (L.R.A)	A	51	
	Noise level(4)	dB(A)	Hi: 39 Lo: 35	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**55**
Refrigerant equipment Compressor type & Q'ty			–	**RM5526GNE4 × 1**
	Motor	kW	–	**1.9**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.1 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**0.7 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
	Motor	W	25 × 1	55 × 1
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:16 Lo:11**	**56**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermostat for discharge temperature.
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. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	12˚C	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDT308HEN-S

Item		Model	FDT308HEN-S	
			FDT308	FDC308HEN3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**8000**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	2.98/3.18	
	Running current (Cooling)	A	13.9/14.4	
	Power factor (Cooling)	%	97/92	
	Heating input	kW	2.84/3.00	
	Running current (Heating)	A	13.3/13.7	
	Power factor (Heating)	%	97/91	
	Inrush current (L.R.A)	A	95	
	Noise level(4)	dB(A)	Hi 41 Lo:35	52
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 260 × 840 × 840** **Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**74**
Refrigerant equipment **Compressor type & Q'ty**			–	**GT-A5534EN41 × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.4 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.45 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	30 × 1	55 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**58**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	33 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDT308HES-S

Item		Model	FDT308HES-S	
			FDT308	FDC308HES3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**8000**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	2.90/2.96	
	Running current (Cooling)	A	5.1/5.5	
	Power factor (Cooling)	%	86/75	
	Heating input	kW	2.54/2.60	
	Running current (Heating)	A	4.6/4.8	
	Power factor (Heating)	%	84/75	
	Inrush current (L.R.A)	A	45	
	Noise level(4)	dB(A)	Hi:41 Lo:35	52
Exterior dimensions Height × Width × Depth		**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**GT-A5534ES41 × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.4 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.45 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	30 × 1	55 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**58**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	33 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1 JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDT408HES-S

Item		Model	FDT408HES-S	
			FDT408	FDC408HES3
Nominal cooling capacity(1)		W	**10000**	
Nominal heating capacity(1)		W	**11200**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	4.50/4.60	
	Running current (Cooling)	A	7.8/8.1	
	Power factor (Cooling)	%	88/79	
	Heating input	kW	3.88/3.92	
	Running current (Heating)	A	7.1/7.5	
	Power factor (Heating)	%	83/73	
	Inrush current (L.R.A)	A	53	
	Noise level(4)	dB(A)	Hi: 48 Lo:40	54
Exterior dimensions Height × Width × Depth		**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1050 × 920 × 340**
Net weight		**kg**	**34 (Unit:28 Panel:6)**	**90**
Refrigerant equipment Compressor type & Q'ty			–	**GU-A5550ES41 × 1**
Motor		kW	–	**2.8**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.7 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.6 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	80 × 1	40 × 2
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:26 Lo:19**	**70**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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 lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDT508HES-S

Item		Model	FDT508HES-S	
			FDT508	FDC508HES3
Nominal cooling capacity(1)		W	**12500**	
Nominal heating capacity(1)		W	**14000**	
Power source			**3 Phase, 380/415V 50Hz**	
Operation data(3)	Cooling input	kW	5.30/5.55	
	Running current (Cooling)	A	9.5/10.3	
	Power factor (Cooling)	%	85/75	
	Heating input	kW	4.85/4.98	
	Running current (Heating)	A	9.0/9.9	
	Power factor (Heating)	%	82/70	
	Inrush current (L.R.A)	A	74	
	Noise level(4)	dB(A)	Hi:49 Lo:43	55
Exterior dimensions Height × Width × Depth		**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 920 × 340**
Net weight		**kg**	**36 (Unit:30 Panel:6)**	**101**
Refrigerant equipment Compressor type & Q'ty			–	**GU-A5570ES41 × 1**
Motor		kW	–	**3.75**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.9 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.6 (BARREL FREEZE 32SAM)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure switch	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	130 × 1	65 × 2
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:28 Lo:20**	**110**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Thermistor for discharge temperature.
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 lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz.

(4) Indicates the value at mild mode.

Model FDT308HEN

Item		Model	FDT308HEN	
			FDT308	FDC306HEN3
Nominal cooling capacity(1)		W	**7100**	
Nominal heating capacity(1)		W	**7300**	
Power source			**1 Phase, 220/240V, 50Hz**	
Operation data(3)	Cooling input	kW	3.07/3.11	
	Running current (Cooling)	A	15.6/16.3	
	Power factor (Cooling)	%	89/79	
	Heating input	kW	2.82/2.86	
	Running current (Heating)	A	14.5/15.2	
	Power factor (Heating)	%	88/78	
	Inrush current (L.R.A)	A	89	
	Noise level(4)	dB(A)	Hi 41 Lo:35	56
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 260 × 840 × 840** **Panel 30 × 950 × 950**	**844 × 950 × 340**
Net weight		**kg**	**30 (Unit:24 Panel:6)**	**69**
Refrigerant equipment **Compressor type & Q'ty**			–	**RC5532ENE1 × 1**
Motor		kW	–	**2.24**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control			Capillary tube	Capillary tube
Refrigerant			**R22**	
Quantity		**kg**	**Holding charged**	**1.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil		ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control			IC controlled de-icer	
High pressure control			High pressure regulator valve	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	30 × 1	60 × 1
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:12**	**54**
Fresh air intake			Available	–
Air filter, Q'ty			Long life filter ×1(washable)	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Drain hose	
Optional parts			Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	

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

(3) The operation data indicate when the air conditioner is operated at 220V and 240V respectively.

(4) Indicates the value at mild mode.

Model FDT308HES

Item				Model	FDT308HES	
					FDT308	FDC306HES3
Nominal cooling capacity(1)			ISO-T1	W	7100/7700	
			ISO-T3		6000	
Nominal heating capacity(1)			ISO-T1	W	7300/7900	
Power source					3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz	
Operation data(3)	ISO-T1	Cooling input		kW	2.83/2.84/3.35	
		Running current (Cooling)		A	5.3/5.3/6.0	
		Power factor (Cooling)		%	81/75/85	
		Heating input		kW	2.50/2.52/2.90	
		Running current (Heating)		A	4.9/5.0/5.6	
		Power factor (Heating)		%	78/70/79	
	ISO-T3	Cooling input		kW	3.58	
		Running current (Cooling)		A	6.5	
		Power factor (Cooling)		%	84	
	Inrush current (L.R.A)			A	43	
	Noise level(4)			dB(A)	Hi:41 Lo:35	56
Exterior dimensions Height × Width × Depth				**mm**	**Unit 260 × 840 × 840 Panel 30 × 950 × 950**	**844 × 950 × 340**
Net weight				**kg**	**30 (Unit:24 Panel:6)**	**69**
Refrigerant equipment Compressor type & Q'ty					–	**RC5538ESE1 × 1**
Motor				kW	–	**2.24**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					R22	
Quantity				**kg**	**Holding charged**	**1.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 1
Motor				W	30 × 1	60 × 1
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:17 Lo:12**	**54/56**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

Model FDT408HES

Item				Model	FDT408HES	
					FDT408	FDC406HES3
Nominal cooling capacity(1)			ISO-T1	W	**10200/11300**	
			ISO-T3		**9900**	
Nominal heating capacity(1)			ISO-T1	W	**10500/11600**	
Power source					**3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	3.78/3.78/4.65	
		Runningcurrent (Cooling)		A	7.5/7.5/8.8	
		Power factor (Cooling)		%	77/70/80	
		Heating input		kW	3.48/3.48/4.28	
		Running current (Heating)		A	7.2/7.2/8.5	
		Power factor (Heating)		%	73/67/77	
	ISO-T3	Cooling input		kW	5.15	
		Running current (Cooling)		A	9.5	
		Power factor (Cooling)		%	82	
	Inrush current (L.R.A)			A	45	
	Noise level(4)			dB(A)	Hi:48 Lo:40	57
Exterior dimensions Height × Width × Depth				**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 950 × 340**
Net weight				**kg**	**34 (Unit:28 Panel:6)**	**86**
Refrigerant equipment Compressor type & Q'ty					–	**RC5547ESE1 × 1**
Motor				kW	–	**2.61**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**1.6 [Pre-charged up to the piping length of 5m]**
Refrigarant oil				ℓ	–	**1.63 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 2
Motor				W	80 × 1	60 × 2
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi: 26 Lo: 19**	**100/110**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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					Neccessary (both Liquid & Gas lines)	
Accessories					Mounting kit. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

Model FDT508HES

Item				Model	FDT508HES	
					FDT508	FDC506HES3
Nominal cooling capacity(1)			ISO-T1	W	**12500/14000**	
			ISO-T3		**11900**	
Nominal heating capacity(1)			ISO-T1	W	**12800/14400**	
Power source					**3 Phase, 380-415V 50Hz or 380V 50Hz/415V 50Hz, 380V 60Hz**	
Operation data(3)	ISO-T1	Cooling input		kW	4.87/4.87/5.83	
		Running current (Cooling)		A	10.0/10.0/11.0	
		Power factor (Cooling)		%	74/68/81	
		Heating input		kW	4.49/4.51/5.41	
		Running current (Heating)		A	9.2/9.3/10.2	
		Power factor (Heating)		%	74/67/81	
	ISO-T3	Cooling input		kW	6.43	
		Running current (Cooling)		A	12.0	
		Power factor (Cooling)		%	81	
	Inrush current (L.R.A)			A	68	
	Noise level(4)			dB(A)	Hi:49 Lo:43	59
Exterior dimensions Height × Width × Depth				**mm**	**Unit 320 × 840 × 840 Panel 30 × 950 × 950**	**1250 × 950 × 340**
Net weight				**kg**	**36 (Unit:30 Panel:6)**	**91**
Refrigerant equipment Compressor type & Q'ty					–	**RC5563ESE2 × 1**
Motor				kW	–	**3.73**
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Slitted fins & bare tubing
Refrigerant control					Capillary tube	Capillary tube
Refrigerant					**R22**	
Quantity				**kg**	**Holding charged**	**2.3 [Pre-charged up to the piping length of 5m]**
Refrigerant oil				ℓ	–	**2.07 (SUNISO 3GS)**
Defrost control					IC controlled de-icer	
High pressure control					High pressure regulator valve	
Air handling equipment Fan type & Q'ty					Turbo fan × 1	Propeller fan × 2
Motor				W	130 × 1	60 × 2
Starting method					Line starting	Line starting
Air flow (Standard)				**CMM**	**Hi:28 Lo:20**	**100/110**
Fresh air intake					Available	–
Air filter, Q'ty					Long life filter ×1(washable)	–
Shock & vibration absorber					Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater				W	–	40 (Crank case heater)
Operation control Operation switch					Wired remote control switch (Optional : RCD-H-S-E)	– (Indoor unit side)
Room temperature control					Thermostat by electronics	–
Safety equipment					Internal thermostat for fan motor. Frost protection thermostat.	Internal protector for compressor. Internal thermostat for fan motor. Internal pressure relief valve for compressor.
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 lines)	
Accessories					Mounting kit. Drain hose	
Optional parts					Decorative Panel	

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

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1, JIS B8616
Heating	20˚C	–	7˚C	6˚C	
Cooling	29˚C	19˚C	46˚C	24˚C	ISO-T3, SASO

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

(3) The operation data indicate when the air conditioner is operated at 380/415V 50Hz and 380V 60Hz respectively.

(4) Indicates the value at mild mode.

6.2.2 Range of usage & limitations

Models FDTN208~508 (FDC208~508 type)
FDT208~508 (FDC208~508 type)

Item \ Models	FDTN208, 258 (FDC208, 258 type) FDT208, 258 (FDC208, 258 type)	FDTN308~508 (FDC308~508 type) FDT308~508 (FDC308~508 type)
Indoor return air temperature (Upper, lower limits)	Refer to the selection chart	
Outdoor air temperature (Upper, lower limits)		
Indoor unit atmosphere (behind ceiling) temperature and humidity	Dew point temperature: 28˚C or less, relative humidity: 80% or less	
Refrigerant line (one way) length	**Max. 30m**	**Max. 50m**
Vertical height difference between outdoor unit and indoor unit	**Max. 20m (Outdoor unit is higher)** **Max. 15m (Outdoor unit is lower)**	**Max. 30m (Outdoor unit is higher)** **Max. 15m (Outdoor unit is lower)**
Power source voltage	Rating ± 10%	
Voltage at starting	Min. 85% of rating	
Frequency of ON-OFF cycle	**Max. 10 times/h**	
ON and OFF interval	**Max. 3 minutes**	

Models FDTN208~508 (FDC206~506 type)
FDT308~508 (FDC306~506 type)

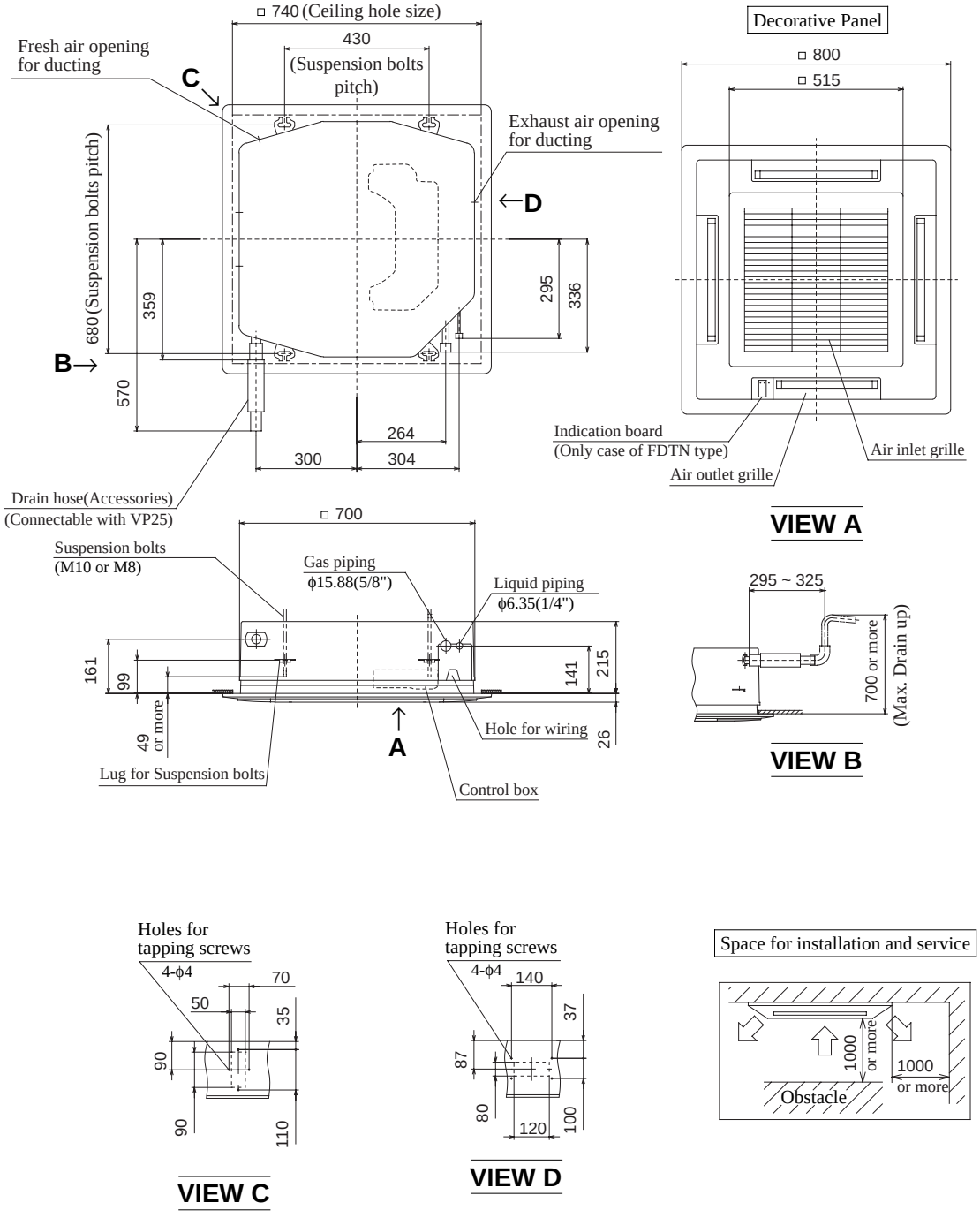
Item \ Models	FDTN208~508 (FDC206~506 type) FDT308~508 (FDC306~506 type)
Indoor return air temperature (Upper, lower limits)	Refer to the selection chart
Outdoor air temperature (Upper, lower limits)	
Indoor unit atmosphere (behind ceiling) temperature and humidity	Dew point temperature: 28˚C or less, relative humidity: 80% or less
Refrigerant line (one way) length	**Max. 30m**
Vertical height difference between outdoor unit and indoor unit	**Max. 15m**
Power source voltage	Rating ± 10%
Voltage at starting	Min. 85% of rating
Frequency of ON-OFF cycle	**Max. 10 times/h**
ON and OFF interval	**Max. 3 minutes**

6.2.3 Exterior dimensions

(1) Indoor unit

Models FDTN208H, FDT208

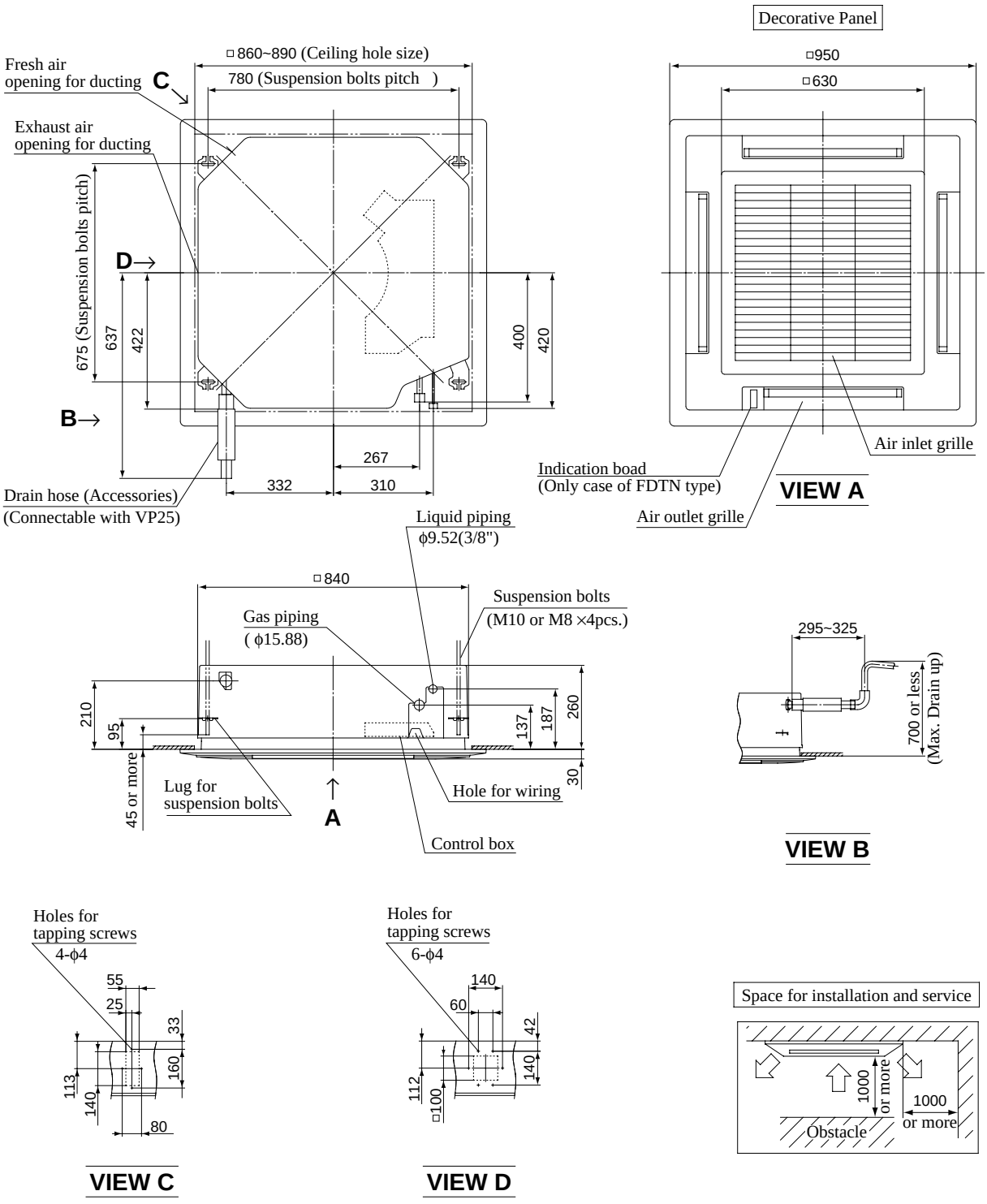
Unit : mm



FDTN-H

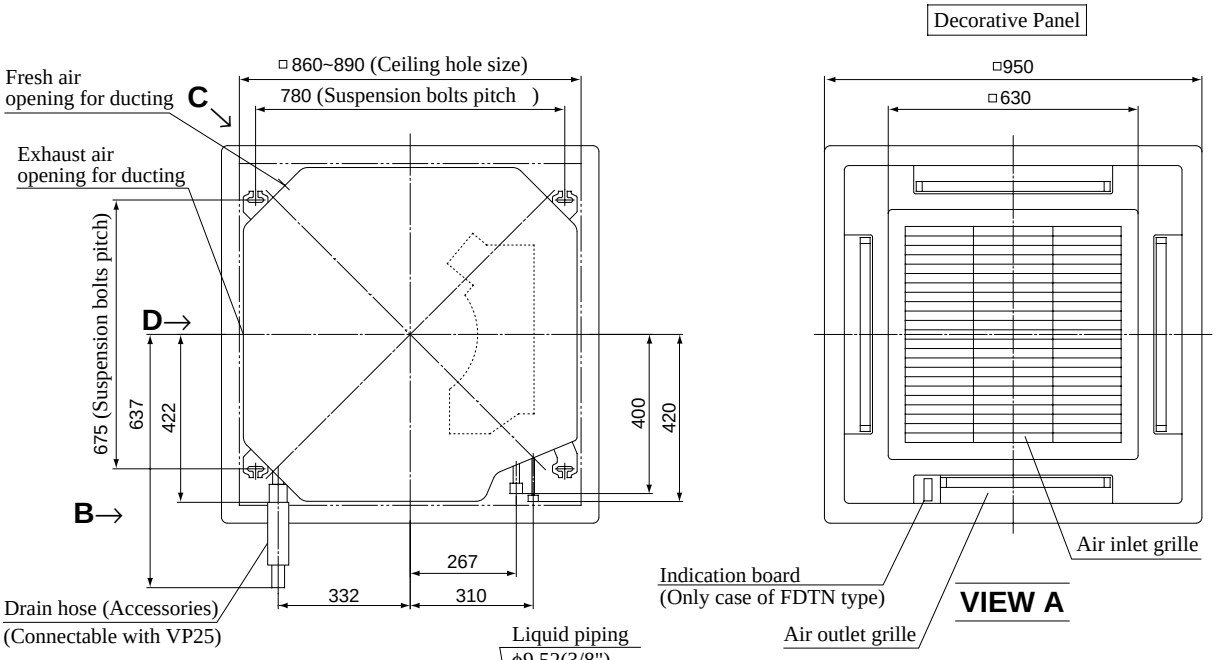
Models FDTN258H, 308H
FDT258, 308

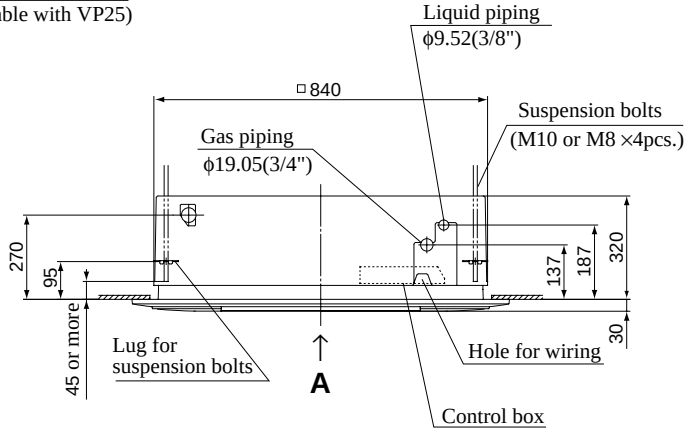
Unit : mm

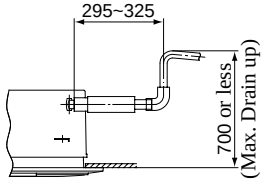


Models FDTN408H, 508H
FDT408, 508

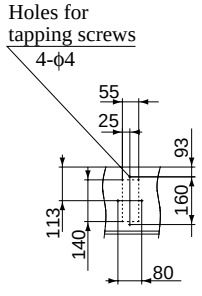
Unit : mm



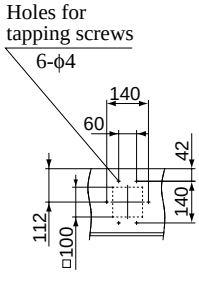




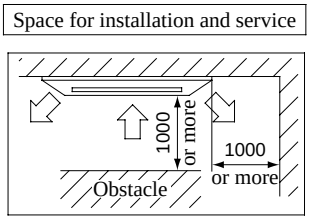
VIEW B



VIEW C



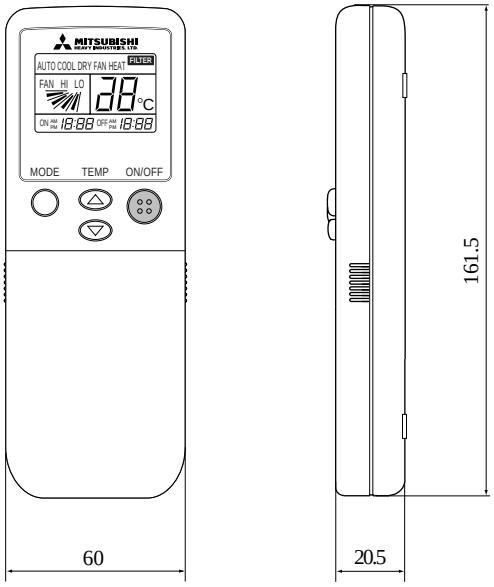
VIEW D



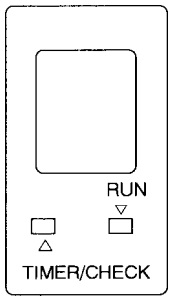
(2) Remote controller

(a) Wireless remote controller

Unit: mm

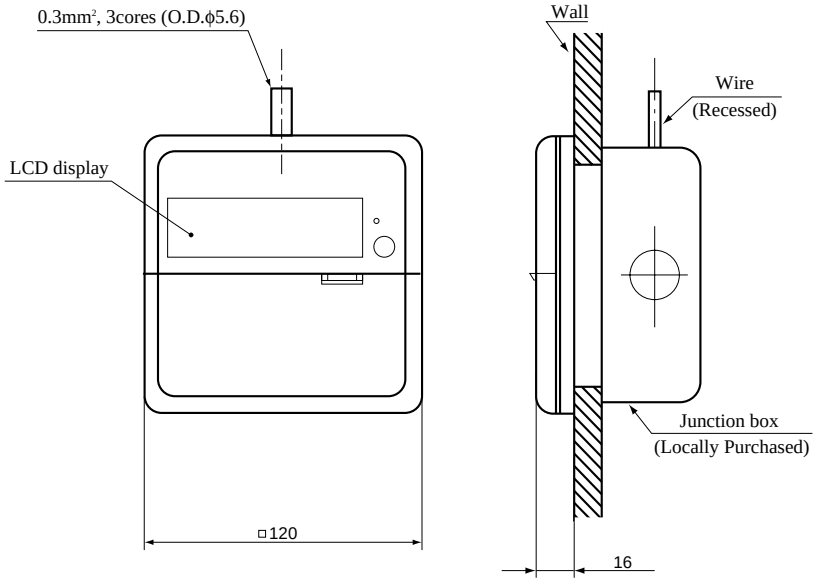


● **Indication board of indoor unit**

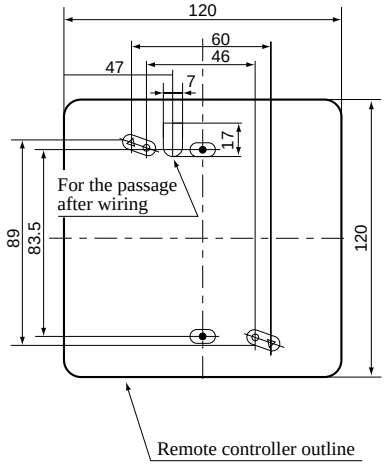


(b) Wired remote controller

Unit: mm



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)

Allowable rang of wire thickness and length

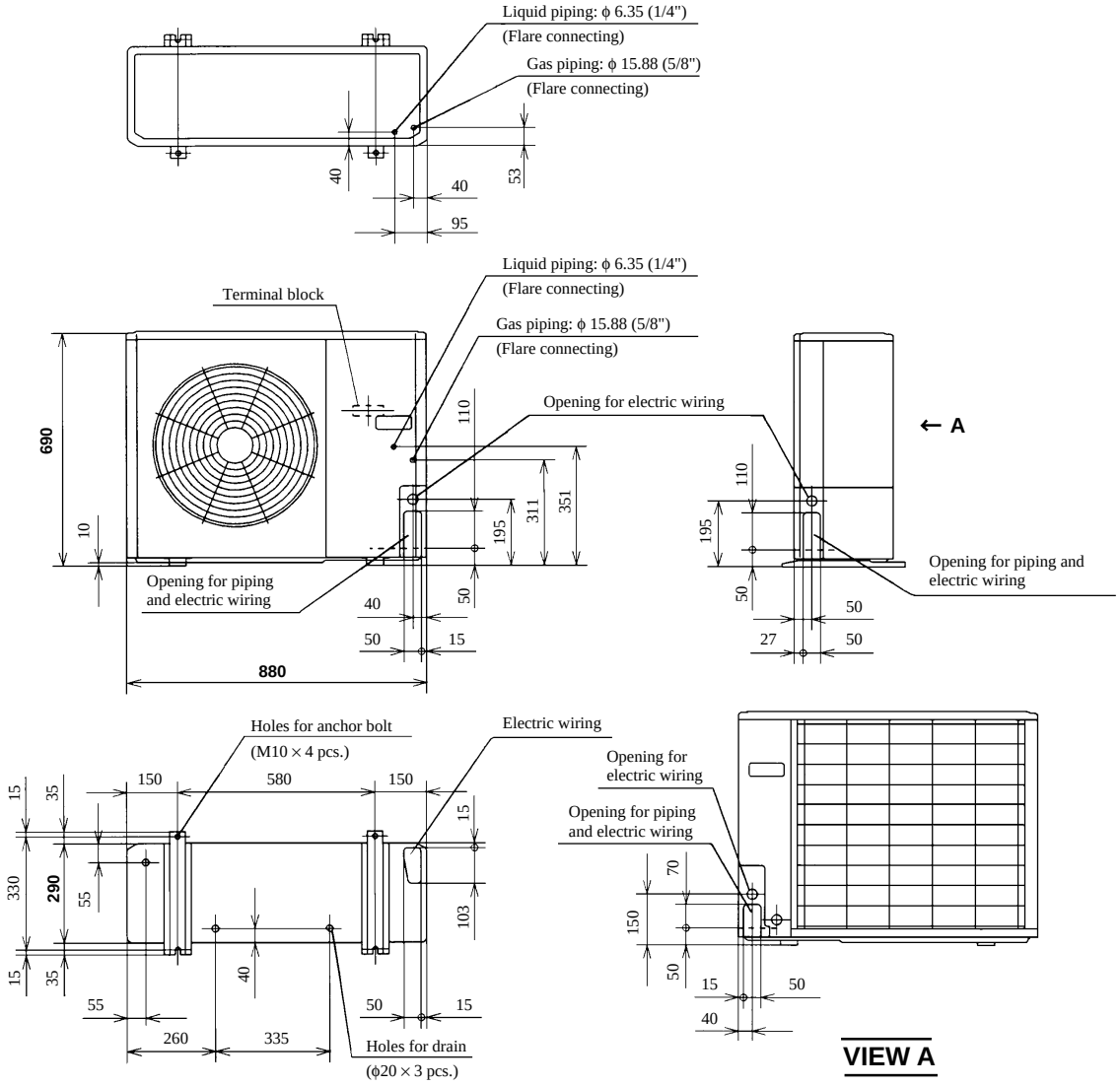
Standard Within	0.3 mm²	× Within 100 m
	0.5 mm²	× Within 200 m
	0.75 mm²	× Within 300 m
	1.25 mm²	× Within 400 m
	2 mm²	× Within 600 m

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

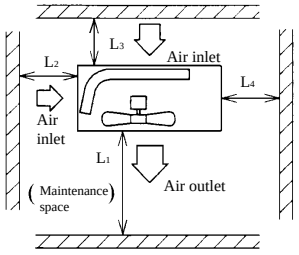
(3) Outdoor unit

Model FDC208HEN3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

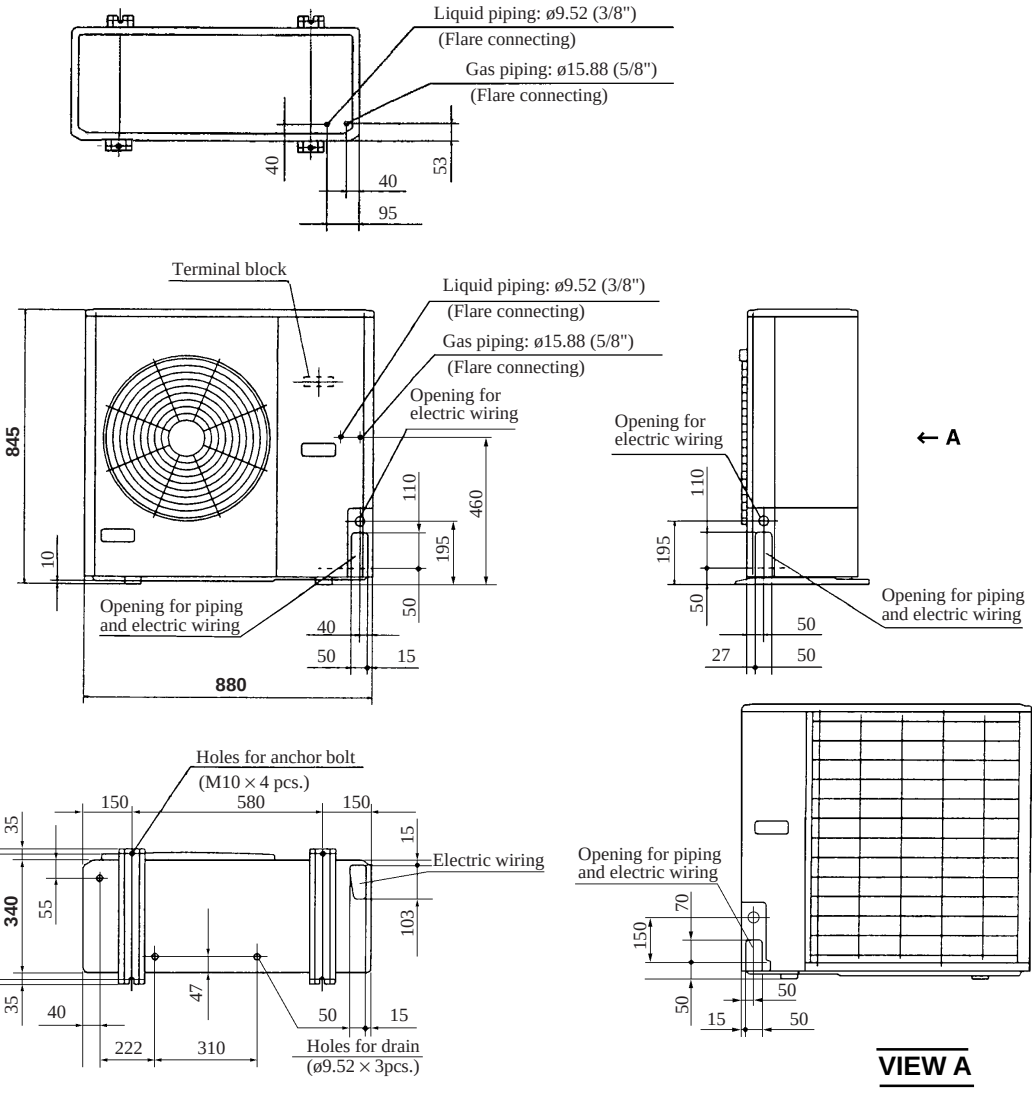
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L_1	Open	Open	500
L_2	300	5	Open
L_3	100	150	100
L_4	5	5	5

Notes

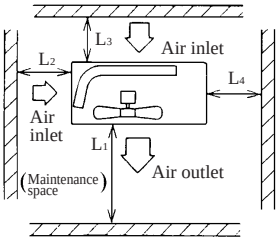
(1) Avoid the location where four sides are entirely surrounded by walls.
(2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
(3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
(4) Secure the space of 1 m and over at the top of unit.
(5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

Models FDC258HEN3, 308HEN3, 308HES3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

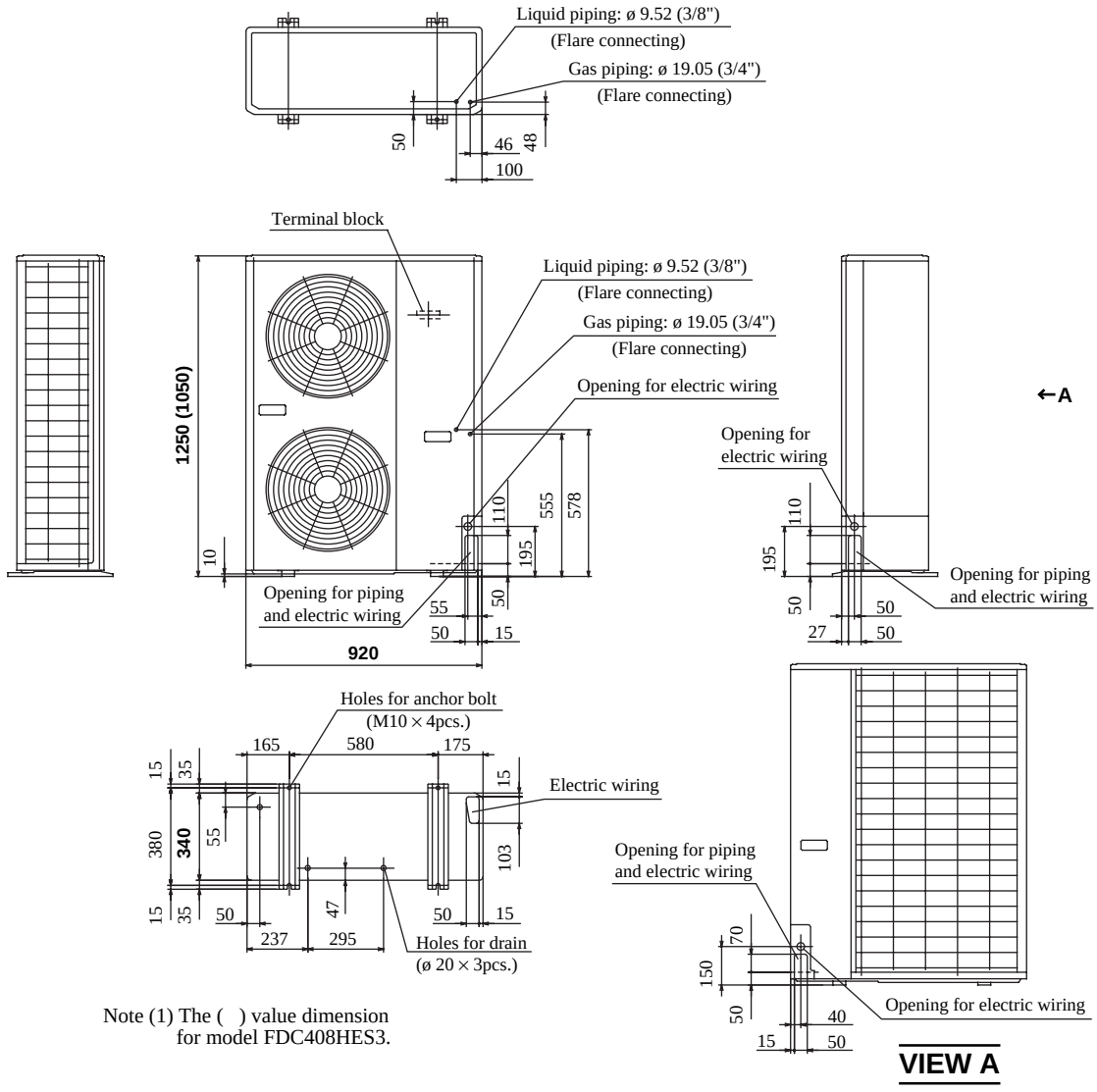
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L_1	Open	Open	500
L_2	300	5	Open
L_3	100	150	100
L_4	5	5	5

Notes

(1) Avoid the location where four sides are entirely surrounded by walls.
(2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
(3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
(4) Secure the space of 1 m and over at the top of unit.
(5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

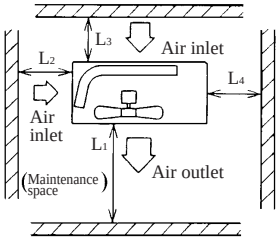
Models FDC408HES3, 508HES3

Unit: mm



Note (1) The ( ) value dimension
for model FDC408HES3.

Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

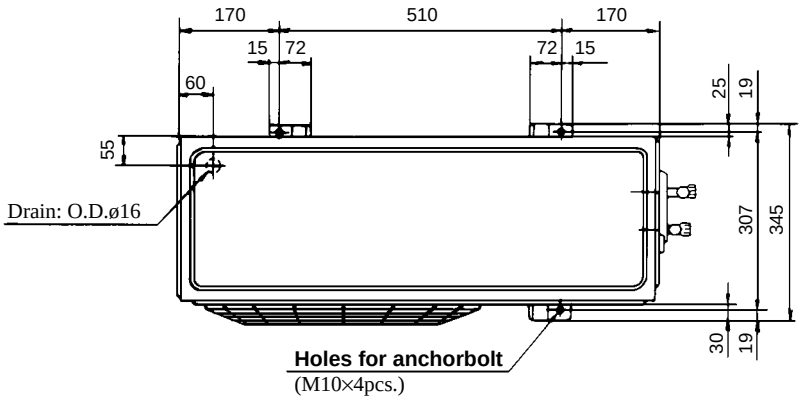
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L_1	Open	Open	500
L_2	300	5	Open
L_3	150	300	150
L_4	5	5	5

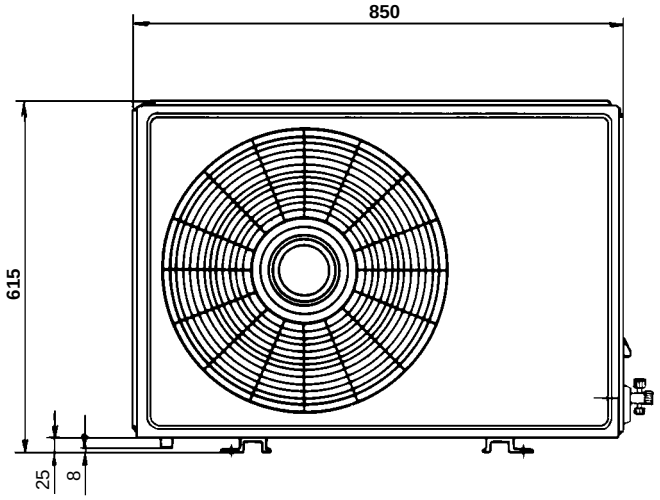
Notes

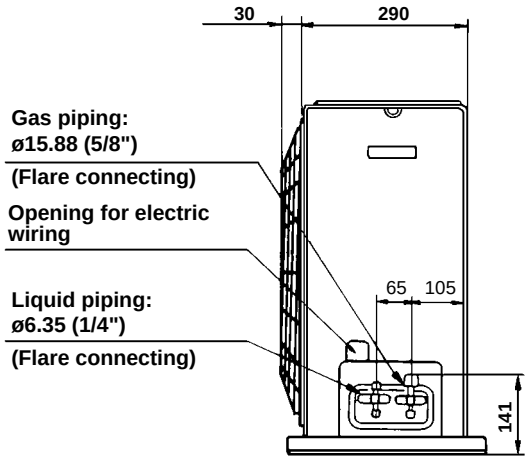
(1) Avoid the location where four sides are entirely surrounded by walls.
(2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
(3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
(4) Secure the space of 1 m and over at the top of unit.
(5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

Models FDC206HEN3, 206HEP3, 256HEN3, 256HEP3

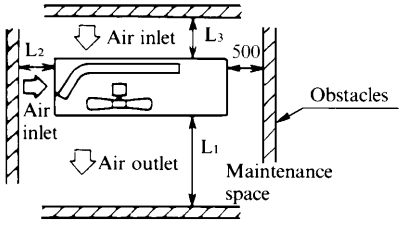
Unit: mm







Required space for maintenance and air flow



Minimum allowable space to the obstacles

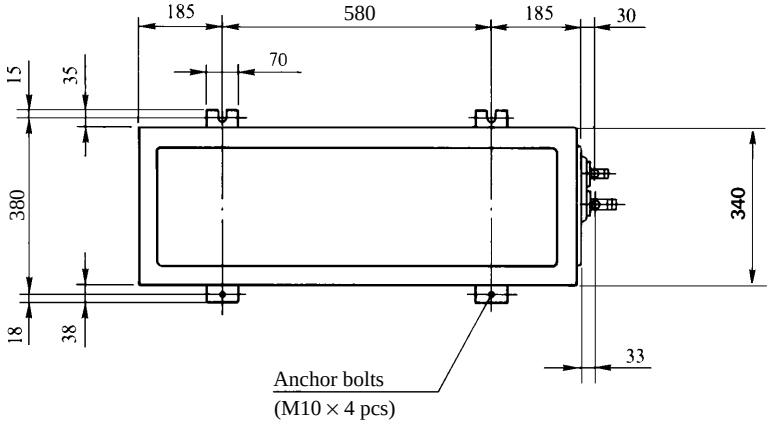
Unit:mm

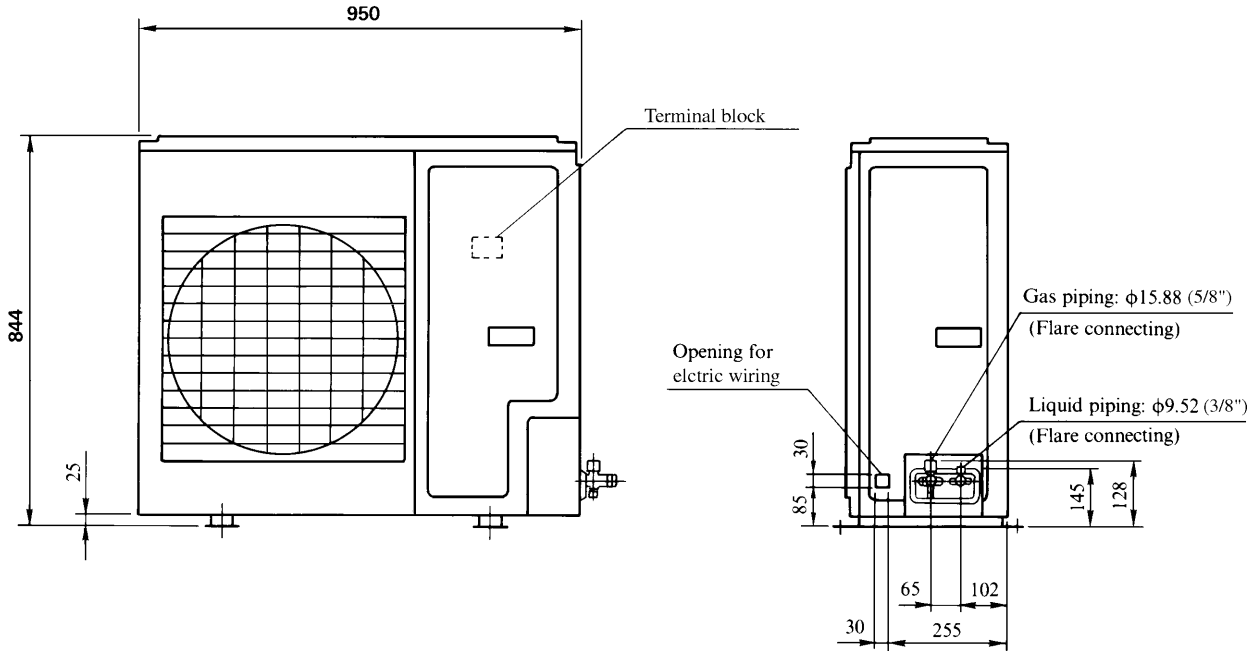
Mark \ Installation type	Ⅰ	Ⅱ
L_1	Open	100
L_2	100	Open
L_3	100	500

Notes
(1) Fix the unit with anchor bolts.
(2) Strong wind must not be directed to the air outlet.
(3) Free space over the unit must be larger than 1 m.
(4) The unit should not be surrounded by obstructions in all direction.
At least one direction around the unit must be free.

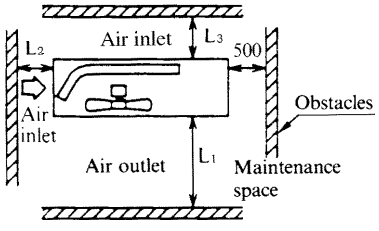
Models **FDC306HEN3, 306HEP3, 306HES3**

Unit: mm





Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

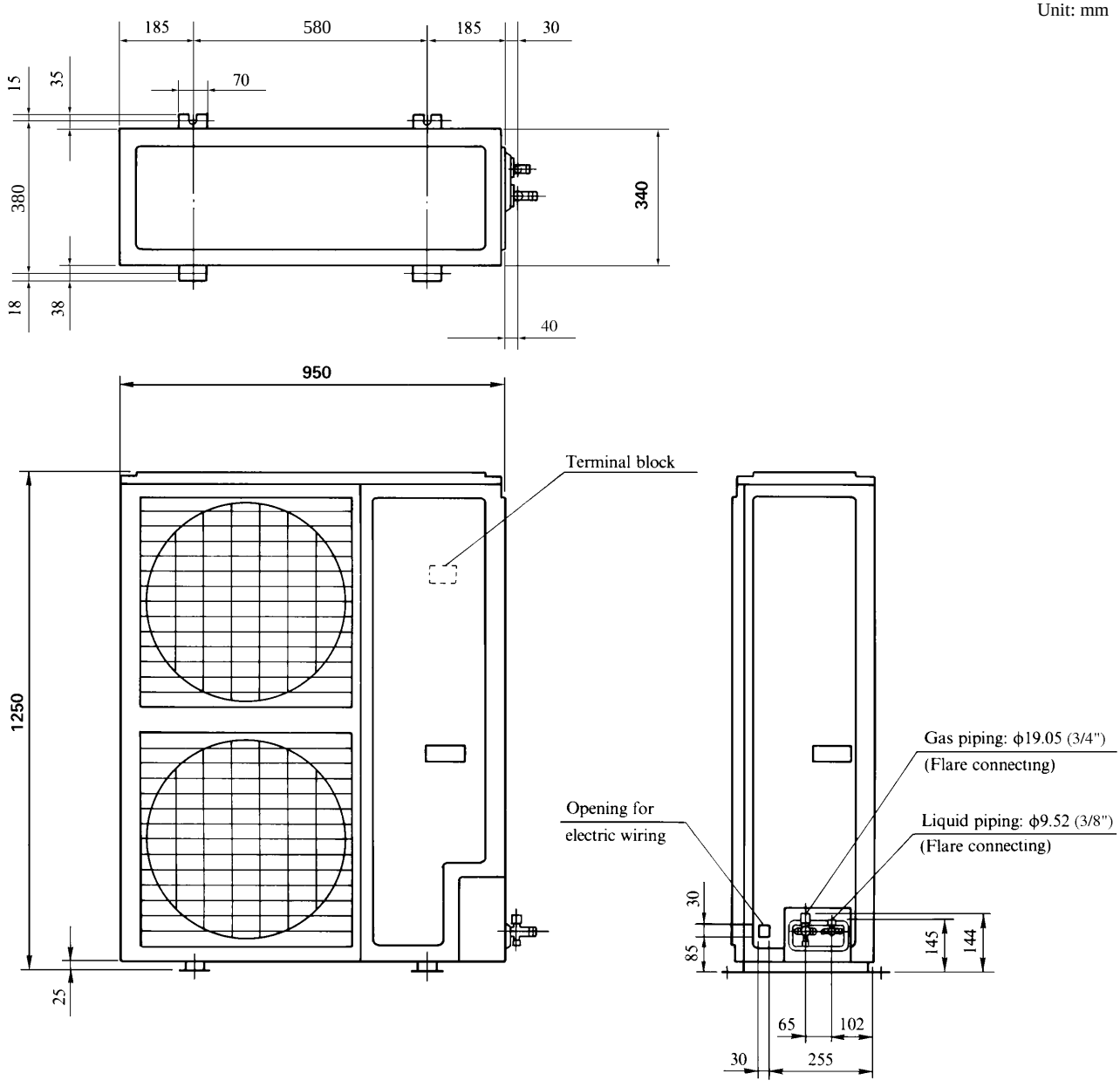
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L_1	Open	Open	500
L_2	300	0	Open
L_3	100	150	100

Notes

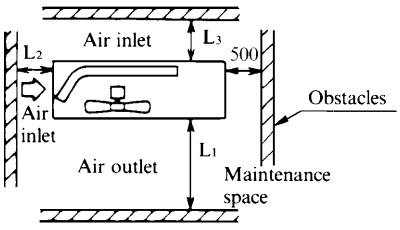
(1) Fix the unit with anchor bolts.
(2) Strong wind must not be directed to the air outlet.
(3) Free space over the unit must be larger than 1 m.
(4) The unit should not be surrounded by obstructions in all direction.
At least one direction around the unit must be free.

Models FDC406HES3, 506HES3, 506HEM3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L_1	Open	Open	500
L_2	300	0	Open
L_3	150	300	150

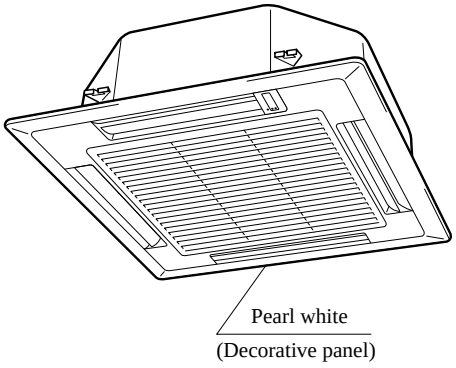
Notes

(1) Fix the unit with anchor bolts.
(2) Strong wind must not be directed to the air outlet.
(3) Free space over the unit must be larger than 1 m.
(4) The unit should not be surrounded by obstructions in all direction.
At least one direction around the unit must be free.

6.2.4 Exterior appearance

(1) Indoor unit

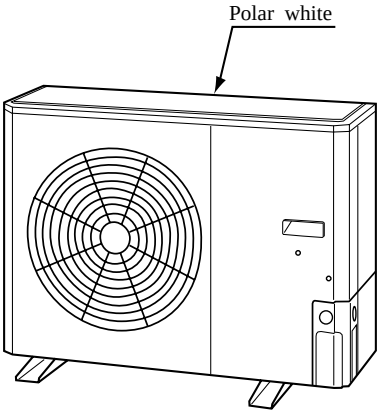
Models All models



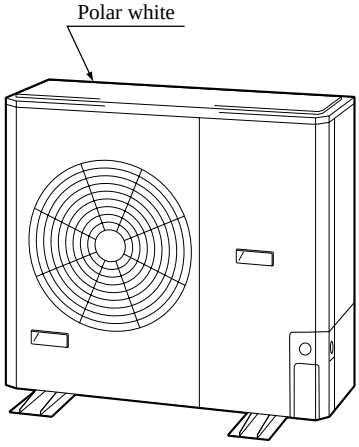
Type \ Item		Panel model	Remarks
For wireless remote controller	FDTN208H	TN-PSC-22W-E	Without swing
	FDTN258H~508H	TN-PSC-32W-E	
For wired remote controller	FDT208	T-PSA-22W-E	
	FDT258~508	T-PSA-32W-E	

(2) Outdoor unit

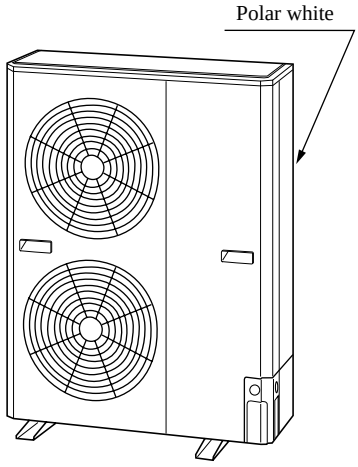
Model FDC208HEN3



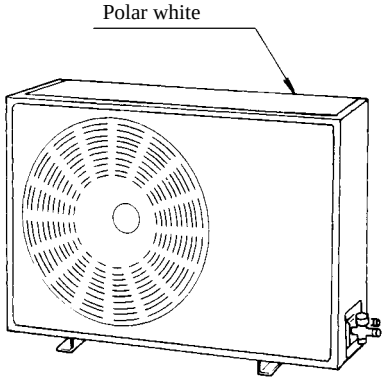
Models FDC258HEN3, 308HEN3, 308HES3



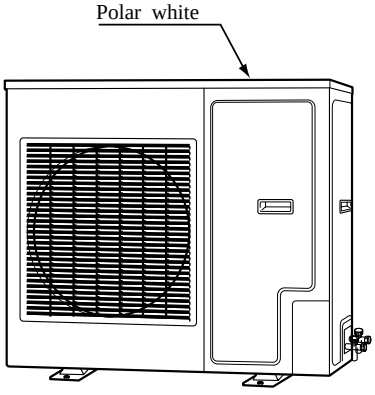
Models FDC408HES3, 508HES3



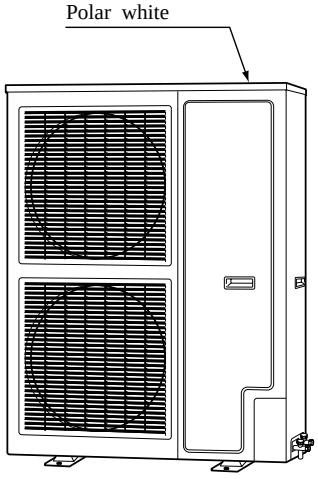
Models FDC206HEN3, 206HEP3 256HEN3, 256HEP3



Models FDC306HEN3, 306HEP3, 306HES3

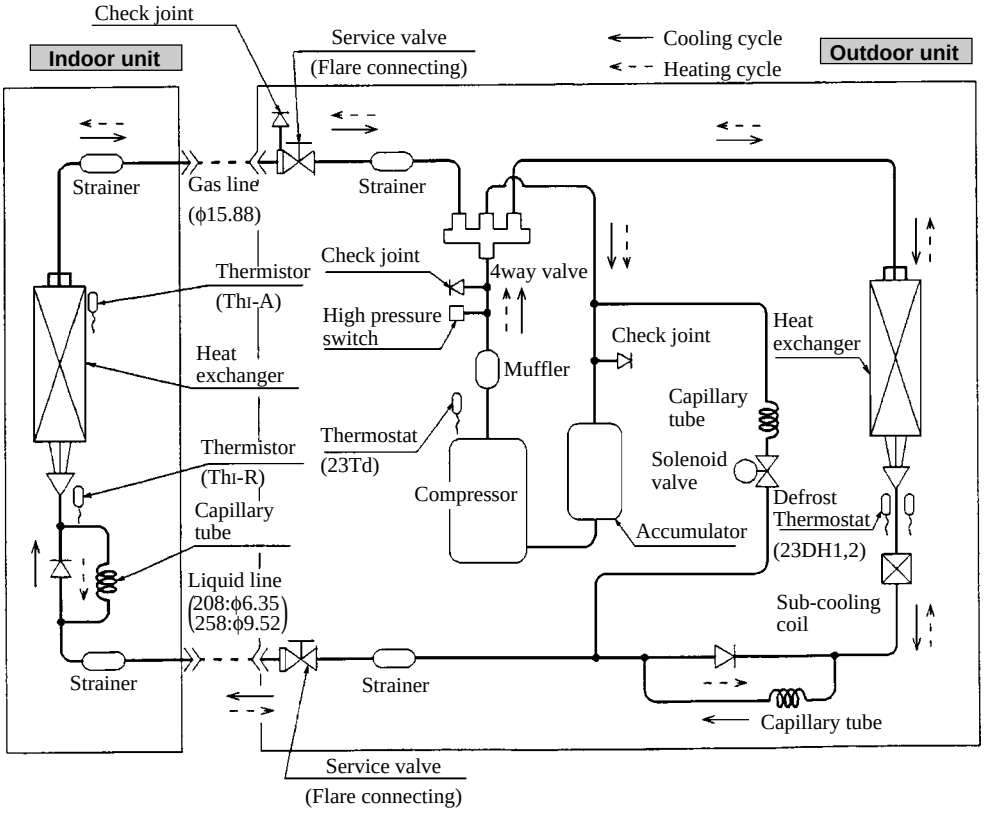


Models FDC406HES3, 506HES3 506HEM3

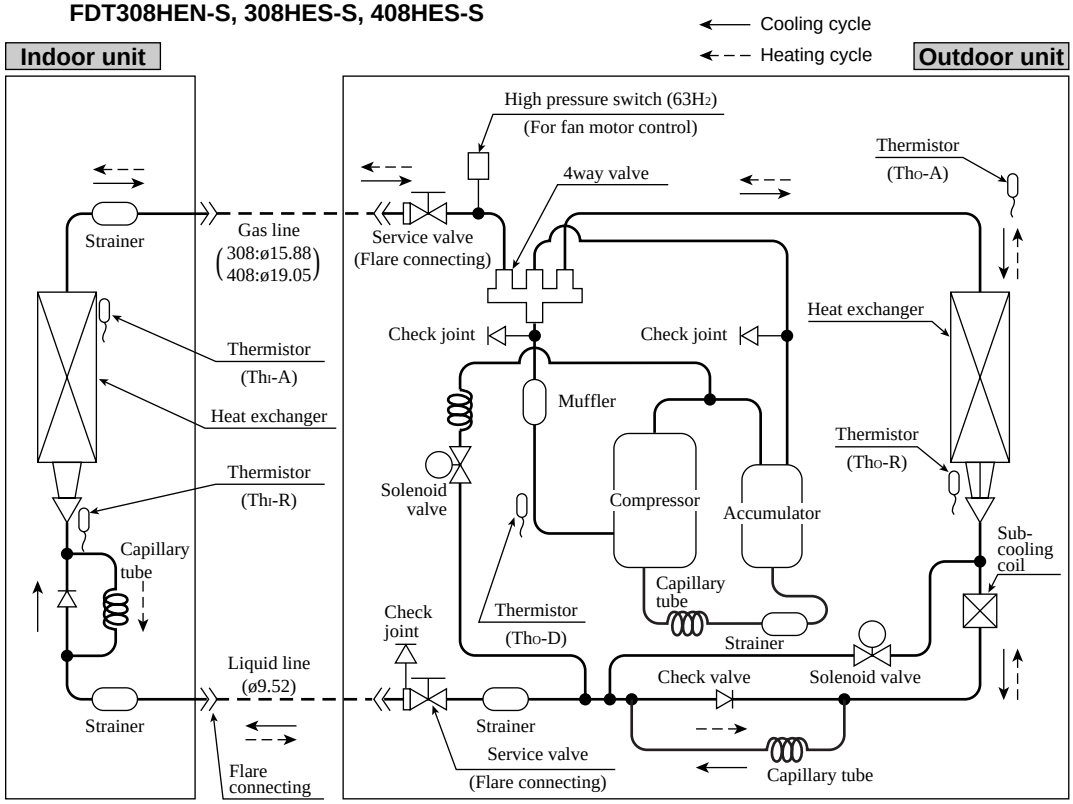


6.2.5 Piping system

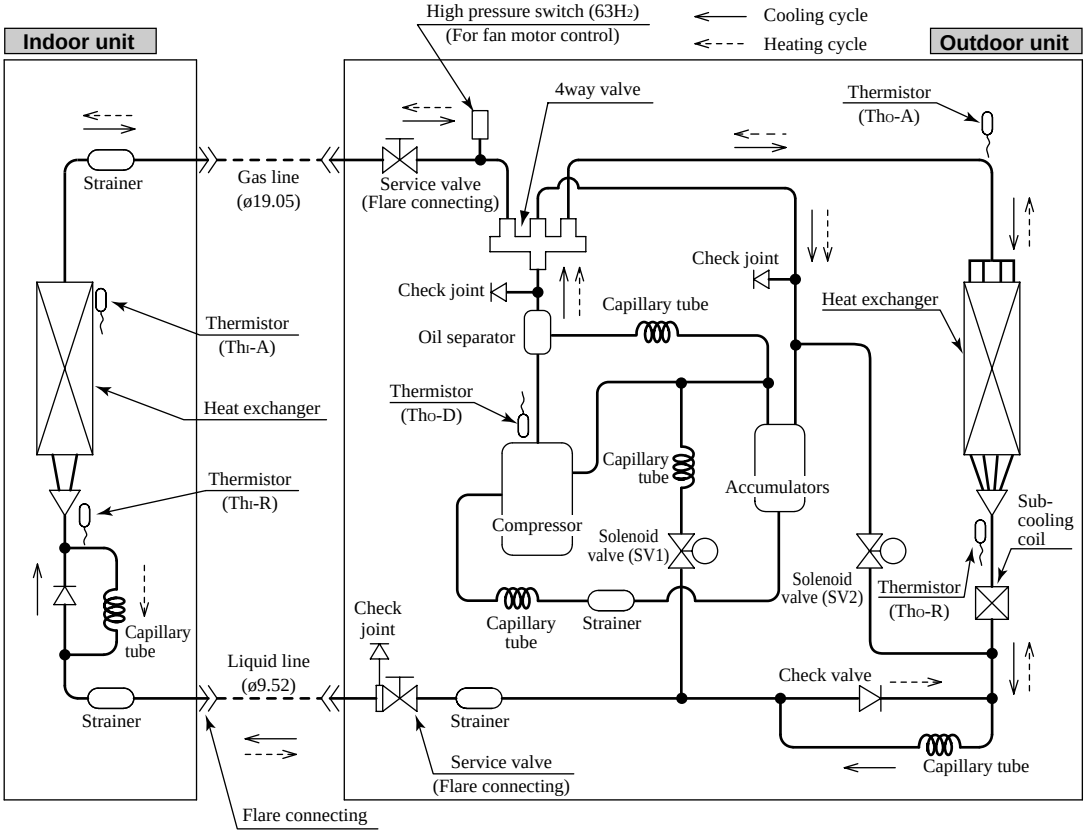
Models FDTN208HEN-S, 258HEN-S
FDT208HEN-S, 258HEN-S



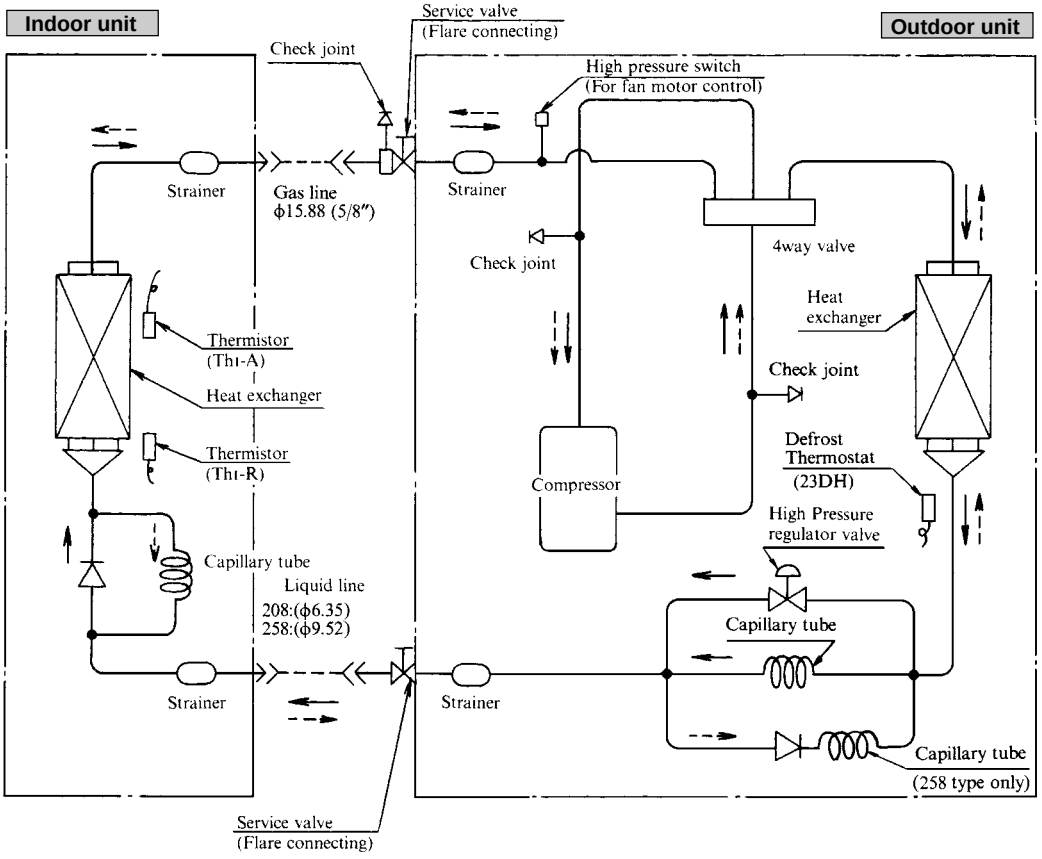
Models FDTN308HEN-S, 308HES-S, 408HES-S
FDT308HEN-S, 308HES-S, 408HES-S



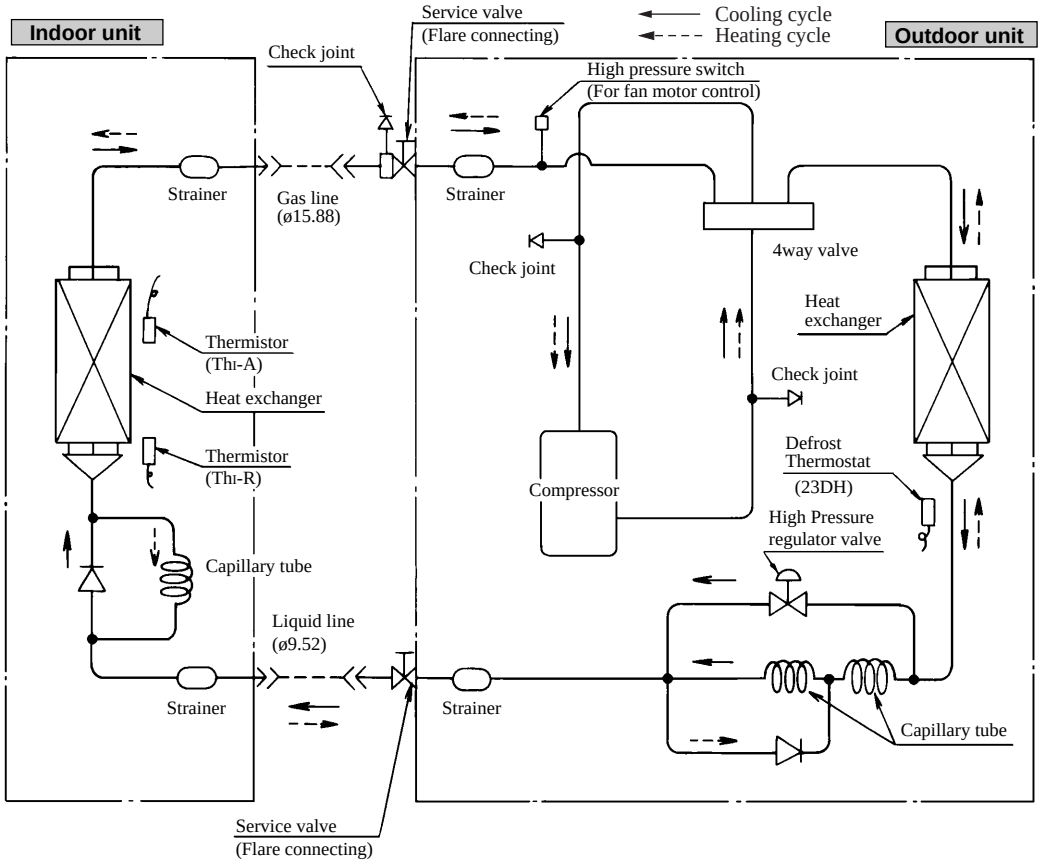
Models FDTN508HES-S, FDT508HES-S



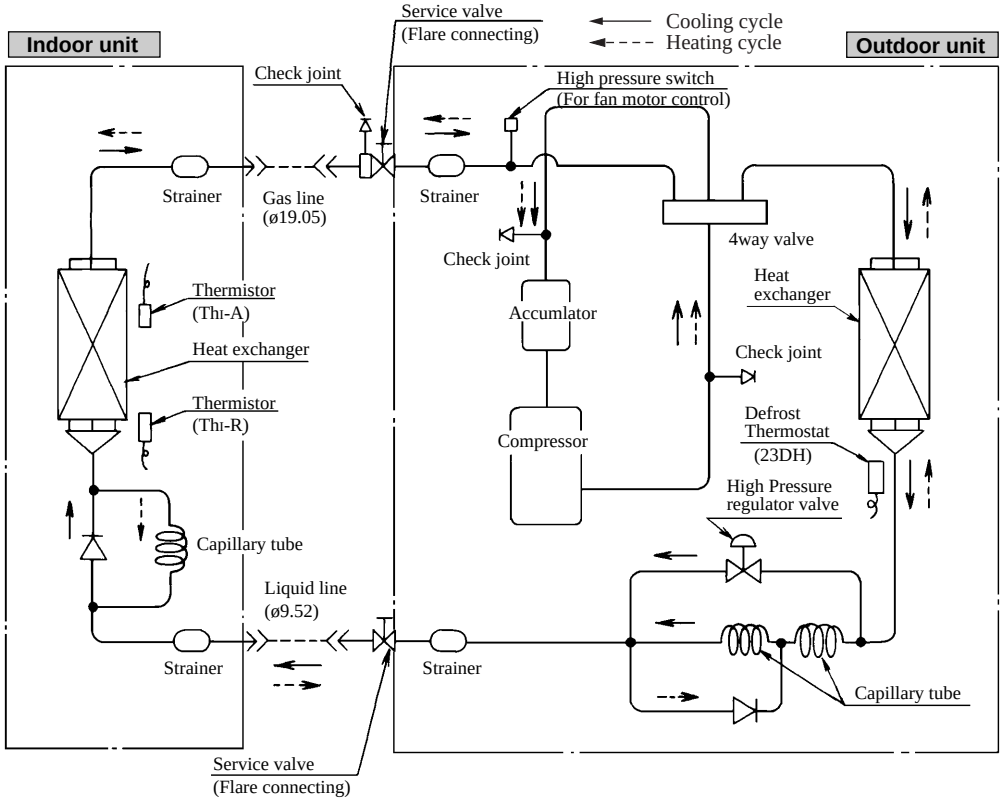
Models FDTN208HEN, 208HEP, 258HEN, 258HEP



Models FDTN308HEN, 308HEP, 308HES
FDT308HEN, 308HES



Models FDTN408HES, 508HES, 508HEM
FDT408HES, 508HES



Preset point of the protective devices

Parts name	Mark	Equipped unit	FDTN308~508 FDT308~508 (FDC308~508 type only)
Thermistor (for protection over-loading in heating)	Th_{I}-R	Indoor unit	OFF 68˚C ON 61˚C
Thermistor (for frost prevention)			OFF 2.5˚C ON 10˚C
Thermistor (for detecting dis-charge pipe temp.)	Tho-D	Outdoor unit	OFF 135˚C ON 90˚C
Thermistor (for detecting heat exchange temp.)	Tho-R	Outdoor unit	OFF 70˚C ON 60˚C
High pressure switch (for controlling FM_0)	$63H_2$	Outdoor unit	OFF 2.5MPa (25.5 Kgf/cm^{2}G) ON 2.06MPa (21 kgf/cm^{2}G)

Parts name	Mark	Equipped unit	FDTN208~508 FDT208~508 (FDC208, 258 or FDC206~506 type only)
Thermistor (for protection over-loading in heating)	TH_{I}-R	Indoor unit	OFF 68˚C ON 61˚C
Thermistor (for frost prevention)			OFF 2.5˚C ON 10˚C
Defrost thermostat	$23DH_2$	Outdoor unit	OFF 12˚C
	$23DH_1$		ON -6˚C
High pressure switch (for controlling FMo)	$63H_2$	Outdoor unit	OFF 2.5MPa (25.5 Kgf/cm^{2}G) ON 1.86MPa (19 kgf/cm^{2}G)

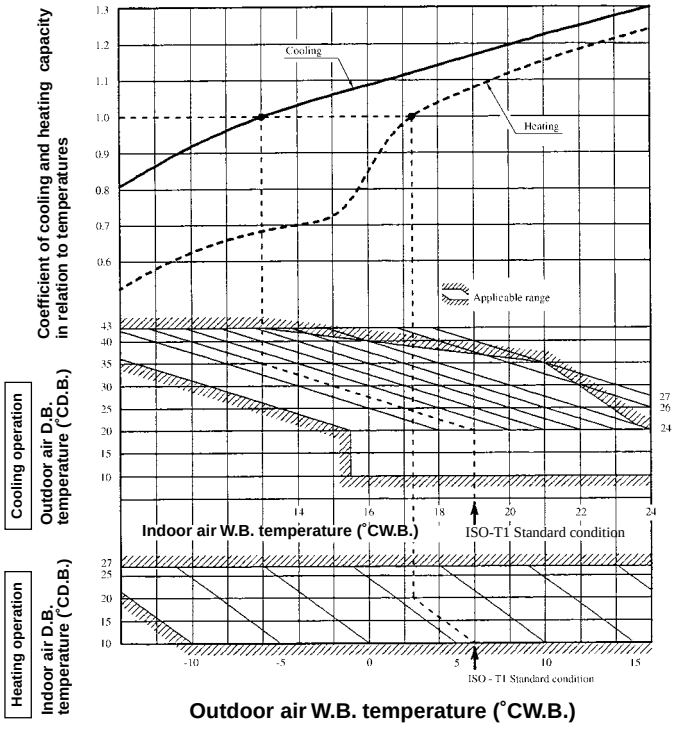
6.2.6 Selection chart

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

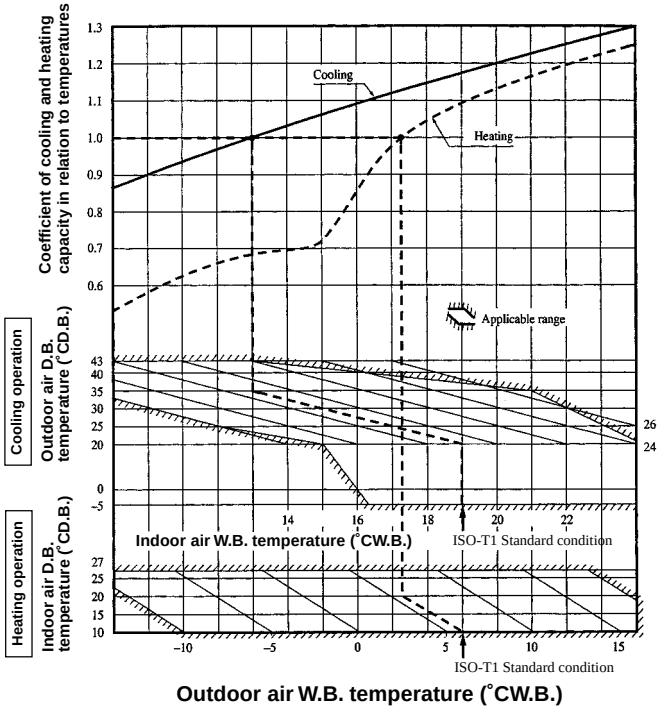
Net capacity = Capacity shown on specification × Correction factors as follows.

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

(a) Only case of ISO-T1 models (Except 308HEN-S, 308HES-S, 408HES-S, 508HES-S type)



(b) Only case of ISO-T1 models (Including 308HEN-S, 308HES-S, 408HES-S, 508HES-S type)



(C) Only case of ISO-T3 and SASO models

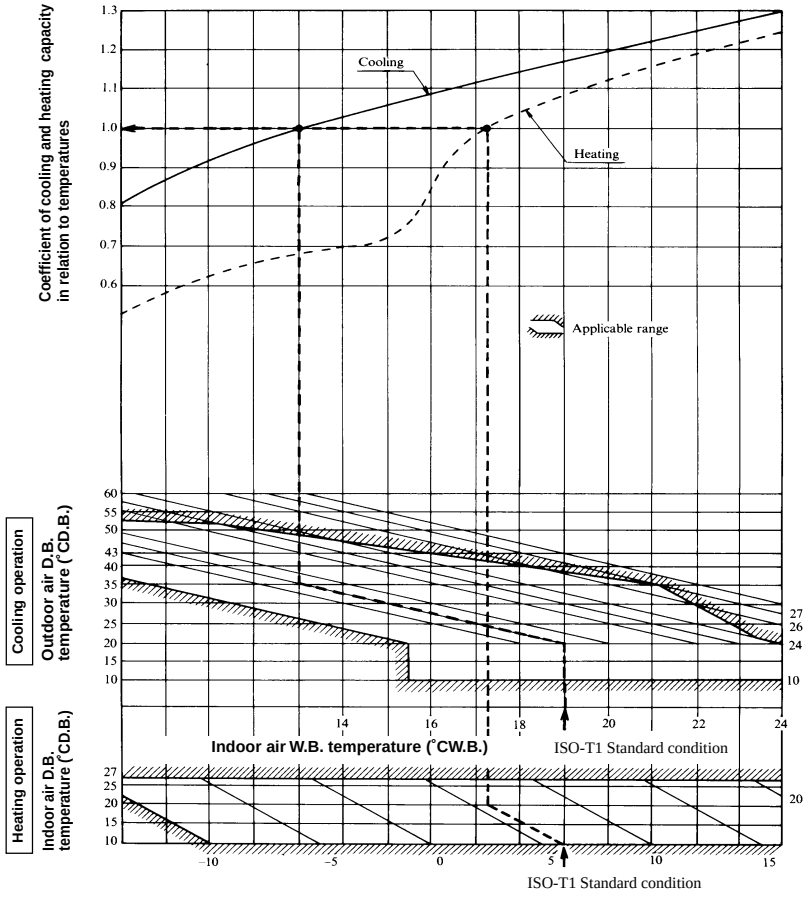


Table of bypass factor

Item \ Model		208 type	258 type	308 type	408 type	508 type
Air flow	Hi	0.112	0.050	0.065	0.076	0.025
	Lo	0.073	0.030	0.030	0.050	0.013

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

Coefficient: 1.00 at High, 0.95 at Low

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

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

50/60Hz

Equivalent piping length(1) m		5	10	15	20	25	30	35	40	45	50	55
Heating		1.0	1.0	1.0	1.0	1.0	0.995	0.995	0.99	0.99	0.985	0.985
Cooling	FDTN, FDT208 type	1.0	0.995	0.995 /0.99	0.99 /0.985	0.985 /0.98	0.985 /0.975	0.98 /0.97	—	—	—	—
	FDTN, FDT258 type	1.0	0.995	0.99	0.985	0.98	0.975	0.97	—	—	—	—
	FDTN, FDT308 type (FDC308 type)	1.0	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.9
	FDTN, FDT408 type (FDC408 type)	1.0	0.995	0.985	0.98	0.97	0.965	0.955	0.95	0.94	0.935	0.925
	FDTN, FDT508 type (FDC508 type)	1.0	0.99	0.975	0.965	0.95	0.94	0.925	0.915	0.9	0.89	0.875
	FDTN, FDT308 type (FDC306 type)	1.0	0.99	0.98 /0.975	0.97 /0.965	0.96 /0.95	0.95 /0.94	0.94 /0.925	—	—	—	—
	FDTN, FDT408 type (FDC406 type)	1.0	0.995 /0.99	0.985 /0.98	0.98 /0.97	0.97 /0.96	0.965 /0.95	0.955 /0.94	—	—	—	—
	FDTN, FDT508 type (FDC506 type)	1.0	0.99 /0.985	0.975 /0.97	0.965 /0.955	0.95 /0.94	0.94 /0.925	0.925 /0.91	—	—	—	—

Note (1) Equivalent piping length can be obtained by calculating as follows.
208, 258, 308 series [ϕ15.88(5/8″)]: Equivalent piping length = Real piping length + (0.10 × Number or bends in piping)
408, 508, series [ϕ19.05(3/4″)]: Equivalent piping length = Real piping length + (0.15 × Number of bends in piping)
[Equivalent piping length < Limitation length of piping + 5m]

(4) 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	5m	10m	15m	20m	25m	30m
Adjustment coefficient	0.01	0.02	0.03	0.04	0.05	0.06

Piping length limitations

Item \ Model	FDTN, FDT208, 258 (FDC208, 258 type)	FDTN, FDT308~508 (FDC308~508 type)	FDTN, FDT208~508 (FDC206~506 type)
Max. one way piping length	30m	50m	30m
Max. vertical height difference	Outdoor unit is higher 20m Outdoor unit is lower 15m	Outdoor unit is higher 30m Outdoor unit is lower 15m	15m

Note (1) Values in the table indicate the one way piping length between the indoor and outdoor units.

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDTN308HEN-S with the air flow “High”, the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0 ˚C and outdoor dry-bulb temperature 35 ˚C is

Net cooling capacity = 7100 × 1.00 × (0.98 - 0.01) × 1.0 = 6887 w

- 7100 : FDTN308HEN-S
- 1.00 : Air flow “High”
- (0.98 - 0.01) : Length 15m. Height difference 5 m
- 1.0 : Factor by air temperatures

6.2.7 Noise level

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

Ambient air temperature:

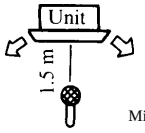
Indoor unit 27˚C DB, 19˚C WB.

Outdoor unit 35˚C DB.

Indoor unit

Measured based on JIS B 8616

Mike position as below



Mike (center & low points)

Outdoor unit

Measured based on JIS B 8616

Mike position: at highest noise level in position as below

Distance from front side 1 m

Height 1 m

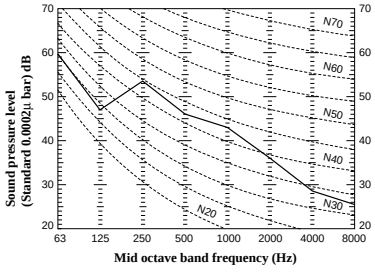
(2) The data in the chart are measured in an unechonic room.

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

(1) Indoor unit

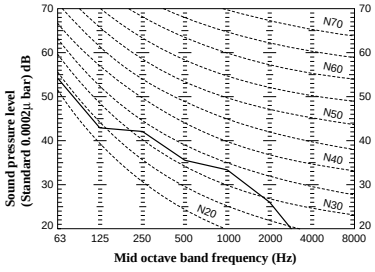
Models FDTN208H, FDT208

Noise level 38 dB (A) at HIGH
33 dB (A) at LOW



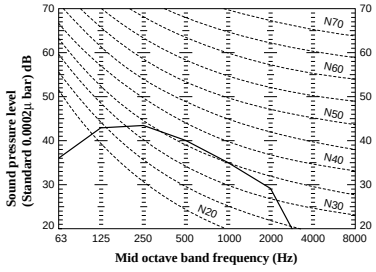
Models FDTN258H, FDT258

Noise level 39 dB (A) at HIGH
35 dB (A) at LOW



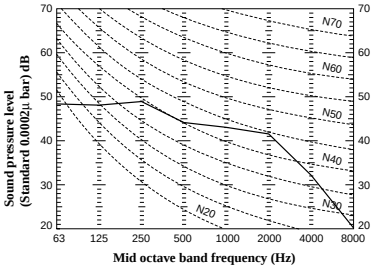
Models FDTN308H, FDT308

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



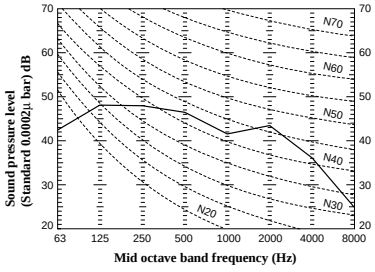
Models FDTN408H, FDT408

Noise level 48 dB (A) at HIGH
40 dB (A) at LOW



Models FDTN508H, FDT508

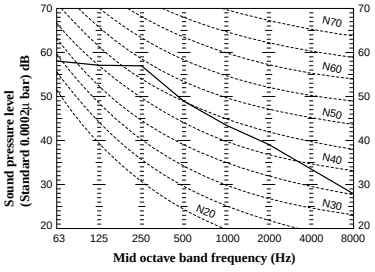
Noise level 49 dB (A) at HIGH
43 dB (A) at LOW



(2) Outdoor unit

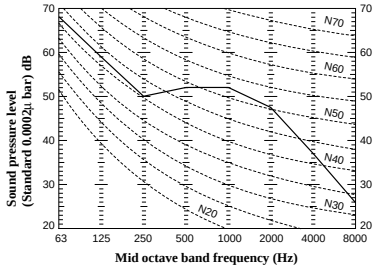
Model FDC208HEN3

Noise level 52 dB (A)



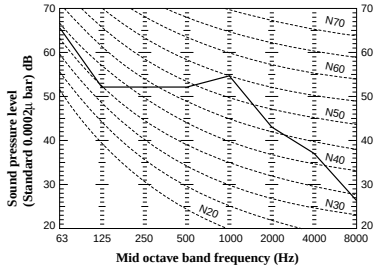
Model FDC206HEN3

Noise level 56 dB (A)



Model FDC206HEP3

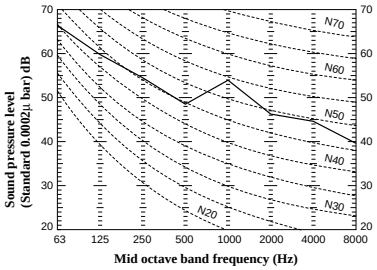
Noise level 56 dB (A)



FDTN-H

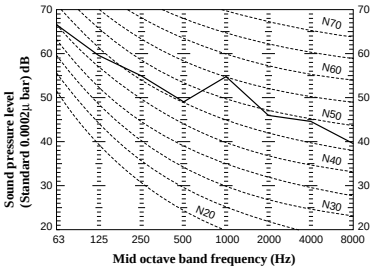
Model FDC258HEN3

Noise level 52 dB (A)



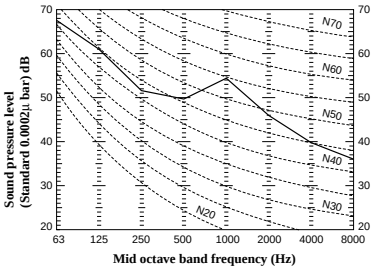
Model FDC256HEN3

Noise level 57 dB (A)



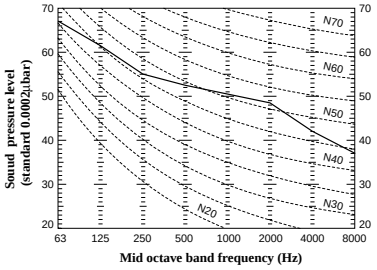
Model FDC256HEP3

Noise level 57 dB (A)



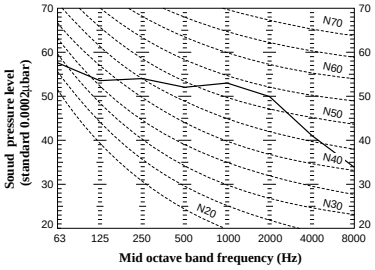
Models FDC308HEN3, 308HES3

Noise level 52 dB (A)



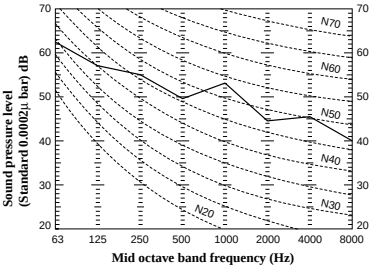
Model FDC306HEN3

Noise level 56 dB (A)



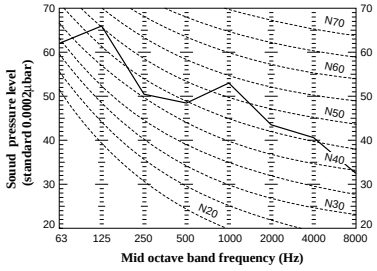
Model FDC306HEP3

Noise level 56 dB (A)



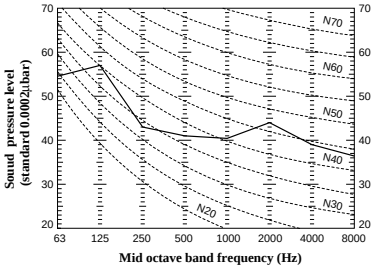
Model FDC306HES3

Noise level 56 dB (A)



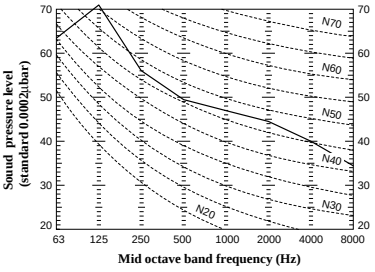
Model FDC408HES3

Noise level 54 dB (A)



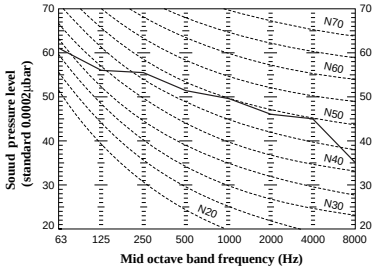
Model FDC406HES3

Noise level 57 dB (A)



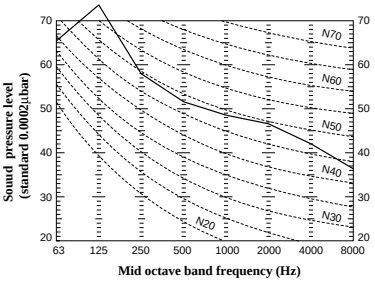
Model FDC508HES3

Noise level 55 dB (A)



Models FDC506HES3, 506HEM3

Noise level 59 dB (A)



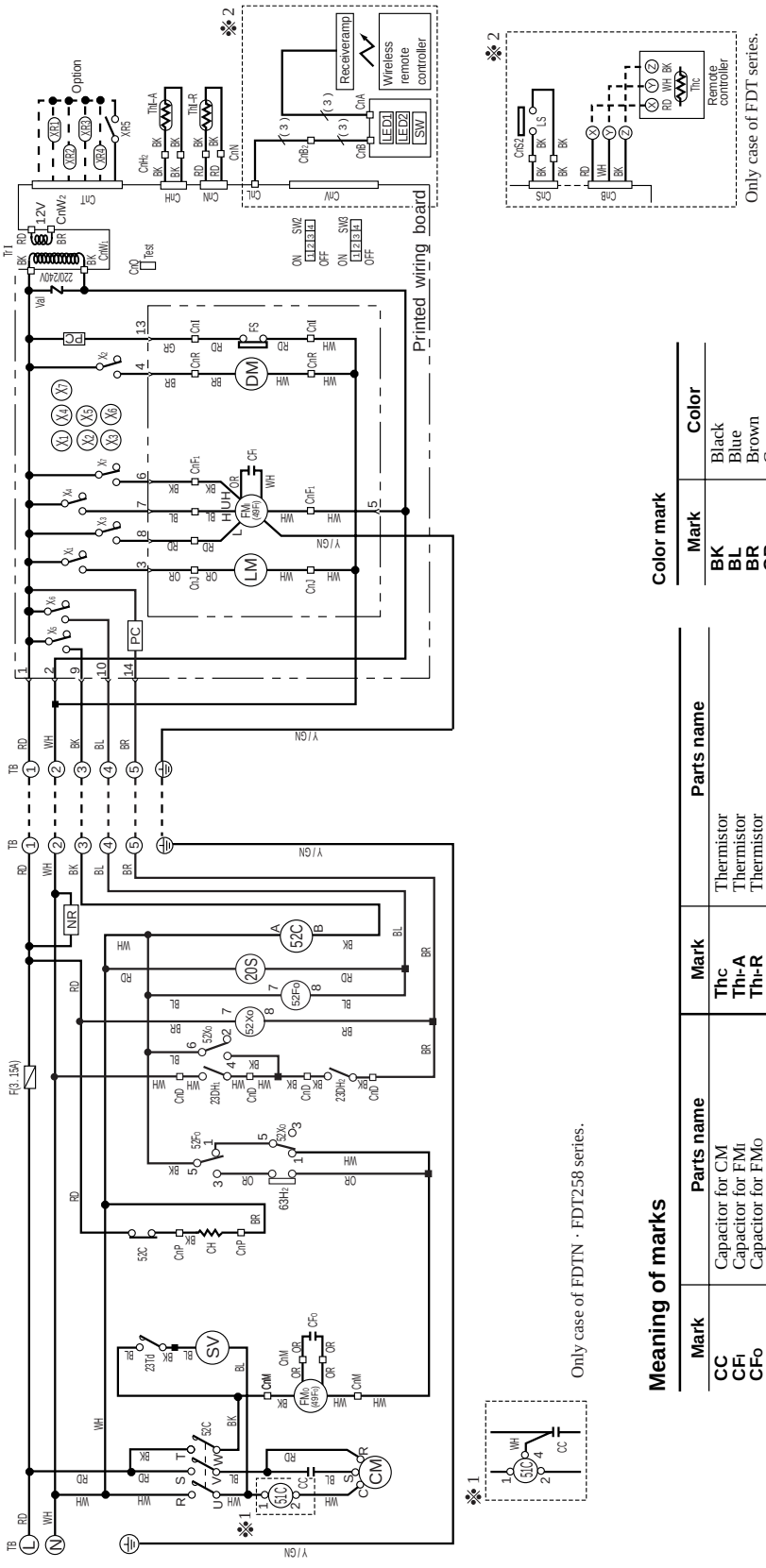
6.3 ELECTRICAL DATA

6.3.1 Electrical wiring

Models **FDTN208HEN-S, 258HEN-S**
FDT208HEN-S, 258HEN-S

This diagram indicates the FDTN208 series. ※1 is for FDTN258 series.
※2 is for FDT208 series. Sections from ※1 and ※2 change on the FDT258 series.

Power source
1 Phase 220/240V 50Hz



Color mark

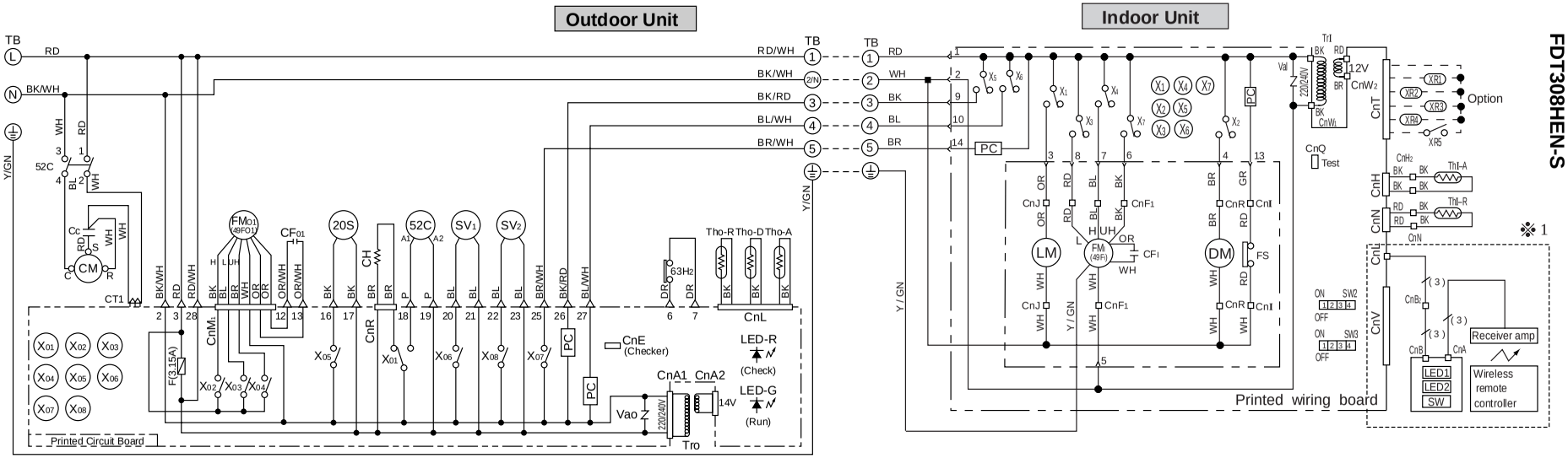
Mark	Color
BK	Black
BL	Blue
BR	Brown
GR	Gray
OR	Orange
RD	Red
WH	White
Y/GN	Yellow/Green

Meaning of marks

Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	Thc	Thermistor
CFi	Capacitor for FMi	Thi-A	Thermistor
CFo	Capacitor for FMo	Thi-R	Thermistor
CH	Crankcase heater	Trl	Transformer
CM	Compressor motor	Val	Varistor
CnA ~ W	Connector (□ mark)	20S	4-way valve solenoid
DM	Drain motor	23DH	Thermostat (deicer)
F	Fuse	23Td	Thermostat
FMi	Fan motor(Indoor unit)	49Fi	Internal thermostat for FMi
FMo	Fan motor (Outdoor unit)	49Fo	Internal thermostat for FMo
FS	Float switch	51C	Overcurrent relay for CM
LED1	Indication lamp (Green - Run)	52C	Magnetic contactor for CM
LED2	Indication lamp (Yellow - Timer/Check)	52Fo	Relay for FMo
LM	Louver motor	52Xo	Relay for fan control
LS	Limit switch	X1~7	Auxiliary relay
NR	Surge suppressor	63H2	High pressure switch (for control)
PC	Photo coupler	▽	Terminal (F)
SV	Solenoid coil (for control)	■	Connector
SW	Switch (ON/OFF)		
SW2, 3	Changeover switch		
TB	Terminal block (◯ mark)		

Power source
1 Phase 220/240V 50Hz

[This diagram indicates the FDTN series. Section from ※1 changes on the FDT series.]



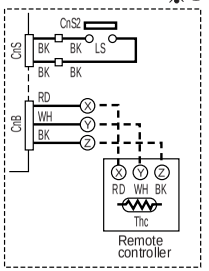
Meaning of marks

Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	**Thc**	Thermistor
CFI	Capacitor for FMI	**ThI-A**	Thermistor
CFo	Capacitor for FMO	**ThI-R**	Thermistor
CH	Crankcase heater	**Tho-A**	Thermistor
CM	Compressor motor	**Tho-D**	Thermistor
CnA ~ W	Connector (□ mark)	**Tho-R**	Thermistor
CT1	Current sensor	**TrI**	Transformer (Indoor unit)
F	Fuse	**Tro**	Transformer (Outdoor unit)
FMI	Fan motor (Indoor unit)	**Val**	Varistor
FMo	Fan motor (Outdoor unit)	**Vao**	Varistor
LED1	Indication lamp (Green - Run)	**20S**	4-way valve solenoid
LED2	Indication lamp (Yellow - Timer/Check)	**49FI**	Internal thermostat for FMI
LM	Louver motor	**49Fo**	Internal thermostat for FMo
LS	Limit switch	**52C**	Magnetic contactor for CM
PC	Photo coupler	**X1~7**	Auxiliary relay
SV1,2	Solenoid coil (for control)	**X01~8**	Auxiliary relay
SW	Switch (ON/OFF)	**63H2**	High pressure switch (for control)
SW2, 3	Changeover switch	◁	Terminal (F)
TB	Terminal block (○ mark)	■	Connector
DM	Drain motor	**LED-G**	Indication lamp (Green)
FS	Float switch	**LED-R**	Indication lamp (Red)

Color mark

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

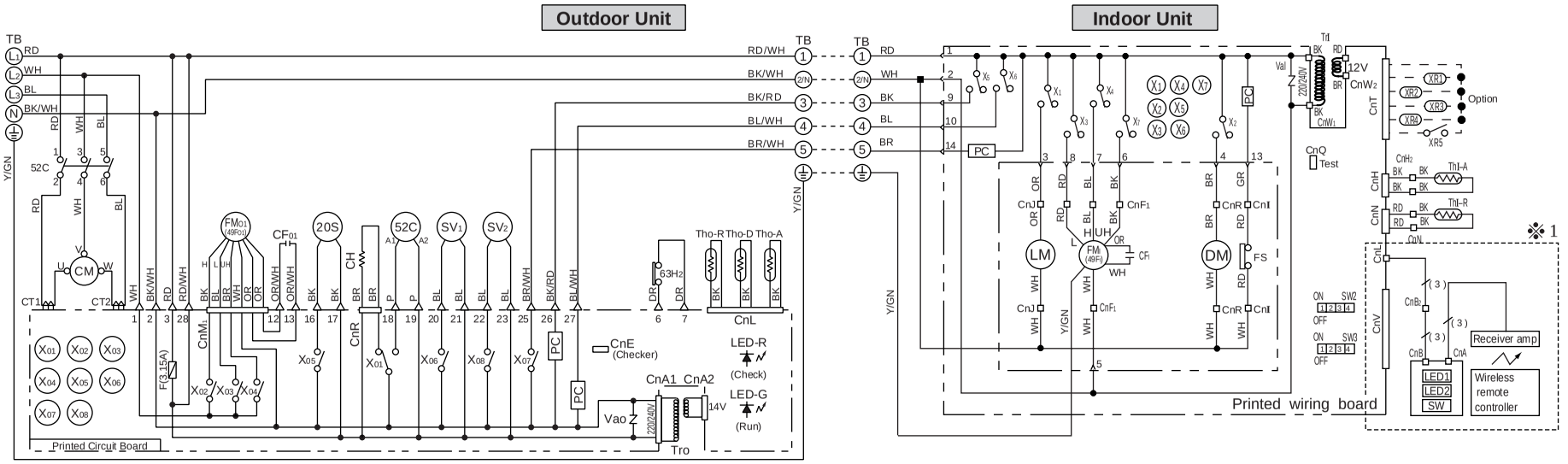
※1



Only case of FDT series.

Power source
3 Phase 380/415V 50Hz

[This diagram indicates the FDTN series. Section from ※1 changes on the FDT series.]



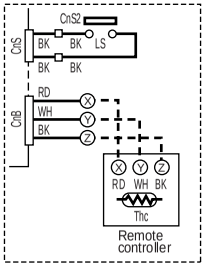
Meaning of marks

Mark	Parts name	Mark	Parts name
CFI	Capacitor for FMI	**ThI-R**	Thermistor
CFO1	Capacitor for FMO	**Tho-A**	Thermistor
CH	Crankcase heater	**Tho-D**	Thermistor
CM	Compressor motor	**Tho-R**	Thermistor
CnA ~ Z	Connector (□ mark)	**TrI**	Transformer (Indoor unit)
CT1,2	Current sensor	**Tro**	Transformer (Outdoor unit)
F	Fuse	**Val**	Varistor
FMI	Fan motor (Indoor unit)	**Vao**	Varistor
FMO1	Fan motor (Outdoor unit)	**20S**	4-way valve solenoid
LM	Louver motor	**49FI**	Internal thermostat for FMI
LS	Limit switch	**49FO1**	Internal thermostat for FMO
DM	Drain motor	**52C**	Magnetic contactor for CM
FS	Float switch	**X1~7**	Auxiliary relay
PC	Photo coupler	**X01~08**	Auxiliary relay
SV1,2	Solenoid coil (for control)	**63H2**	High pressure switch (for control)
SW	Switch (ON/OFF)	◁	Terminal (F)
SW2, 3	Changeover switch	■	Connector
TB	Terminal block (◯ mark)	**LED-G**	Indication lamp (Green)
Thc	Thermistor	**LED-R**	Indication lamp (Red)
ThI-A	Thermistor		

Color mark

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

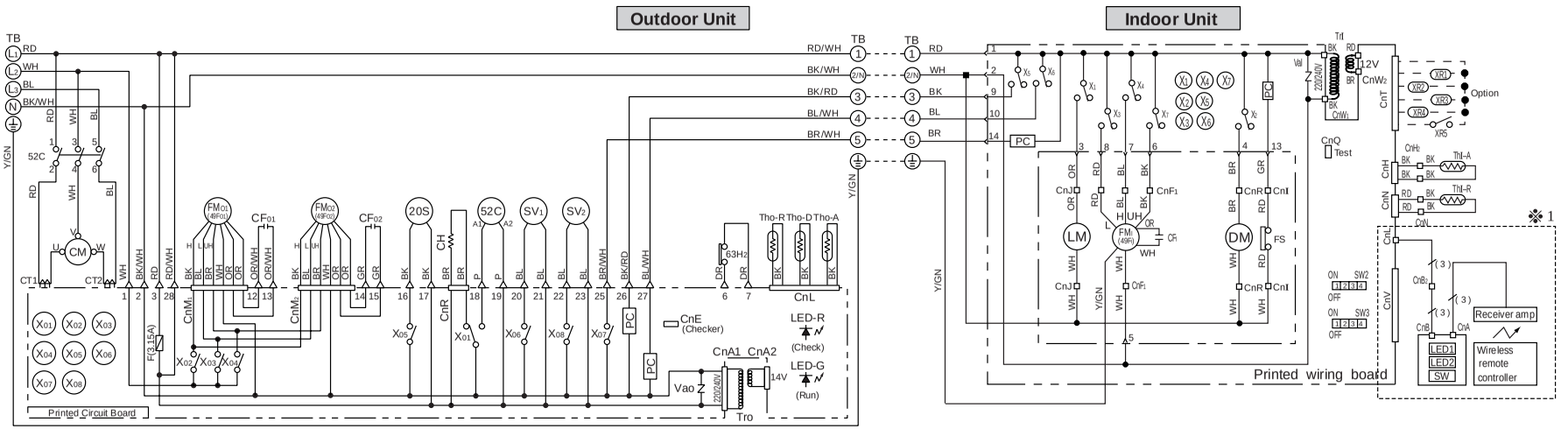
※1

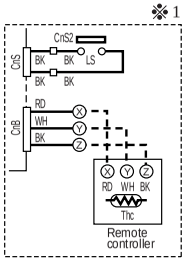


Only case of FDT series.

Power source
3 Phase 380/415V 50Hz

[This diagram indicates the FDTN series. Section from ※1 changes on the FDT series.]





Only case of FDT series.

Meaning of marks

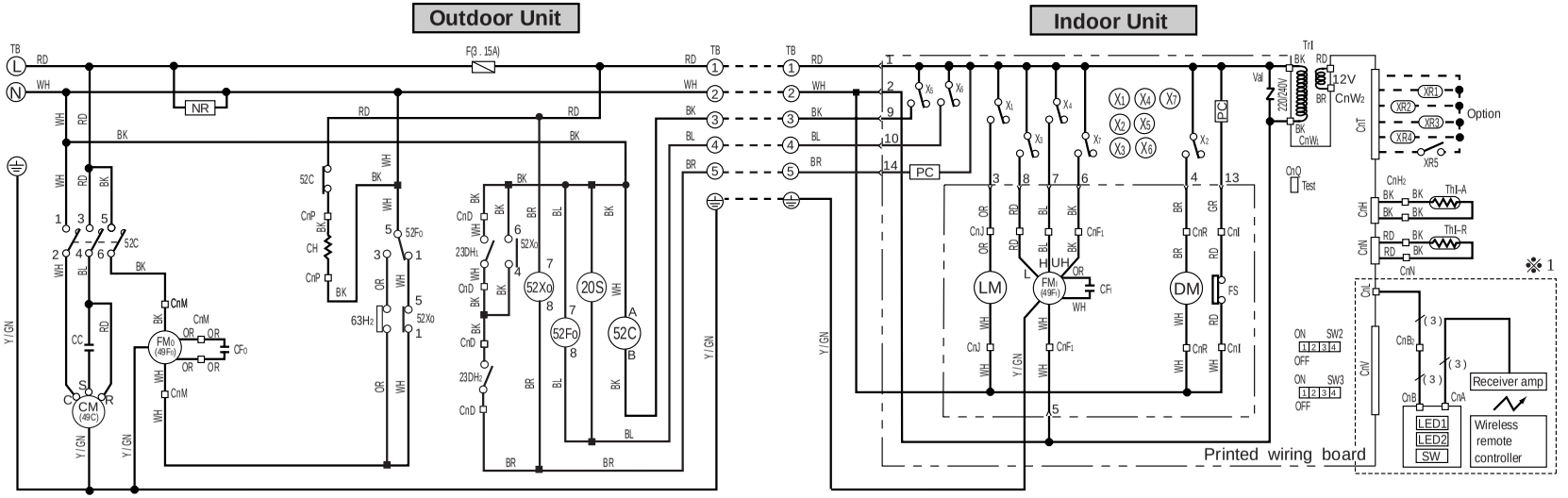
Mark	Parts name	Mark	Parts name
CFI	Capacitor for FMI	**THI-R**	Thermistor
CFO1,2	Capacitor for FMO	**Tho-A**	Thermistor
CH	Crankcase heater	**Tho-D**	Thermistor
CM	Compressor motor	**Tho-R**	Thermistor
CnA ~ Z	Connector (□ mark)	**TrI**	Transformer (Indoor unit)
CT1,2	Current sensor	**TrO**	Transformer (Outdoor unit)
F	Fuse	**Val**	Varistor
FMI	Fan motor (Indoor unit)	**Vao**	Varistor
FMO1,2	Fan motor (Outdoor unit)	**20S**	4-way valve solenoid
LM	Louver motor	**49FI**	Internal thermostat for FMI
LS	Limit switch	**49FO1,2**	Internal thermostat for FMO
DM	Drain motor	**52C**	Magnetic contactor for CM
FS	Float switch	**X1~7**	Auxiliary relay
PC	Photo coupler	**X01~08**	Auxiliary relay
SV1,2	Solenoid coil (for control)	**63H2**	High pressure switch (for control)
SW	Switch (ON/OFF)	◁	Terminal (F)
SW2,3	Changeover switch	■	Connector
TB	Terminal block (○ mark)	**LED-G**	Indication lamp (Green)
Thc	Thermistor	**LED-R**	Indication lamp (Red)
THI-A	Thermistor		

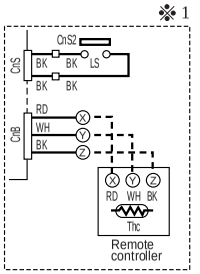
Color mark

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

Power source
FDTN208HEN, 258HEN, 308HEN, FDT308HEN
1 Phase 220/240V 50Hz
FDTN208HEP, 258HEP, 308HEP
1 Phase 220V 60Hz

[This diagram indicates the FDTN series. Section from ※1 changes on the FDT series.]





Only case of FDT series.

Meaning of marks

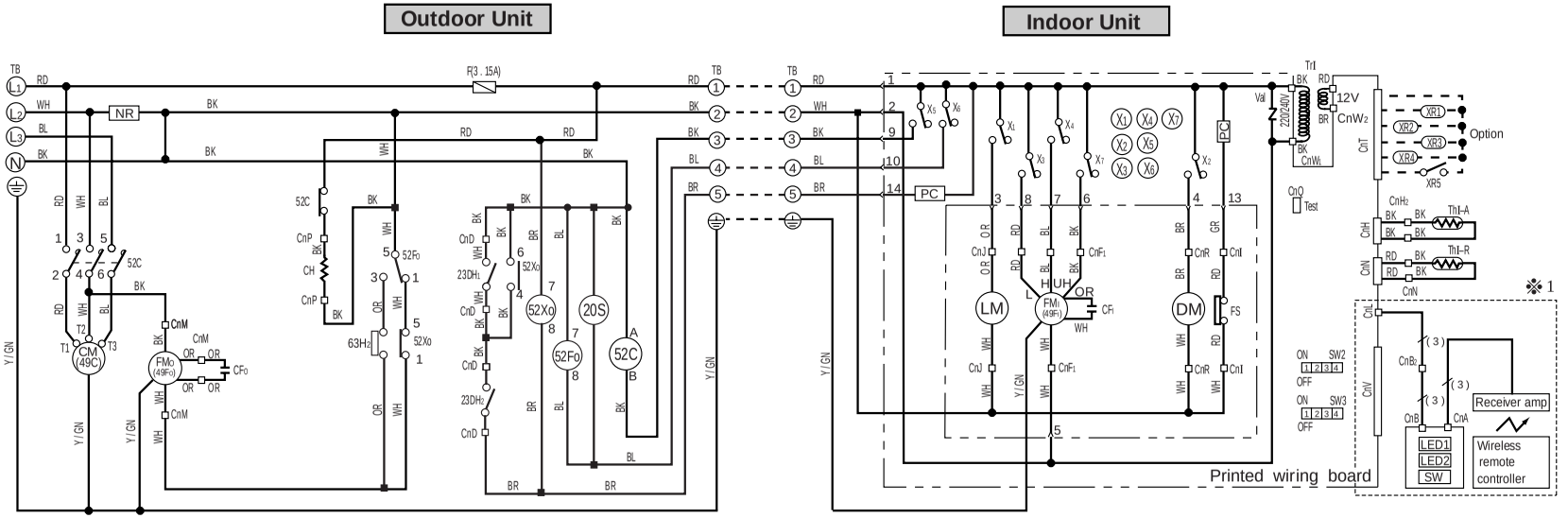
Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	**Thc**	Thermistor
CFI	Capacitor for FMI	**THI-A**	Thermistor
CFO	Capacitor for FMO	**THI-R**	Thermistor
CH	Crankcase heater	**TrI**	Transformer
CM	Compressor motor	**Val**	Varistor
CnA ~ W	Connector (□ mark)	**20S**	4-way valve solenoid
DM	Drain motor	**23DH**	Thermostat (deicer)
F	Fuse	**49C**	Internal thermostat for CM
FMI	Fan motor (Indoor unit)	**49FI**	Internal thermostat for FMI
FMO	Fan motor (Outdoor unit)	**49FO**	Internal thermostat for FMO
FS	Float switch	**52C**	Magnetic contactor for CM
LED1	Indication lamp (Green - Run)	**52FO**	Relay for FMO
LED2	Indication lamp (Yellow - Timer/Check)	**52XO**	Relay for fan control
LM	Louver motor	**X1~7**	Auxiliary relay
LS	Limit switch	**63H2**	High pressure switch (for control)
NR	Surge suppressor	◁	Terminal (F)
PC	Photo coupler	■	Connector
SW	Switch (ON/OFF)		
SW2, 3	Changeover switch		
TB	Terminal block (○ mark)		

Color mark

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

Power Source
3 Phase 380-415V 50Hz / 380V 60Hz

[This diagram indicates the FDTN series. Section from ※ 1 changes on the FDT series.]



Only case of FDT series.

Meaning of marks

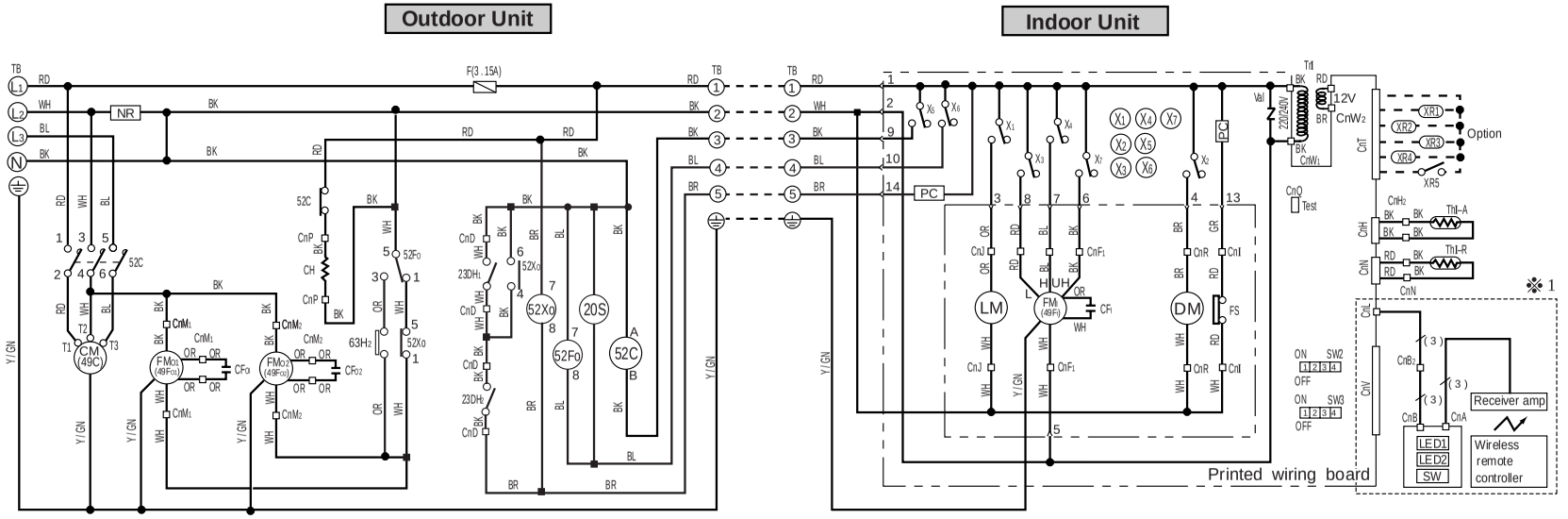
Mark	Parts name	Mark	Parts name
CFI	Capacitor for FMI	**Thc**	Thermistor
CFo	Capacitor for FMo	**ThI-A**	Thermistor
CH	Crankcase heater	**ThI-R**	Thermistor
CM	Compressor motor	**TrI**	Transformer
CnA ~ W	Connector (□ mark)	**Val**	Varistor
DM	Drain motor	**20S**	4-way valve solenoid
F	Fuse	**23DH**	Thermostat (deicer)
FMI	Fan motor (Indoor unit)	**49C**	Internal thermostat for CM
FMo	Fan motor (Outdoor unit)	**49FI**	Internal thermostat for FMI
FS	Float switch	**49Fo**	Internal thermostat for FMo
LED1	Indication lamp (Green - Run)	**52C**	Magnetic contactor for CM
LED2	Indication lamp (Yellow - Timer/Check)	**52Fo**	Relay for FMo
LM	Louver motor	**52Xo**	Relay for fan control
LS	Limit switch	**X1~7**	Auxiliary relay
NR	Surge suppressor	**63H2**	High pressure switch (for control)
PC	Photo coupler	◁	Terminal (F)
SW	Switch (ON/OFF)	■	Connector
SW2, 3	Changeover switch		
TB	Terminal block (○ mark)		

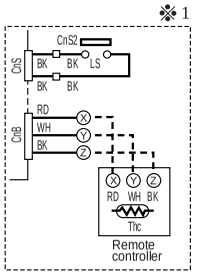
Color mark

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

Power Source
3 Phase 380-415V 50Hz / 380V 60Hz

[This diagram indicates the FDTN series. Section from ※1 changes on the FDT series.]





Only case of FDT series.

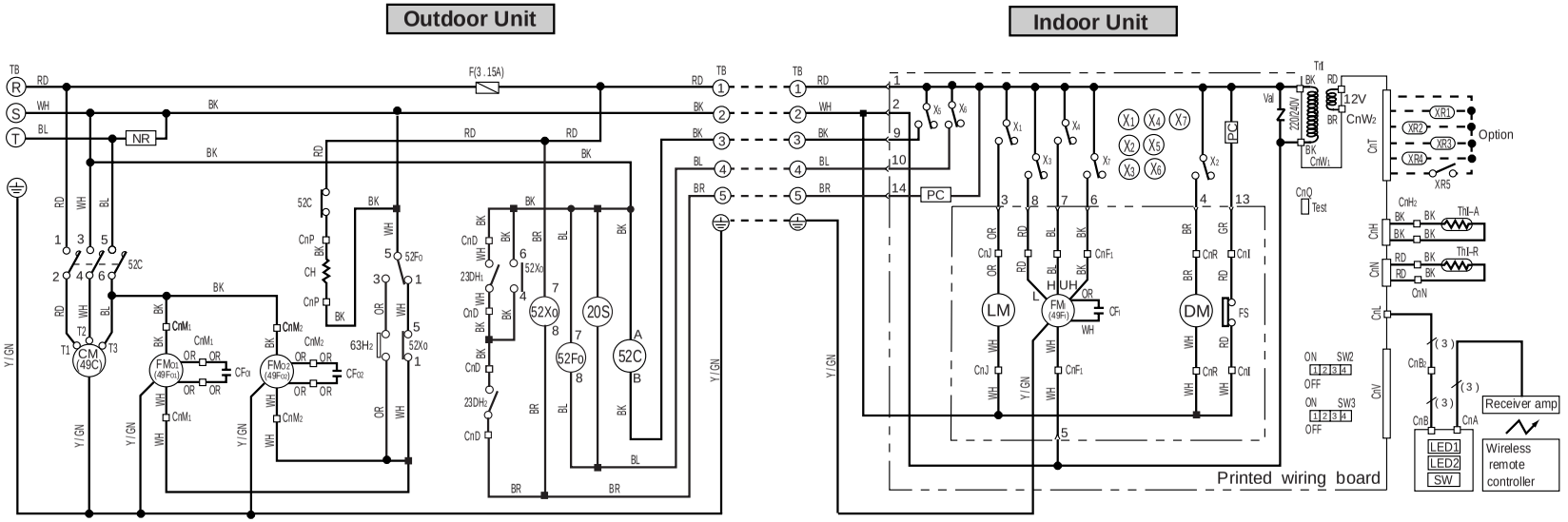
Meaning of marks

Mark	Parts name	Mark	Parts name
CFI	Capacitor for FMI	**Thc**	Thermistor
CFO1,2	Capacitor for FMO	**THI-A**	Thermistor
CH	Crankcase heater	**THI-R**	Thermistor
CM	Compressor motor	**TrI**	Transformer
CnA ~ W	Connector (□ mark)	**Val**	Varistor
DM	Drain motor	**20S**	4-way valve solenoid
F	Fuse	**23DH**	Thermostat (deicer)
FMI	Fan motor (Indoor unit)	**49C**	Internal thermostat for CM
FMO1,2	Fan motor (Outdoor unit)	**49FI**	Internal thermostat for FMI
FS	Float switch	**49FO1,2**	Internal thermostat for FMO
LED1	Indication lamp (Green - Run)	**52C**	Magnetic contactor for CM
LED2	Indication lamp (Yellow - Timer/Check)	**52FO**	Relay for FMO
LM	Louver motor	**52XO**	Relay for fan control
LS	Limit switch	**X1~7**	Auxiliary relay
NR	Surge suppressor	**63H2**	High pressure switch (for control)
PC	Photo coupler	◁	Terminal (F)
SW	Switch (ON/OFF)	■	Connector
SW2, 3	Changeover switch		
TB	Terminal block (◯ mark)		

Color mark

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

Power source
3 Phase 230V 50Hz / 220V 60Hz



Meaning of marks

Mark	Parts name	Mark	Parts name
CFI	Capacitor for FMI	**Thl-A**	Thermistor
CFO1,2	Capacitor for FMO	**Thl-R**	Thermistor
CH	Crankcase heater	**Trl**	Transformer
CM	Compressor motor	**Val**	Varistor
CnA ~ W	Connector (□ mark)	**20S**	4-way valve solenoid
DM	Drain motor	**23DH**	Thermostat (deicer)
F	Fuse	**49C**	Internal thermostat for CM
FMI	Fan motor (Indoor unit)	**49FI**	Internal thermostat for FMI
FMO1,2	Fan motor (Outdoor unit)	**49FO1,2**	Internal thermostat for FMO
FS	Float switch	**52C**	Magnetic contactor for CM
LED1	Indication lamp (Green - Run)	**52FO**	Relay for FMO
LED2	Indication lamp (Yellow - Timer/Check)	**52XO**	Relay for fan control
LM	Louver motor	**X1~7**	Auxiliary relay
NR	Surge suppressor	**63H2**	High pressure switch (for control)
PC	Photo coupler	◁	Terminal (F)
SW	Switch (ON/OFF)	■	Connector
SW2, 3	Changeover switch		
TB	Terminal block (◯ mark)		

Color mark

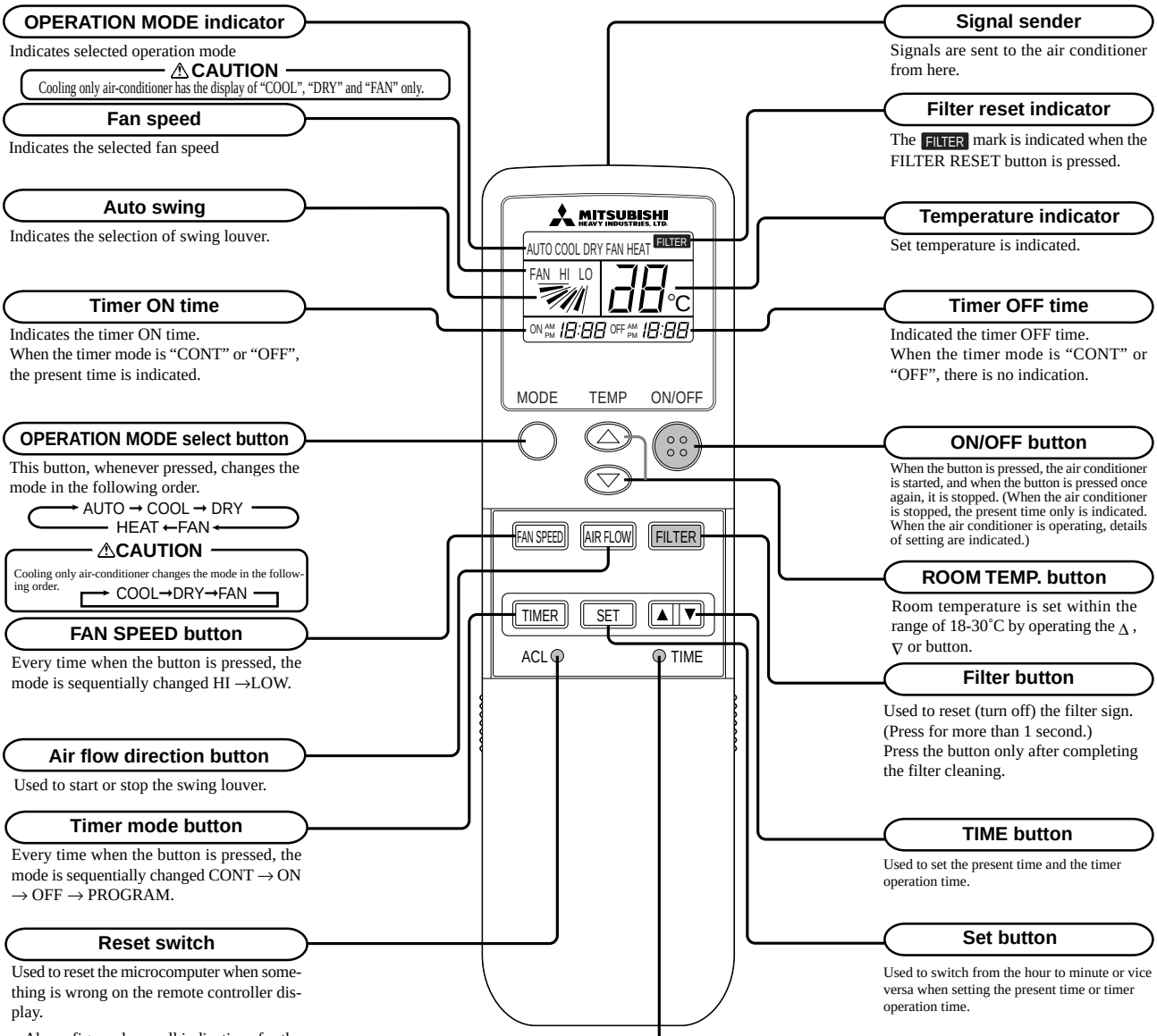
Mark	Color
BK	Black
BL	Blue
BR	Brown
GR	Gray
OR	Orange
RD	Red
WH	White
Y/GN	Yellow/Green

6.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Wireless remote controller

Models FDTN, FDEN, FDKN series

(a) Remote controller



OPERATION MODE indicator

Indicates selected operation mode

⚠CAUTION

Cooling only air-conditioner has the display of "COOL", "DRY" and "FAN" only.

Fan speed

Indicates the selected fan speed

Auto swing

Indicates the selection of swing louver.

Timer ON time

Indicates the timer ON time.
When the timer mode is "CONT" or "OFF", the present time is indicated.

OPERATION MODE select button

This button, whenever pressed, changes the mode in the following order.

AUTO → COOL → DRY
HEAT ← FAN

⚠CAUTION

Cooling only air-conditioner changes the mode in the following order.

COOL→DRY→FAN

FAN SPEED button

Every time when the button is pressed, the mode is sequentially changed HI →LOW.

Air flow direction button

Used to start or stop the swing louver.

Timer mode button

Every time when the button is pressed, the mode is sequentially changed CONT → ON → OFF → PROGRAM.

Reset switch

Used to reset the microcomputer when something is wrong on the remote controller display.

- Above figure shows all indications for the purpose of explanation, but practically only the pertinent parts are indicated.

Signal sender

Signals are sent to the air conditioner from here.

Filter reset indicator

The FILTER mark is indicated when the FILTER RESET button is pressed.

Temperature indicator

Set temperature is indicated.

Timer OFF time

Indicated the timer OFF time.
When the timer mode is "CONT" or "OFF", there is no indication.

ON/OFF button

When the button is pressed, the air conditioner is started, and when the button is pressed once again, it is stopped. (When the air conditioner is stopped, the present time only is indicated. When the air conditioner is operating, details of setting are indicated.)

ROOM TEMP. button

Room temperature is set within the range of 18-30˚C by operating the Δ, ∇ or button.

Filter button

Used to reset (turn off) the filter sign. (Press for more than 1 second.)
Press the button only after completing the filter cleaning.

TIME button

Used to set the present time and the timer operation time.

Set button

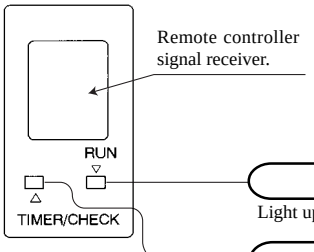
Used to switch from the hour to minute or vice versa when setting the present time or timer operation time.

Clock switch

Press this before setting the present time.

(b) Indoor unit indicators

Model FDTN series



RUN LAMP (GREEN)

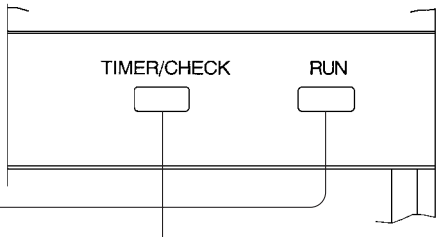
Light up : Air conditioner is operating.

TIMER/CHECK (YELLOW)

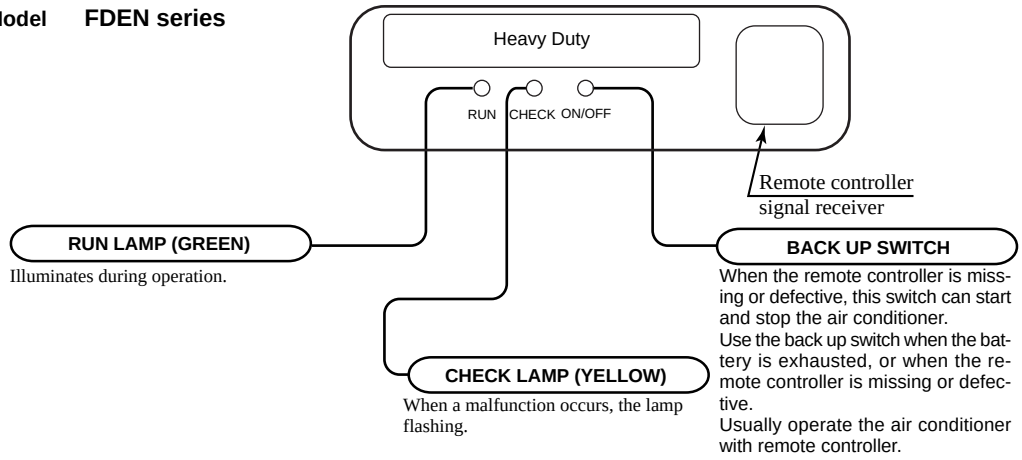
Light up : Timer mode operating.

Flashing : When some error occurs.

Model FDKN series



Model FDEN series



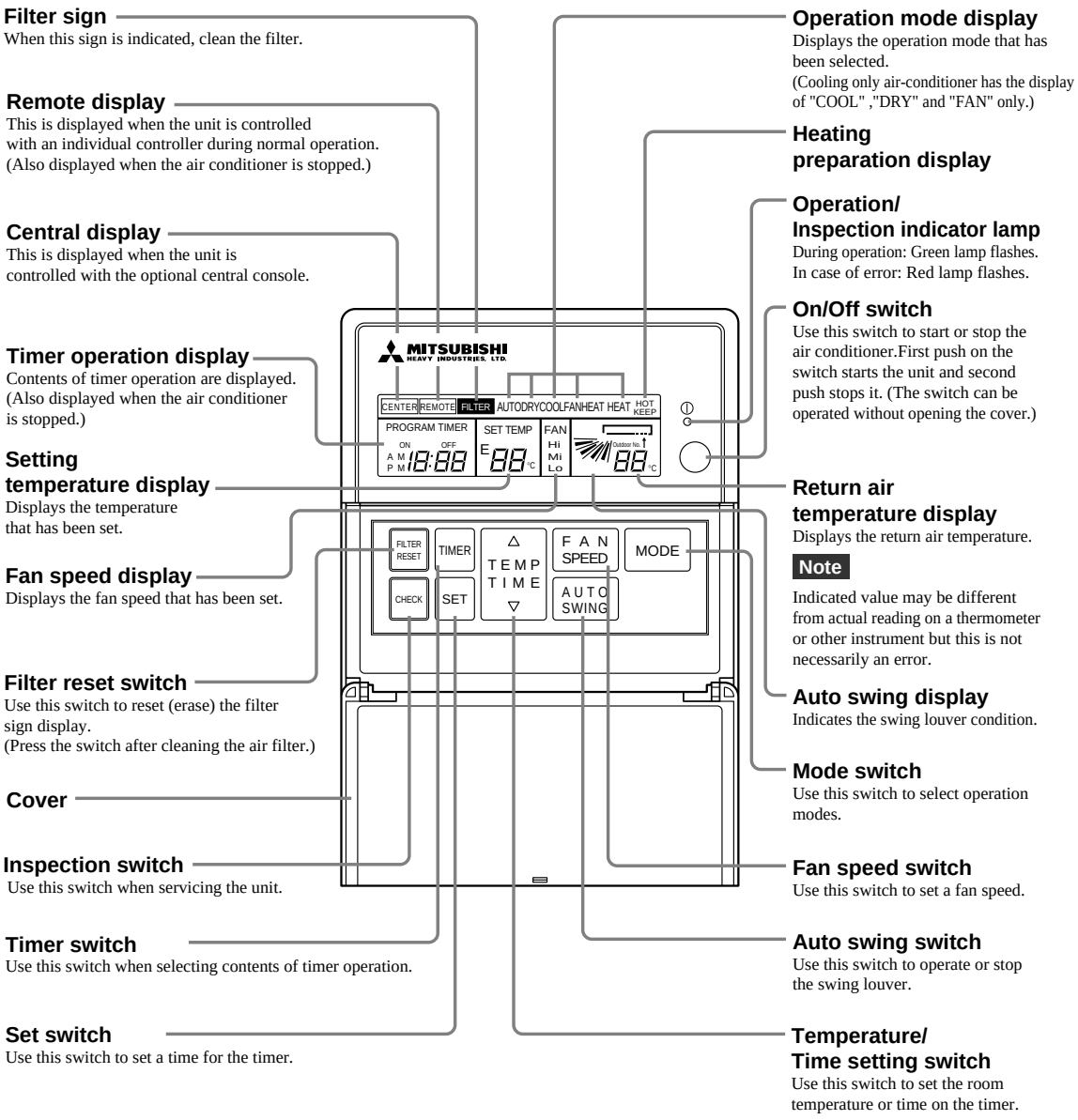
(2) Wired remote controller

Models FDT, FDR, FDU, FDUM, FDFL series

FDR,FDU, FDUM and FDFL 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.

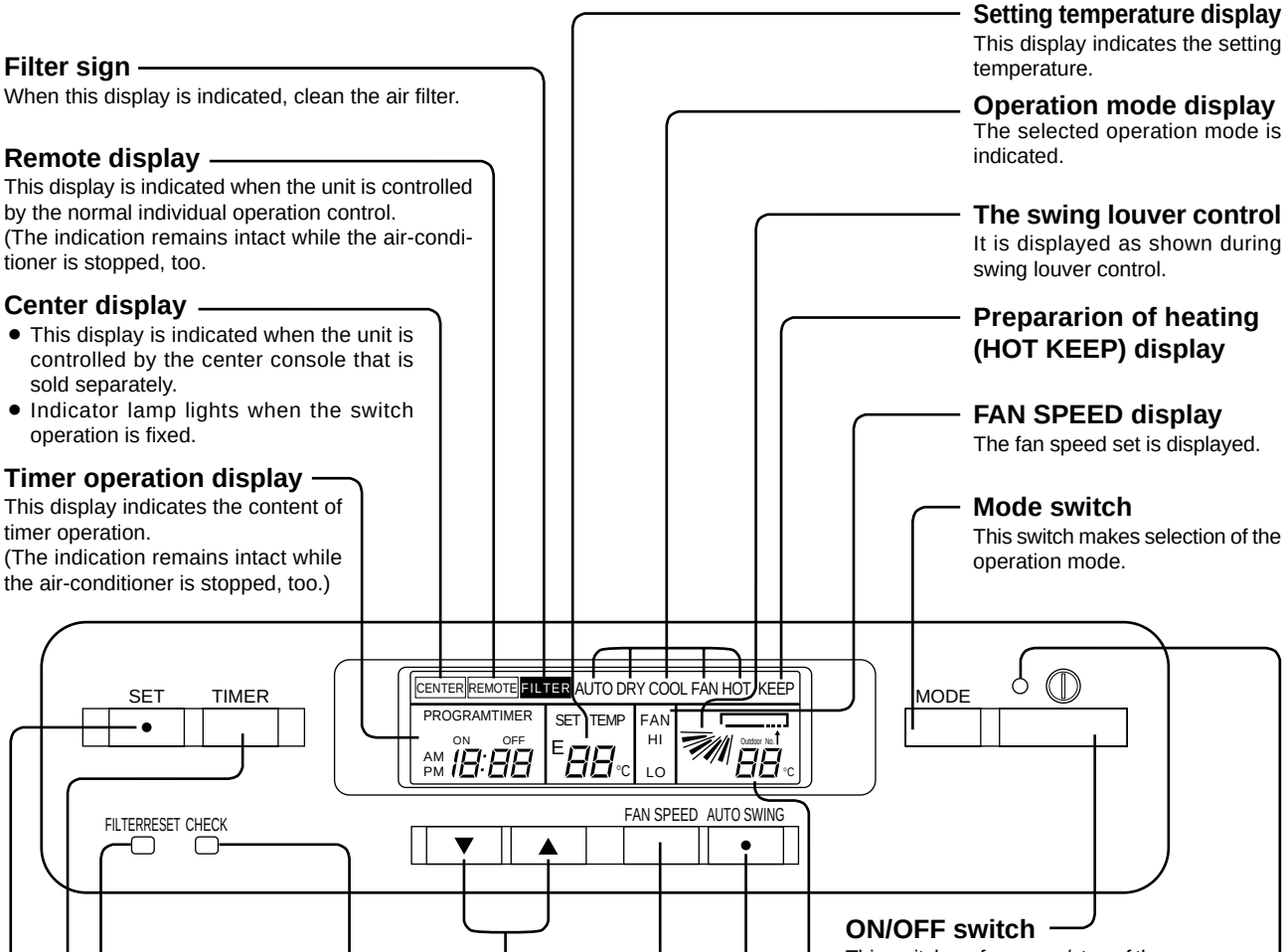
Pull the knob on the cover to this side to open it downward.



(3) Control switch

Model FDF series

The liquid crystal display area indicates the full contents of display for explanation.



Filter sign
When this display is indicated, clean the air filter.

Remote display
This display is indicated when the unit is controlled by the normal individual operation control.
(The indication remains intact while the air-conditioner is stopped, too.

Center display
- This display is indicated when the unit is controlled by the center console that is sold separately.
- Indicator lamp lights when the switch operation is fixed.

Timer operation display
This display indicates the content of timer operation.
(The indication remains intact while the air-conditioner is stopped, too.)

Setting temperature display
This display indicates the setting temperature.

Operation mode display
The selected operation mode is indicated.

The swing louver control
It is displayed as shown during swing louver control.

Prepararion of heating (HOT KEEP) display

FAN SPEED display
The fan speed set is displayed.

Mode switch
This switch makes selection of the operation mode.

ON/OFF switch
This switch performs run/stop of the air-conditioner. Press switch once to “run” and press it again to “stop”.

Operation/check indication lamp
During normal operation: Green lamp is lit.
When an error occurred: Red lamp flickers.

Check switch
This switch is used for service.

Filter reset switch
This switch resets (erases) the filter sign display.
(Press this switch after the cleaning of filter has been finished.)

Return air temperature display
The temperature of return air is indicated.

NOTE
The indicated temperature value may be different from the indication of thermometer, etc. but this is not abnormal.

Timer switch
This switch is used to select the content of timer operation.

Auto swing switch
Activates and stops the swing louver.

FAN SPEED switch
The fan speed is switched.

Setting switch
This switch is used to set the timer time.

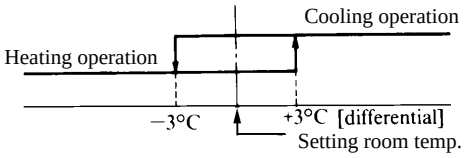
Temperature setting/time setting switch
This switch is used to set the room temperature and the timer time.

(4) Outline of microcomputer control function

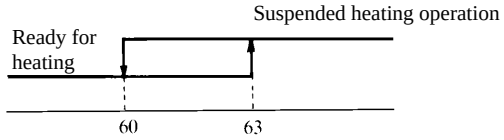
(a) Operation control function by the indoor controller

1) Automatic operation (Only heat pump type)

If the Auto mode is selected on the remote control device, the selection of cooling or heating can be made automatically depending on the room temperature (and the temperature of indoor heat exchanger). (When the switching between the cooling and the heating is made within 3 minutes, the compressor will not operate for 3 minutes.) This will make much easier the switching of cooling/heating at the change of season and can be adapted to the unmanned operation at bank cash dispenser.



Room temp. (detected at $Th_{1\text{-}A}$) [deg]



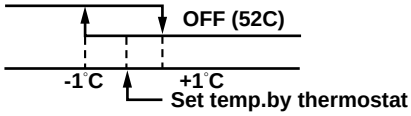
Indoor heat exchanger temperature (˚C)

Notes (1) During the automatic switching of cooling/heating the room temperature is controlled based on the setting of room temperature (DIFF:±}1 deg)

(2) If the temperature of indoor heat exchanger rises beyond 63˚C during the heating operation, it is switched automatically to the cooling operation. For an hour after this switching, the heating operation is suspended regardless of the temperature as shown at left.

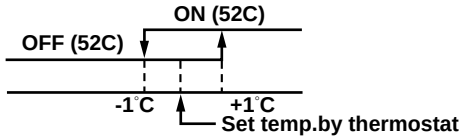
2) Room temperature control (Differential of thermostat)

Heating operation



Temperature difference between thermostat set temp. and return air temp. (Detected by ThI-A)

Cooling operation



Temperature difference between thermostat set temp. and return air temp. (Detected by ThI-A)

3) Control parts operation during cooling and heating

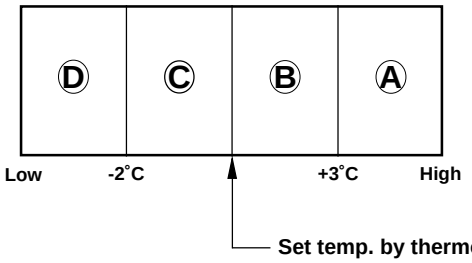
Function / Control part	Cooling		Fan	Heating				Dry	
	Thermostat ON	Thermostat OFF	–	Thermostat ON	Thermostat OFF	Defrost	HOT START	Thermostat ON	Thermostat OFF
Compressor	○	×	×	○	×	○	○	○	×
4-way valve	×	×	×	○	×	×	○	×	×
Outdoor fan	○	×	×	○	×	×	○	○	×
Indoor fan	○		○	○/×				○	
Louver motor	○/×								
Condensate motor	○	x (2min. ON)	x (2min. ON)	× (2min. ON)				○	x (2min. ON)
Electric heater	×		×	○/×	×			×	

Note(1)
○ :ON
× :OFF
○/× :According to control other than temperature control.

4) Dehumidifying operation ("THERMAL DRY")

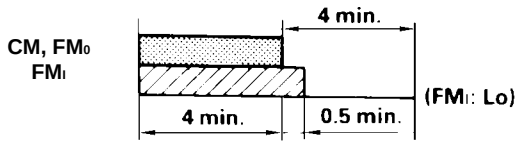
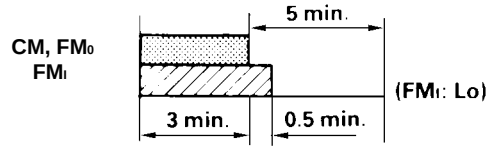
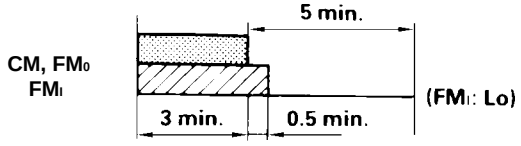
The compressor, the indoor fan motor and the outdoor fan motor are operated intermittently under thermistor (ThI-A) control according to the appropriate operation block, to provide cooling operation for the dehumidifying.

Operation block



Pattern of operation

CM, FM_O: ON FM_I: ON

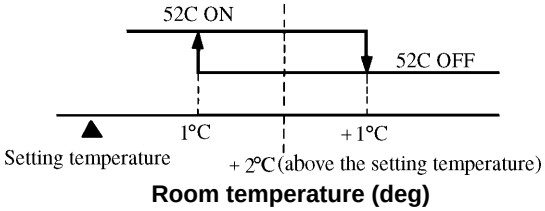
Operation block	Thermal drying starting (for 8 or 16 minutes after operation started)	Normal thermal dry operation (after completion of thermal drying)
Ⓐ	(16 minutes)	(8 minutes) Continuous cooling operation (FM_I:Lo)
Ⓑ	• Cooling operation (Thermostat ON) • Indoor fan operating with the setting air flow. • When the thermostat is turned off, the indoor fan operates for 30 seconds with the Lo operation in the wind blowing mode and then stops.	(8 minutes) 
Ⓒ	(8 minutes) 	(8 minutes) 
Ⓓ		(8 minutes) All stoppage

Notes (1) **Operation block ⒶⒷ : Normal cooling operation for 16 minutes after operation is started.**
Operation stops by thermostat when the set temperature is reached.
After 16 minutes, normal thermal drying operation starts.
Operation block ⒸⒹ : Operation as above is performed for 8 minutes.
After 8 minutes, normal thermal drying operation starts.

(2) **In normal operation, the temperature is checked at 8 minute intervals** after normal thermal drying operation is started, **to determine which operation block is to the selected.**
Operation block Ⓐ thermal drying is carried out if the thermostat set temperature is constant.

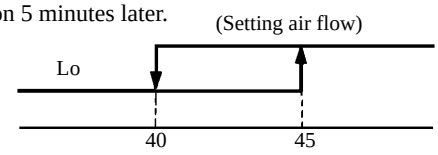
5) Hot spurt (Only heat pump type)

In the hot spurt mode, the control is conducted at the level 2 ˚C higher than the setting temperature at the start of heating operation. The hot spurt is canceled either after the initial thermostat OFF, when the indoor heat exchanger temperature reaches 61˚C or 60 minutes after the start of the mode.



6) FM control with the heating thermostat turned off (For cold draft prevention) (Only heat pump type)

In order to prevent a cold draft while the heating thermostat is turned off, the indoor blower is controlled in response to the temperature of the indoor heat exchanger as illustrated below. It should be noted that if SW3-4 on the indoor PCB is turned off, the indoor blower will stop so far as the temperature of the indoor heat exchanger is lower than 40˚C. It will be turned to the Lo operation 5 minutes later.



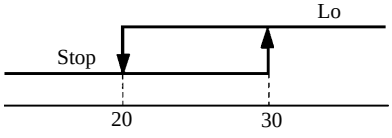
Note (1) After the thermostat is reset, it returns to the hot start control.

7) Hot start (Cold draft prevention during heating) (Only heat pump type)

1) If the indoor heat exchanger temperature is lower than 30˚C when the heating operation has started, the following indoor blower control is performed.
   (1) In case of the thermostat off condition: Lo operation
   (2) In case of the thermostat on condition : Stop
   (3) If the indoor heat exchanger temperature exceeds 30˚C or 7 minutes after the beginning of hot start, the hot start terminates and it returns to the setting airflow of the blower.
2) If the indoor heat exchanger temperature is lower than 30˚C when the unit is heating under the thermo-ON condition, the indoor fan operates in the Lo mode. As the temperature rises higher than 30 ˚C or 7 minutes after the beginning of hot start, the hot start terminates and it returns to the setting air flow.

8) Indoor fan control during defrost operation (Only heat pump type)

1) The indoor fan operation is changed from the setting airflow to the Lo operation 40 seconds before the start of defrost operation (when the defrost thermostat is turned ON) and stops if the indoor heat exchanger temperature drops below 20˚C.
2) After the stop as described in 1)-above, the control will be conducted as illustrated below depending on the indoor heat exchanger temperature.



Indoor heat exchanger temperature(˚C)

3) If the indoor heat exchanger temperature rises beyond 30˚C of 7 minutes after the end of defrosting, the indoor fan control related to the defrosting is completed.

9) Condensate pump motor (DM) control (Only FDTN, FDT, FDR, FDUM models)

During the cooling or Dehumidifying operation, the condensate pump motor (DM) is synchronized with the start of compressor operation. If the operation is switched from the operation stop, error stop, thermostat stop and the cooling of defrosting operation to the fan or heating operation, the drain motor continues to operate for 2 minutes after the switching.

Overflow detection by means of the float switch is always on regardless of the operation mode. If an overflow occurs (or the float switch is not connected or the wire is broken), the operation is interrupted as the error stop and the drain motor is operated until the state of float switch is normalized.

10) Defrost control (FDC208, 258 or 6 series only)

Defrost operation is precisely controlled with the defrost thermostat ($23DH_{1,2}$) and a timer.

a) Defrost starting conditions

Defrost operation will start only when all of following conditions are met.

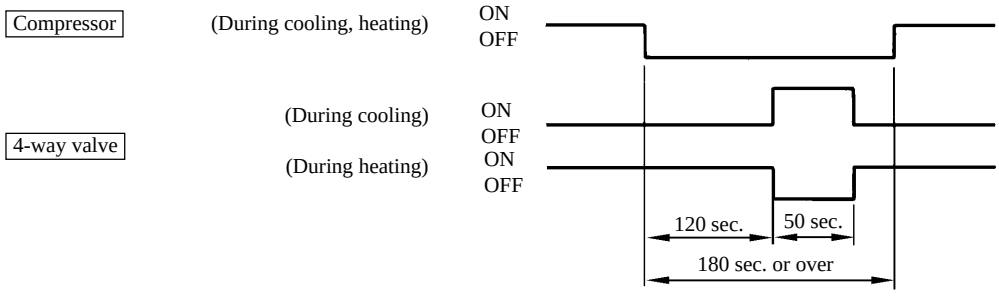
1) When the compressor operation time accumulated after the start of heating operation exceeds 30 minutes.
2) When the compressor operation time accumulated after the end of defrost operation exceeds 45 minutes.
3) When the defrost thermostat (23DH1) is turned ON (-6˚C)

b) Defrost terminating condition

If the defrost thermostat (23DH2) is turned OFF (12˚C) or 12 minutes after the start of defrost operation, the defrost operation is canceled and it returns to the heating operation.

11) 4-way valve control (1 phase models only and heat pump only) (FDC208, 258 or 6 series only)

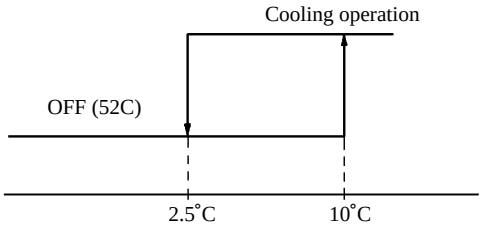
In order to maintain the pressure balance after the stop of compressor during cooling, dehumidifying and heating operation. the 4-way valve is controlled repeatedly as illustrated below.



12) Frost prevention during cooling (For indoor heat exchanger)

In order to prevent the frosting during cooling operation, the temperature of indoor unit heat exchanger (detected by Th_{I-R}) is checked 9 min, after the compressor operation start and the unit operation.

This cycle is not operated for 9 min. after the resetting of this frost prevention mechanism.



Indoor heat exchanger (ThI-R)

13) Compressor inching prevention control (FDC208, 258 or 6 series only)

a) Compressor 3 minutes delay control

The compressor will remain in stop state for three 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 three-minute delay timer is cancelled.

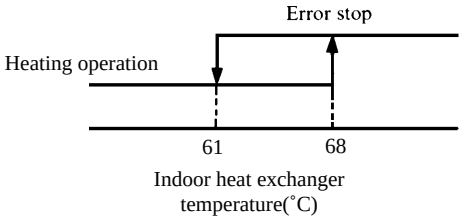
b) Compressor 3 minutes forced operation control

Compressor cannot be stopped for 3 minutes after it started. However, it will be stopped immediately when the thermostat is turned off due to the operation stop initiated by the ON/OFF switch or the change of operation mode.

Note (1) Both the error control and the protective control take priority over this control.

14) Overload protection during heating (Only heat pump type)

If an overload condition has been detected by the indoor heat exchanger temperature and it has continued for more than 2 seconds during heating, the compressor is stopped. The compressor is started after a delay of 3 minutes and, if the overload condition is detected again whithin 60 minutes after the initial detection, the compressor is stopped with the error stop.



15) Automatic restart control

If there is interruption of power while the unit is operating, the unit operates after power restoration under the same condition as prior to the power interruption. However the compressor will only be able to start three minutes after the power restoration. Furthermore, if the timer was operating prior to the power interruption, the unit remains stopped even after the restoration of service.

Note (1) Becomes invalid if the dip switch SW3-1 on the indoor PC board is at OFF (SW3-1 is set at ON when unit is shipped from the factory).

16) Thermistor disconnection detection control

a) Detection of indoor return air thermistor disconnection

- If there is detection of a disconnection on the return air thermistor in 10 seconds after turning the power ON, the compressor is stopped. If there is a second disconnection on the return air thermistor detected within 60 minutes, there is emergency stop.

Note (1) If the first disconnection on the return air thermistor is detected for a period of 6 continuous minutes, there is emergency stop. If there is no detection of a second disconnection on the return air thermistor whithin 60 minutes, the first detection becomes invalid.

b) Detection of heat exchanger thermistor disconnection

- If a disconnection is detected on the heat exchanger thermistor in 20 seconds after the compressor has been operating for 2 minutes, the compressor is stopped. If a second disconnection on the heat exchanger thermistor line is detected within 60 minutes, there is emergency stop.

Note (1) If the first disconnection on the heat exchanger thermistor is detected for a period 6 continuous minutes, there is emergency stop.

If there is no detection of second disconnection on the heat exchanger thermistor within 60 minutes, the first detection becomes invalid.

17) Drain detection (Only FDTN, FDT, FDR, FDUM models)

a) If there is detection of a drain abnormality during cooling operation, the drain pump goes ON for 5 minutes and the compressor which had been running comes to a stop.
Overflow detection is carried out at all times with the float switch regardless of operational mode. If an overflow is generated (or if the float switch is not yet connected or has been disconnected). there is emergency stop (while the Check lamp (yellow) blinks 4 times) the drain motor operates until reset of the float switch.

b) If a drain abnormality is detected during cooling operation, there is emergency stop (while the Check lamp (yellow) blinks 4 times) to stop the compressor, and the drain pump is operated with the drain motor until reset of the float switch.

c) If a drain abnormality is detected during a stop state or fan operation, there is forced operation of the drain pump for 5 minutes. After 5 minutes have elapsed, the drain motor stops if the float switch is reset. Otherwise, there is emergency stop (wile the Check lamp (yellow) blinks 4 times) and the drain motor operates until the float switch is reset.

d) If the float switch is not connected or if there is a disconnection, there is emergency stop.

18) Low voltage guard control

If the power source voltage remains at a value of 80% of rating or less for 3 continuous minutes during operation of the compressor, the compressor stops (52C OFF). Furthermore, if the power source voltage remains at a figure of 15% of rating or greater after 3 minutes have elapsed since stopping the compressor, there is restarting of the compressor (52C ON). Moreover, during stoppage of the compressor, the Run lamp (green) blinks 2 times.

Note (1) When starting the compressor for the first time after turning the operational switch ON, there is starting regardless of the power source voltage. Furthermore, if dip switch SW 3-2 on the internal substrate is OFF, this becomes invalid. (Switch SW 3-2 is set to ON upon shipment from the factory).

19) Refrigerant shortage error

When 52C is ON when operating in cooling (including automatic cooling), if heat exchanger sensor temperature for the indoor unit (Th_1 -R) does not drop to 25 °C or less for 40 minutes 5 minutes or more after the start of operation, an abnormal stop due to insufficient refrigerant is performed.

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

- **External control (remote display) output**

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

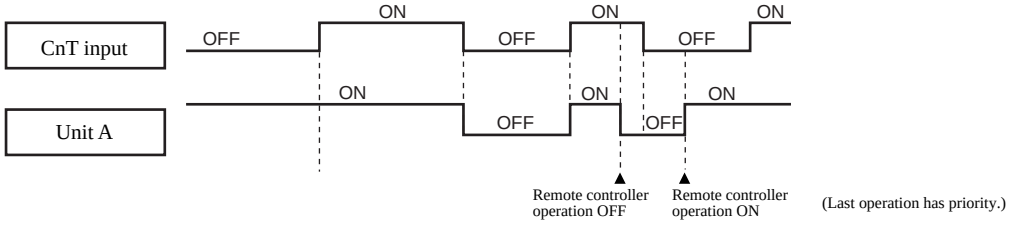
- Operation output: Power to engage DC 12V relay (provided by the customer) is outputted during operation.
- Heating output: Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.
- Compressor ON output: Power to engage DC 12V relay (provided by the customer)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

- **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.)

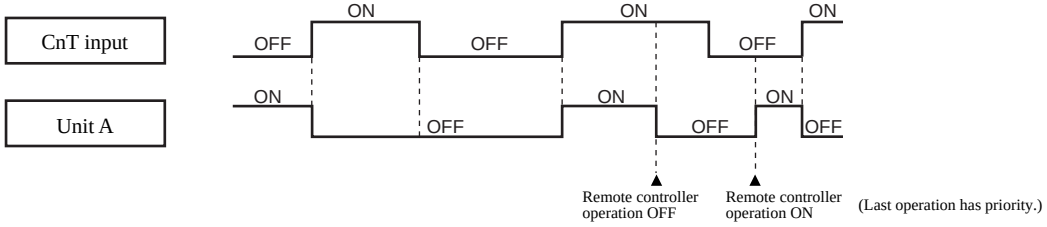
Control of input signal (switch input, timer input) connectors (CNT) are provided on the control circuit board of the indoor unit. However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

- At shipping from factory (SW5-3 [J3] on PCB OFF)
  - Input signal to CnT OFF → ON [Edge input] ... Air conditioner ON
  - Input signal to CnT ON → OFF [Edge input] ... Air conditioner OFF



- When SW5-3 (J3) 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.



21) Auto Swing Control (Excepted FDR, FDU, FDUM, FDF models)

- Have a louver motor to move the louvers up and down for the so called “auto swing” function.
- The louver auto swing starts when the AUTO SWING key is pressed once and stops when the AUTO SWING key is pressed again. **The louver position is displayed on the LCD on the remote controller.** During auto swing, the position displayed on the LCD 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.)
- **Stopping the louvers**

  When the AUTO SWING key 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 J7 ($SW_{4\text{-}4}$) on the indoor unit printed circuit board is cut, the louvers stop immediately at the AUTO SWING key is pressed to stop them and the LCD display changes to show this position. (Excepted FDKN model)
- **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.

- **Keeping the louvers horizontal during heating (Only heat pump type)**

  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 key (auto swing or stop). The louver position display of LCD displays continuously the original position before this control operation.

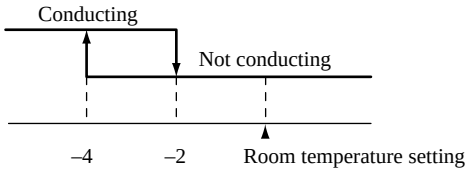
  When the **HOT KEEP display goes out,** both the louvers and the LCD display return to their previous position.

  (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 settings of the ON / OFF or AUTO SWING keys).

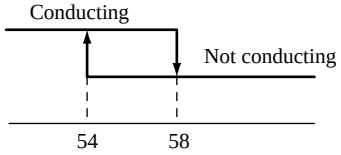
22) Auxiliary Electric Heater (Only FDF model)

(1) This control is enabled when an auxiliary heater is used. As shown in the drawing below, since the ON/OFF control is performed by the temperature of the thermostat and the air heat exchanger (both of them conduct electricity during electrical conditions), control with high responsiveness to the load is performed.

Note that there is no conductivity when the fan for the indoor unit is stopped (including hot start), when the compressor is stopped and when the defroster is operating.



Room temperature ($Th_{I\text{-}A}$ detected) [deg]

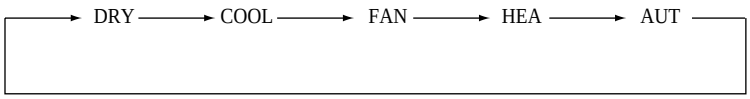


Indoor heat exchanger temperature (°C)

(2) When the heater changes from conducting to not conducting, even when the indoor fan (FMI) has been stopped (operation stop by the operating switch or abnormal stop) the indoor fan will operate at low speed for 40 seconds before shutting off to remove surplus heat from the heater.

(b) Operation control function by the wired remote controller

(i) The following is the sequence of operation for the remote controller operation mode switch.



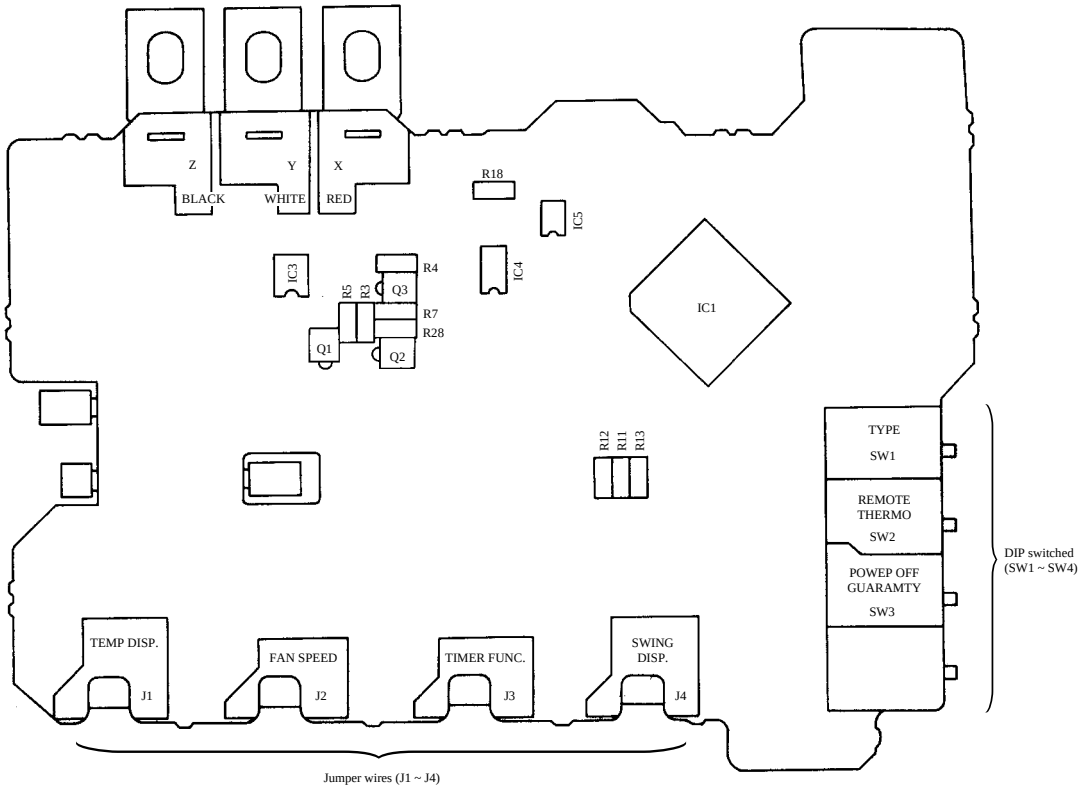
(ii) CPU reset

This functions when the " inspection " and " filter reset switch " on the remote controller are pushed simultaneously. It operates in the same manner as the power reset.

(iii) Power outage compensation function.

- This is enabled by setting dip switch SW3 on the remote control circuit board to ON.
- It records the normally used remote control modes. Once power has been restored, it restarts operation by using the contents of the memory. Note that the stop positions for auto swing and the timer mode are cancelled.

Parts layout on the remote controller PCB



• Function of DIP switched

Switch		Function
SW1	ON	Cooling only type
	OFF	Heat pump type
SW2	ON	Remote control sensor - Enabled
	OFF	Remote control sensor - Disabled
SW3	ON	Power outage compensation - ON
	OFF	Power outage compensation - OFF

• Function of Jumper wires

Switch		Function
J1	Wich	Inlet temperature display - Enabled
	None (1)	Inlet temperature display - Disabled
J2	Wich	Fan display - 3 speeds
	None (1)	Fan display - 2 speeds
J3	Wich	Timer function - Enabled (Normal)
	None (1)	Timer function - Disabled
J4	Wich	Auto swing display - ON
	None (1)	Auto swing display - OFF

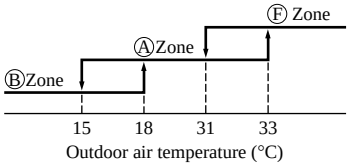
Note (1) 'None' means that jumper wire is not provided on the PCB or the connection ic cut.

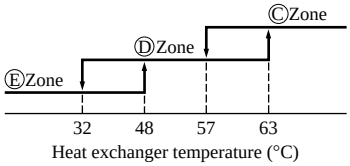
(c) Operation control function by the outdoor controller (Only case of FDC308, 408, 508 type)

1) Control for outdoor unit fan

a) Cooling Operation

The speed of the fan for the outdoor unit is controlled by the temperature of the heat exchanger (Tho-R detection) and the outdoor air temperature (Tho-A).





Description of control for fan for outdoor unit

Tho-A (°C) / Tho-R (°C)	Ⓕ Zone	Ⓐ Zone	Ⓑ Zone
Ⓒ Zone	UHi	UHi	UHi
Ⓓ Zone	UHi	Hi	Hi
Ⓔ Zone	UHi	Hi	Lo

b) Heating Operation

① Stop control for outdoor fan

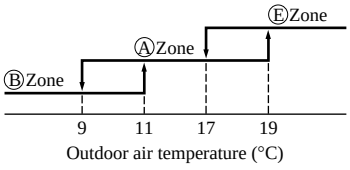
When the high pressure switch ($63H_2$) operates, the fan for the outdoor unit is stopped to control the high pressure switch.

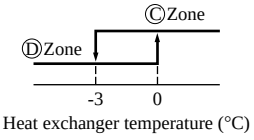
$63H_2$ settings

2.5 OFF/2.06 ON (MPa) [25.5 OFF/21 ON (kgf/cm^2G)]

② Tap control for outdoor fan

When the high pressure switch ($63H_2$) is closed, the outdoor fan is controlled by the detected heat of the outdoor heat exchanger thermistor (Tho-R) and the detected heat of the outdoor air temperature thermistor (Tho-A).





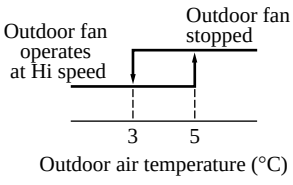
Description of control for fan for outdoor unit

Tho-A (°C) / Tho-R (°C)	Ⓔ Zone	Ⓐ Zone	Ⓑ Zone
Ⓒ Zone	Lo	Hi	UHi
Ⓓ Zone	Hi	UHi	UHi

Note (1) When the fan for the outdoor unit is started when the outdoor air temperature is more than 12 °C, it will operate at high speed for 3 seconds and then switch to low speed. After operating a low speed for 4 minutes, it will be transferred to controlled speed.

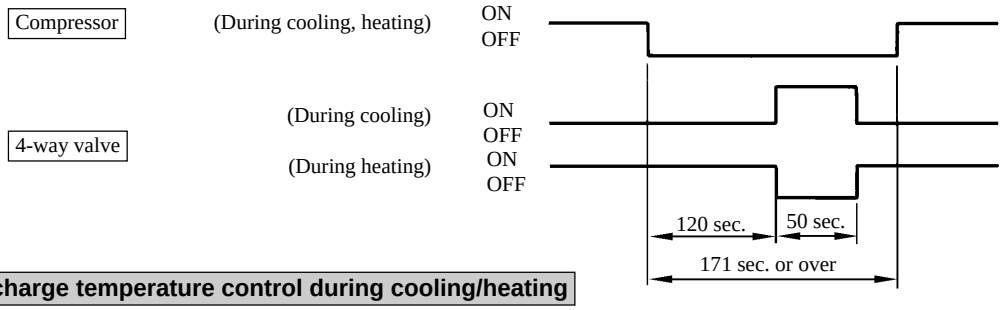
2) Control of fan for outdoor unit for de-icing

If DIP switch SW5-2 on the printed circuit board for the outdoor unit is set to on, the fan on the outdoor unit which has been stopped will operate for 10 seconds at Hi speed every 10 minutes when the outdoor air temperature is 3 °C or less.



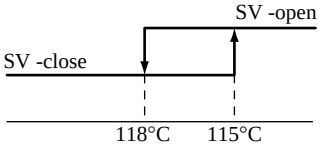
3) 4-way valve control (1 phase models only)

In order to maintain the pressure balance after the stop of compressor during cooling, dehumidifying and heating operation. the 4-way valve is controlled repeatedly as illustrated below.



4) Discharge temperature control during cooling/heating

As the discharge gas temperature (detected with Th_{O-D}) rises during cooling/heating operation, the capillary bypass and the liquid bypass solenoid valve (SV1) are opened so that the abnormal rise of discharge gas temperature is prevented.

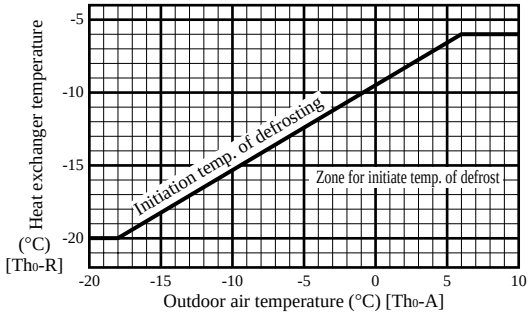


Discharge gas temp.

5) Defrost control

Defrost operation will start when the temperature of the heat exchanger for the outdoor unit (Tho-R detection) and the outdoor air temperature (Tho-A detection) enter the start of defrost range shown in the figure below.

Initiation temp. of defrosting (Detected by Tho-R, Tho-A)



Note (1) If DIP switch SW5-1 on the printed circuit board for the outdoor unit is set to on, defrost operation will begin when temperature of the heat exchanger for the outdoor unit reaches -7 °C.

a) Defrost Operation

Switching of the control of the 4-way selector valve during defrost operation can be performed by enabling/disabling the jumper wire (J17) on the printed circuit board for the outdoor unit.

(i) J17 None (4-way selector valve ON during heater operation)
Defrost operation is performed with the compressor on, the fan for the outdoor unit off and the 4-way selector valve off.

(ii) J17 With (4-way selector valve OFF during heater operation)
Defrost operation is performed with the compressor on, the fan for the outdoor unit off and the 4-way selector valve on.

b) Defrost finished

(i) Once defrost operation has started, it will finish after the cumulative operating time of the compressor has reached 12 minutes (factory setting: SW5-1 OFF).

Note (1) This time will become 14 minutes if the DIP switch (SW5-1) on the printed circuit board on the outdoor unit is set to on.

(ii) Switching of the defrost recovery time can be performed by enabling/disabling the jumper wire (J18) on the printed circuit board for the outdoor unit.

J18 (SW6-2) With: 14 °C, J18 (SW6-2) None: 18 °C

6) Compressor protecting function (Microcomputer and phase protection relay)

a) Overcurrent control

(i) When a 52C secondary L_1-phase continues for 0.5 seconds and when it is more than the set value (detection at current sensor CT), the compressor is stopped. The compressor is restarted after a 3-minute delay if the detection current is less than 1.5 to 2A. If this condition is re-detected 5 times within 60 minutes of the first occurrence, an abnormal stop of the unit is performed.

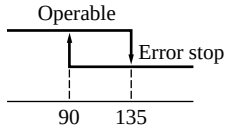
(ii) If 60 minutes passes and the detected current after the first to the fourth stoppage is not less than 1.5~2A, an abnormal stop of the unit is performed.

b) Open-phase Protection

When a 52C secondary detection current continues for 4 seconds when the compressor is on and when it is less than 1.5 to 2 A, it is determined to be a open-phase of the 52C secondary N-phase, and the compressor is stopped. The compressor is restarted after a 3-minute delay and if this condition is re-detected within 60 minutes of the first occurrence, an abnormal stop of the unit is performed.

c) Detection of Abnormal Discharge Temperature

(i) When an abnormally high temperature is detected at the discharge pipe of the compressor (Tho-D detection), the compressor is stopped. The compressor is restarted after a 3-minute delay and if this condition is re-detected 5 times within 60 minutes of the first occurrence, an abnormal stop of the unit is performed.

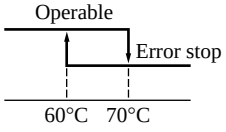


(ii) If 60 minutes passes and the detected temperature after the first to the fourth stoppage is not less than 90 °C, an abnormal stop of the unit is performed.

Note (1) Once an abnormal discharge temperature has occurred, restarting cannot be performed for 45 minutes. [Detection temperature less than 3 °C]. (In failure mode, resetting cannot be performed by remote control.) Operation is possible after 45 minutes. (Cleared by resetting power source.)

d) Cooling overload protection

State of overload during cooling operation is detected (with Tho-R) based on the temperature of outdoor heat exchanger and the unit operation is stopped / Immediate reset after repair



e) Thermistor (Discharge Piping, Heat Exchanger and Outdoor Air Sensor) disconnected wire

(i) If there is a disconnected wire or if there is a big difference in performance characteristics, an abnormal stop of the unit is performed. ⇨ Restore after repairing.

f) Compressor inching prevention control

(i) Compressor 3 minutes delay control

The compressor will remain in stop state for three 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 three-minute delay timer is cancelled.

(ii) Compressor 3 minutes forced operation control

Compressor cannot be stopped for 3 minutes after it started. However, it will be stopped immediately when the thermostat is turned off due to the operation stop initiated by the ON/OFF switch or the change of operation mode.

Note (1) Both the error control and the protective control take priority over this control.

6.5 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 perchased 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 (R22) within the refrigeration cycle.
  Rupture and injury caused by abnormal high pressure can result from such mixing.
- 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.

6.5.1 Installation of indoor unit

⚠NOTICE

All Wiring of this installation must comply with NATIONAL, STATE AND LOCAL REGULATIONS. These instructions do not cover all variations for every kind of installation circumstance. Should further information be desired or should particular problems occur, the matter should be referred to Mitsubishi Heavy Industries, Ltd. through your local distributor.

⚠WARNING

BE SURE TO READ THESE INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE SERIOUS INJURY OR DEATH, EQUIPMENT MALFUNCTION AND/OR PROPERTY DAMAGE.

(1) Selection of installation location

(a) Select location where the space above ceiling is larger than those mentioned below and perfect draining can be assured.

(b) Places where perfect drainage can be prepared and sufficient drainage gradient is available.

(c) Places free from air distrubances to the air inlet and outlet of the indoor unit.

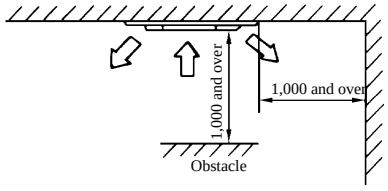
(d) laces with the environmental dew-point temperature is lower than 28°C and the relative humidity is less than 80%.(When installing at a place under a high humidity environment, pay sufficient attention to prevention of dewing such as thermally insulating the unit properly.)

(e) Do not place where the unit is exposed to oil splashes or steam (e.g. kitchens and machine plants). (Installation and use at such places will causes the performance drop, corrosion in the heat exchanger and damage in molded synthetic resin parts.)

(f) Do not place where corrosive gas (such as sulfurous acid gas) or inflammable gas (thinner, gasoline, etc.) is generated or remains. Installation and use at such places will cause corrosion in the heat exchanger and damage in molded synthetic resin parts.

Type	Space above ceiling
FDT(N) 208	Over 225 mm
FDT(N) 258, 308	Over 270 mm
FDT(N) 408, 508	Over 330 m**m**

● **Installation space** (mm)



(g) Do not place adjacent to equipment generating electromagnetic waves or high-frequency waves such as in hospitals, Generated noise may cause malfunctioning of the controller.

(2) Preparation for installation

(a) Ceiling hole size and Position of suspension bolts.

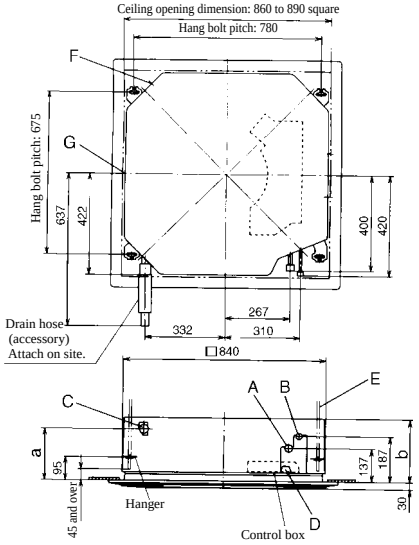
1) The pattern sheet may shrink or expand as humidity changes, so check the actual size before use.

2) The size of ceiling opening can be adjusted within the range shown below. Bring the unit body to the ceiling opening right in the center so as not to be set aside and so that space between a ceiling opening end and the outside of the unit body becomes equal to that on the opposite side.

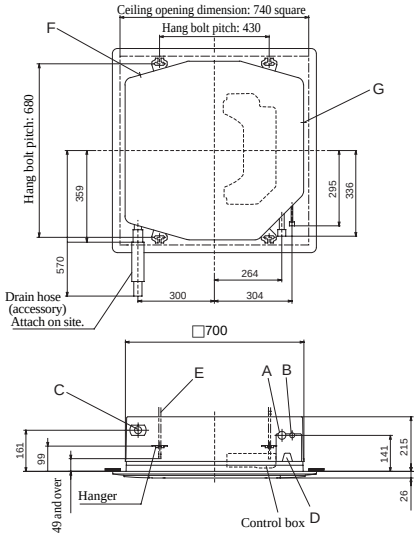
3) The size of the pattern sheet equals to the maximum size of the square ceiling opening.

(b) Location of Pipes

For the location of pipe, see the exterior dimension.



FDT(N) 258~508



FDT(N) 208

A	Gas refrigerant piping
B	Liquid refrigerant piping
C	Drain piping connecting hole
D	Power intake hole
E	Hang bolt
F	Outside air intake hole
G	Supply air branch duct connecting hole

Unit: mm

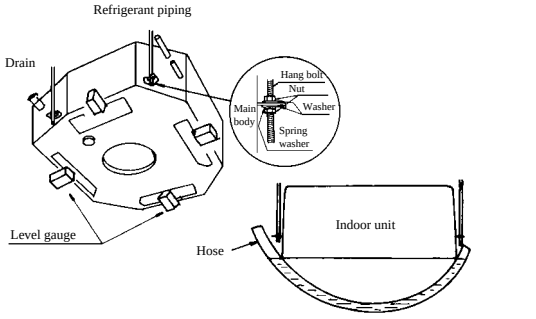
Model	a	b
258, 308	210	260
408, 508	270	320

(3) Hanging

- Arrange four sets of a hang bolt (M10 or M8) , a nut for it, a plain washer and a spring washer on site.

When there is the ceiling

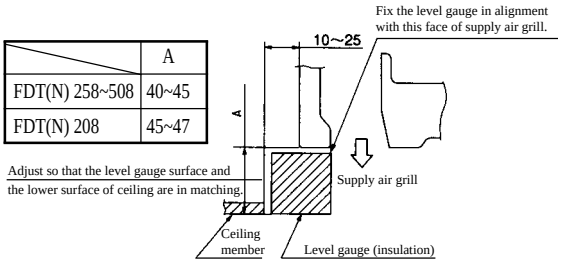
1. Make an 860 to 890 mm-square cutout on the ceiling.
   Refer to the outside dimensions of packing cardboard container.
   ▶ Align the center of ceiling cutout and the center of unit.
2. Decide the hang bolt position 675×780 in the case of FDT(N) 258 ~ 508, and 430×680 in the case of FDT(N) 208.
3. Use four hang bolts and fix them so that each bolt can resist the pull out load of 50kgf.
4. Decide the length of hang bolt to approx. 70mm above the ceiling surface.
5. After hanging in the unit, fix the attached level gauge and secure the height of unit.
6. Use a transparent hose filled with water to check the levelness of unit. (The maximum allowable height difference between both ends of unit is 3mm.)



Request

- For the hang bolt whose length exceeds 1.3m, use the M10 size hang bolt and moreover combine a diagonal member to the hang bolt for reinforcement.

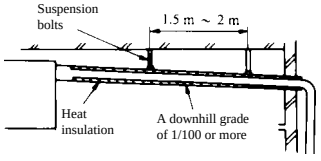
	A
FDT(N) 258~508	40~45
FDT(N) 208	45~47



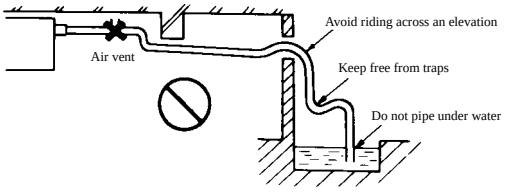
(4) Drain Piping

(a) Drain piping should always be in a downhili grade (1/50~1/100) and avoid riding across and elevation or making traps.

● Good piping

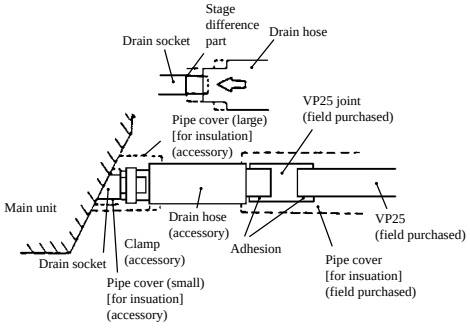


● Improper piping



(b) When connecting the drain pipe to unit, pay sufficient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.

(c) For drain pipe, use hard PVC general purpose pipe VP-25 (I.D.1") which can be purchased locally. When connecting, insert a PVC pipe end securely into the drain socket before tightening securely using the attached drain hose and clamp. Adhesive must not be used connection of the drain socket and drain hose (accessory).

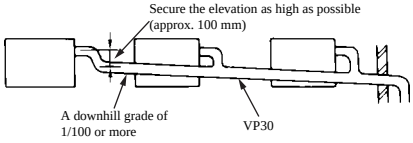


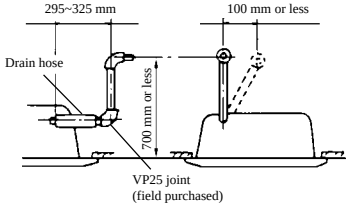
(d) When consturcting drain piping for several units, position the common pipe about 100 mm below the drain outlet of each unit as shown in the sketch. Use VP-30 (11/4") or thicker pipe for this purpose.

(e) Be sure to provide heat insulation to hard PVC pipes of indoor placement.

(f) Do not ever provide an air vent.

(g) The height of the drain head can be elevated up to a point 700 mm ablve the ceiling and, when an obstacle exists in the ceiling space, elevate the piping to avoid the obstacle using an elbow or corresponding gadget. When doing this, if the stretch for the needed height is higher than 500 mm, the back-flow quantity of drain at the event of interruption of the operation gets too much and it may cause overflow at the drain pan. Therefore, make the height of the drain pipe within the distance given in the sketeh below.





(h) Avoid positioning the drain piping outlet at a place where generation of odor may be stimulated. Do not lead the drain piping direct into a sewer from where sulfur gas may generate.

(i) The purpose of drain hose is to absorb minute discrepancy of the unit or the drain piping occurred when they are installed. Therefore, when it is bent intentionally or used under expanded condition, it may be damaged and result in water leakage.

Drainage Test

① Conduct a drainage test after completion of the electrical work.

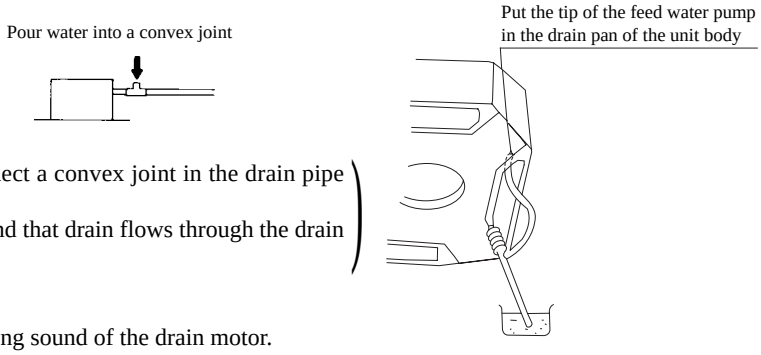
② During the trial, make sure that drain flows properly through the piping and that no water leaks from connections.

③ In case of a new building, conduct the test before it is furnished with the ceiling.

④ Be sure to conduct this test even when the unit is installed in the heating season.

Procedures

① Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.



If the electrical work has not been completed, connect a convex joint in the drain pipe connection to provide a water inlet.
Then, check if water leaks from the piping system and that drain flows through the drain pipe normally.

② Check at the exhaust port if drain is flowing.

(Note) Conduct this test paying attention to rotating sound of the drain motor.

③ Remove the drain plug located on the bottom of the drain pan when the water has to be evacuated from the unit.

④ After the test, fit the drain plug to the original place and turn off the power source.

(5) Fixing of Decorative Panel (The panel fixing bolts are attached on the panel.)

(a) Check with the accessory level gauges that the indoor unit height and the size of ceiling hole are correct.

- Remove the level gauges from the indoor unit before fixing the decorative panel.

(b) Screw two bolts out of four accessory bolts less than 5 mm in the indoor unit diagonally.

(c) Hang the panel on the two bolts and fix them temporarily.

(d) Tighten the bolts fixed temporarily and the ramaining two bolts.

Screw the remaining two bolts, and tighten all (four) bolts.

(e) Connect the louver motor connector (red) to the panel respectively.

(f) If the louver motor is not operated by remote control, check if the connector is connected correctly, and turn off the power for more then 10 seconds, then reset it.

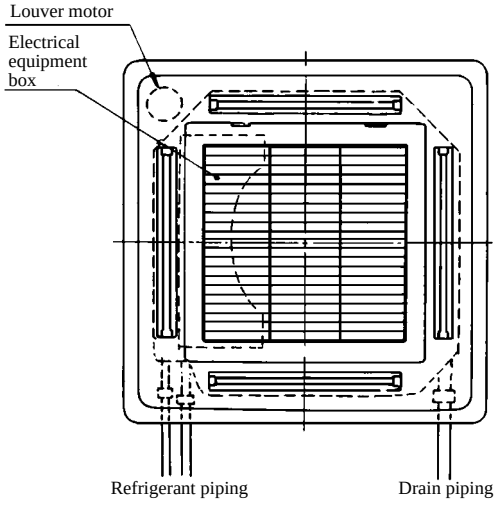
Panel Joint Setting

- The panel can turn 30 mm to the left and to the right in all, and the indoor unit turns 30 mm to the left and to the right in all in the case of FDT(N)258~508, and 20 mm in the case of FDT(N)208.

Limit Fixing Panel

① Fix the panel only in the direction shown in the figure.

② If it is fixed in other way, air will leak. Also, wires cannot be connected for auto swing and receiver amp.



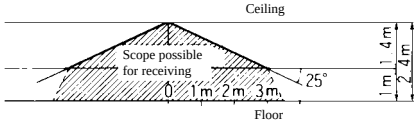
(6) Cautions for wireless remote conntroller operation

As wireless remote controller is operated by infrared rays as a signal, make sure to explain to customers the following matters regarding the operating distance and protection from jamming.

- Operate it by directing the remote controller switch correctly to the receiver amp section.
- Operating distance is shown below, but it may become shorter or longer depending on circumstances.
- When its receiving section is directly under the sun or strong illumination, or covered by dust or behind an obstacle, the operating distance may become shorter or it may not work.
- A hook for fixing the remote controller is provided for to keep the controller from missing.

(a) Operating distance of wireless remote controller

Operate it within the distance and angle shown in the sketch.

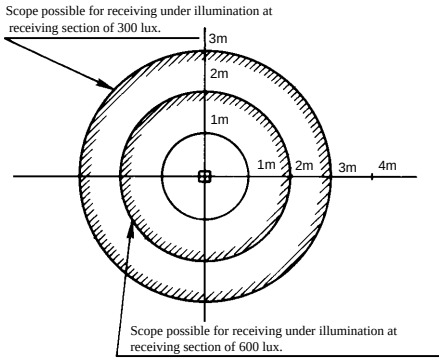


1) Standard receiving distance

CONDITION: 300 luxes at the receiving section (at an ordinary office where there is no ceiling light within one meter around the unit.

2) The receiving distance as viewd from the plane, and the relation between the illumination at the receiving section and receiving distance.

CONDITION: The relation between illumination and receiving distance when the remote controller is operated at the place one meter above the floor with the ceiling 2.4 m high. When the illumination is doubled, the receiving distance become 2.3.



By switching the dip switch (SW3-3) on the indoor unit printed circuit board ("Specify the following switch number."), the operation mode can be changed to the quiet mode (mild mode). Confirm at installation and change if necessary.

6.5.2 Installation of the wired remote controller (Optional parts)

(1) Selection of installation location

Following locations should be avoided:

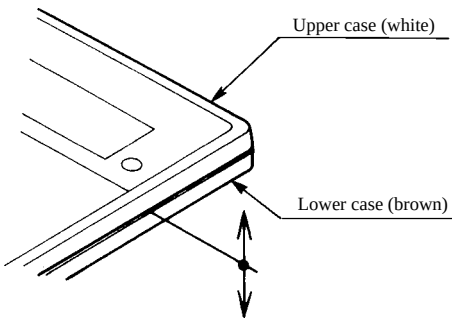
(a) Where exposed to direct sunlight
(b) Near the heat source
(c) Highly humid area or where splashed with water
(d) Uneven installation surface

(2) Selection of installation location

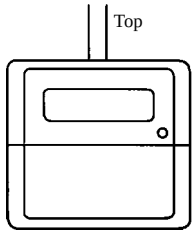
Exposed installation

(a) Remove the remote controller case.

- Insert finger nails between the upper (white) and lower (brown) cases and ply them to open.



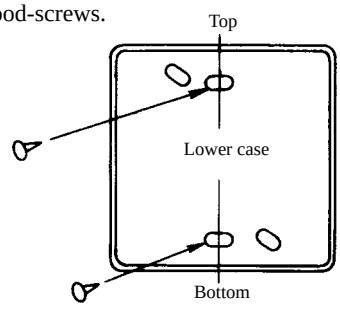
(b) Remote controller cords can be taken out upward only as shown below.



(Cord take-out direction)

- Cut the remote controller lower case off at the top and thin section with a nipper, knife or other and remove burrs from the cut with a file or other.

(c) Secure the remote controller lower case on the wall with 2 pieces of wood-screws.



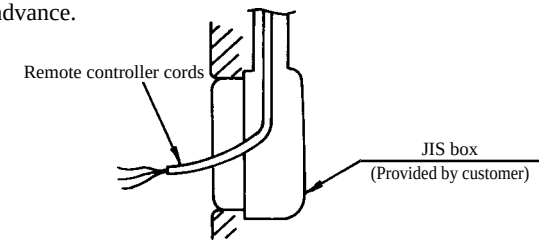
(d) Connect the remote controller cords with the terminal block. Make sure to align the terminal numbers on the indoor unit and the remote controller. Polarities are specified on the terminal block so that the unit will not be operated if the cords are connected improperly.

Terminals: (X) red wire, (Y) white wire, (Z) black wire

1) Set necessary functions in accordance with the model of indoor unit.
   Refer to (c) for the setting of functions.
2) Couple the upper case with the lower case as they were.
3) Secure the remote controller cords on the wall or other using cord clamps.

Embedded installation

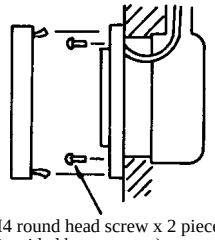
1) Have a JIS box and remote controller cords (use shielding wires or twisted pair wires for extension) embedded in the wall in advance.



Adequate JIS box

- JIS C 8336 Single switch box (without cover)
- JIS C 8336 Medium size square outlet box and two-switch cover with paint margin

2) Remove the upper case from the remote controller.
3) Secure the remote controller body on the JIS box with 2 pieces of M4 round head screw (provided by customer).
4) Connect remote controller cords with the remote controller.
   (Refer to the section regarding the exposed installation.)
5) Couple the upper case with the lower case as it was to finish up the installation.



Cautions for extension of remote controller cords

- **Make sure to use shielding wires only.**
  - **All models: 0.3 mm² x 3 core wires [MVVS3C, products of Keihan Cables]**

Note (1) When the extension distance exceeds 100 m, change the wire size as follows:
100 ~ 200 m ... 0.50 mm² × 3 core wires
~ 300 m ... 0.75 mm² × 3 core wires
~ 400 m ... 1.25 mm² × 3 core wires
~ 600 m ... 2.00 mm² × 3 core wires

- **Make sure to ground one side only of the shielding wire.**

6.5.3 Installation of outdoor unit

⚠WARNING

BE SURE TO READ THESE INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE SERIOUS INJURY OR DEATH, EQUIPMENT MALFUNCTION AND/OR PROPERTY DAMAGE.

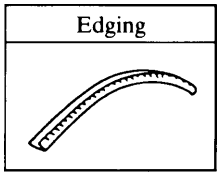
Models : FDC208~508 series

(1) Installation

(a) Accessories

Confirm accessories shown below are attached in the bag with this installation manual.

1) "Edging" for protection of electric wires from opening edge.



(b) Selection of installation location

Select the installation location after obtaining the approval of customer.

1) The place where the foundation can bear the weight of Outdoor unit.
2) The place where there is no concern about leakage of combustible gas.
3) The place where it is not stuffy.
4) The place where free from thermal radiation of other thermal source.
5) The place where flow of drain is allowed.
6) The place where noise and hot air blast do not trouble neighboring houses.
7) The place where there is no obstruction of wind at the intake air port and discharge air port.

8) When the unit is installed at the particular location as shown below, corrosion or failure may be caused. Please consult the dealer from which you purchased the air-conditioner.
   a) The place where corrosive gas is generated (hot spring, etc.).
   b) The place where wind containing salt blows (seaside area).
   c) The place where enveloped by oil mist.
   d) The place where there is a machine that radiates electromagnetic wave.

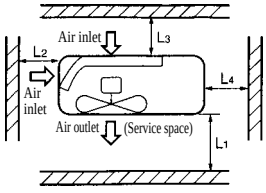
Request
- Restrict the height of obstruction wall in front of the discharge air port to the height of unit or less.
- Do not enclose around the unit by the obstruction. Secure the top space for 1 m or more.
- When installing the units side by side in series, secure a space of 10 mm between units.
- When installing the unit where there is a concern about the short circuit, attach the guide louver in front of discharge air port to prevent the short circuit.
- When installing plural units in a group, secure sufficient intake space to prevent the short circuit.
- When installing the unit where it is covered by snow, provide appropriate snow break means.
- When installing the unit where it is subject to strong wind, execute wind-breaking work.

(c) The minimum space for installation

Select the space considering the direction of refrigerant piping.

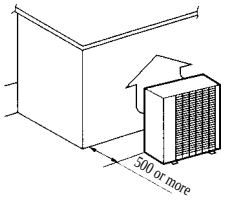
Unit : mm

Installation example / Distance	FDC208, 258			FDC308			FDC408, 508		
	Ⅰ	Ⅱ	Ⅲ	Ⅰ	Ⅱ	Ⅲ	Ⅰ	Ⅱ	Ⅲ
L_1	Open space	Open space	500	Open space	Open space	500	Open space	Open space	500
L_2	300	5	Open space	300	5	Open space	300	5	Open space
L_3	100	150	100	100	150	100	150	300	150
L_4	5	5	5	5	5	5	5	5	5

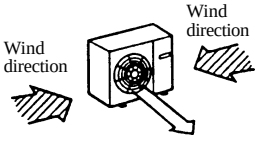


(d) Location where strong wind blows against the unit

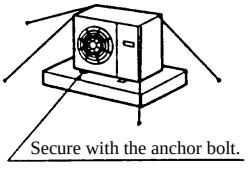
1) Install the unit directing the discharge air port to the wall.



2) Install the unit directing the discharge air port at a right angle to the wind direction.



3) Where the foundation is not stable, secure the unit with wire, etc.

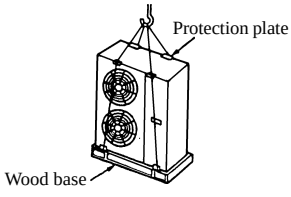


(2) Carry-in and installation of unit

Pay sufficient attention to the carry-in and moving work of the unit, and always execute work by two persons or more.

(a) Carry-in

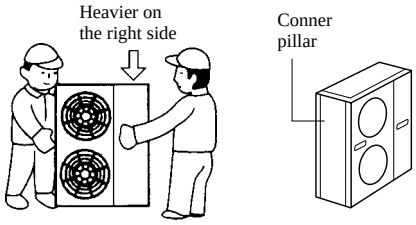
1) When carrying-in the unit, carry it in as packed condition to the installation site as near as possible.
2) If you are compelled to carry-in the unit unpacked condition, lift the unit by the rope using a nylon sling or applying protection plates so that the unit is not marred.



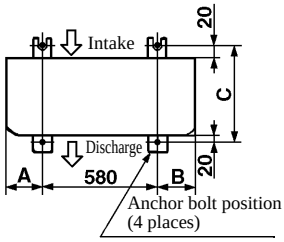
⚠ CAUTION
- **Rope the unit taking the discrepancy of center of gravity into consideration.**

(b) Moving

1) The unit is heavier on the right side looking from the front of unit (discharge air port side). Therefore, sufficient caution is required for the person who carries the right side of unit. The person who carries the left side must hold the handle of front panle and the conner pillar with both hands.



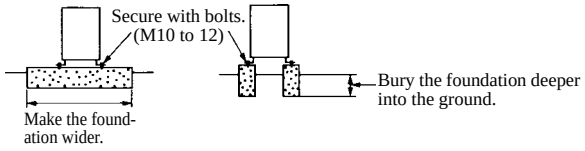
(c) Bolt securing position



Unit : mm

Model \ Item	A	B	C
FDC208	150	150	380
FDC258, 308	150	150	330
FDC408, 508	165	175	380

1) To install the unit, secure the legs of unit by below mentioned bolts without fail.

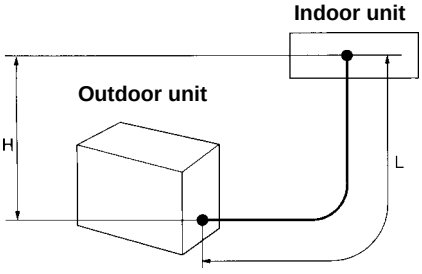


2) Limit the protrusion height of front side anchor bolts to 15 mm at the maximum.
3) Install the unit firmly so that it does not fall by earthquake and strong wind.
4) Make the concrete foundation by referring the above illustration.
5) Install the unit in level. (The height difference between right and left is within 30 mm.)

(3) Refrigerant piping work

Select the piping specification to fit the specification of Indoor unit and installation location.

(a) Decision of piping specification



Piping specification

Outdoor unit model	Gas pipe	Liquid pipe
FDC208	ø 15.88 × t1.0	ø 6.35 × t0.8
FDC258, 308	ø 15.88 × t1.0	ø 9.52 × t0.8
FDC408, 508	ø 19.05 × t1.0	ø 9.52 × t0.8

Maximum one way length

FDC208, 258 : L=30 m or less

FDC308~508 : L=50 m or less

Height difference

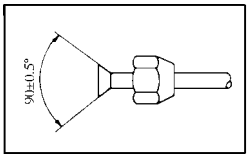
- When the position of outdoor unit is higher than that of the indoor unit, keep the difference H=30 m or less (FDC208, 258 : H=20 m or less.).
- When the position of outdoor unit is lower than that of the indoor unit, keep the difference H=15 m or less.

(b) Piping work

Request

- Use the pipe made of following material. Moreover, it is very convenient for you to use the separately sold piping kit.
  Material: Phosphor deoxidized seamless copper tube (C1220T, JIS H3300)
- In the case of this unit, condensation water is also generated on the liquid piping. Insulate both of the liquid piping and gas piping perfectly.
- In the case of heat pump type unit, the maximum temperature of the gas piping reaches approx. 120˚C, therefore use the insulation material which has sufficient heat resistance.
- When bending the pipe, bend it with large radius as much as possible. Do not bend the same portion of pipe repeatedly.

- Do not let dust, chips or water enter the pipe while pipe working.
- The flared connection for refrigerant piping is required. Flare the pipe after inserting the flared nut into the pipe.
- Tighten the flared connection firmly using 2 of spanners. Comply with the following value for tightening torque of the flared nut.

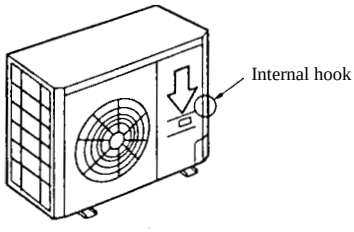


ø 6.35: 16 to 20 (N·m), (1.6 to 2.0 (kg·m)) ø 9.52: 40 to 50 (N·m), (4 to 5 (kg·m)) ø 15.88: 90 to 120 (N·m), (9 to 12 (kg·m)) ø 19.05: 100 to 140 (N·m), (10 to 14 (kg·m))

- In the case of brazing connection, perform brazing while flowing nitrogen gas in the pipe to prevent generation of oxide film inside the pipe without fail.

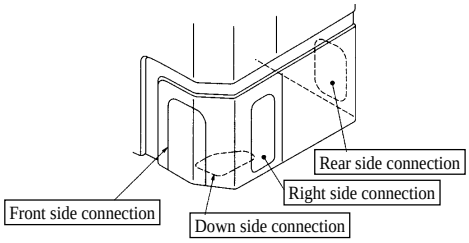
1) How to remove the service panel

Remove screws on the service panel, pull down the panel toward the arrow direction, and then remove the panel toward you.



2) Refrigerant pipe connection

a) The piping can be taken out to the right, front, rear and down directions.
b) Cut the plate at the knockout portion on the piping penetration section with necessary minimum size.
c) Mount the attached edging by cutting it to the appropriate length before connecting the pipe.



⚠ IMPORTANT

- **Take care so that the piping to be worked does not contact the parts contained in the unit. If it contacts the inner parts, abnormal sound or vibration may occur.**

(c) Leak test and air purge

Perform the procedure according to the following instructions.

Request

- Perform the air purge of Indoor unit and refrigerant piping by vacuuming method without fail.

Leak test

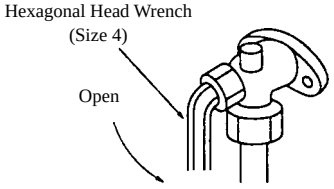
1) After tightening all flared nuts on the Indoor unit and Outdoor unit, hold the service valves (both of liquid and gas sides) of the Outdoor unit in fully closed position and perform the leak test from the charge port of service valve to confirm that there is no leakage.

(Use nitrogen gas for leak test. Execute the test at the pressure of 3.0 MPa (30kgf/cm²G).)

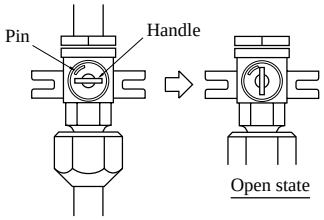
Air purge

2) While holding the service valves (both of liquid and gas sides) of the Outdoor unit at fully closed position, perform vacuuming at –0.1 MPa (–76 cmHg) or under from the service valve charge port.

3) After completion of vacuuming, remove the cap nut for the valve stem and fully open the service valve (for both of liquid and gas) as shown in the right illustration. After confirming that the valve is fully open, tighten the cap nuts (for valve stem and charge port).



FDC208, 258, 308 Liquid / gas service valve
FDC408, 508 Liquid service valve



FDC408,508
Gas service valve

(d) Refrigerant charge

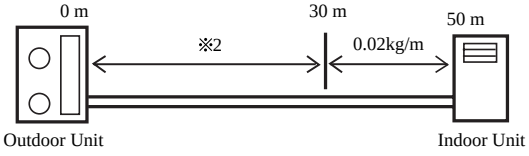
1) Outdoor unit is pre-charged R-22 refrigerant at a factory as shown in Table 1.
2) Indoor unit is pre-charged only a small amount of nitrogen gas for prevention of the air entry.
3) Additional charge on site is required when the pipe length is longer than that of restricted value (Which is varied wirh the type of Indoor unit) as shown in Table 1.

Table 1

Item / Model	Factory charge amount (kg)	Additional charge amount ※1 (kg/m)		Pipe length that additional charge is not required (m)	Maximum piping length (m)
		0 ~30m	30 ~ 50m		
FDC208H type	0.98	0.015	–	0 (5) *3	30
FDC258H type	1.10	0.025	–	5	
FDC308H type	1.40		0.02		50
FDC408H type	1.67	0.035 ※2			
FDC508H type	1.90				
FDC208C type	0.90	0.015	–	0 (5) *3	30
FDC258CEN3	1.05	0.025		5	
FDC258CEP3	1.13				

Note (1) *3. The values in ( ) are when connected to FDKN Series indoor unit.

※1 Additional charge amount



- Calculate the additional charge amount according to Table 1.

Example : In the case that FDTN508HES-S is newly installed with piping length of 40m.

(30 – 5) (m) × 0.035 (kg/m) + (40 – 30) (m) × 0.02 (kg/m)= 1.075 (kg)

- Additional charge amount.
- When piping length is more than 30m, additional charge amount per 1m.
- Total length of the piping (one way).
- When piping length is 30m or less, additional charge amount per 1m.
- Length that additional charge is not required.

- In the case of recharge the refrigerant for service, calculate the proper amount of refrigerant depending on the piping length on site.

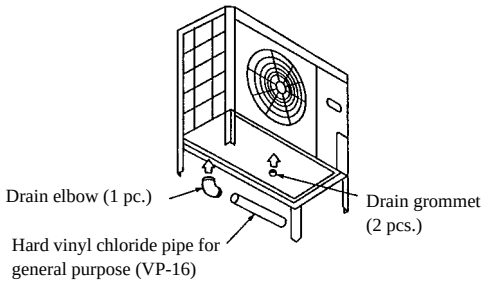
Example : In the case that FDTN508HES-S with piping length of 15m is fully recharged in service.

1.9 (kg) + (15 – 5) (m) × 0.035 (kg/m)= 2.25 (kg)

- Recharge amount.
- Additional charge amount per 1m.
- Length that additional charge is not required.
- Total length of the piping (one way).
- Factory charge amount for FDC508HES3.

(4) Drain piping work

- Execute the drain piping by using field purchased parts of pipe, elbow, and grommets, if the drainage work is needed.



- ○ There are 3 holes (ø 20) on the bottom plate of Outdoor unit for draining condensed water.
- ○ To guide the condensed water to the gutter it is necessary to install the unit on the flat base or blocks.
- ○ Connect the drain elbow as shown in the illustration and close other holes with grommets.

(5) Electrical wiring

○ This air conditioning system should be notificated to supply authority before connection to power supply system.

(a) Selection of size of power supply and interconnecting wires.

⚠ IMPORTANT

- Electric wiring work should be conducted only by authorized personnel.
- Use copper conductor only.
- Power source wires and Interconnecting wires shall not be lighter than polychloroprene sheathed flexible cord (design HO5RN-F IEC 57).
- Do not connect more than three wires to the terminal block.
- Use round type crimped terminal lugs with insulated grip on the end of the wires.

- Select wire sizes and circuit protection from Table 2.

Table 2 (This table shows 20m length wires with less than 2% voltage drop.)

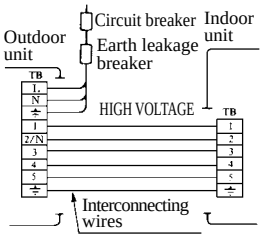
Item / Model	Phase	Circuit breaker		Power source wires (minimum)	Interconnecting and grounding wires (minimum)
		Switch breaker (A)	Over-current protector rated capacity (A)		
FDC208H(C) type	1	30	20	ø 2.0 mm	ø 1.6
FDC258H(C) type				5.5mm²	
FDC258CEP3			30		
FDC308HEN3					
FDC308HES3	3		15	ø 2.0 mm	
FDC408H type				5.5mm²	
FDC508H type			20		

(b) Wiring connection.

1) Connect the same terminal number between the Indoor unit and Outdoor unit as shown in the following diagram.
2) Make wiring to supply to the Outdoor unit, so that the power for the Indoor unit is supplied by ① and ② terminals.
3) Secure the wiring with wiring clamp so that no external force is transmitted to the connecting portion of terminal.
4) There is a ground (Earth) terminal in the control box.

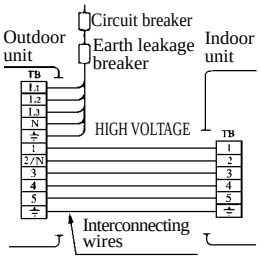
① 1 phase model

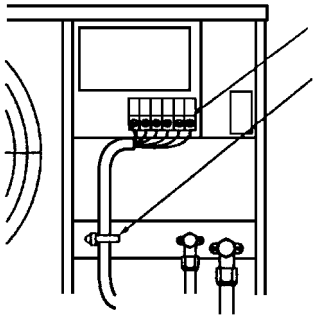
Note (1) The diagram below is for models equipped with heat pumps. Cooling only units do not have TB (4), (5).



② 3 phase model

Note (1) The diagram below is for models equipped with heat pumps. Cooling only units do not have TB (4), (5).





Power source and ground terminal block

Wiring clamp

○ Secure the wiring so that no external force is applied to the connecting portion of terminal.

Take out direction of wiring

○ Same as the refrigerant piping, 4 directions are allowed, which are right, front, rear and down.

Wiring diagram

○ Wiring diagram is fixed at the backside of service panel.

(6) Test run

⚠ CAUTION

THIS UNIT WILL BE STARTED INSTANTLY WITHOUT "ON" OPERATION WHEN ELECTRIC POWER IS SUPPLIED.
BE SURE TO EXECUTE "OFF" OPERATION BEFORE ELECTRIC POWER IS DISCONNECTED FOR SERVICING.

- This unit has a function of automatic restart system after recovering power stoppage.

DO NOT LEAVE OUTDOOR UNIT WITH THE SERVICE PANEL OPENED.

- When the service panel is removed, high voltage portion and high temperature areas are exposed.

⚠ IMPORTANT

- Check that the service valves are fully opened without fail before operation.
- Turn on the power for over 12 hours to energize the crankcase heater in advance of operation.
- Wait more than 3 minutes to restart the unit after stop.

- Run the unit continuously for about 30 minutes, and check the following.
  - ○ Suction pressure at check joint on the compressor suction pipe.
  - ○ Discharge pressure at check joint on the compressor discharge pipe (for Heat pump model), or at check joint of service valve for gas pipe (for cooling only model).
  - ○ Temperature difference between return air and supply air for Indoor unit.
- Refer to “Check Indicator Table” on wiring diagram of Outdoor unit or “User’s manual” of Indoor unit for diagnosis of operation failure.

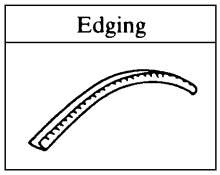
◆ Models FDC206~506 series

(1) Installation

(a) Accessories

Confirm accessories shown below are attached in the bag with this installation manual.

1) "Edging" for protection of electric wires from opening edge.

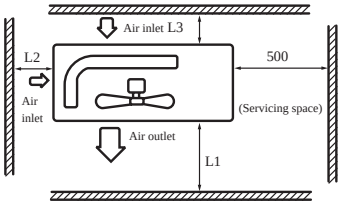


(b) Selection of the place of installation

Select the place of installation satisfying the following conditions and, at the same time, obtain a consent from the client or user.

1) Place where air circulates.
   Place free from heat radeation from other heat sources.
2) Place where drain water may be discharged.
   Place where noise and hot air may not disturb the neighborhood.
3) Place where there is not heavy snowfall in the winter time.
4) Place where obstacles do not exist near the inlet air port and outlet air port.
5) Place where the outlet port may not be exposed to a strong wind.
6) Place surrounded at four sides are not suitable for installation. 1m or more of overhead space is needed for the unit.
7) Mount guide-louvers to place where short-circuit is a possibility.
8) When installing several unit, secure sufficient suction space to avoid short circuiting.

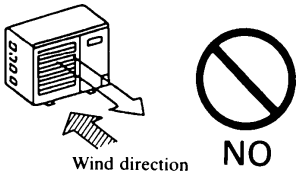
a) Open space requirement around the unit



Unit: mm

Model	FDC206, 256		FDC306			FDC406, 506		
Case / Distance	Ⅰ	Ⅱ	Ⅰ	Ⅱ	Ⅲ	Ⅰ	Ⅱ	Ⅲ
L1	open	100	open	open	500	open	open	500
L2	100	open	300	0	open	300	0	open
L3	100	500	100	150	100	150	300	150

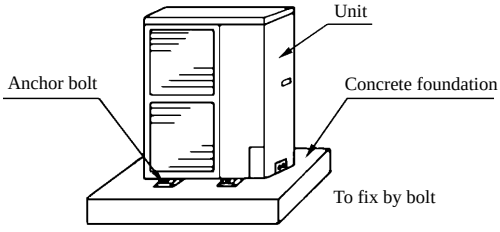
b) Installation where the area with strong winds.
Install the unit so that the air outlet section of the unit must NOT be faced toward wind direction.



(c) Installation of outdoor unit

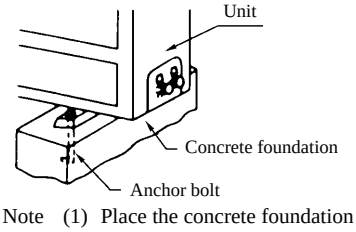
1) Installation
Fix the unit in a proper way according to the condition of a place where it is installed by referring to the following.

a) Concrete foundation



Note (1) Give enough room for the concrete foundation to fix by anchor bolts.

b) Foundation anchor

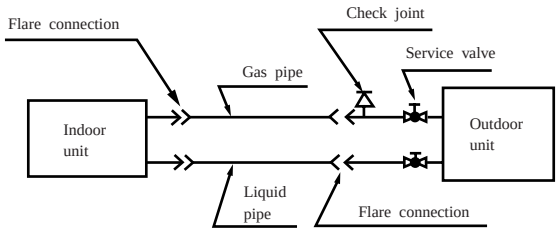


Note (1) Place the concrete foundation deep enough.

Install the unit so that the angle of indination must be less than 3 degrees.

(2) Refrigerant piping

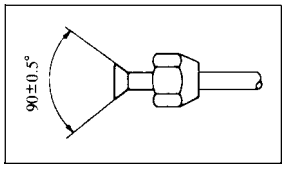
(a) Outline of piping



(b) Piping size

Model	FDC206	FDC256, 306	FDC406, 506
Gas piping	ϕ15.88 × 1.0 mm	ϕ15.88 × 1.0 mm	ϕ19.05 × 1.0 mm
Liquid piping	ϕ6.35 × 0.8 mm	ϕ9.52 × 0.8 mm	ϕ9.52 × 0.8 mm

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



(c) Limitations for one way piping length and vertical height difference.
- One way piping length: Less than 30 m
- Vertical height difference: Less than 15 m

Precautions for refrigerant piping

- Do not twist or crush piping.
- Be sure that no dust is mixed in piping.
- Bend piping with as wide angle as possible.
- Keep insulation both gas and liquid piping.
- Check flare-connected area for gas leakage.

(d) Air purge

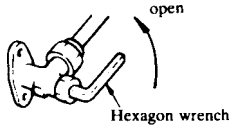
Carry out the air purge of the indoor unit and refrigerant piping by vacuuming.

Procedures.

1) Tighten all the flare nuts of the piping on the side of indoor and outdoor units so that there is no leakage.
2) Carry out vacuuming from the service valve charge port with the service valves (both liquid and gas side) of the outdoor unit fully closed.
3) After vacuuming, remove the cap nut for the valve stem, and thghten the cap nuts (cap nuts for valve stem and charge port) with service valve (both liquid and gas) fully opened.

(e) Method of opening and closing service valve of outdoor unit

1) Remote the hexagonal cap nut.
2) Operate the valve using a hexagonal wrench to open by left turn and to close by right turn.
3) Tighten the hexagonal cap nut after the piping works.



Item \ Model		FDC206~306	FDC406, 506
Hexagon wrench size	Gas side	4	6
	Liquid side	4	4

(f) Additional charge of refrigerant

Unit : kg

Item / Model	Basic refrigerant charge amount(1)	Factory charge amount of refrigerant		Additional charge amount(1) per meter	Length that additional charge is not required	Maximum piping length
		Outdoor unit	Indoor unit			
FDC206H type	0.88	1.00	0 (Holding charged)	0.025	5 m (5) (8)	30 m
FDC256H type	1.13	1.25				
FDC306H type	1.18	1.30				
FDC406H type	1.43 (4)	1.60		0.035		
FDC506H type	2.13	2.30				
FDC206CEN3	0.78	0.90		0.025	5 m (7) (8)	
FDC206CEP3	1.03	1.15				
FDC256C type	1.23	1.35				
FDC306C type	1.18	1.30				
FDC406C type	1.38 (6)	1.55		0.035		
FDC506C type	1.68	1.85				
FDC506CEM	1.63	1.80				

Notes (1) Basic refrigerant charge amount means refrigerant amount when refrigerant piping length is 0 m.
(2) When the refrigernat piping length exceeds the length that additional refrigerant charge is not required, charge additional refrigerant based on to the calculated amount of refrigerant per unit piping length.

Example of additional charge amount calculation

Calculate the additional charge amount for the model FDTN508HES when the piping length is 25 m.

(25 - 5) × 0.035 = 0.70

- 0.70 → Additional charge amount (kg)
- 0.035 → Additioanl charge amount per 1 m (kg/m)
- 5 → Length that additional refrigerant charge is not required (m)
- 25 → Total length of the piping (one way) (m)

Additional charge amount of refrigerant = 0.70 kg (Calculate the amount in any case.)

(3) 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 gas is filled for prevention of the air entry.
(4) In the case of FDR408H and FDU408H, it is 1.60 kg.
(5) In the case of FDR408H and FDU408H, it is 0 m.
(6) In the case of FDU408C, it is 1.55 kg.
(7) In the case of FDU408C, it is 0 m.
(8) In the case of FDKN208 and FDKN308, it is 10 m.

(3) Electric wiring

⚠WARNING

DANGER OF BODILY INJURY OR DEATH
TURN OFF ELECTRIC POWER AT CIRCUIT BREAKER OR POWER SOURCE BEFORE MAKING ANY ELECTRIC CONNECTIONS.
GROUND CONNECTIONS MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS.

- This air conditioning system should be notificated to supply authority connection to power supply system.

(a) Selection of size of power supply and interconnecting wires.

Precautions for Electric wiring

- Electric wiring work should be conducted only by authorized personnel.
- Do not connect more than three wires to the terminal block. Always use round type crimped terminal lugs with insulated grip on the ends of the wires.
- Use copper conductor only.
- Power source wires and interconnecting wires shall not bo lighter than polychloroprene shcathcd fiexible cord (design H05RN-F IEC57).

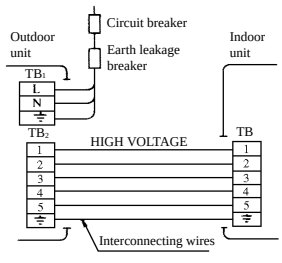
Select wire sizes and circuit protection from table below. (This table shows 20 m length wires with less than 2% voltage drop.)

Item / Model	Phase	Circuit breaker		Power source wire size (minumum)	Interconnecting and grounding wires (minimum)
		Switch breaker (A)	Overcurrent Protector rated capacity (A)		
FDC206 type	1	30	20	5.5mm²	ϕ1.6 mm
FDC256 type			30		
FDC306EN type				8 mm²	
FDC306ES type	3		15	ϕ1.6 mm	
FDC406 type			20	ϕ2.0 mm	
FDC506 type				5.5 mm²	
FDC506EM type			30	8 mm²	

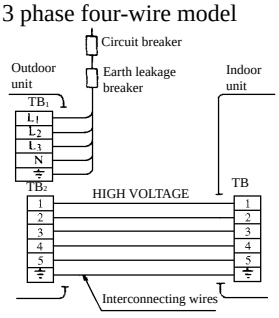
(b) Wiring connection

Make wiring to supply power to the outdoor unit, so that the power for the indoor unit is supplied by ① and ② terminals.

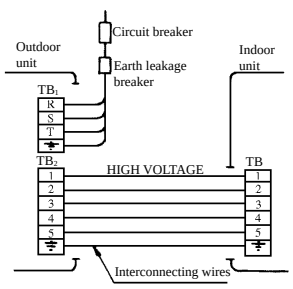
1) 1 phase model



2) 3 phase four-wire model



3) 3 phase three-wire model



Note (1) The diagram above is for models equipped with heat pumps. Cooling only units do not have TB2 (4), (5).

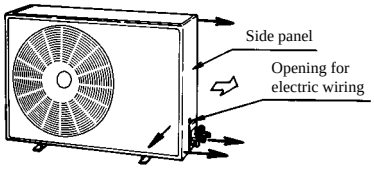
⚠WARNING

DO NOT CONNECT THE NEUTRAL WIRE Ⓝ TO Ⓛ1 (Ⓡ), Ⓛ2 (Ⓢ) OR Ⓛ3 (Ⓣ) PHASE. INTERCONNECTING WIRES MUST BE WIRED WITH SAME SYMBOLS ON THE TERMINALS OF BOTH INDOOR AND OUTDOOR UNIT. INCORRECT WIRING CAUSE EQUIPMENT DAMAGE OR A FIRE.

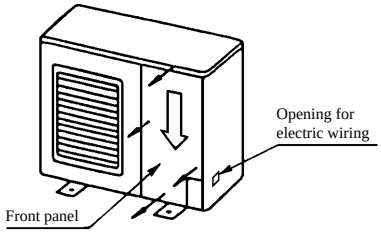
(c) Wiring procedure

1) Remove set screws on the side before taking off the side panel (for model FDC206, 256) or the front panel (for model FDC306, 406, 506) toward the direction shown in figure.
2) Connect wires to the terminal block correctly and fix the wires with a wire clamp equipped near by the terminal block.
3) Route the wires in a proper way and penetrate the wires through the opening for electric wiring on the side panel.

FDC206, 256 type



FDC306, 406, 506 type



(4) Test run

⚠CAUTION

THIS UNIT WILL BE STARTED INSTANTLY WITHOUT "ON" OPERATION WHEN ELECTRIC POWER IS SUPPLIED. BE SURE TO EXECUTE "OFF" OPERATION BEFORE ELECTRIC POWER IS DISCONNECTED FOR SERVICING.

- This unit has a function of automatic restart system after recovering power stoppage.

(a) Before starting test run (for all Heat pump models and Cooling only model FDC506CES)

Confirm whether the power source breaker (main switch) of the unit has been turned on for over 12 hrs to energize the crankcase heater in advance of operation.

(b) Test run

Run the unit continuously for about 30 minutes, and check the following.

- Suction pressure at check joint of service valve for Gas pipe.
- Discharge pressure at check joint on the compressor discharge pipe.
- Temperature difference between return air and supply air for indoor unit.

6.6 MAINTENANCE DATA

6.6.1 Servicing

(1) Evacuation

The evacuation is a procedure to purge impurities, such as noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R22 is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called ice clogging.

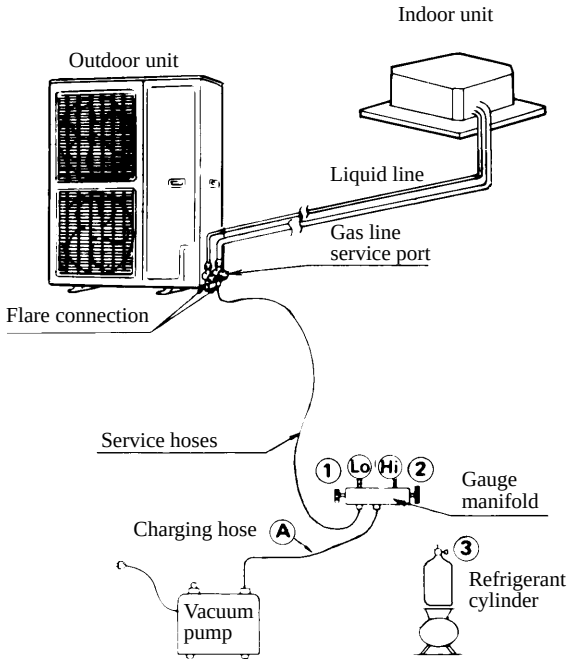
Evacuation procedure

Make sure that the both service valves of gas and liquid line are fully opened.

(a) Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relived through the service port.

(b) Connect the charging hose of the gauge manifold to the service port of the gas piping.
Close high pressure valve ② of gange manifold.

(c) Connect the charging hoseⒶto a vecuum pump.
Repeat evacuation in the following sequence.



Notes (1) Refer to the exterior-view drawing for the position of the service valve.
(2) When connecting of the service valve, flare connection for both the indoor and outdoor unit.

Start the vacuum pump.

⇩

Compond pressure gauge indicates -0.1 MPa (-76 cmHg)

⇩

Operate the vacuum pump for more than 10 minutes after -0.1MPa (-76 cmHg) Hg is indicated.

⇩

Close low pressure valves ① of gauge manifold.

⇩

Stop the vacuum pump.

Notes (1) Do not use the refrigerant pressure to expel air.
(2) Do not use the compressor for evacuation.
(3) Do not operate the compressor in a vacuum condition.

(2) Refrigerant charging

(a) After the evacuation shown in the above, change the connection of the charge hose Ⓐ to the refrigerant cylinder.

(b) Purge air from the charge hose Ⓐ .

First loosen the connecting portion of the charge hose at the gauge manifold side and open valve ③ for a few seconds, and then immediately retighten it after observing that gas has blown out from loosened connecting portion.

(c) Open valves ① and ③ then gas refrigerant begins flowing from the cylinder into the unit.

When refrigerant has been charged into the unit to some extent, **refrigerant flow becomes stagnant. When that happens, start the compressor in cooling cycle until the system is filled with the specified amount of gas, then close valves ① and ③ and remove the gauge manifold. Cover the service port with caps and tighten them securely.**

(d) Check for gas leakage by applying a gas leak detector around the piping connection.

(e) Start the air conditioner and make sure of its operating condition.

6.6.2 Trouble shooting for refrigerant circuit

(1) Judgement of operating condition by operation pressure and temperature difference

Making an accurate judgement requires a skill that is acquired only after years of experience, one trouble may lead to an another trouble from a single trouble source and several other troubles may exist at the same time which comes from a undetected different trouble source.

Filtering out the trouble sources can be done easier by comparing with daily operating conditions. Some good guides are to judge the operating pressure and the temperature difference between suction air and delivery air.

Following are some pointers,

Pressure						Trouble cause
Indi-cation / Cir-cuit	Too low	A little low	Normal	A little high	Too high	
High side Low side					● ●	1) Excessive overcharging of refrigerant 2) Mixture of non condensable gas (air etc.)
High side Low side	●				 ●	Ineffective compression (defective compressor)
High side Low side	 ●	●				1) Insufficient refrigerant in circuit 2) Clogging of strainer 3) Gas leakage 4) Clogging of air filter (in cooling) 5) Decrease in heat load (in cooling) 6) Locking of indoor fan (in cooling)
High side Low side				 ●	●	1) Locking of outdoor unit fan (in cooling) 2) Dirty outdoor heat exchanger (in cooling) 3) Mixture of non condensable gas (air etc.)
High side Low side				●	 ●	1) Too high temperature of room

6.6.3 Diagnosing of microcomputer circuit

(1) Before starting diagnosis

(a) Required tools and measurement equipment

For unit disassembling

Small and large Philips screw driver, Flat head screw driver, Wrench

For diagnosis

Tester (A general tester will do)

(Diagnosis tools and equipment for refrigeration circuit should be prepared if necessary.)

(2) Selfdiagnosis function

(a) Indoor unit side

Only case of wireless remote control model.

Check Lamp (yellow) Flashing

	Flashing Conditions	Nature of Breakdown	Cause
1 time flash	If the heat exchanger thermistor temperature of indoor unit is measured at -50°C or lower for 6 minutes or more following operation of the compressor.	Heat exchanger thermistor of indoor unit abnormality.	Disconnection on heat exchanger thermistor, Poor connection of connector.
2 time flash	If the return thermistor temperature of indoor unit is measured at -50°C or lower for 6 minutes or more after turning the power ON.	Return thermistor of indoor unit abnormality.	Disconnection on return thermistor. Poor connection of connector.
4 time flash	Float switch operation	Drain abnormality.	Drain reverse slope. Drain pump abnormality. Float switch abnormality.
5 time flash	If the heat exchanger thermistor temperature of indoor unit is measured at 25°C or higher for 40 minutes or more following operation of the compressor.	Abnormality caused by insufficient refrigerant.	Insufficient gas.
6 time flash	If the indoor heat exchanger thermistor temperature is detected twice to be 68°C or over within 60 minutes during the heating operation.	Heating overload error	Clogged air filter Shortcircuit on the indoor unit Shortcircuit of heat exchanger thermistor

Run Lamp (green) Flashing

	Flashing Conditions	Nature of Breakdown	Cause
6 time flash	During the low voltage protection control 52 C OFF (Conpressor, Outdoor unit)	When the power source voltage is 80% of rating or lower.	Restore automatically at 85% of rating or higher.

Note (1) Inspection LED display has a cycle of 8 seconds (flashing time of 0.5 seconds).

Only case of wired remote control model.

Table of inspection items based on error codes

Error Code	Location of Problem	Cause
E1	Operating switch wire (signal noise)	• Defective connection or broken wire for operating switch signal wire. • Signal noise has entered the operating switch wire.
	Circuit board for operating switch or indoor unit	• Is the circuit board for the operating switch or the circuit board for the indoor unit is defective (communication circuit defective)?
E6	Indoor unit heat exchanger thermistor	• Indoor unit heat exchanger thermistor defective (element defective or broken wire). Defective connection of connector for thermistor.
	Indoor unit circuit board	• Indoor unit circuit board defective (defective thermistor input circuit)?
E7	Indoor unit air inlet thermistor	• Indoor unit return thermistor defective (element defective or broken wire). Defective connection of connector for thermistor.
	Indoor unit circuit board	• Indoor unit circuit board defective (defective thermistor input circuit)?
E8	Installation and operating conditions	• Heating overload (temperature of heat exchanger for indoor unit abnormally high)
	Indoor unit heat exchanger thermistor	• Indoor unit heat exchanger thermistor defective (short circuit).
	Indoor unit circuit board	• Indoor unit circuit board defective (defective thermistor input circuit)?
E9	Failure in drainage	• Failure with the condensate pump (DM), or open circuit or disconnection of connector with the condensate pump.
	Float switch	• Malfunctioning of the float switch (erroneous functioning)
	Indoor circuit board	• Indoor unit circuit board defective (defective float switch input circuit) • Indoor unit circuit board defective (defective DM driving output circuit)
E57	Insufficient refrigerant	• Gas leak.
	Indoor unit heat exchanger thermistor Indoor unit circuit board	• Indoor unit heat exchanger thermistor defective (short circuit). Indoor unit circuit board defective (defective thermistor input circuit)?

(3) Error diagnosis procedures at the indoor unit side

To diagnose the error, measure the voltage (AC, DC), resistance, etc. at each connector around the circuit board of indoor unit based on the inspection display or the operation state of unit (no operation of compressor or blower, no switching of 4-way valve, etc.). If any defective parts are discovered, replace with the assembly of parts as shown below.

(a) Single-unit replacement parts for circuit board of indoor unit. (Peripheral electric parts for circuit board.)
Indoor unit printed circuit board, thermistor (return, heat exchanger), operating switches, limit switches, transformers, fuses.
Note (1) Use normal inspection methods to determine the condition of strong electrical circuits and frozen cycle parts.

(b) Replacement procedure of indoor unit microcomputer printed circuit board

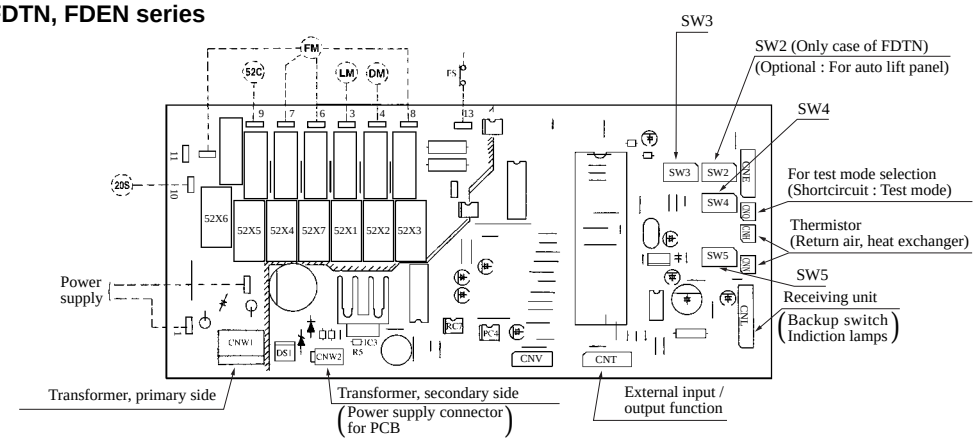
Microcomputer printed circuit board can be replaced with following procedure.

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

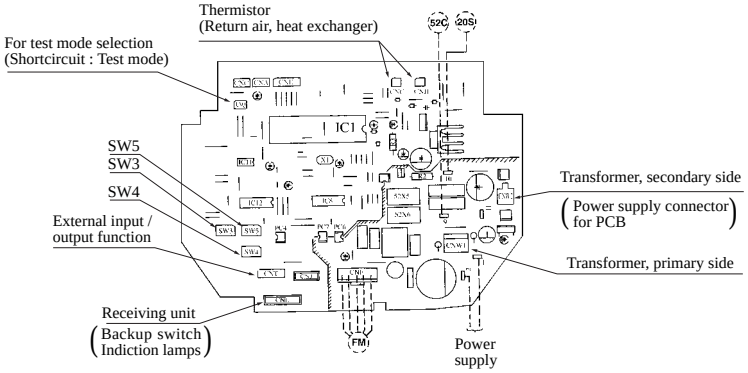
Model	Parts number	Model	Parts number
FDTN, FDEN	PJA505A069	**FDT, FDR, FDU, FDUM, FDFL**	PJA505A080AZ
FDKN208	PHA505A007	**FDF**	PJA505A080Z
FDKN258, 308	PHA505A008		

Parts layout on the indoor unit PCB

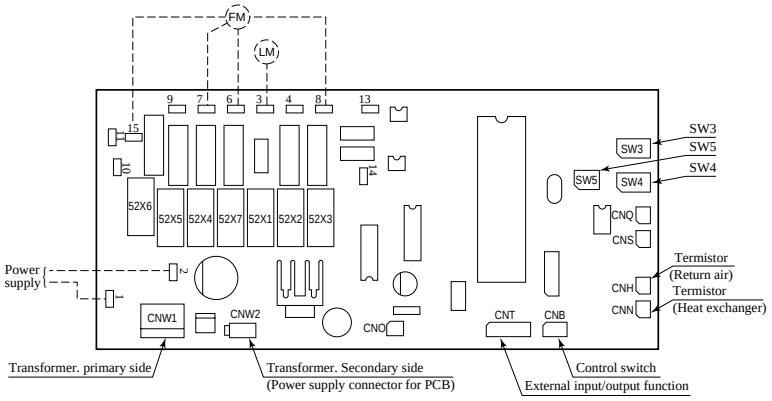
Models: FDTN, FDEN series



Model: FDKN series



Models: FDT, FDR, FDU, FDUM, FDF, FDFL series



- Function of jumper wires

Name		Function
J1(SW5-1)	With	1 Phase model
	None	3 Phase model
J2(SW5-2)	With	Cooling only type
	None	Heat pump type
J3(SW5-3)	With	Pulse input
	None	Step input
J4(SW4-1)	With	—
	None	
J5(SW4-2)	With	Antifrost 2.5˚C
	None	Antifrost 1˚C
J6(SW4-3)	With	With abnormality resetting
	None	Without abnormality resetting
J7(SW4-4)	With	4 position louver control: valid
	None	4 position louver control: invalid
*1 J7(SW4-4)	With	FDKN208 type
	None	FDKN258, 308 type

- Function of DIP switched (SW3)

Switch		Function
SW3-1	ON	Power off guaranteed
	OFF	No power off guaranteed
SW3-2	ON	With low-voltage detection control
	OFF	Without low-voltage detection control
SW3-3	ON	Power up mode (UHi-Lo)
	OFF	Mild mode (Hi-Lo)
SW3-4	ON	Indoor fan is Lo when heating thermostat is OFF.
	OFF	Indoor fan is OFF when heating thermostat is OFF.

Note (1) *1 J7 (SW4-4) is for switching models on the FDKN Series.

(ii) Please match the settings of control switching switches (SW3, SW4, SW5) to the settings they had before they were replaced. With these switches, if the printed circuit had a jumper wire before being replaced, set to jumper wire ON if there was a jumper wire and jumper OFF is these was not.

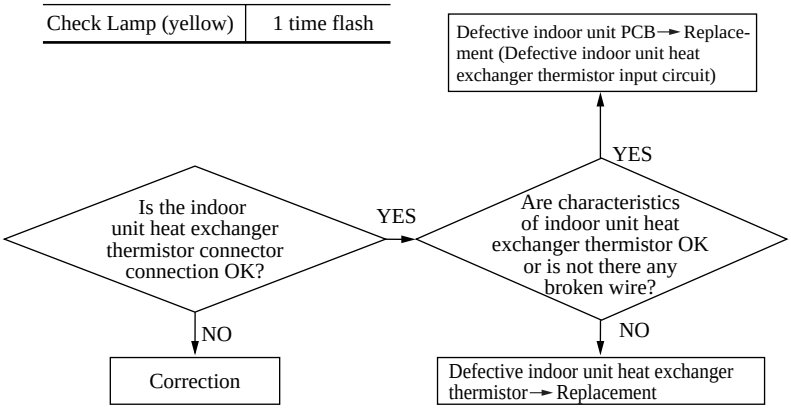
(iii) Connect the fast-on terminals and connectors that are to the circuit board for the micro-computer.
Connect by matching the wire color of the fast-on terminal with the color printed on the circuit board for the micro-computer.
Note (1) When connecting to the fast-on connection for the circuit board for the micro-computer, use care so as not to excessively distort the circuit board.

(c) Inspection method when there are fault lamps (display lamps on indoor unit).

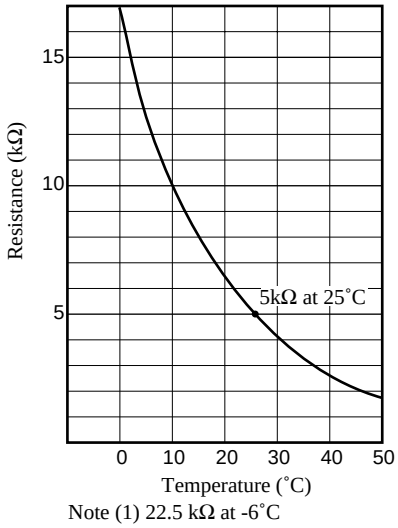
◆ Only case of wireless remote control model

1 Defective indoor unit heat exchanger thermistor

Indoor unit	
Check Lamp (yellow)	1 time flash



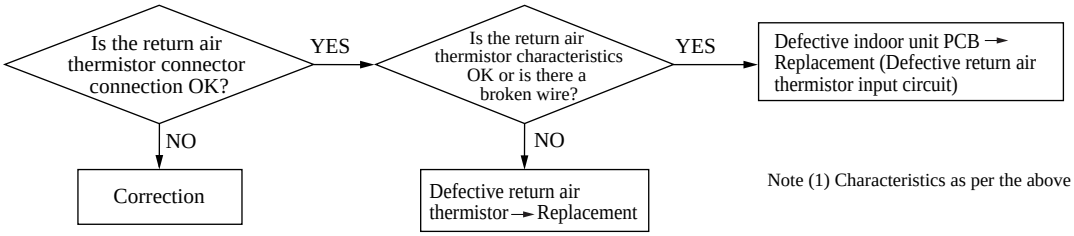
Return air thermistor (Th_R-A)
Indoor unit heat exchanger thermistor (Th_R-R)
Resistance temperature characteristics



Note (1) 22.5 kΩ at -6˚C

2 Defective return air thermistor

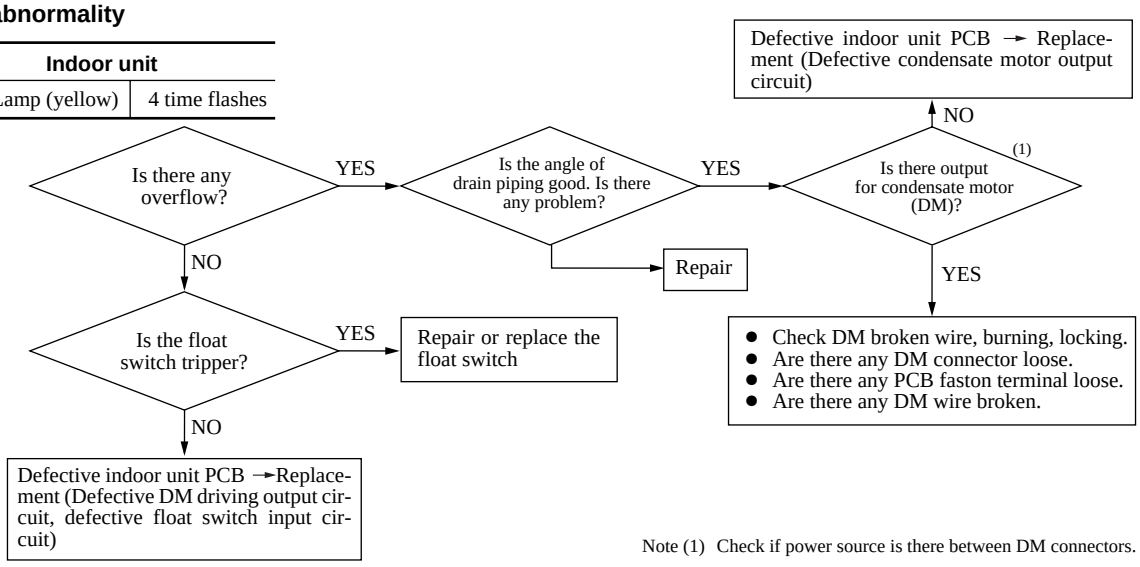
Indoor unit	
Check Lamp (yellow)	2 time flashes



Note (1) Characteristics as per the above graph.

3 Drain abnormality

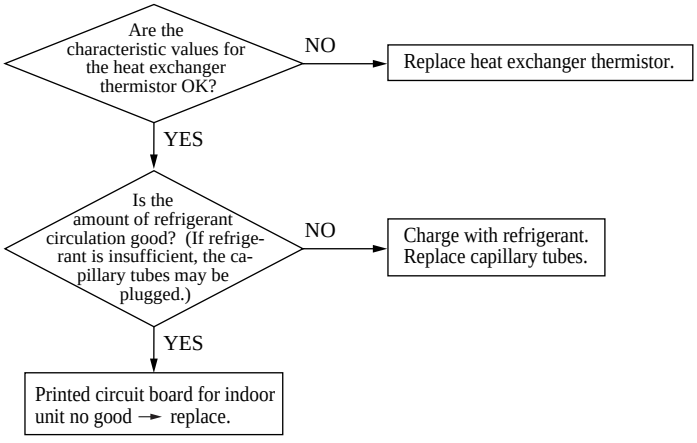
Indoor unit	
Check Lamp (yellow)	4 time flashes



Note (1) Check if power source is there between DM connectors.

4 Abnormality casued by insufficient refrigerant.

Indoor unit	
Check Lamp (yellow)	5 time flashes



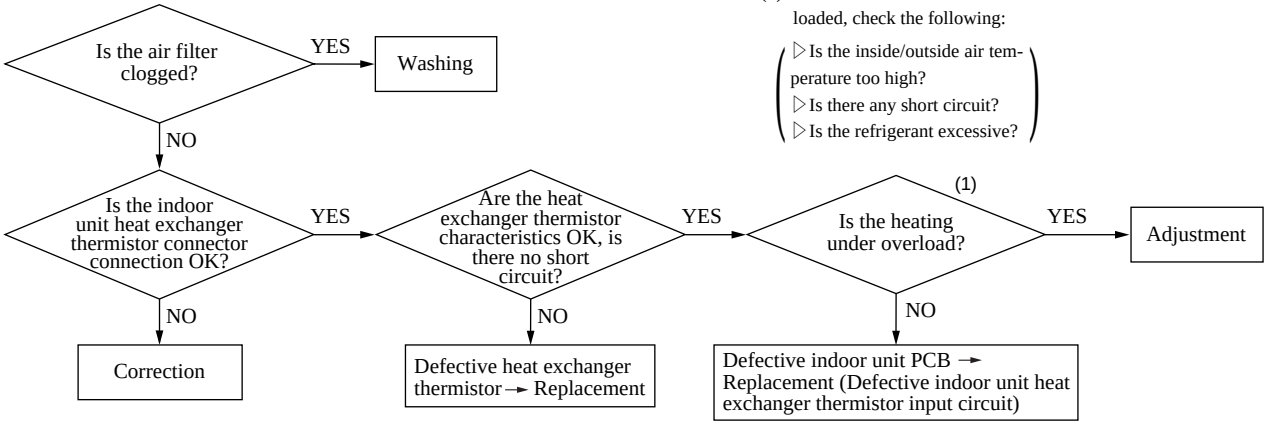
Note (1) Refer to previous page for heat exchanger thermistor temperature resistance characteristic values.

5 Heating overload

Indoor unit	
Check Lamp (yellow)	6 time flashes

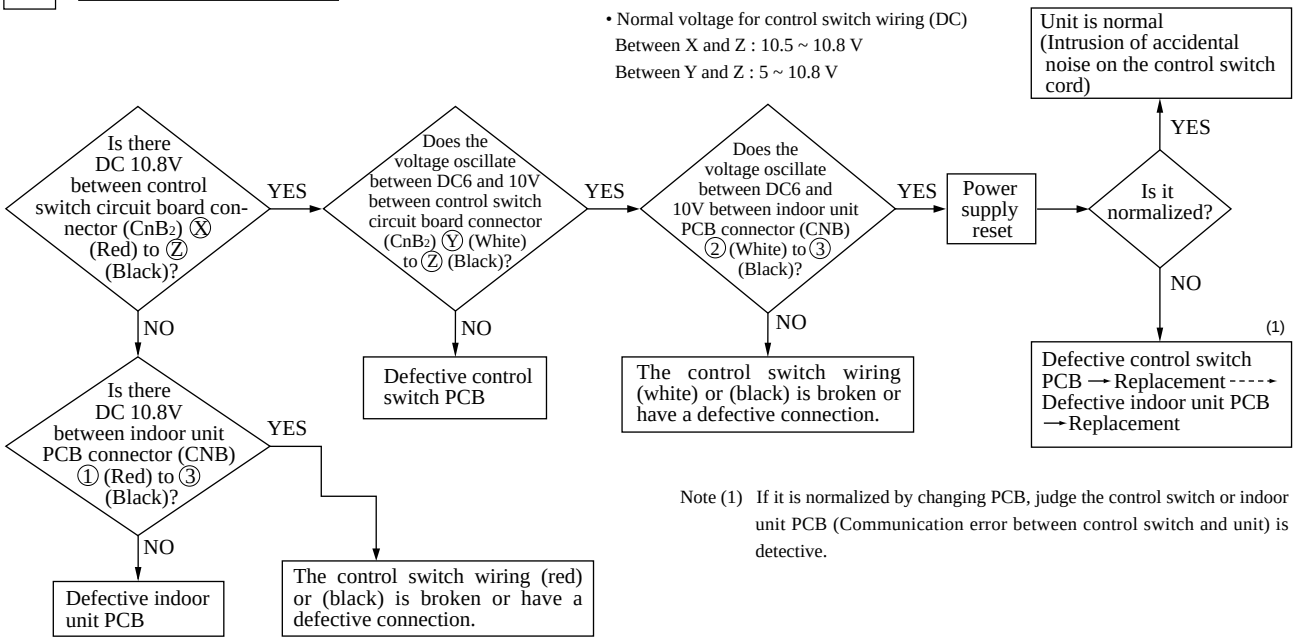
Note (1) To see whether or not it is overloaded, check the following:

(▷ Is the inside/outside air temperature too high?
▷ Is there any short circuit?
▷ Is the refrigerant excessive?)



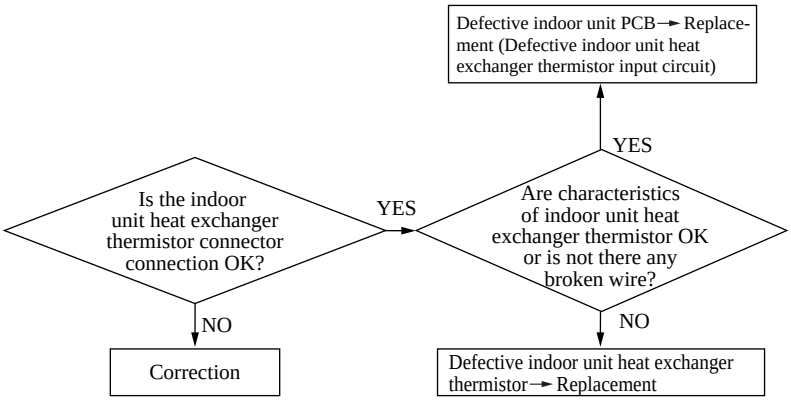
◆ **Only case of wired remote control model**

1 Error display : E1 [Communication error between control switch ~ Indoor unit PCB]

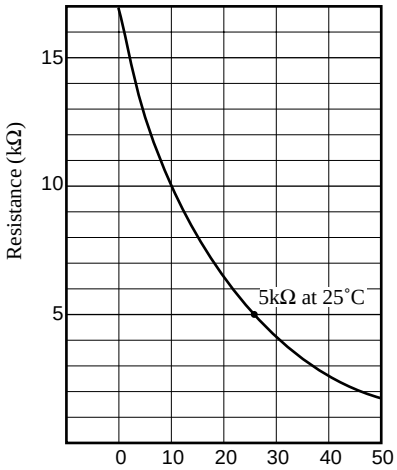


Note (1) If it is normalized by changing PCB, judge the control switch or indoor unit PCB (Communication error between control switch and unit) is detective.

2 Error display : E6 [Defective indoor unit heat exchanger thermistor]

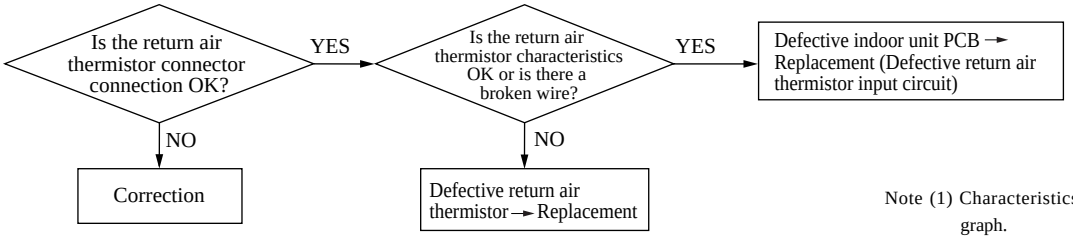


Return air thermistor (Th_R-A)
Indoor unit heat exchanger thermistor (Th_R-R)
Resistance temperature characteristics



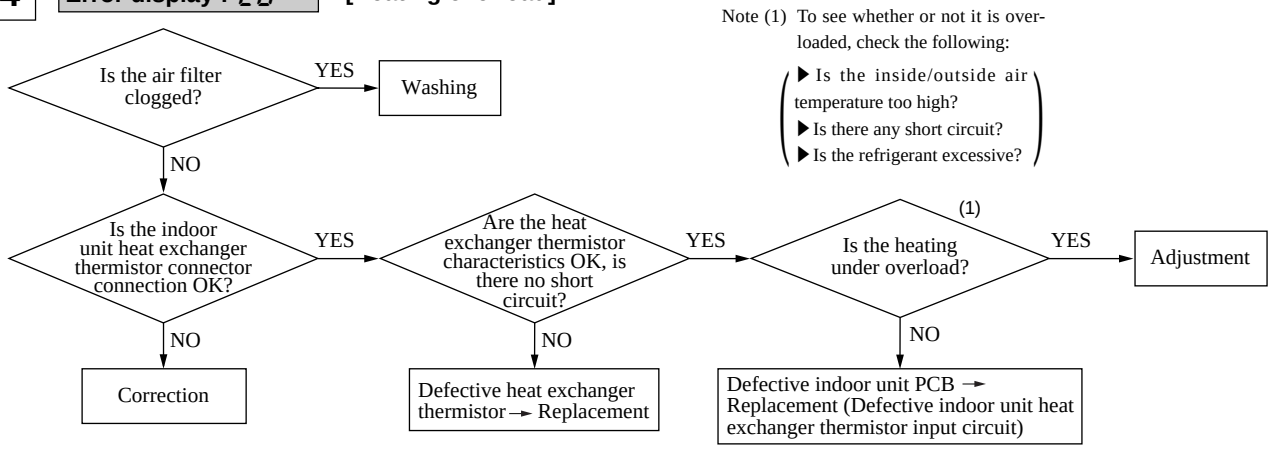
Note (1) 22.5 kΩ at -6˚C

3 Error display : E7 [Defective return air thermistor]



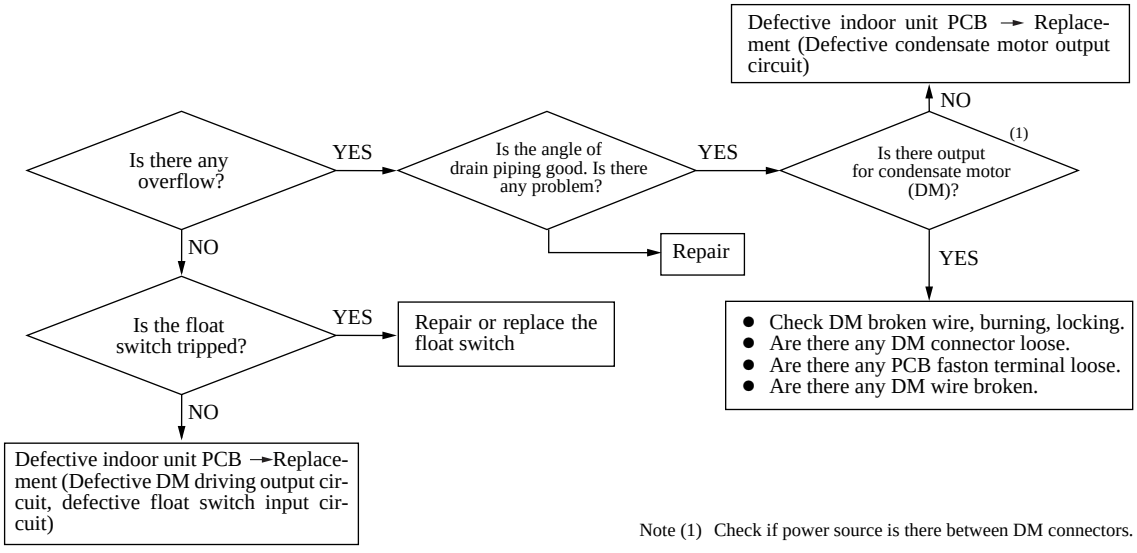
Note (1) Characteristics as per the above graph.

4 Error display : E8 [Heating overload]



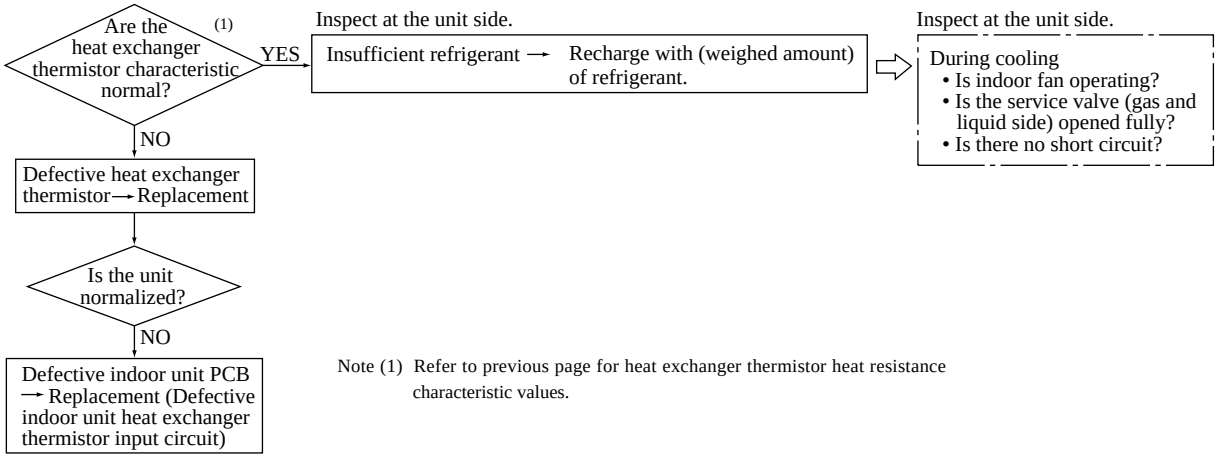
Note (1) To see whether or not it is overloaded, check the following:
- ▶ Is the inside/outside air temperature too high?
- ▶ Is there any short circuit?
- ▶ Is the refrigerant excessive?

5 Error display : E9 [Failure in drainage]



Note (1) Check if power source is there between DM connectors.

6 Error display : E57 [Insufficient refrigerant]



Note (1) Refer to previous page for heat exchanger thermistor heat resistance characteristic values.

(4) Outdoor unit side (FDC308, 408, 508 model only)

Check Indicator Table

Failure mode on the outdoor unit is indicated by flashing both Green LED (LED-G) and Red LED (LED-R) on the printed circuit board.

Outdoor unit LED		Failure at:	Contents of the failure
Green	Red		
Keeps flashing	Stays OFF	————	Normal/Power is supplied.
Stays OFF	1 time flash	Power wiring	• The outdoor power wiring is in reversed phase. • Open phase at L3 phase (primary side). • Incorrect set-up of outdoor unit PCB.
Stays OFF	2 time flashes	Installation or operation status	• Over current of the compressor motor. • Open phase at L2 phase (secondary wiring of 52C) of compressor. • Defective outdoor unit PCB.
Stays OFF	3 time flashes	CM wiring	• The wiring (secondary wiring of 52C) to the compressor is open.
Stays OFF	4 time flashes	Installation or operation status	• The outdoor heat exchanger temperature is too high [70°C or over].
		Outdoor heat exchanger thermistor	• Failure with the outdoor heat exchanger thermistor.
Stays OFF	5 time flashes	Installation or operation status	• The discharge gas temperature is too high.
		Discharge gas thermistor	• Failure with the discharge gas thermistor.
1 time flash	1 time flash	Outdoor heat exchanger thermistor	• Failure or open circuit with the outdoor heat exchanger thermistor or imperfect connection of the connector.
1 time flash	2 time flashes	Outdoor temperature thermistor	• Failure or open circuit with the outdoor temperature thermistor or imperfect connection of the connector.
1 time flash	3 time flashes	Discharge gas thermistor	• Failure with the discharge gas thermistor or imperfect connection of the connector.

"Check Indicator" is resetted when power supply is turned off once and the failure is fixed.

(a) Procedure for diagnosing trouble for outdoor unit

When diagnosing trouble for the outdoor unit, check the flashing and turns of the inspection indicator lamp (red LED) and fault indicator lamp (green LED) to obtain a general concept of the nature of the problem. Then inspect and perform repair.

1) Unit replacement parts related to printed circuit board for outdoor unit.

Micro-computer for outdoor unit, microcomputer, printed circuit board, thermistor (heat exchanger, discharge piping and outdoor air), fuses and transformer.

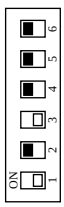
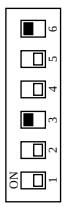
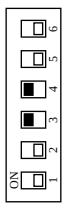
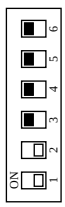
2) Summary of replacement for micro-computer for outdoor unit

a) Check the following part number

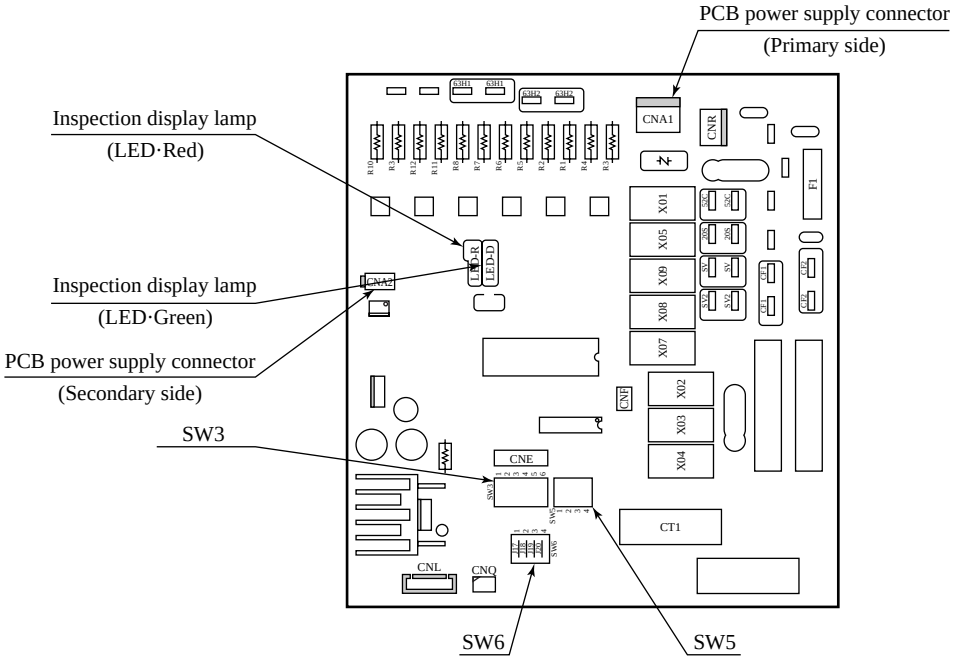
Model	Parts No.	Model	Parts No.
1 phase model	PCA505A046ZN	**3 phase model**	PCA505A046ZS

b) Set the overcurrent value using the overcurrent setting switch (SW3) for CM. Refer to the following table at the setting.

- **Table of switch (SW3) setting**

Model	FDC308HEN3	FDC308HES3	FDC408HES3	FDC508HES3
Setting value (A)	23	9	12	15
Table of switch setting Make ON/OFF setting for each switch No. (■: ON, ○: OFF)				

Parts layout on the outdoor unit PCB



• Switching by SW5

SW5	Description		
1	ON	Defrost Switching	Actual spot
	OFF		Ordinary
2	ON	De-icing Switching	Enabled
	OFF		Disabled

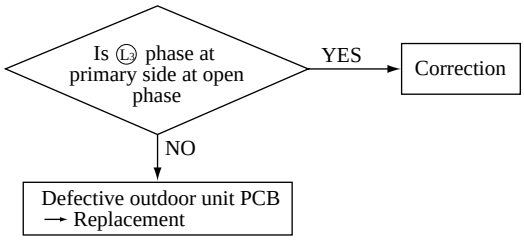
• Switching by SW6

SW6	Description		
1 (J17)	ON	4-Way Valve Control	Enabled
	OFF		Disabled
2 (J18)	ON	Defrost Circulation Temperature Switching	14°C
	OFF		18°C

(b) Inspection method when there are fault lamps (outdoor unit LED)

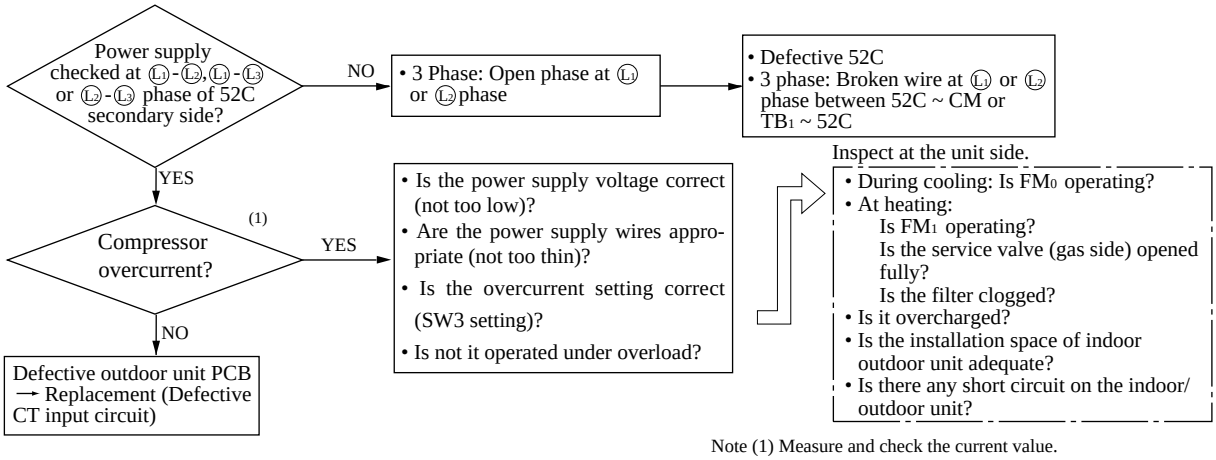
1 Open phase at L_3 phase (Primary side)

Outdoor unit	
Red LED	1 time flash
Green LED	Stays OFF



2 Overcurrent of the compressor motor

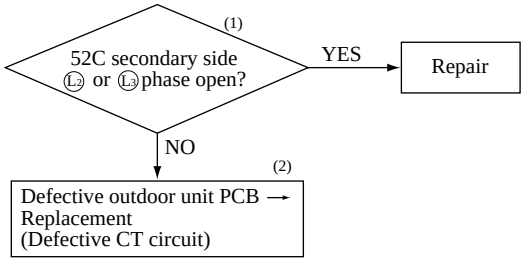
Outdoor unit	
Red LED	2 time flashes
Green LED	Stays OFF



Note (1) Measure and check the current value.
Confirm that the overcurrent setting by SW_3 of outdoor unit PCB is correct.

3 The wiring (secondary wiring of 52C) to the compressor is open.

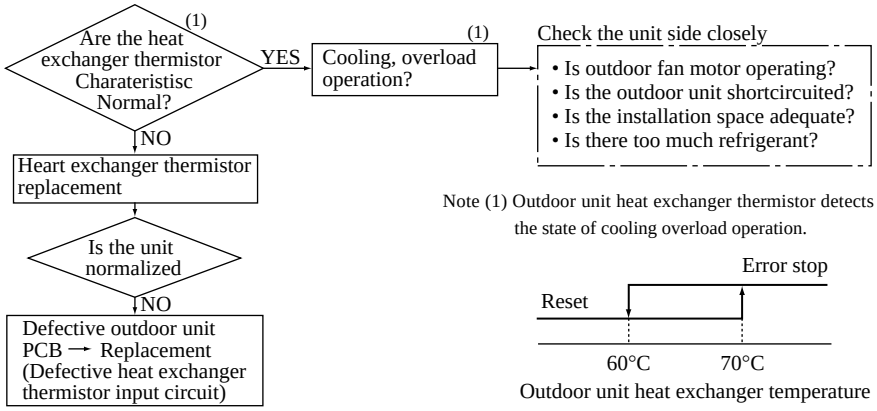
Outdoor unit	
Red LED	3 time flashes
Green LED	Stays OFF



Notes (1) When voltage is detected at 52C primary side L2 or L3 phase but not at the secondary side, check also 52C (broken coil, poor contact).
(2) When voltage is detected at 52C primary side L2 or L3 phase and there is no error at 52C (52C is energized if TB_1 L2 or L3 terminal and 52C coil secondary side connector are short circuited), the outdoor unit PCB (defective X_{01} circuit or X_{01}) or indoor unit PCB (defective thermostat circuit) is defective.

4 The outdoor heat exchanger temperature is too high (70°C or over)

Outdoor unit	
Red LED	4 time flashes
Green LED	Stays OFF

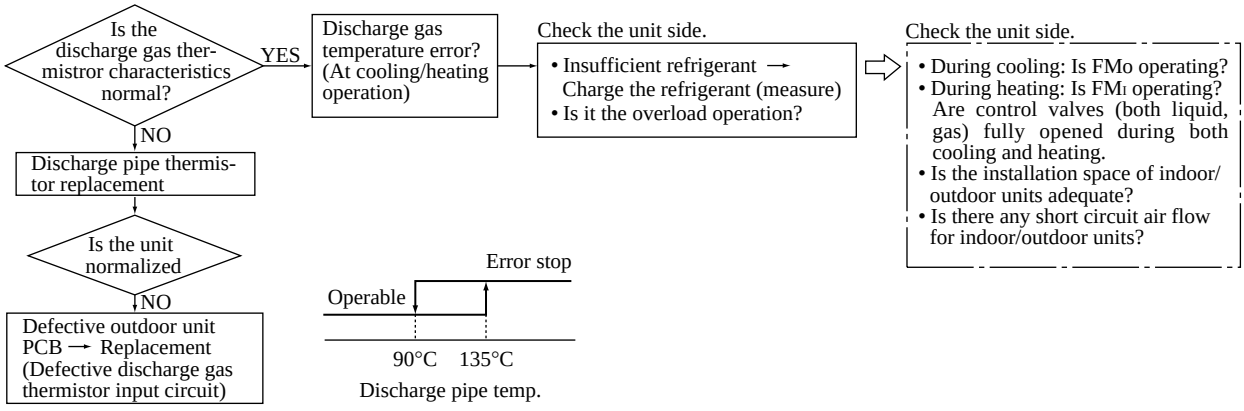


Note (1) Outdoor unit heat exchanger thermistor detects the state of cooling overload operation.

Outdoor unit heat exchanger temperature

5 The discharge gas temperature is too high.

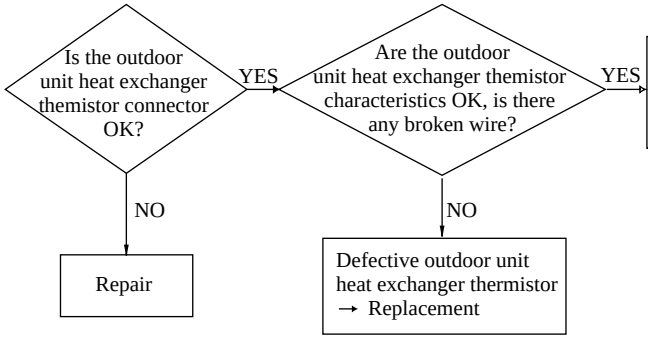
Outdoor unit	
Red LED	5 time flashes
Green LED	Stays OFF

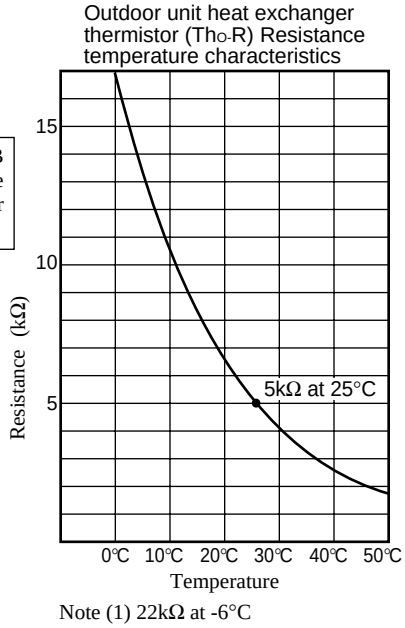


Discharge pipe temp.

6 Defective outdoor unit heat exchanger thermistor

Outdoor unit	
Red LED	1 time flash
Green LED	1 time flash

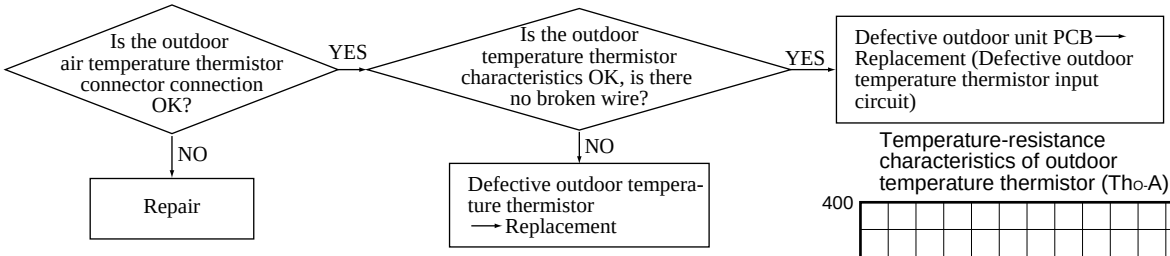




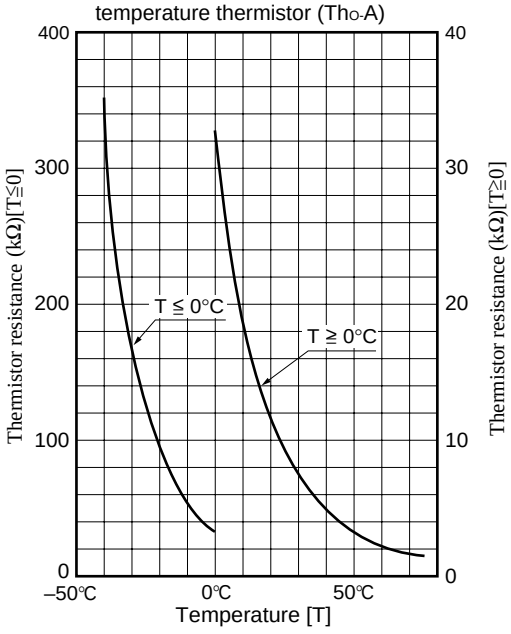
Note (1) 22kΩ at -6°C

7 Defective outdoor temperature thermistor

Outdoor unit	
Red LED	2 time flashes
Green LED	1 time flash

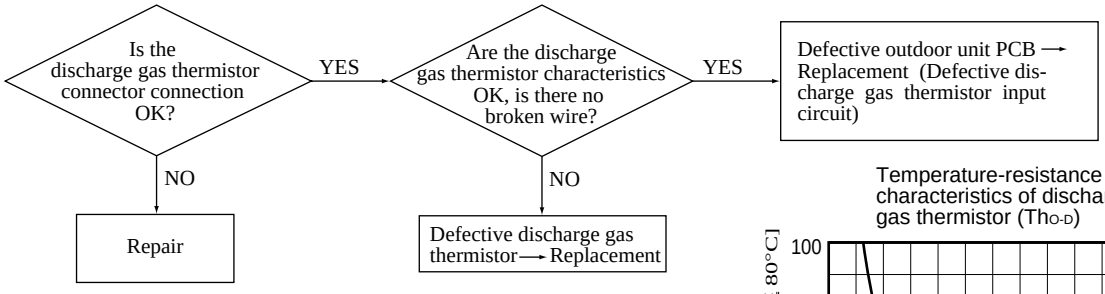


Temperature-resistance characteristics of outdoor temperature thermistor ($Th_{O\text{-}A}$)

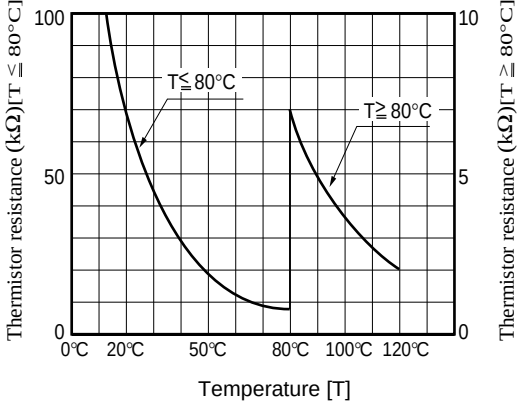


8 Defective discharge gas thermistor

Outdoor unit	
Red LED	3 time flashes
Green LED	1 time flash



Temperature-resistance characteristics of discharge gas thermistor ($Th_{O\text{-}D}$)



MEMO