1. PACKAGED AIR-CONDITIONER (Split system, Air to air heat pump type)

Alternative refrigerant R410A use models

CEILING RECESSED TYPE

FDTVA151HEN	FDTA301HEN
201HEN	301HES
251HEN	401HEN
	401HES
	501HES
	601HES

WALL MOUNTED TYPE

FDKNVA151HEN	FDKNA301HEN
201HEN	301HES
251HEN	

CEILING SUSPENDED TYPE

FDENVA151HEN	FDENA301HEN
201HEN	301HES
251HEN	401HEN
	401HES
	501HES
	601HES

CEILING MOUNTED DUCT TYPE

FDURVA201HEN	FDURA301HEN
251HEN	301HES
	401HEN
	401HES
	501HES
	601HES

CONTENTS

1.1 GENERAL INFORMATION

1.1.1 Specific features

(1) A new refrigerant, R410A, which causes no damage to the earth's ozone layer, is used. R410A is a pseudoazeotropic refrigerant, so there is little formation of separate vapor and liquid layers, and it is possible to add refrigerant on-site.

(2) 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%.

(3) The microcomputer chip is installed in the indoor unit and outdoor 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.

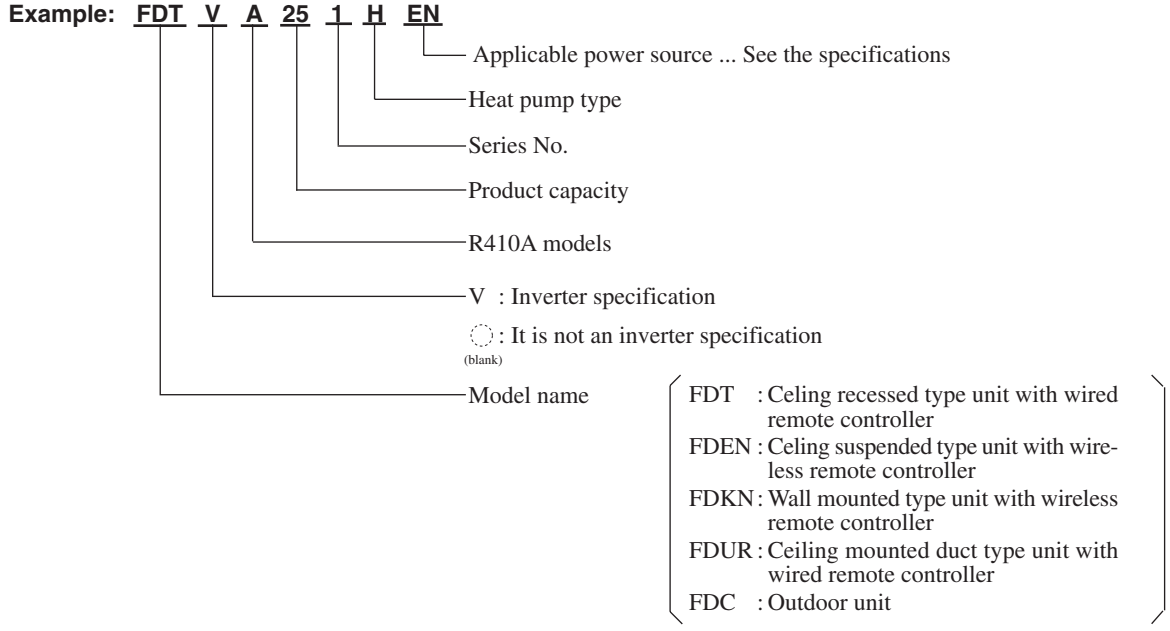
(4) There are only three power lines between the outdoor and indoor unit. One cabtyre cable with 3 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.

(5) All air supply ports have auto swing louvers. (Only case of FDT, FDEN and FDKN models). The indoor fan motor has three speeds of high, medium and low.

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

(7) The size and weight of the outdoor units in the 151~251 Series have been greatly reduced. Use of an inverter has also improved energy conservation and economy.

1.1.2 How to read the model name



1.2 SELECTION DATA

1.2.1 Specifications

(1) Ceiling recessed type (FDT)

Model FDTVA151HEN

Item		Model	FDTVA151HEN	
			FDTA151	FDCVA151HEN
Nominal cooling capacity(1)		W	**4000 [1800~4700]**	
Nominal heating capacity(1)		W	**4500 [2000~5400]**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**1.22 [0.35~1.55]**	
	Running current (Cooling)	A	**5.4 [1.6~6.9]**	
	Power factor (Cooling)	%	**98**	
	Heating input	kW	**1.32 [0.40~1.74]**	
	Running current (Heating)	A	**5.9 [1.8~7.7]**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	48
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.7**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**14 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:18 Me:15 Lo:14** **Mild mode Hi:15 Me:14 Lo:13**	**41**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA201HEN

Item		Model	FDTVA201HEN	
			FDTA201	FDCVA201HEN
Nominal cooling capacity(1)		W	**5000 [2200~5600]**	
Nominal heating capacity(1)		W	**5400 [2500~6300]**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**1.42 [0.42~1.66]**	
	Running current (Cooling)	A	**6.3 [1.9~7.4]**	
	Power factor (Cooling)	%	**98**	
	Heating input	kW	**1.49 [0.50~1.87]**	
	Running current (Heating)	A	**6.6 [2.2~8.3]**	
	Power factor (Heating)	%	**98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	48
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.9**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**14 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:18 Me:15 Lo:14** **Mild mode Hi:15 Me:14 Lo:13**	**41**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA251HEN

Item			Model	FDTVA251HEN	
				FDTA251	FDCVA251HEN
Nominal cooling capacity(1)			W	**5600 [2800~6300]**	
Nominal heating capacity(1)			W	**6700 [3100~7100]**	
Power source				**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input		kW	**1.64 [0.54~1.90]**	
	Running current (Cooling)		A	**7.3 [2.4~8.4]**	
	Power factor (Cooling)		%	**98**	
	Heating input		kW	**1.78 [0.57~1.93]**	
	Running current (Heating)		A	**7.9 [2.5~8.6]**	
	Power factor (Heating)		%	**98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	48
Exterior dimensions **Height × Width × Depth**			**mm**	**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment **Compressor type & Q'ty**				–	**5CS102XFD × 1**
Motor			kW	–	**1.5**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.48 (RB68A)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**14 × 1**	**34 × 1**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15** **Mild mode Hi:17 Me:15 Lo:13**	**41**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTA301HEN

Item		Model	FDTA301HEN	
			FDTA301	FDCA301HEN
Nominal cooling capacity(1)		W	**7200**	
Nominal heating capacity(1)		W	**7300**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**2.17**	
	Running current (Cooling)	A	**10.0**	
	Power factor (Cooling)	%	**94**	
	Heating input	kW	**2.10**	
	Running current (Heating)	A	**9.5**	
	Power factor (Heating)	%	**96**	
	Inrush current (L.R.A)	A	**63**	
	Noise level	dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	53
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 270 × 840 × 840** **Panel 30 × 950 × 950**	**845 × 880 × 340**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**75**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP26K3E-PFJ × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**20 × 1**	**55 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:20 Me:17 Lo:15** **Mild mode Hi:17 Me:15 Lo:13**	**46**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDTA301HES

Item			Model	FDTA301HES	
				FDTA301	FDCA301HES
Nominal cooling capacity(1)			W	**7200**	
Nominal heating capacity(1)			W	**7300**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**2.17**	
	Running current (Cooling)		A	**3.8**	
	Power factor (Cooling)		%	**82**	
	Heating input		kW	**2.10**	
	Running current (Heating)		A	**3.7**	
	Power factor (Heating)		%	**82**	
	Inrush current (L.R.A)		A	**34**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	53
Exterior dimensions **Height × Width × Depth**			**mm**	**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**845 × 880 × 340**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**75**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP26K3E-TFD × 1**
Motor			kW	–	**2.5**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.12 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**20 × 1**	**55 × 1**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15** **Mild mode Hi:17 Me:15 Lo:13**	**46**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDTA401HEN

Item			Model	FDTA401HEN	
				FDTA401	FDCA401HEN
Nominal cooling capacity(1)			W	**10000**	
Nominal heating capacity(1)			W	**11200**	
Power source				**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input		kW	**3.55**	
	Running current (Cooling)		A	**16.4**	
	Power factor (Cooling)		%	**94**	
	Heating input		kW	**3.49**	
	Running current (Heating)		A	**15.7**	
	Power factor (Heating)		%	**97**	
	Inrush current (L.R.A)		A	**100**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:43 Lo:41 Mild mode Hi:43 Me:41 Lo:38	54
Exterior dimensions **Height × Width × Depth**			**mm**	**Unit 295 × 840 × 840** **Panel 35 × 950 × 950**	**1050 × 920 × 340**
Net weight			**kg**	**33 (Unit:26 Panel:7)**	**92**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP41K3E-PFJ × 1**
Motor			kW	–	**3.0**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.24 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**40**	**40 × 2**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:25 Me:22 Lo:20** **Mild mode Hi:22 Me:20 Lo:18**	**64**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDTA401HES

Item			Model	FDTA401HES	
				FDTA401	FDCA401HES
Nominal cooling capacity(1)			W	**10000**	
Nominal heating capacity(1)			W	**11200**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**3.48**	
	Running current (Cooling)		A	**6.3**	
	Power factor (Cooling)		%	**80**	
	Heating input		kW	**3.42**	
	Running current (Heating)		A	**6.2**	
	Power factor (Heating)		%	**80**	
	Inrush current (L.R.A)		A	**46**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:43 Lo:41 Mild mode Hi:43 Me:41 Lo:38	54
Exterior dimensions **Height × Width × Depth**			**mm**	**Unit 295 × 840 × 840** **Panel 35 × 950 × 950**	**1050 × 920 × 340**
Net weight			**kg**	**33 (Unit:26 Panel:7)**	**92**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP41K3E-TFD × 1**
Motor			kW	–	**3.0**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.24 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**40**	**40 × 2**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:25 Me:22 Lo:20** **Mild mode Hi:22 Me:20 Lo:18**	**64**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDTA501HES

Item		Model	FDTA501HES	
			FDTA501	FDCA501HES
Nominal cooling capacity(1)		W	**12500**	
Nominal heating capacity(1)		W	**13600**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**4.30**	
	Running current (Cooling)	A	**7.7**	
	Power factor (Cooling)	%	**81**	
	Heating input	kW	**3.77**	
	Running current (Heating)	A	**6.8**	
	Power factor (Heating)	%	**80**	
	Inrush current (L.R.A)	A	**67**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	56
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 365 × 840 × 840** **Panel 35 × 950 × 950**	**1300 × 970 × 370**
Net weight		**kg**	**38 (Unit:31 Panel:7)**	**112**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP54K3E-TFD × 1**
Motor		kW	–	**3.75**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.95 (3MAW POW)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	**120 × 1**	**55 × 2**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:32 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**100**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDTA601HES

Item		Model	FDTA601HES	
			FDTA601	FDCA601HES
Nominal cooling capacity(1)		W	**14300**	
Nominal heating capacity(1)		W	**16200**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**4.33**	
	Running current (Cooling)	A	**7.5**	
	Power factor (Cooling)	%	**83**	
	Heating input	kW	**5.05**	
	Running current (Heating)	A	**8.4**	
	Power factor (Heating)	%	**87**	
	Inrush current (L.R.A)	A	**77**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	57
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 365 × 840 × 840** **Panel 35 × 950 × 950**	**1300 × 970 × 370**
Net weight		**kg**	**38 (Unit:31 Panel:7)**	**126**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP57K3E-TFD × 1**
Motor		kW	–	**4.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.66 (3MAW POW)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 2
Motor		W	**120 × 1**	**55 × 2**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:34 Me:30 Lo:26** **Mild mode Hi:30 Me:26 Lo:23**	**100**
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 : RC-E1) Wireless remote control switch (Optional : RCN-T-W-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. Abnormal discharge temperature protection.
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 (I.D.25mm, O.D.32mm)	–
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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(2) Ceiling suspended type (FDE)

Model FDENVA151HEN

Item		Model	FDENVA151HEN	
			FDENA151	FDCVA151HEN
Nominal cooling capacity(1)		W	**3800 [1800~4700]**	
Nominal heating capacity(1)		W	**4500 [2000~5400]**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**1.18 [0.40~1.66]**	
	Running current (Cooling)	A	**5.3 [1.8~7.3]**	
	Power factor (Cooling)	%	**97**	
	Heating input	kW	**1.32 [0.42~1.76]**	
	Running current (Heating)	A	**5.9 [1.9~7.8]**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	48
Exterior dimensions **Height × Width × Depth**		**mm**	**210 × 1070 × 690**	**595 × 780 (+67) × 290**
Net weight		**kg**	**30**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
	Motor	kW	–	**0.7**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
	Motor	W	**25 × 1**	**34 × 1**
	Starting method		Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**41**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA201HEN

Item		Model	FDENVA201HEN	
			FDENA201	FDCVA201HEN
Nominal cooling capacity(1)		W	**5000 [2200~5600]**	
Nominal heating capacity(1)		W	**5400 [2500~6300]**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**1.54 [0.47~1.82]**	
	Running current (Cooling)	A	**6.9 [2.1~8.1]**	
	Power factor (Cooling)	%	**97**	
	Heating input	kW	**1.57 [0.52~1.96]**	
	Running current (Heating)	A	**7.0 [2.3~8.7]**	
	Power factor (Heating)	%	**98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	48
Exterior dimensions **Height × Width × Depth**		**mm**	**210 × 1070 × 690**	**595 × 780 (+67) × 290**
Net weight		**kg**	**30**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.9**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**25 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**41**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA251HEN

Item			Model	FDENVA251HEN	
				FDENA251	FDCVA251HEN
Nominal cooling capacity(1)			W	**5600 [2800~6300]**	
Nominal heating capacity(1)			W	**6700 [3100~7100]**	
Power source				**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input		kW	**1.74 [0.55~2.01]**	
	Running current (Cooling)		A	**7.8 [2.5~8.9]**	
	Power factor (Cooling)		%	**98**	
	Heating input		kW	**1.87 [0.58~2.03]**	
	Running current (Heating)		A	**8.3 [2.6~9.0]**	
	Power factor (Heating)		%	**98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	48
Exterior dimensions			**mm**	**210 × 1320 × 690**	**595 × 780 (+67) × 290**
Height × Width × Depth					
Net weight			**kg**	**36**	**40**
Refrigerant equipment				–	**5CS102XFD × 1**
Compressor type & Q'ty					
Motor			kW	–	**1.5**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.48 (RB68A)**
Defrost control				MC controlled de-icer	
Air handling equipment				Multiblade centrifugal fan × 4	Propeller fan × 1
Fan type & Q'ty					
Motor			W	**25 × 2**	**34 × 1**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**41**
Fresh air intake				Unavailable	–
Air filter, Q'ty				Polypropylene net ×2(washable)	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control				Wireless remote control switch (Optional: RCN-E1)	– (Indoor unit side)
Operation switch				Wired remote control switch (Optional: RC-E1)	
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data			**mm**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Refrigerant piping size			**(in)**		
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENA301HEN

Item		Model	FDENA301HEN	
			FDENA301	FDCA301HEN
Nominal cooling capacity(1)		W	**6400**	
Nominal heating capacity(1)		W	**7100**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**2.26**	
	Running current (Cooling)	A	**10.3**	
	Power factor (Cooling)	%	**95**	
	Heating input	kW	**2.19**	
	Running current (Heating)	A	**10.2**	
	Power factor (Heating)	%	**93**	
	Inrush current (L.R.A)	A	**63**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	53
Exterior dimensions **Height × Width × Depth**		**mm**	**210 × 1320 × 690**	**845 × 880 × 340**
Net weight		**kg**	**36**	**75**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP26K3E-PFJ × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W	**25 × 2**	**55 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**46**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDENA301HES

Item			Model	FDENA301HES	
				FDENA301	FDCA301HES
Nominal cooling capacity(1)			W	**6400**	
Nominal heating capacity(1)			W	**7100**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**2.26**	
	Running current (Cooling)		A	**4.0**	
	Power factor (Cooling)		%	**82**	
	Heating input		kW	**2.19**	
	Running current (Heating)		A	**3.9**	
	Power factor (Heating)		%	**81**	
	Inrush current (L.R.A)		A	**34**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	53
Exterior dimensions **Height × Width × Depth**			**mm**	**210 × 1320 × 690**	**845 × 880 × 340**
Net weight			**kg**	**36**	**75**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP26K3E-TFD × 1**
Motor			kW	–	**2.5**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.12 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor			W	**25 × 2**	**55 × 1**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**46**
Fresh air intake				Unavailable	–
Air filter, Q'ty				Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**			**mm** **(in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDENA401HEN

Item			Model	FDENA401HEN	
				FDENA401	FDCA401HEN
Nominal cooling capacity(1)			W	**10000**	
Nominal heating capacity(1)			W	**11200**	
Power source				**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input		kW	**3.44**	
	Running current (Cooling)		A	**15.9**	
	Power factor (Cooling)		%	**94**	
	Heating input		kW	**3.10**	
	Running current (Heating)		A	**13.9**	
	Power factor (Heating)		%	**97**	
	Inrush current (L.R.A)		A	**100**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:39	54
Exterior dimensions			**mm**	**250 × 1620 × 690**	**1050 × 920 × 340**
Height × Width × Depth					
Net weight			**kg**	**46**	**92**
Refrigerant equipment				–	**ZP41K3E-PFJ × 1**
Compressor type & Q'ty					
Motor			kW	–	**3.0**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.24 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment				Multiblade centrifugal fan × 4	Propeller fan × 2
Fan type & Q'ty					
Motor			W	**30 × 2**	**40 × 2**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:29 Me:26 Lo:23** **Mild mode Hi:26 Me:23 Lo:21**	**64**
Fresh air intake				Unavailable	–
Air filter, Q'ty				Polypropylene net ×2(washable)	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	33 (Crank case heater)
Operation control				Wireless remote control switch (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Operation switch					
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data			**mm**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Refrigerant piping size			**(in)**		
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDENA401HES

Item			Model	FDENA401HES	
				FDENA401	FDCA401HES
Nominal cooling capacity(1)			W	**10000**	
Nominal heating capacity(1)			W	**11200**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**3.32**	
	Running current (Cooling)		A	**6.0**	
	Power factor (Cooling)		%	**80**	
	Heating input		kW	**3.05**	
	Running current (Heating)		A	**5.5**	
	Power factor (Heating)		%	**80**	
	Inrush current (L.R.A)		A	**46**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:39	54
Exterior dimensions **Height × Width × Depth**			**mm**	**250 × 1620 × 690**	**1050 × 920 × 340**
Net weight			**kg**	**46**	**92**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP41K3E-TFD × 1**
Motor			kW	–	**3.0**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.24 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 2
Motor			W	**30 × 2**	**40 × 2**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:29 Me:26 Lo:23** **Mild mode Hi:26 Me:23 Lo:21**	**64**
Fresh air intake				Unavailable	–
Air filter, Q'ty				Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**			**mm** **(in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDENA501HES

Item			Model	FDENA501HES	
				FDENA501	FDCA501HES
Nominal cooling capacity(1)			W	**12600**	
Nominal heating capacity(1)			W	**13300**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**4.65**	
	Running current (Cooling)		A	**8.2**	
	Power factor (Cooling)		%	**82**	
	Heating input		kW	**3.84**	
	Running current (Heating)		A	**6.8**	
	Power factor (Heating)		%	**82**	
	Inrush current (L.R.A)		A	**67**	
	Noise level		dB(A)	Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	56
Exterior dimensions			**mm**	**250 × 1620 × 690**	**1300 × 970 × 370**
Height × Width × Depth					
Net weight			**kg**	**46**	**112**
Refrigerant equipment				–	**ZP54K3E-TFD × 1**
Compressor type & Q'ty					
Motor			kW	–	**3.75**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.95 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment				Multiblade centrifugal fan × 4	Propeller fan × 2
Fan type & Q'ty					
Motor			W	**33 × 2**	**55 × 2**
Starting method				Line starting	Line starting
Air flow			**CMM**	**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**100**
Fresh air intake				Unavailable	–
Air filter, Q'ty				Polypropylene net ×2(washable)	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control				Wireless remote control switch (Optional: RCN-E1)	– (Indoor unit side)
Operation switch				Wired remote control switch (Optional: RC-E1)	
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data			**mm**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Refrigerant piping size			**(in)**		
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDENA601HES

Item		Model	FDENA601HES	
			FDENA601	FDCA601HES
Nominal cooling capacity(1)		W	**14200**	
Nominal heating capacity(1)		W	**15900**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**4.69**	
	Running current (Cooling)	A	**8.0**	
	Power factor (Cooling)	%	**85**	
	Heating input	kW	**4.38**	
	Running current (Heating)	A	**7.2**	
	Power factor (Heating)	%	**88**	
	Inrush current (L.R.A)	A	**77**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	57
Exterior dimensions **Height × Width × Depth**		**mm**	**250 × 1620 × 690**	**1300 × 970 × 370**
Net weight		**kg**	**46**	**126**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP57K3E-TFD × 1**
Motor		kW	–	**4.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.66 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 2
Motor		W	**40 × 2**	**55 × 2**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**100**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Polypropylene net ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(3) Wall mounted type (FDK)

Model FDKNVA151HEN

Item		Model	FDKNVA151HEN	
			FDKNA151	FDCVA151HEN
Nominal cooling capacity(1)		W	**4000 [1800~4700]**	
Nominal heating capacity(1)		W	**4500 [2000~5400]**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**1.30 [0.43~1.74]**	
	Running current (Cooling)	A	**5.8 [1.9~7.7]**	
	Power factor (Cooling)	%	**97**	
	Heating input	kW	**1.30 [0.42~1.74]**	
	Running current (Heating)	A	**5.8 [1.9~7.7]**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:42 Lo:40 Mild mode Hi:42 Me:40 Lo:37	48
Exterior dimensions **Height × Width × Depth**		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.7**
Starting method			–	Line starting
Heat exchanger			Slitted fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:10** **Mild mode Hi:11 Me:10 Lo:9**	**41**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Long life filter ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D.16mm, O.D.22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDKNVA201HEN

Item		Model	FDKNVA201HEN	
			FDKNA201	FDCVA201HEN
Nominal cooling capacity(1)		W	**5000 [2200~5600]**	
Nominal heating capacity(1)		W	**5400 [2500~6300]**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**1.66 [0.53~1.93]**	
	Running current (Cooling)	A	**7.4 [2.4~8.6]**	
	Power factor (Cooling)	%	**98**	
	Heating input	kW	**1.58 [0.53~1.98]**	
	Running current (Heating)	A	**7.1 [2.4~8.8]**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	48
Exterior dimensions **Height × Width × Depth**		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.9**
Starting method			–	Line starting
Heat exchanger			Slitted fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**41**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Long life filter ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D.16mm, O.D.22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDKNVA251HEN

Item		Model	FDKNVA251HEN	
			FDKNA251	FDCVA251HEN
Nominal cooling capacity(1)		W	**5600 [2800~6000]**	
Nominal heating capacity(1)		W	**6300 [3100~7100]**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**1.99 [0.67~2.20]**	
	Running current (Cooling)	A	**8.9 [3.0~9.8]**	
	Power factor (Cooling)	%	**97**	
	Heating input	kW	**1.85 [0.65~2.15]**	
	Running current (Heating)	A	**8.2 [2.9~9.5]**	
	Power factor (Heating)	%	**98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:45 Lo:42 Mild mode Hi:45 Me:42 Lo:39	48
Exterior dimensions **Height × Width × Depth**		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**1.5**
Starting method			–	Line starting
Heat exchanger			Slitted fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:14 Me:13 Lo:11** **Mild mode Hi:13 Me:11 Lo:10**	**41**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Long life filter ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D.16mm, O.D.22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range

Model FDKNA301HEN

Item		Model	FDKNA301HEN	
			FDKNA301	FDCA301HEN
Nominal cooling capacity(1)		W	**6700**	
Nominal heating capacity(1)		W	**7300**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**2.28**	
	Running current (Cooling)	A	**10.3**	
	Power factor (Cooling)	%	**96**	
	Heating input	kW	**2.22**	
	Running current (Heating)	A	**10.4**	
	Power factor (Heating)	%	**93**	
	Inrush current (L.R.A)	A	**63**	
	Noise level	dB(A)	Powerful mode Hi:49 Me:46 Lo:43 Mild mode Hi:46 Me:43 Lo:40	53
Exterior dimensions **Height × Width × Depth**		**mm**	**298 × 1155 × 196**	**845 × 880 × 340**
Net weight		**kg**	**13.5**	**75**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP26K3E-PFJ × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**40 × 1**	**55 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:21 Me:18 Lo:15** **Mild mode Hi:18 Me:15 Lo:13**	**46**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Long life filter ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm** **(in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D.16mm, O.D.22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDKNA301HES

Item		Model	FDKNA301HES	
			FDKNA301	FDCA301HES
Nominal cooling capacity(1)		W	**6700**	
Nominal heating capacity(1)		W	**7300**	
Power source			**1 Phase, 380/400/415V, 50Hz**	
Operation data(3)	Cooling input	kW	**2.28**	
	Running current (Cooling)	A	**4.0**	
	Power factor (Cooling)	%	**82**	
	Heating input	kW	**2.22**	
	Running current (Heating)	A	**4.0**	
	Power factor (Heating)	%	**80**	
	Inrush current (L.R.A)	A	**34**	
	Noise level	dB(A)	Powerful mode Hi:49 Me:46 Lo:43 Mild mode Hi:46 Me:43 Lo:40	53
Exterior dimensions **Height × Width × Depth**		**mm**	**298 × 1155 × 196**	**845 × 880 × 340**
Net weight		**kg**	**13.5**	**75**
Refrigerant equipment **Compressor type & Q'ty**			–	**ZP26K3E-TFD × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**40 × 1**	**55 × 1**
Starting method			Line starting	Line starting
Air flow		**CMM**	**Powerful mode Hi:21 Me:18 Lo:15** **Mild mode Hi:18 Me:15 Lo:13**	**46**
Fresh air intake			Unavailable	–
Air filter, Q'ty			Long life filter ×2(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 (Optional: RCN-E1) Wired remote control switch (Optional: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D.16mm, O.D.22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(4) Ceiling mounted duct type (FDUR)

Model FDURVA201HEN

Item		Model	FDURVA201HEN	
			FDURA201	FDCVA201HEN
Nominal cooling capacity(1)		W	**5000 [2200~5600]**	
Nominal heating capacity(1)		W	**5400 [2500~6300]**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**1.64 [0.58~1.88]**	
	Running current (Cooling)	A	**7.3 [2.6~8.4]**	
	Power factor (Cooling)	%	**98**	
	Heating input	kW	**1.58 [0.60~1.96]**	
	Running current (Heating)	A	**7.0 [2.7~8.7]**	
	Power factor (Heating)	%	**98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:40 Lo:36	48
Exterior dimensions **Height × Width × Depth**		**mm**	**295 × 850 × 650**	**595 × 780 (+67) × 290**
Net weight		**kg**	**39**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Motor		kW	–	**0.9**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**90 × 1**	**34 × 1**
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:17 Lo:13.5**	**41**
Available static pressure		Pa	**Standard: 50, Max: 85**	–
Fresh air intake			–	–
Air filter, Q'ty			Polypropylene net ×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 : RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDURVA251HEN

Item		Model	FDURVA251HEN	
			FDURA251	FDCVA251HEN
Nominal cooling capacity(1)		W	**5600 [2800~6300]**	
Nominal heating capacity(1)		W	**6400 [3100~7100]**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**1.98 [0.69~2.33]**	
	Running current (Cooling)	A	**8.8 [3.1~10.3]**	
	Power factor (Cooling)	%	**98**	
	Heating input	kW	**1.77 [0.68~2.04]**	
	Running current (Heating)	A	**7.9 [3.0~9.1]**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:41 Lo:37	48
Exterior dimensions Height × Width × Depth		**mm**	**295 × 850 × 650**	**595 × 780 (+67) × 290**
Net weight		**kg**	**40**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
	Motor	kW	–	**1.5**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
	Motor	W	**130 × 1**	**34 × 1**
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi:21 Lo:17**	**41**
Available static pressure		Pa	**Standard: 50, Max: 85**	–
Fresh air intake			–	–
Air filter, Q'ty			Polypropylene net ×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 : RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	12˚C	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDURA301HEN

Item		Model	FDURA301HEN	
			FDURA301	FDCA301HEN
Nominal cooling capacity(1)		W	**6700**	
Nominal heating capacity(1)		W	**7100**	
Power source			**1 Phase, 220/230/240V, 50Hz**	
Operation data(3)	Cooling input	kW	**2.38**	
	Running current (Cooling)	A	**11.0**	
	Power factor (Cooling)	%	**94**	
	Heating input	kW	**2.21**	
	Running current (Heating)	A	**10.4**	
	Power factor (Heating)	%	**92**	
	Inrush current (L.R.A)	A	**63**	
	Noise level	dB(A)	Hi:41 Lo:37	53
Exterior dimensions Height × Width × Depth		**mm**	**295 × 850 × 650**	**845× 880× 340**
Net weight		**kg**	**40**	**75**
Refrigerant equipment Compressor type & Q'ty			–	**ZP26K3E-PFJ × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fines & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**230 × 1**	**55 × 1**
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi: 25 Lo: 20**	**46**
Available static pressure		Pa	**Standard: 50, Max: 130**	–
Fresh air intake			–	–
Air filter, Q'ty			Polypropylene net × 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: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDURA301HES

Item		Model	FDURA301HES	
			FDURA301	FDCA301HES
Nominal cooling capacity(1)		W	**6700**	
Nominal heating capacity(1)		W	**7100**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**2.38**	
	Running current (Cooling)	A	**4.2**	
	Power factor (Cooling)	%	**82**	
	Heating input	kW	**2.21**	
	Running current (Heating)	A	**4.0**	
	Power factor (Heating)	%	**80**	
	Inrush current (L.R.A)	A	**34**	
	Noise level	dB(A)	Hi: 41 Lo: 37	53
Exterior dimensions Height × Width × Depth		**mm**	**295 × 850 × 650**	**845 × 880 × 340**
Net weight		**kg**	**40**	**75**
Refrigerant equipment Compressor type & Q'ty			–	**ZP26K3E-TFD × 1**
Motor		kW	–	**2.5**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.15 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.12 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**230 × 1**	**55 × 1**
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi: 25 Lo: 20**	**46**
Available static pressure		Pa	**Standard: 50, Max: 130**	–
Fresh air intake			–	–
Air filter, Q'ty			Polypropylene net ×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: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDURA401HEN

Item		Model	FDURA401HEN	
			FDURA401	FDCA401HEN
Nominal cooling capacity(1)		W	**10000**	
Nominal heating capacity(1)		W	**11200**	
Power source			**1 Phase, 220/230/240V 50Hz**	
Operation data(3)	Cooling input	kW	**3.56**	
	Running current (Cooling)	A	**16.5**	
	Power factor (Cooling)	%	**94**	
	Heating input	kW	**3.28**	
	Running current (Heating)	A	**14.7**	
	Power factor (Heating)	%	**97**	
	Inrush current (L.R.A)	A	**100**	
	Noise level	dB(A)	Hi:42 Lo:37	54
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 650**	**1050 × 920 × 340**
Net weight		**kg**	**63**	**92**
Refrigerant equipment Compressor type & Q'ty			–	**ZP41K3E-PFJ × 1**
	Motor	kW	–	**3.0**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.24 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 2
	Motor	W	**280 × 1**	**40 × 2**
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi: 34 Lo: 27**	**64**
Available static pressure		Pa	**Standard: 50, Max 130**	–
	Fresh air intake		–	–
	Air filter, Q'ty		Polypropylene net ×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: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

Model FDURA401HES

Item		Model	FDURA401HES	
			FDURA401	FDCA401HES
Nominal cooling capacity(1)		W	**10000**	
Nominal heating capacity(1)		W	**11200**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**3.32**	
	Running current (Cooling)	A	**6.0**	
	Power factor (Cooling)	%	**80**	
	Heating input	kW	**3.10**	
	Running current (Heating)	A	**5.6**	
	Power factor (Heating)	%	**80**	
	Inrush current (L.R.A)	A	**46**	
	Noise level	dB(A)	Hi: 42 Lo: 37	54
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 650**	**1050 × 920 × 340**
Net weight		**kg**	**63**	**92**
Refrigerant equipment Compressor type & Q'ty			–	**ZP41K3E-TFD × 1**
	Motor	kW	–	**3.0**
	Starting method		–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.24 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 2
	Motor	W	**280 × 1**	**40 × 2**
	Starting method		Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi: 34 Lo: 27**	**64**
Available static pressure		Pa	**Standard: 50, Max 130**	–
	Fresh air intake		–	–
	Air filter, Q'ty		Polypropylene net ×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: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDURA501HES

Item		Model	FDURA501HES	
			FDURA501	FDCA501HES
Nominal cooling capacity(1)		W	**12500**	
Nominal heating capacity(1)		W	**13600**	
Power source			**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input	kW	**4.66**	
	Running current (Cooling)	A	**8.4**	
	Power factor (Cooling)	%	**80**	
	Heating input	kW	**3.89**	
	Running current (Heating)	A	**7.0**	
	Power factor (Heating)	%	**80**	
	Inrush current (L.R.A)	A	**67**	
	Noise level	dB(A)	Hi:43 Lo:38	56
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 650**	**1300 × 970 × 370**
Net weight		**kg**	**65**	**112**
Refrigerant equipment Compressor type & Q'ty			–	**ZP54K3E-TFD × 1**
Motor		kW	–	**3.75**
Starting method			–	Line starting
Heat exchanger			Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control			Electronic expansion valve	
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.95 (3MAW POE)**
Defrost control			MC controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 2
Motor		W	**460 × 1**	**55 × 2**
Starting method			Line starting	Line starting
Air flow (Standard)		**CMM**	**Hi: 42 Lo: 33.5**	**100**
Available static pressure		Pa	**Standard: 50, Max 130**	–
Fresh air intake			–	–
Air filter, Q'ty			Polypropylene net ×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: RC-E1)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

Model FDURA601HES

Item			Model	FDURA601HES	
				FDURA601	FDCA601HES
Nominal cooling capacity(1)			W	**14400**	
Nominal heating capacity(1)			W	**16000**	
Power source				**3 Phase, 380/400/415V 50Hz**	
Operation data(3)	Cooling input		kW	**4.79**	
	Running current (Cooling)		A	**8.2**	
	Power factor (Cooling)		%	**84**	
	Heating input		kW	**4.63**	
	Running current (Heating)		A	**7.5**	
	Power factor (Heating)		%	**89**	
	Inrush current (L.R.A)		A	**77**	
	Noise level		dB(A)	Hi:43 Lo:38	57
Exterior dimensions **Height × Width × Depth**			**mm**	**350 × 1370 × 650**	**1300 × 970 × 370**
Net weight			**kg**	**65**	**126**
Refrigerant equipment **Compressor type & Q'ty**				–	**ZP57K3E-TFD × 1**
Motor			kW	–	**4.5**
Starting method				–	Line starting
Heat exchanger				Louver fins & inner grooved tubing	Slitted fins & inner grooved tubing
Refrigerant control				Electronic expansion valve	
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.9 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.66 (3MAW POE)**
Defrost control				MC controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 2
Motor			W	**460 × 1**	**55 × 2**
Starting method				Line starting	Line starting
Air flow (Standard)			**CMM**	**Hi: 42 Lo: 33.5**	**100**
Available static pressure			Pa	**Standard: 50, Max 130**	–
Fresh air intake				–	–
Air filter, Q'ty				Polypropylene net ×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: RC-E1)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data **Refrigerant piping size**			**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D.25mm, O.D.32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Suction grille	

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
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

1.2.2 Range of usage & limitations

Item \ Models		151, 201, 251 models	301~601 models
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart (see page 59)	
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. 40m**	**Max. 50m**
Vertical height difference between outdoor unit and indoor unit		**Max. 30m (Outdoor unit is higher)** **Max. 15m (Outdoor unit is lower)**	
Power source voltage		Rating ± 10%	
Voltage at starting		Min. 85% of rating	
Compressor ON-OFF Frequency	**Cycle Time**	6 minutes or more (from ON to ON) or (from OFF to OFF)	
	Stop Time	3 minutes or more	

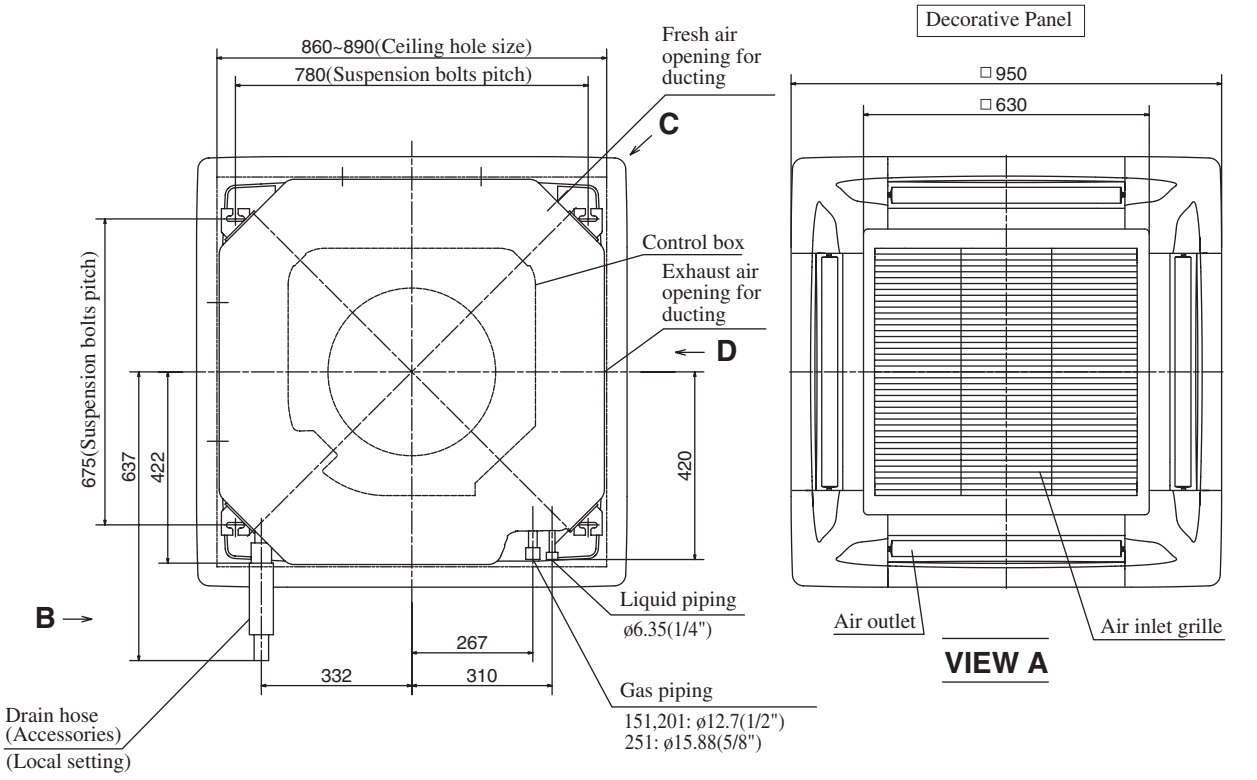
1.2.3 Exterior dimensions

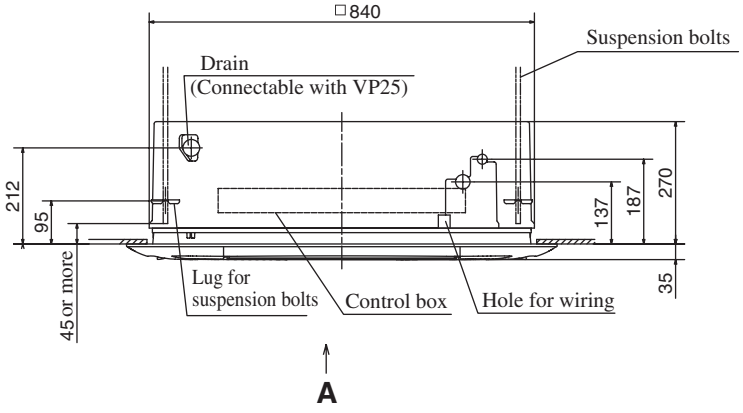
(1) Indoor unit

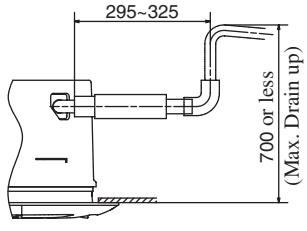
(a) Ceiling recessed type (FDT)

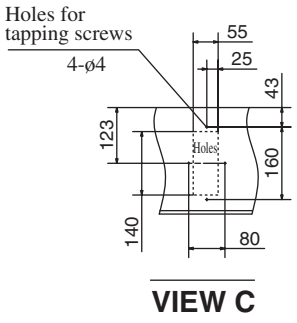
Models FDTA151, 201, 251

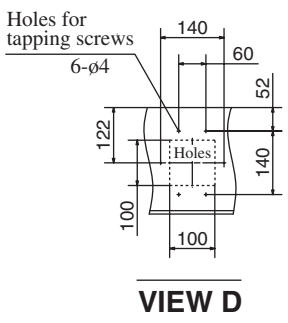
unit : mm

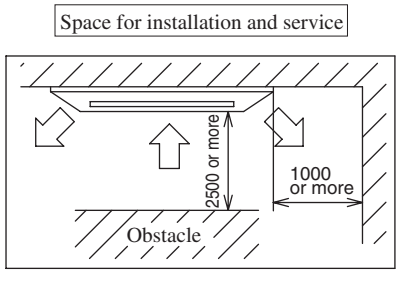






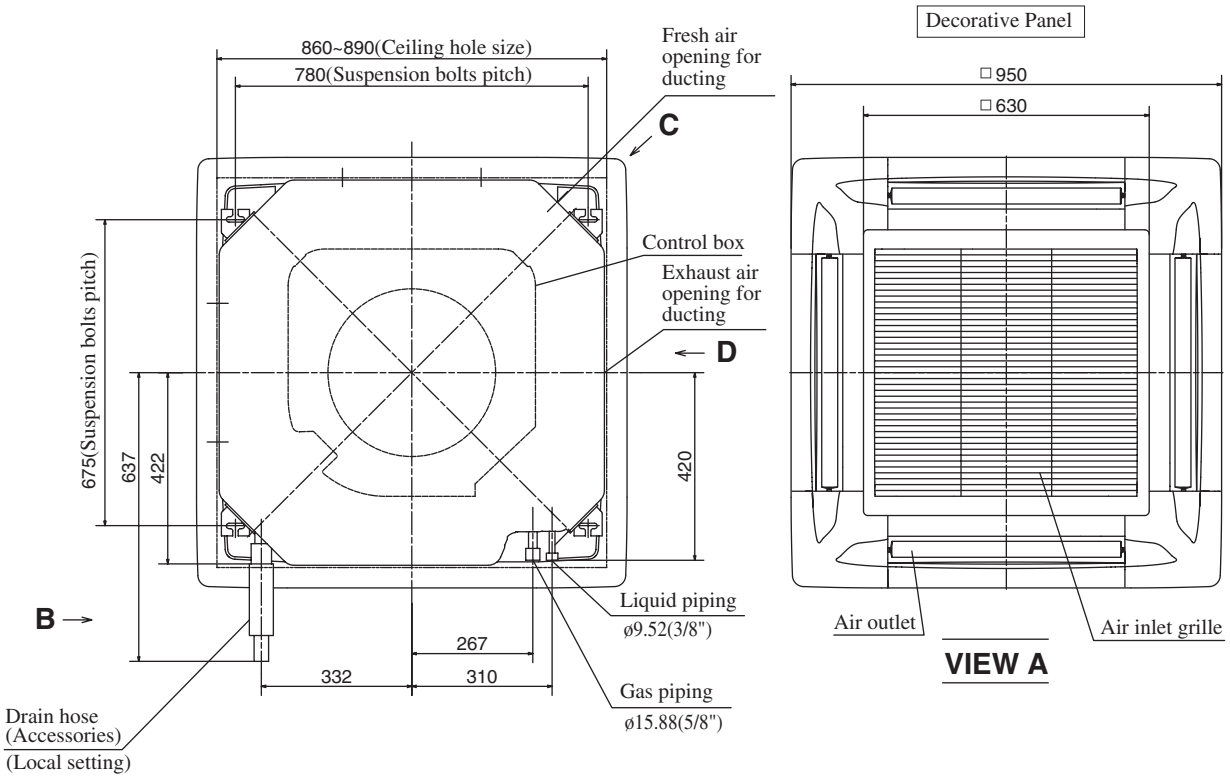


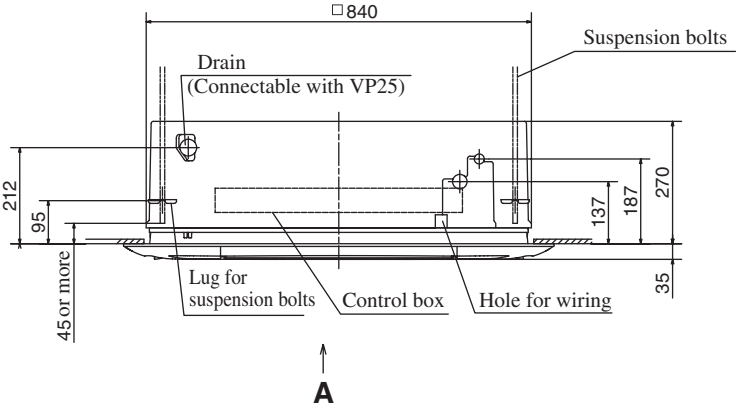


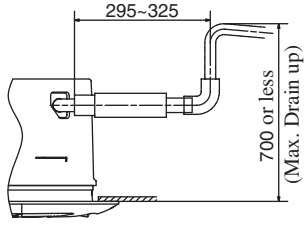


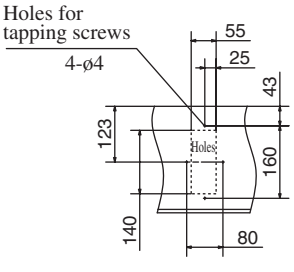
Model FDTA301

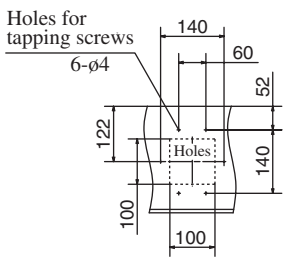
unit : mm

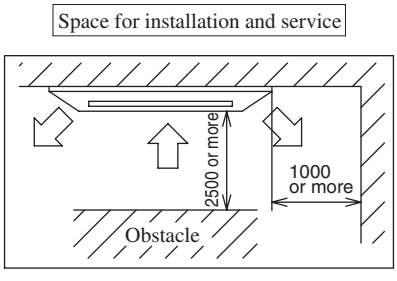






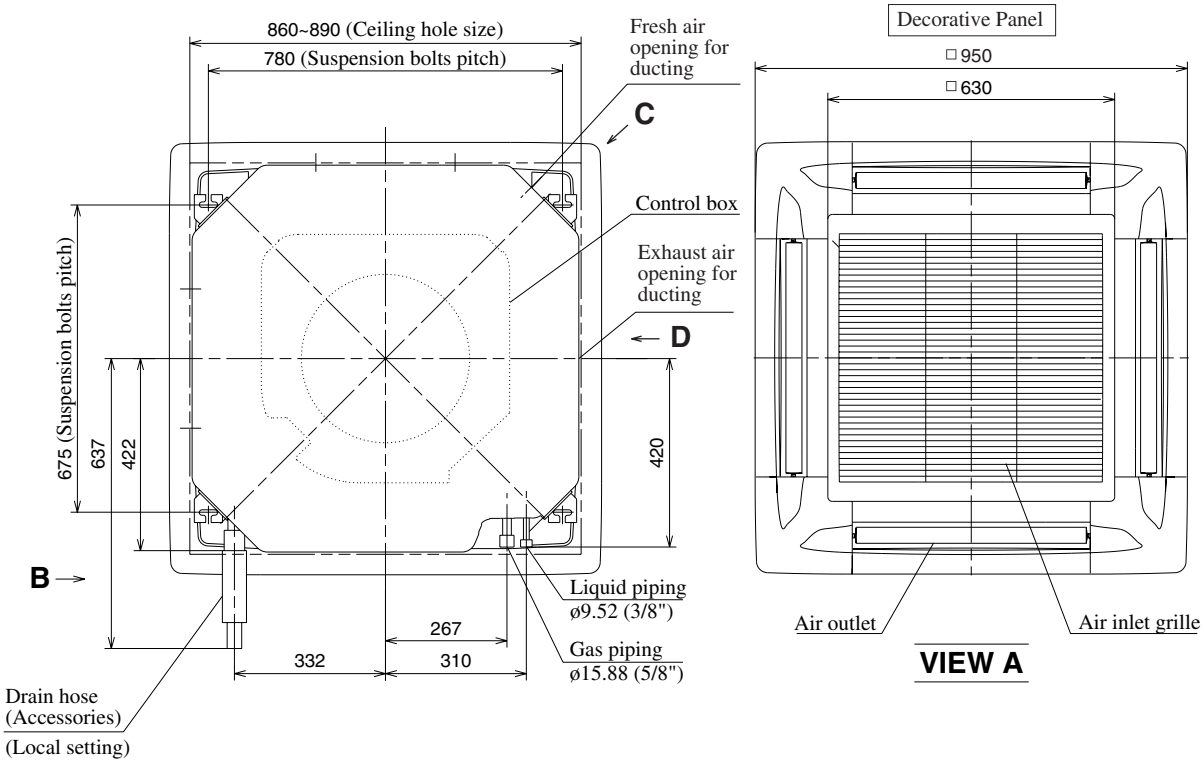


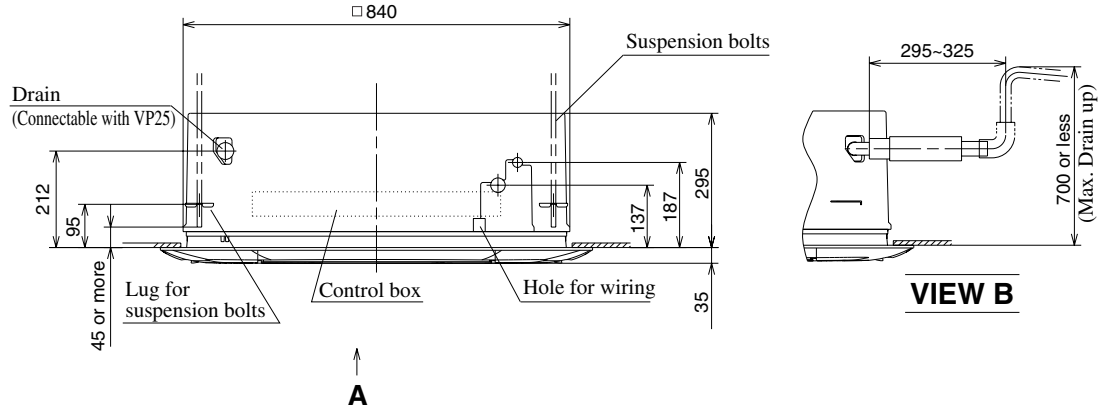


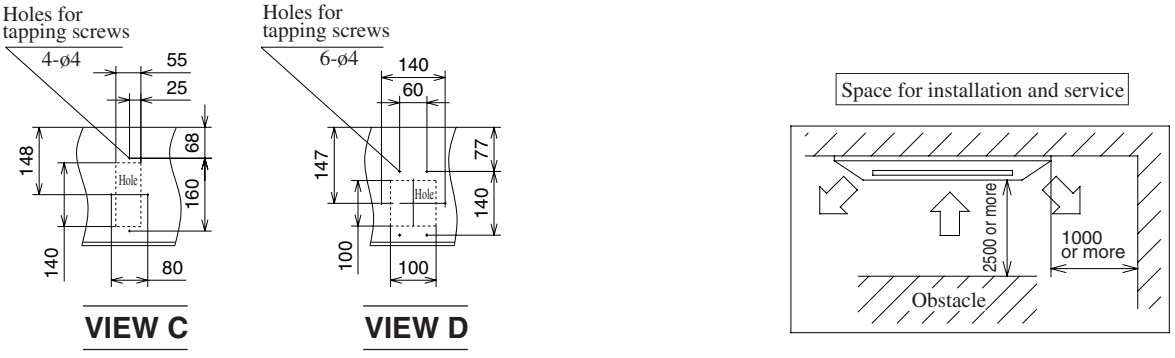


Model FDTA401

unit : mm

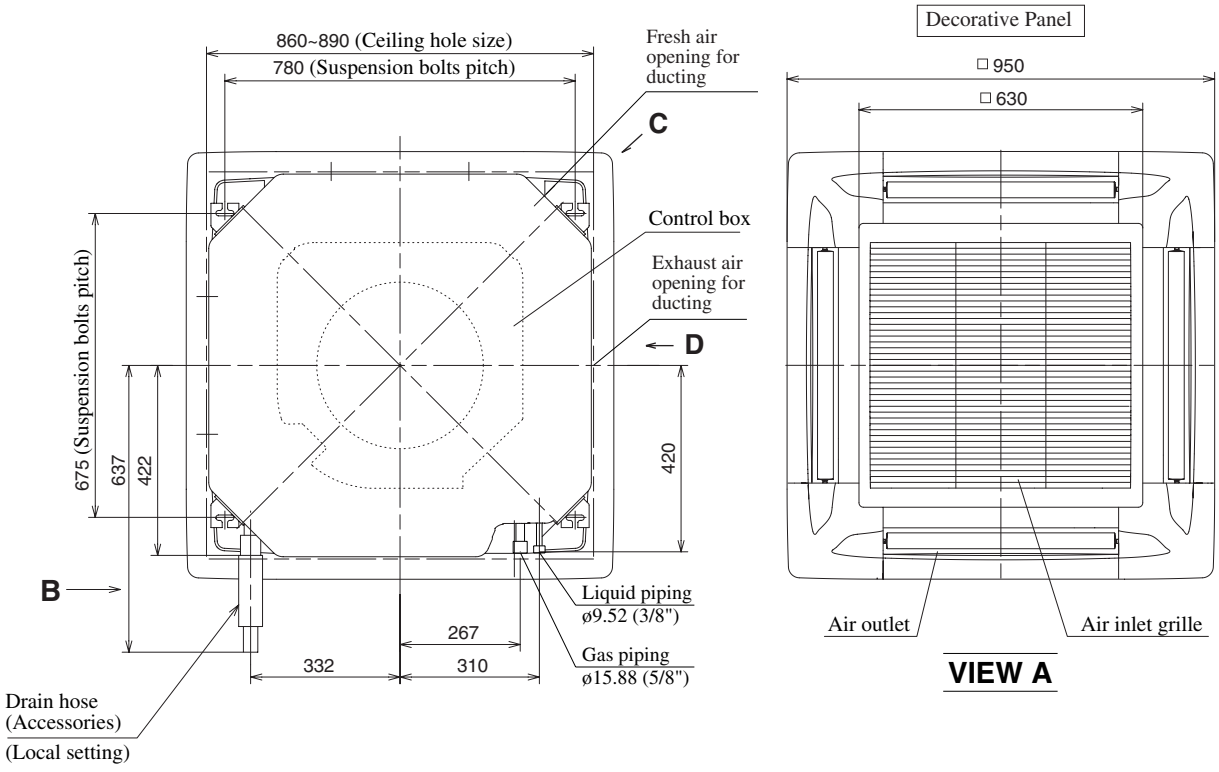


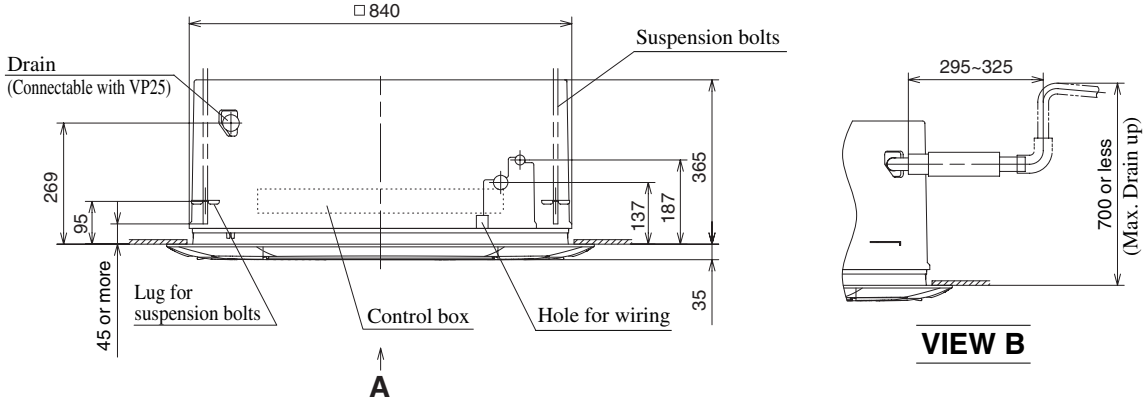


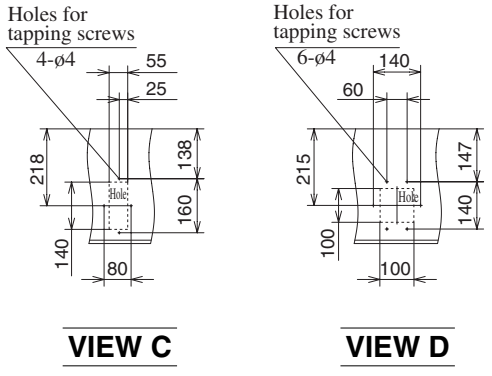


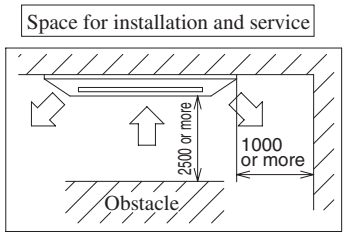
Models FDTA501, 601

unit : mm





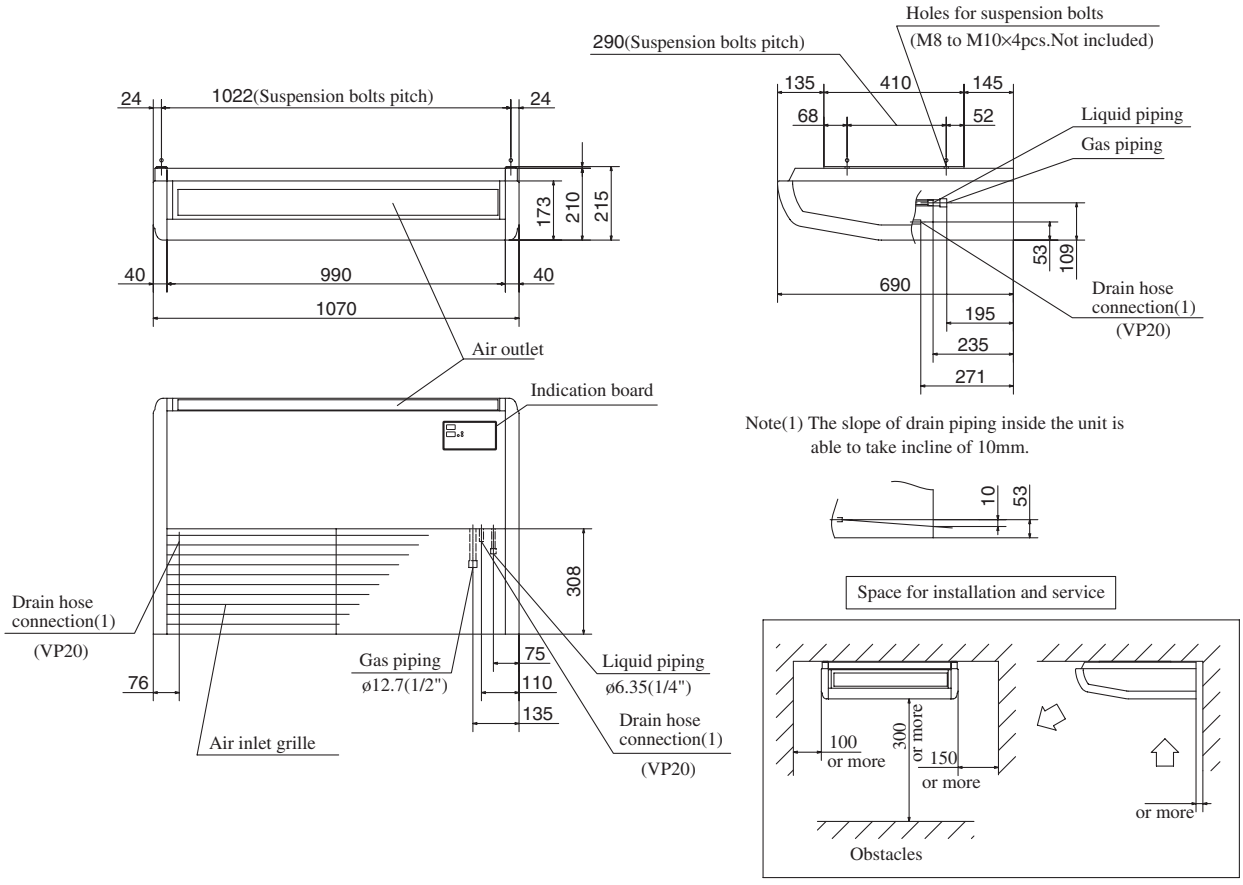




(b) Ceiling suspended type (FDE)

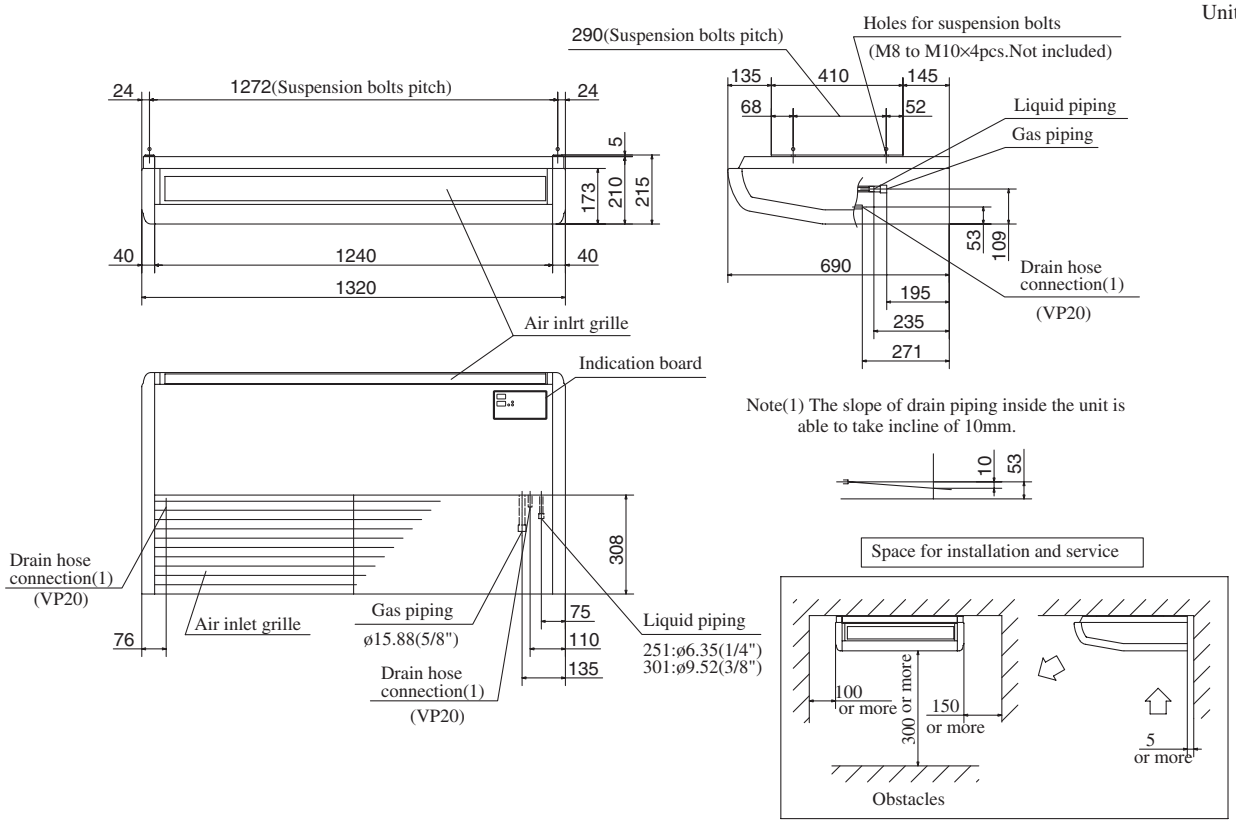
Models FDENA151, 201

Unit : mm



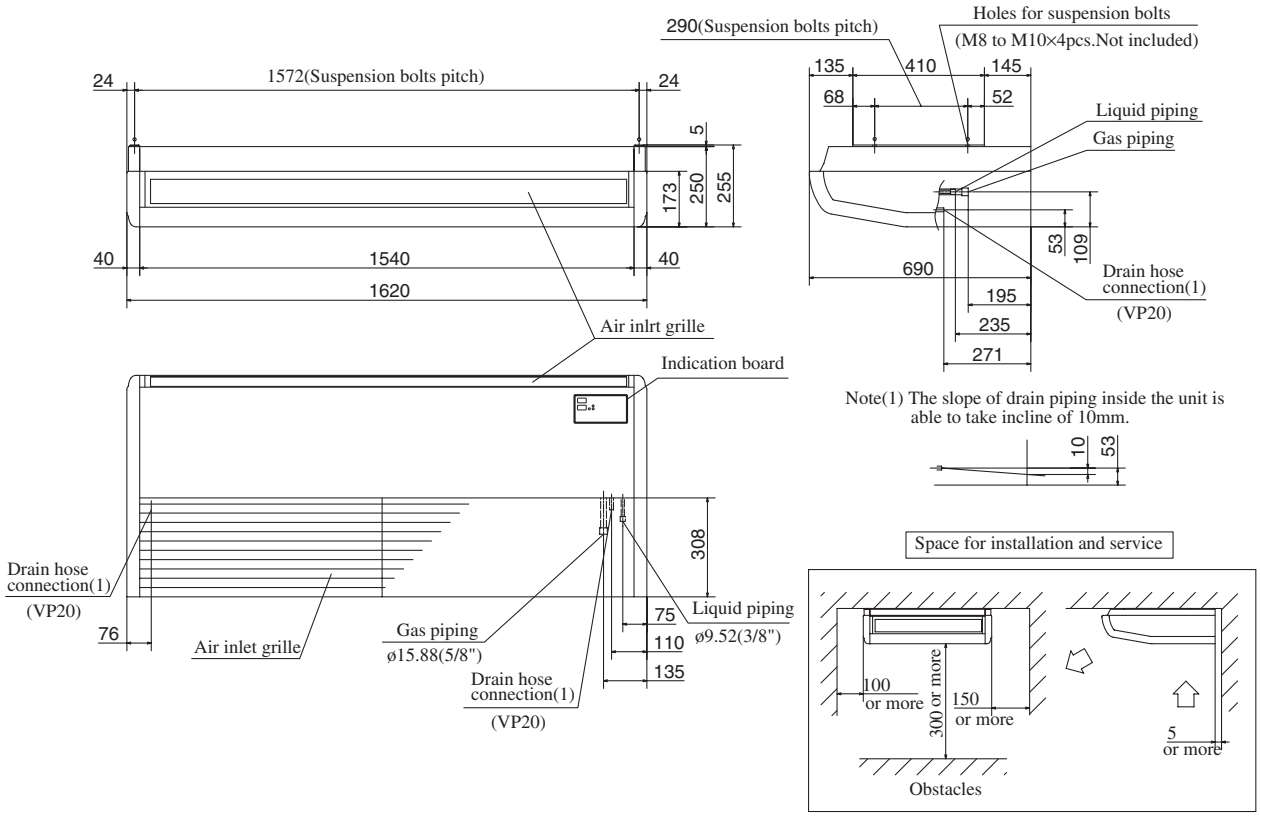
Model FDENA251, 301

Unit : mm



Models FDENA401, 501, 601

Unit : mm

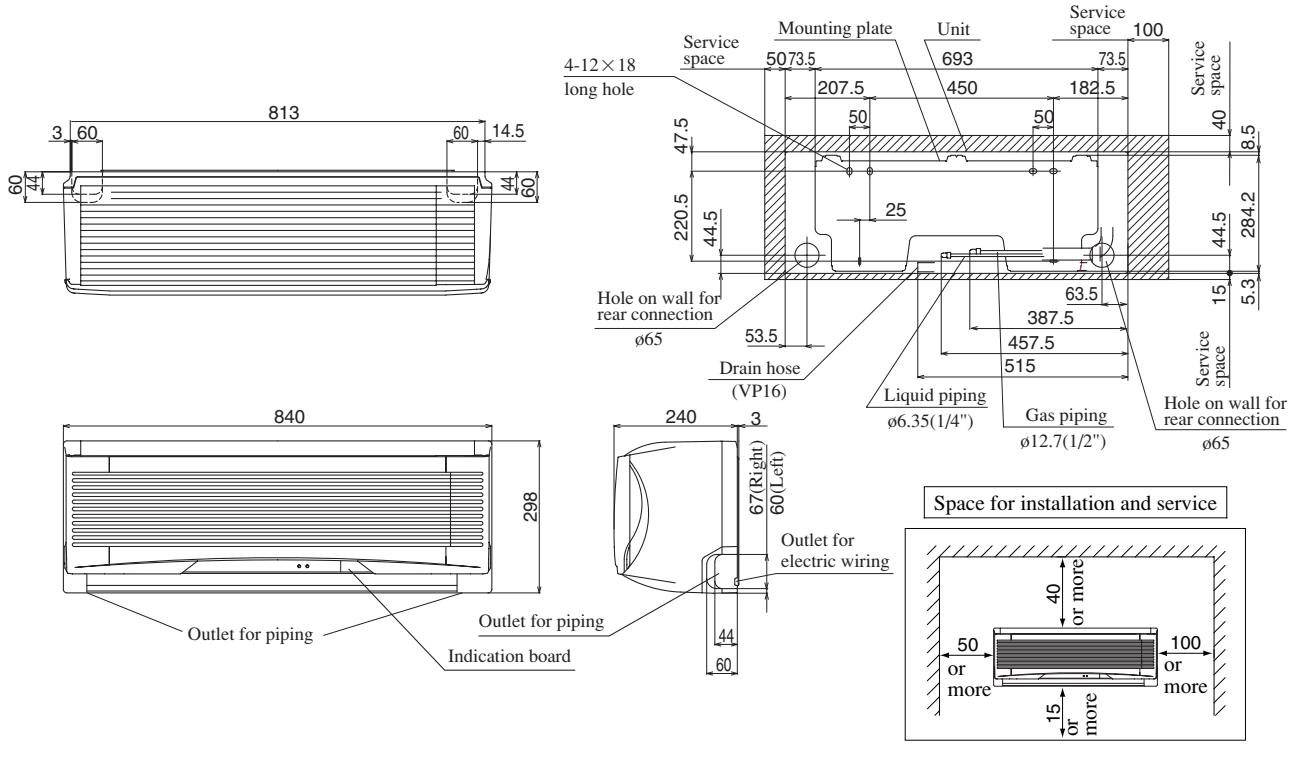


(c) Wall mounted type (FDK)

Models FDKNA151, 201

Unit : mm

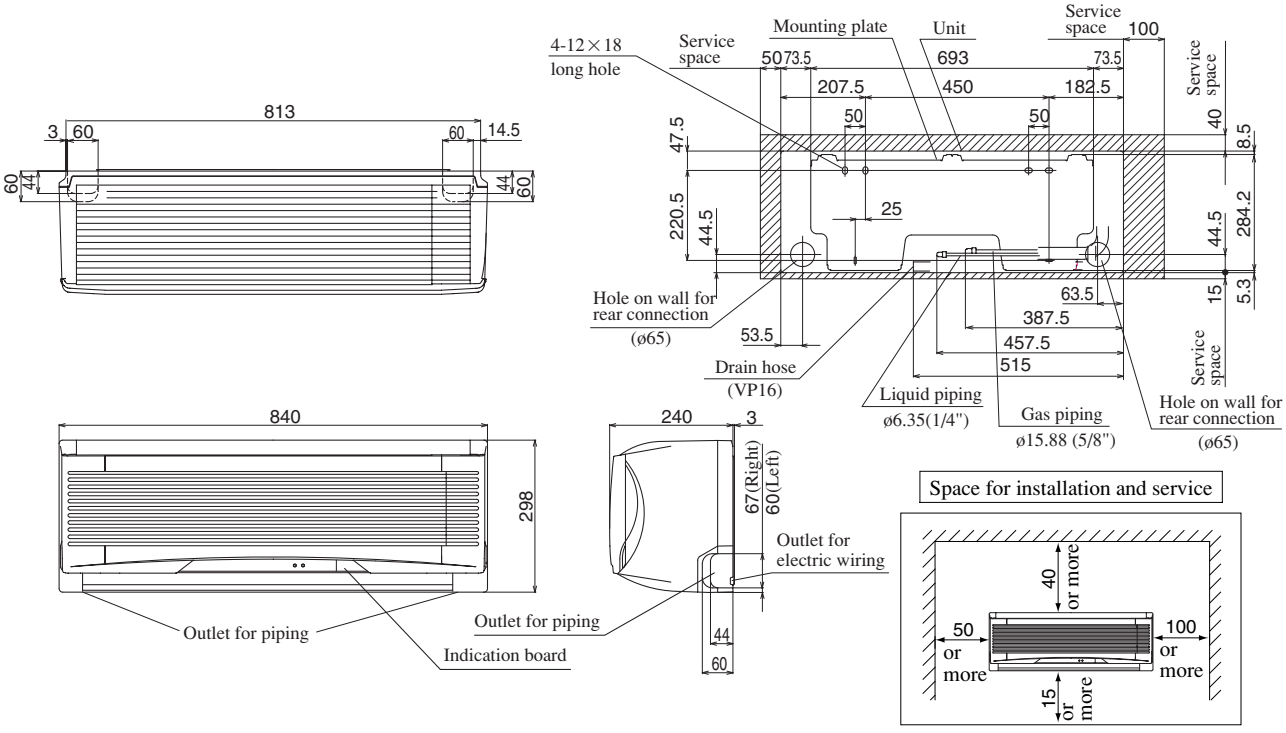
Installation position diagram and installation space, from the front.



Model FDKNA251

Unit : mm

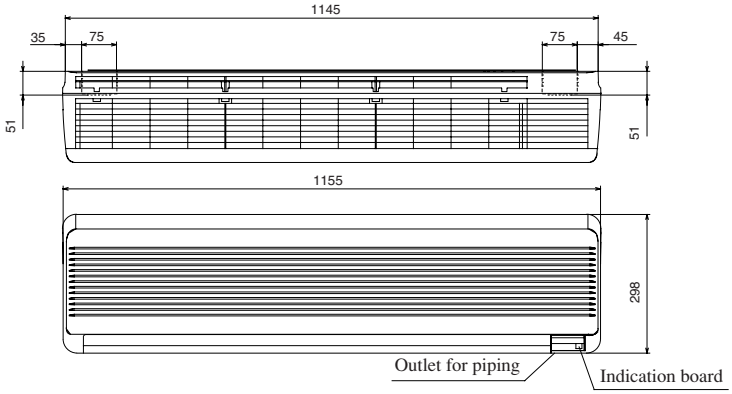
Installation position diagram and installation space, from the front.

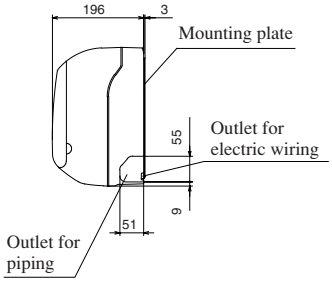


Space for installation and service

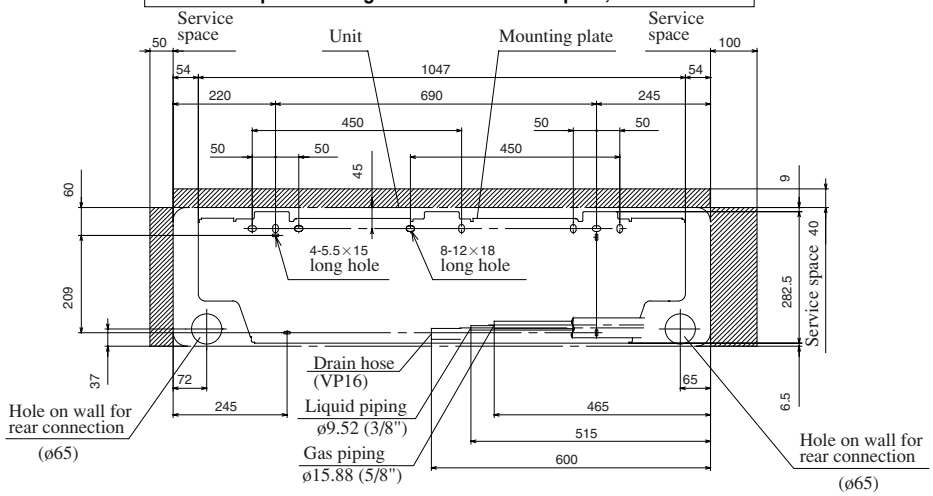
Model FDKNA301

Unit : mm

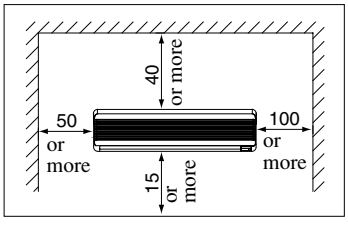




Installation position diagram and installation space, from the front.



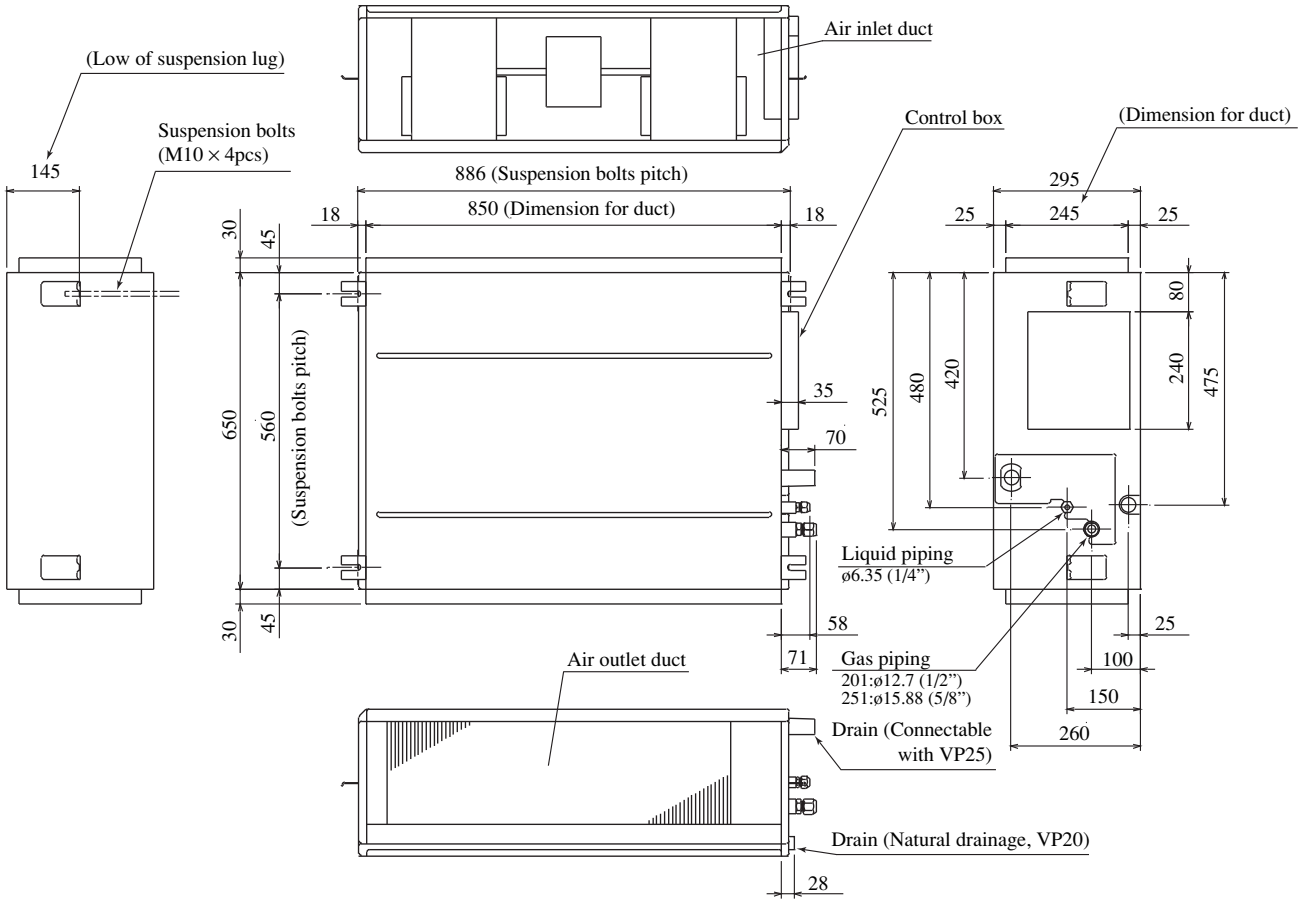
Space for installation and service



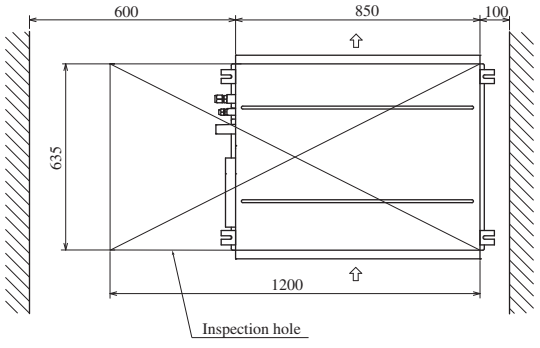
(d) Ceiling mounted duct type (FDUR)

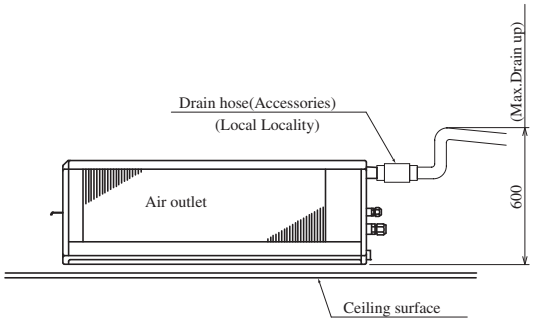
Models FDURA201, 251

Unit : mm



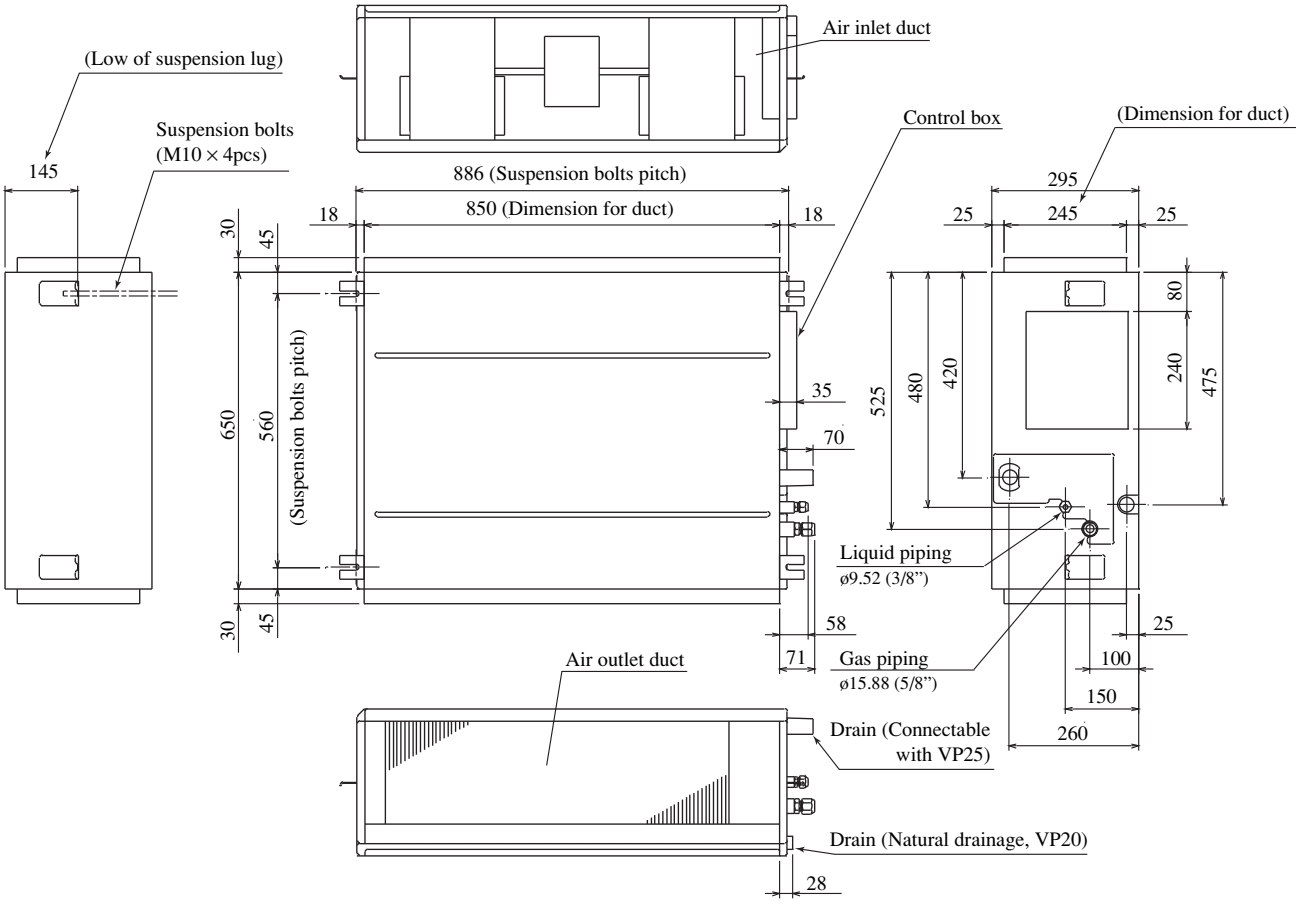
Space for installation and service



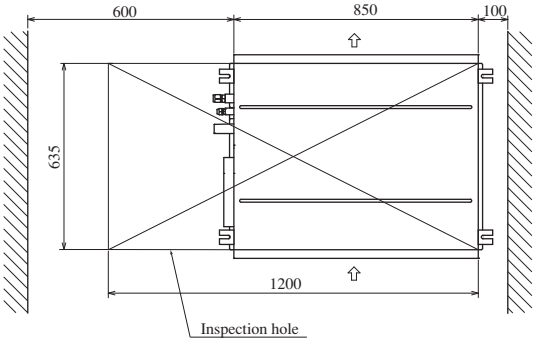


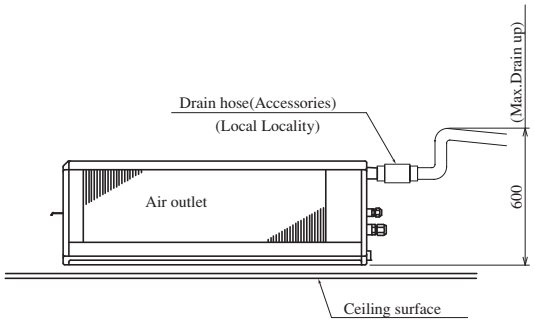
Model FDURA301

Unit : mm



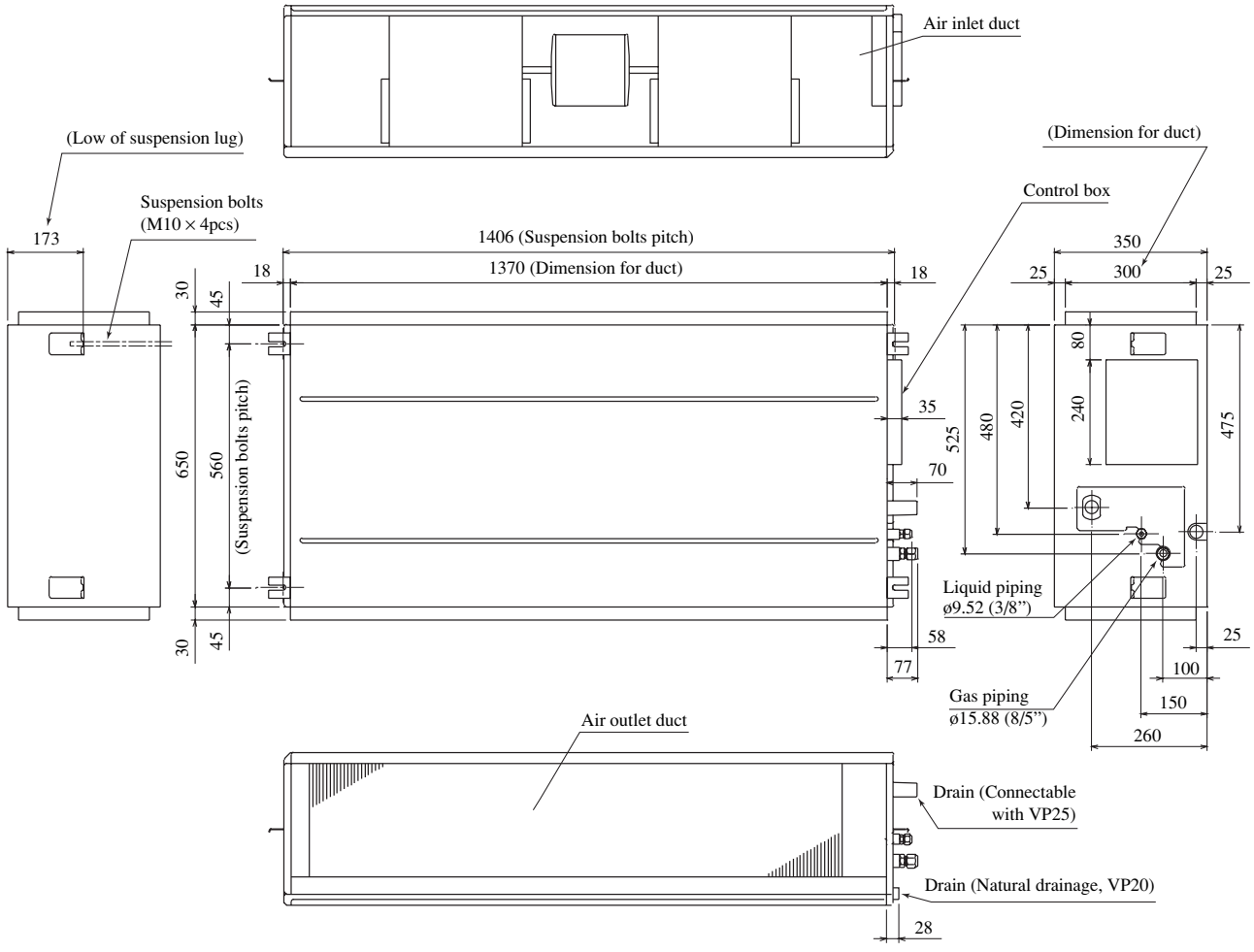
Space for installation and service



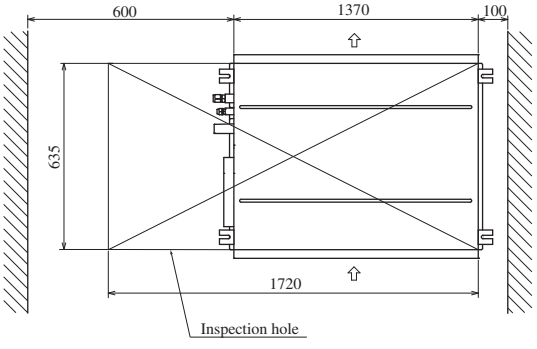


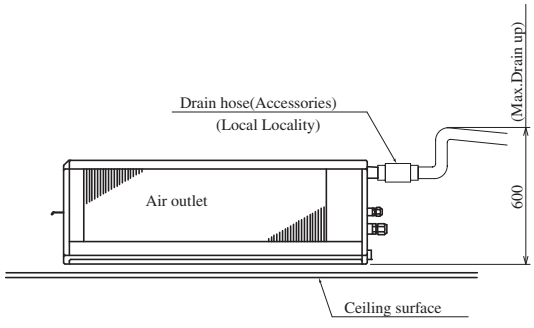
Models FDURA401, 501, 601

Unit : mm



Space for installation and service



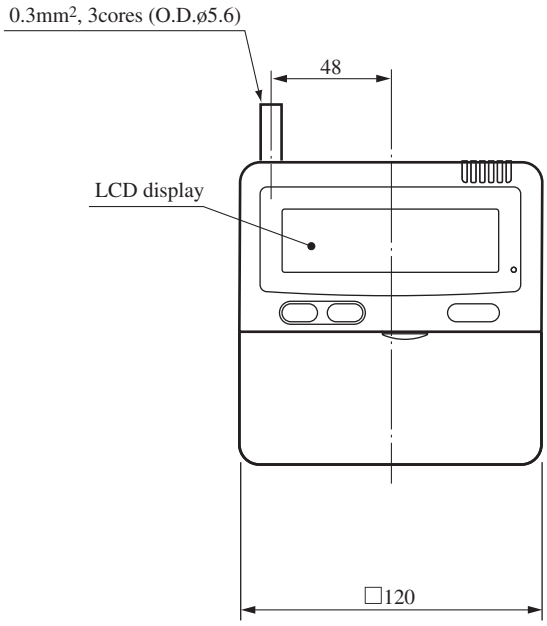


(2) Remote controller (Optional parts)

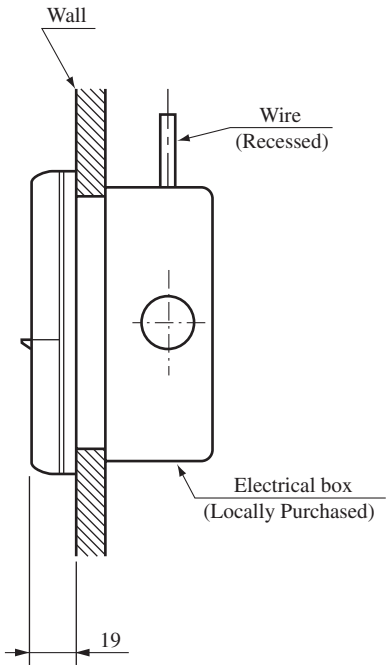
(a) Wired remote controller

Unit : mm

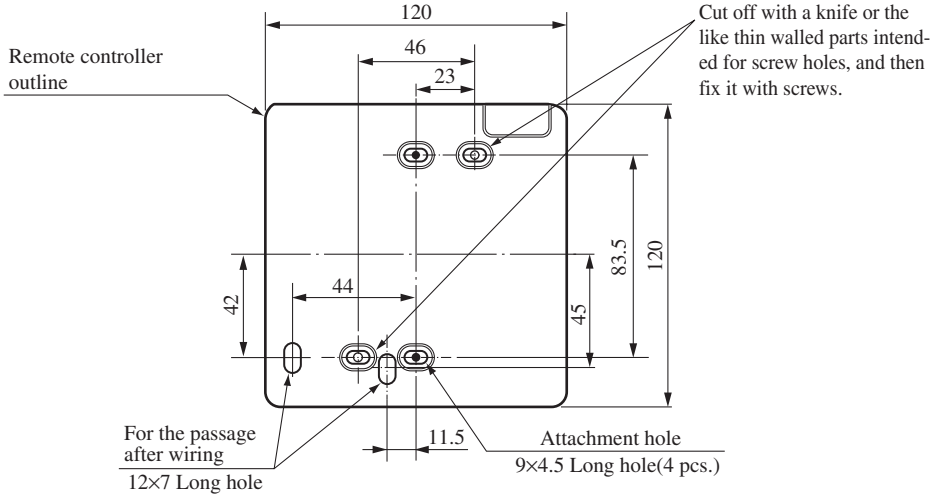
Installation with wiring exposed



Installation with wiring recessed



Remote controller mounting dimensions



Precation in Extending the Remote control cord

▶ Maximum total extension 600m.

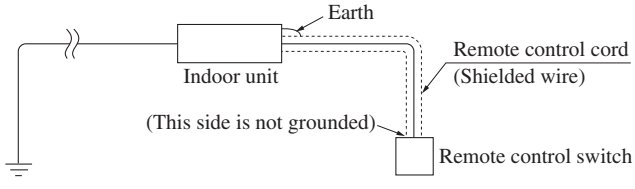
The cord should be a shielded wire.

● For all types : 0.3mm² × 3 cores

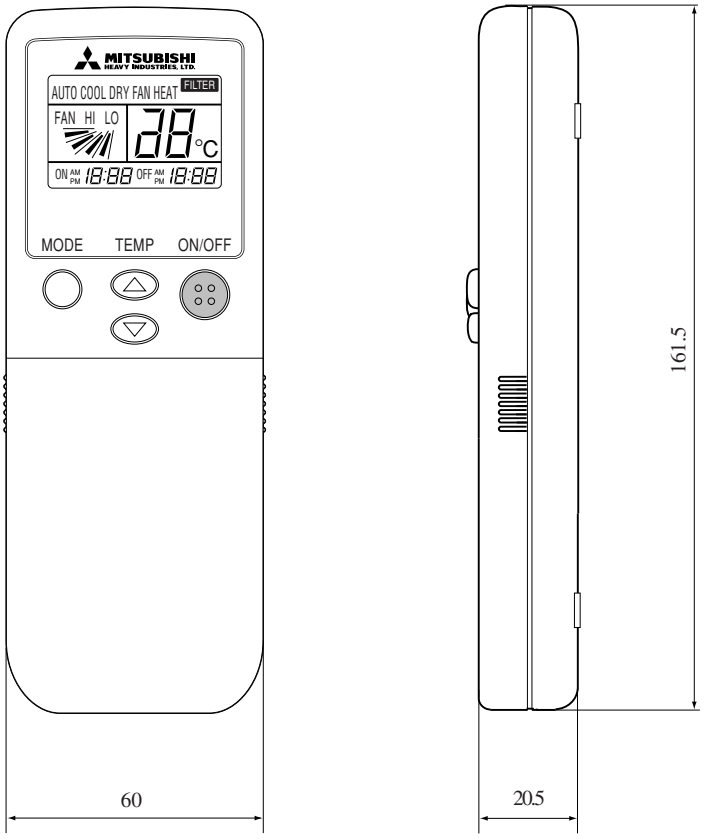
Note: (1) Use cables up to 0.5mm² (maximum) for those laid inside the remote control unit casing and connect to a different size cable at a vicinity point outside the remote control unit, if necessary.

Within 100-200m····· 0.5 mm² × 3 cores
Within 300m····· 0.75 mm² × 3 cores
Within 400m····· 1.25 mm² × 3 cores
Within 600m····· 2.0 mm² × 3 cores

● The shielded wire should be grounded at one side only.



(b) Wireless remote controller



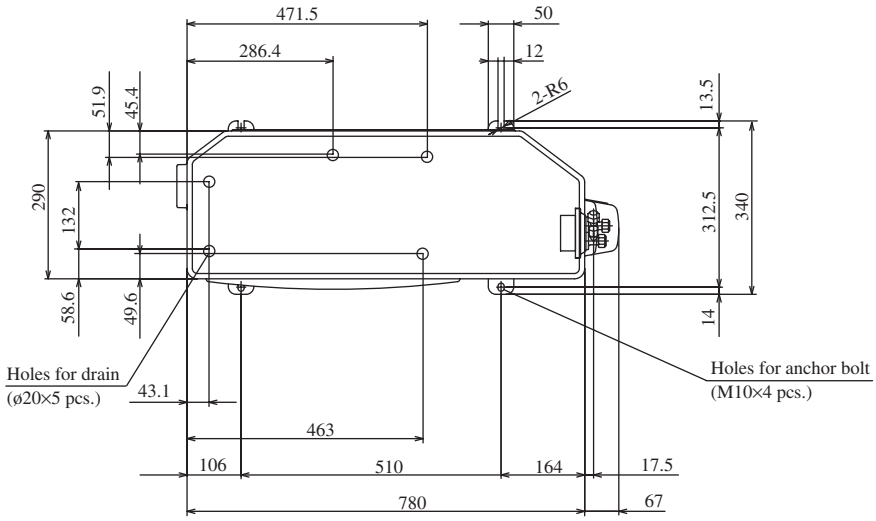
Unit: mm

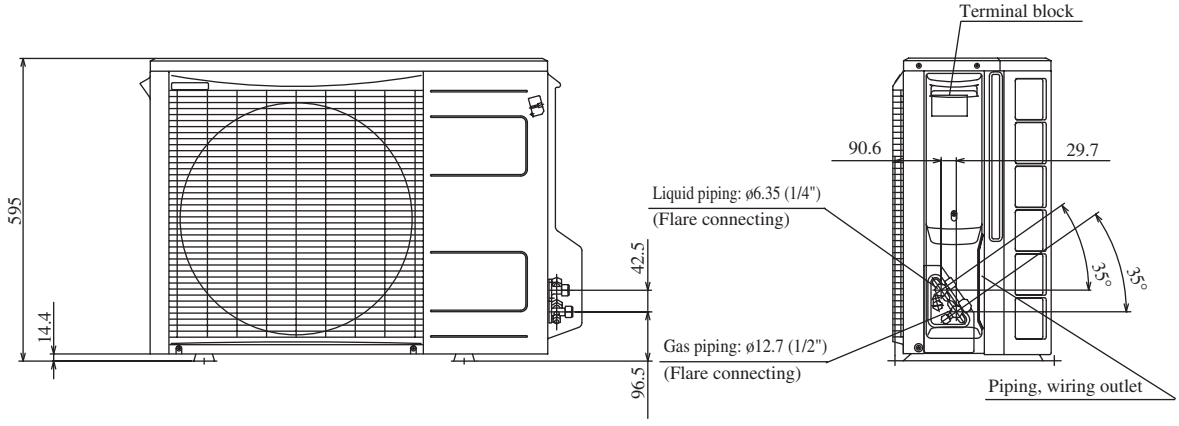
FD

(3) Outdoor unit

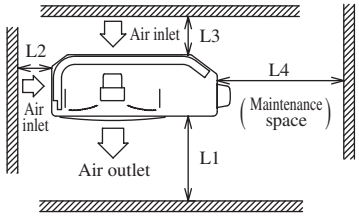
Models FDCVA151HEN, 201HEN

Unit: mm





Required space for maintenance and air flow



Minimum allowable space to the obstacles

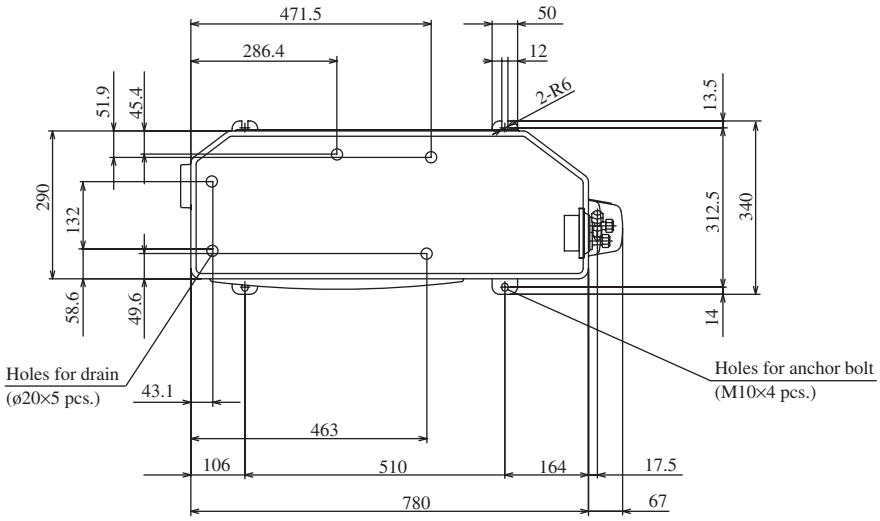
Unit:mm

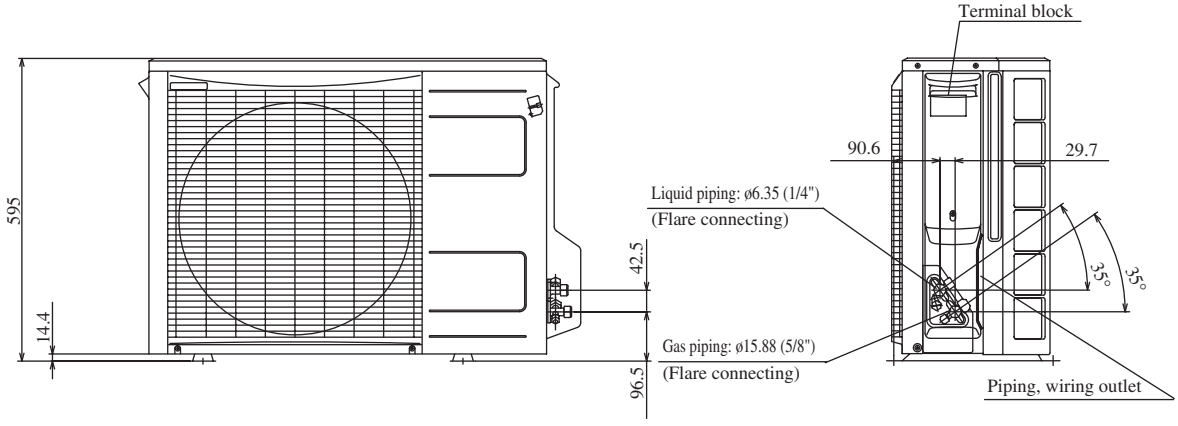
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	280	280
L2	100	75	Open
L3	100	80	80
L4	250	Open	250

Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

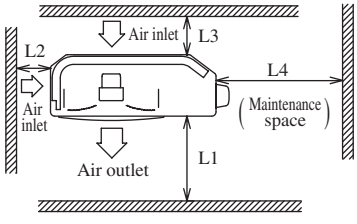
Model FDCVA251HEN

Unit: mm





Required space for maintenance and air flow



Minimum allowable space to the obstacles

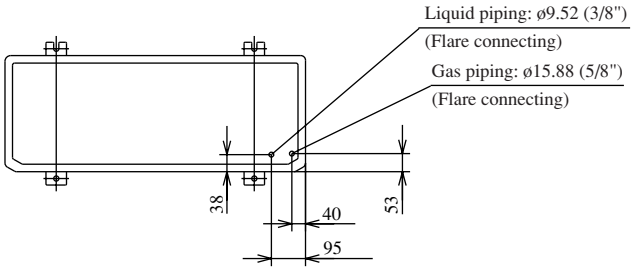
Unit:mm

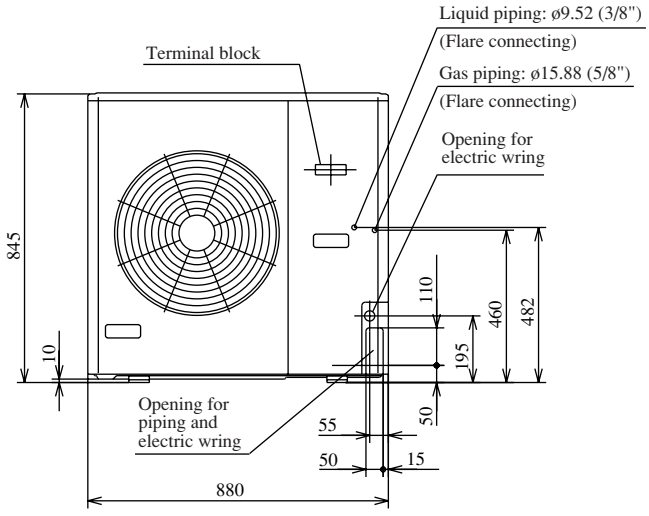
Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	280	280
L2	100	75	Open
L3	100	80	80
L4	250	Open	250

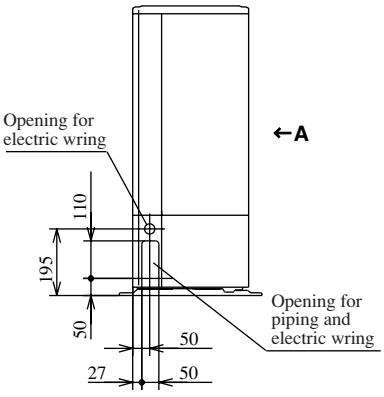
Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

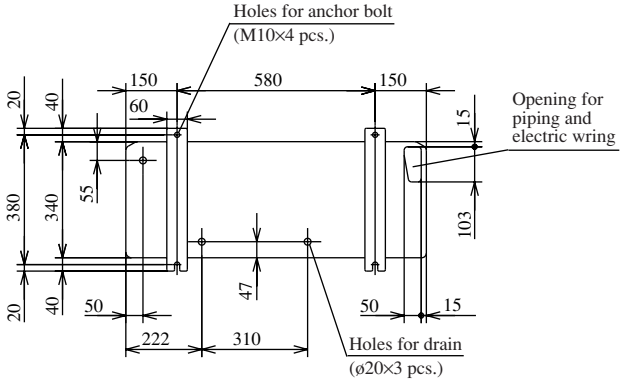
Models FDCA301HEN, 301HES

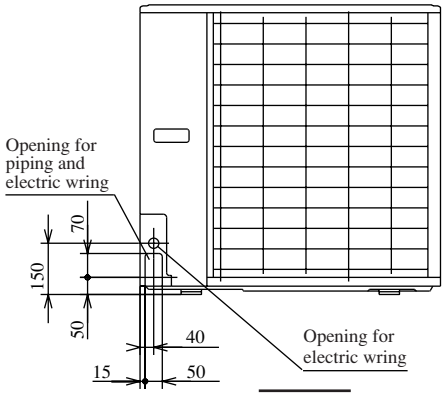
Unit: mm





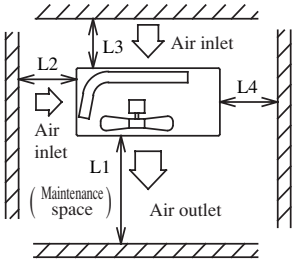






VIEW A

Required space for maintenance and air flow



Minimum allowable space to the obstacles

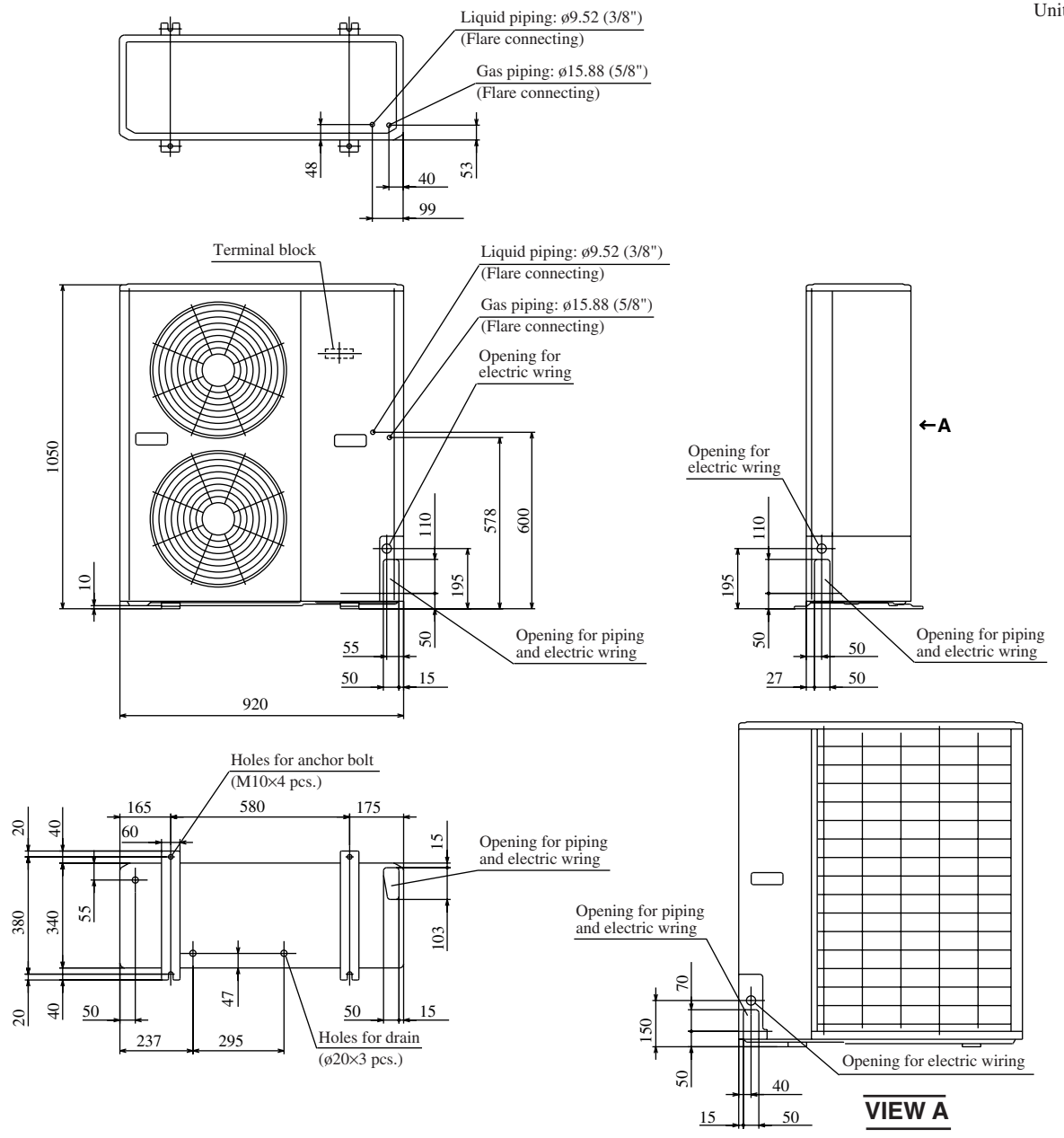
Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	5	Open
L3	100	150	100
L4	5	5	5

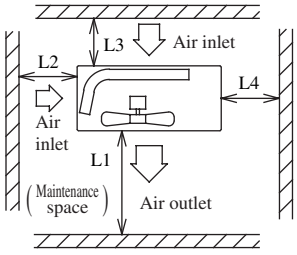
Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Models FDCA401HEN, 401HES

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

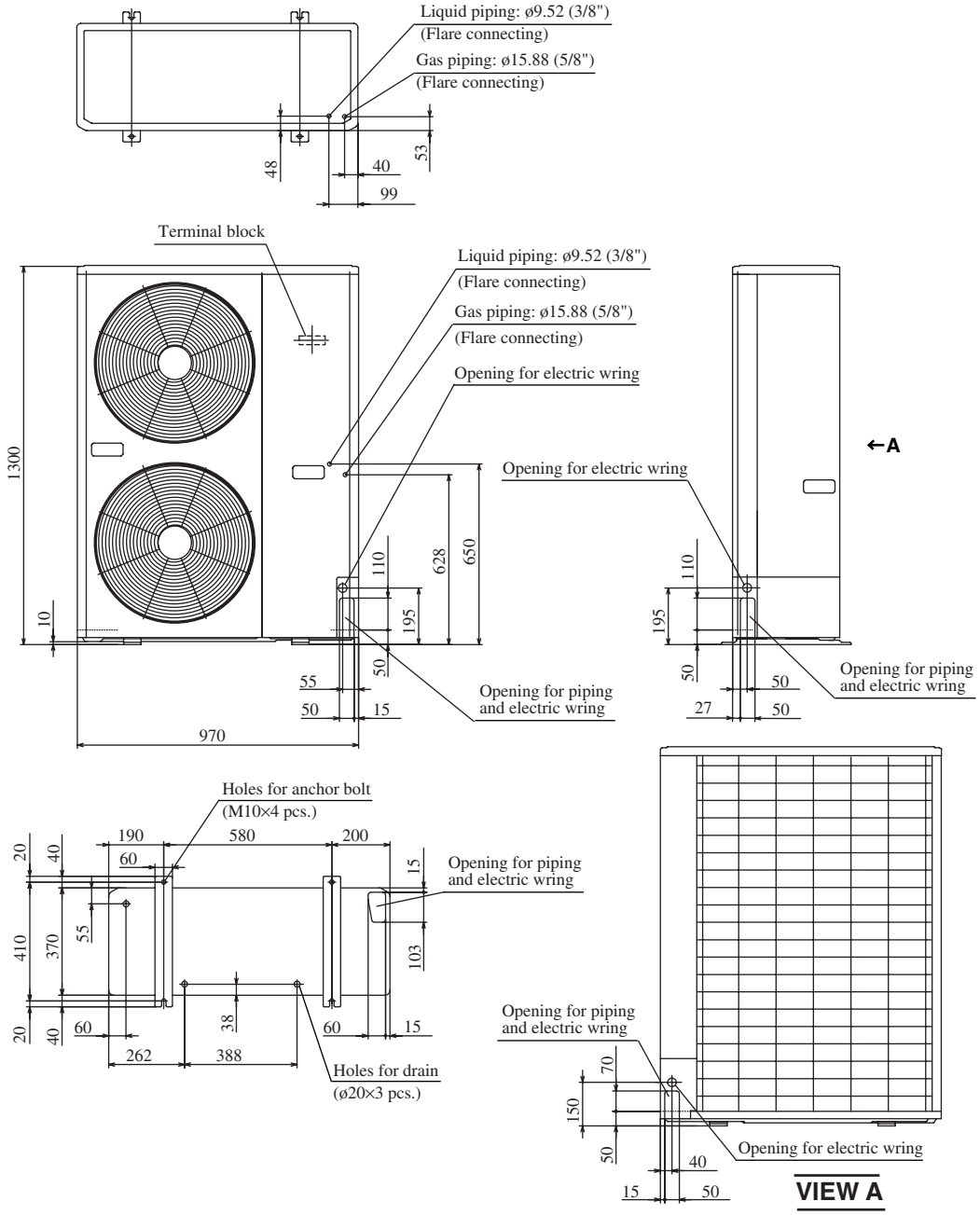
Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

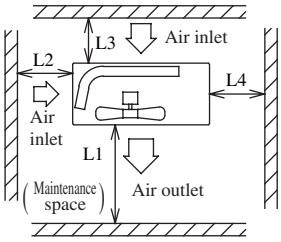
Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Model FDCA501HES

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

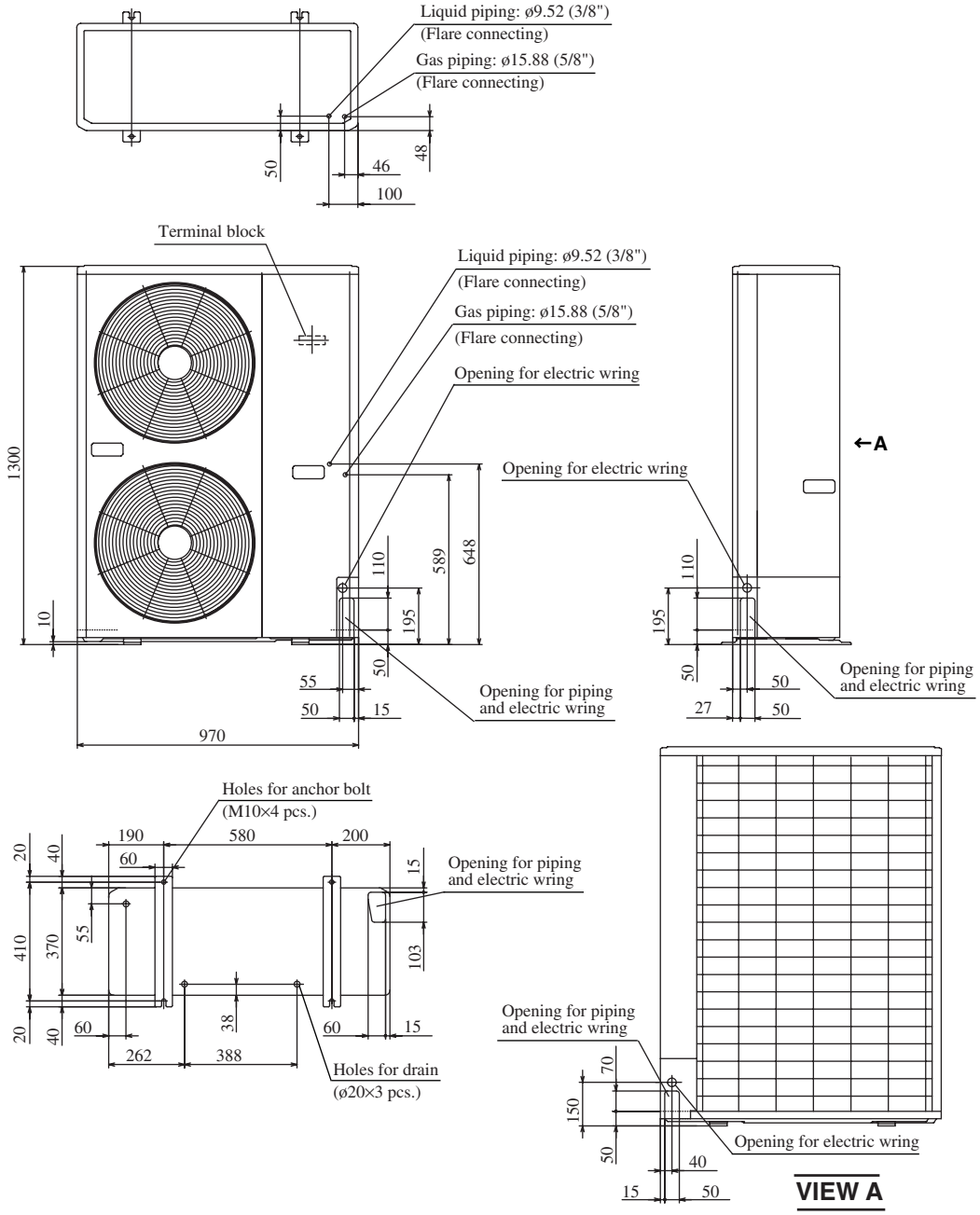
Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

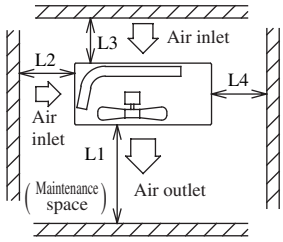
Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Model FDCA601HES

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

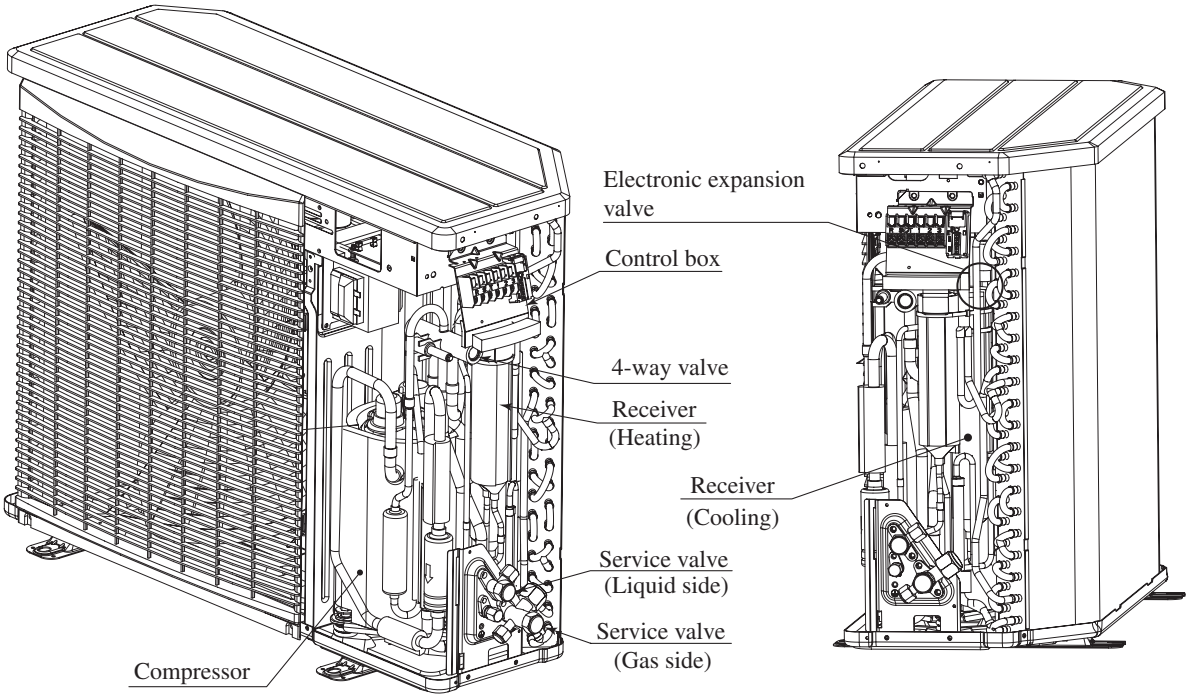
Notes
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

1.2.4 Inside view

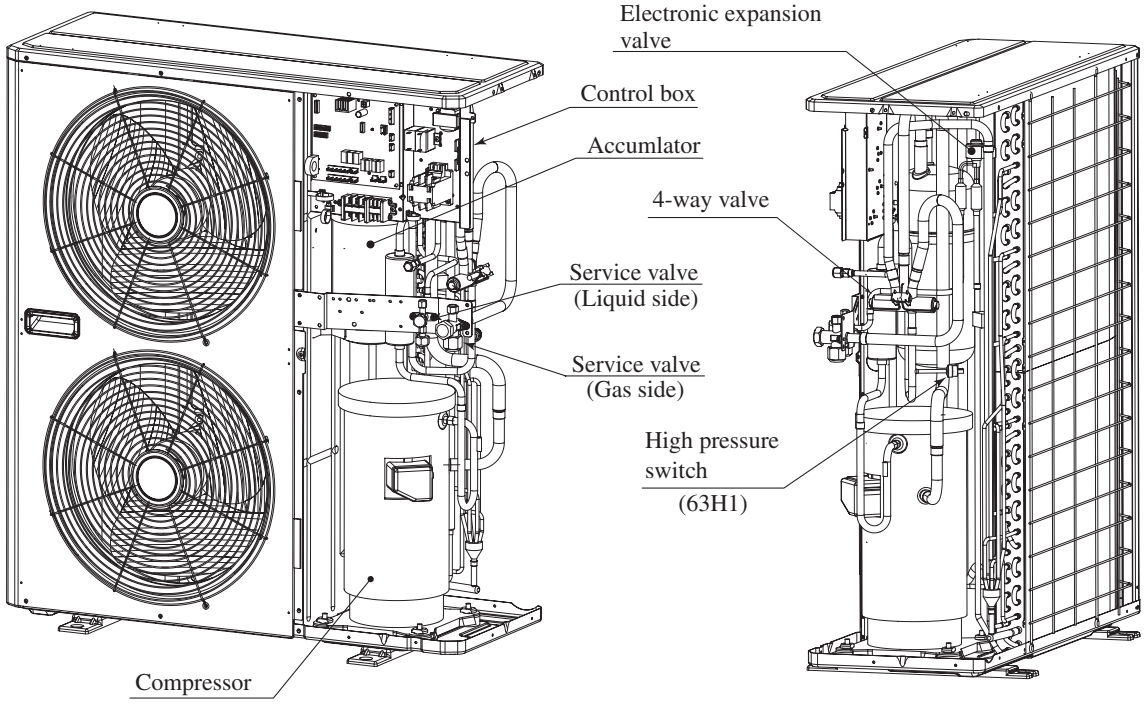
(1) Outdoor unit

Models FDCVA151HEN,201HEN,251HEN

unit : mm



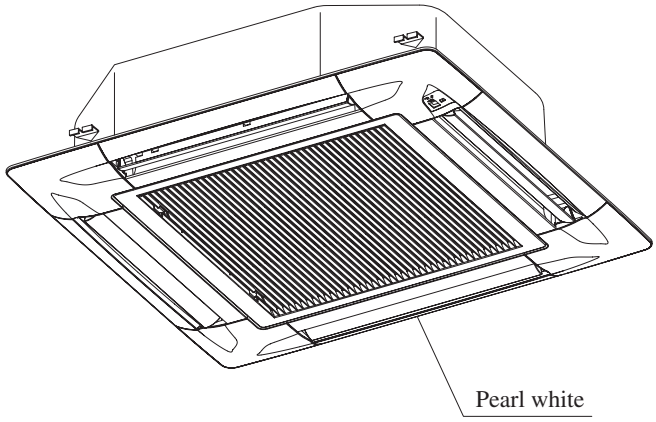
Models FDCA401HEN,401HES



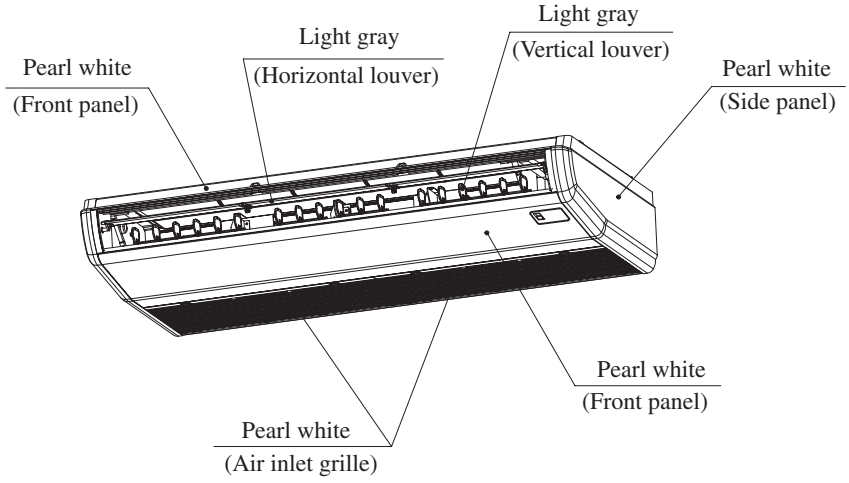
1.2.5 Exterior appearance

(1) Indoor unit

(a) Ceiling recessed type (FDT)

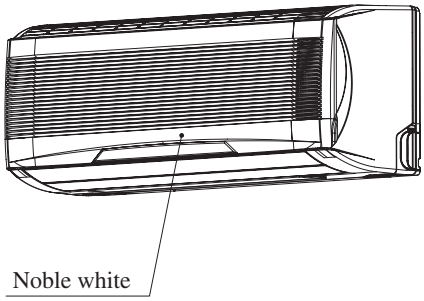


(b) Ceiling suspended type (FDEN)

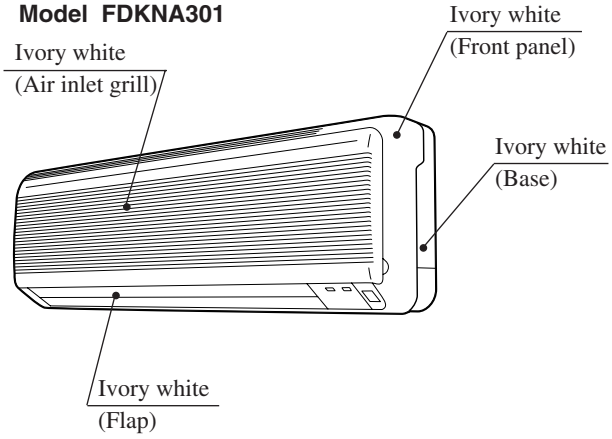


(c) Wall mounted type (FDKN)

Models FDKNA151,201,251



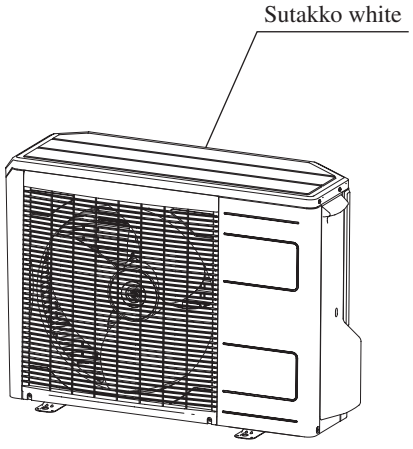
Model FDKNA301



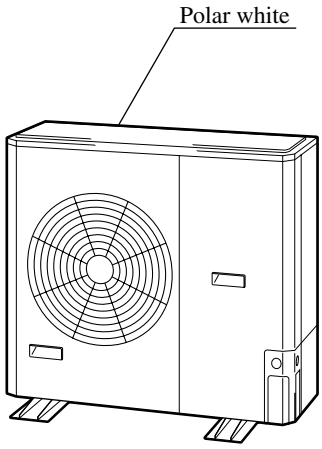
(d) Ceiling mounted duct type (FDUR) ····· Zinc steel plate

(2) Outdoor unit

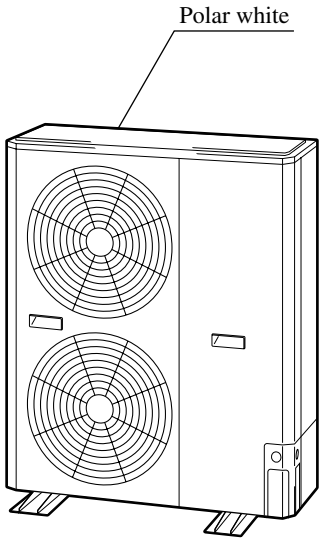
Models FDCVA151HEN,201HEN,251HEN



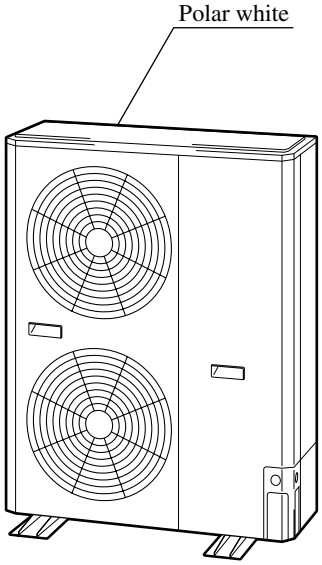
Models FDCA301HEN,301HES



Models FDCA401HEN,401HES

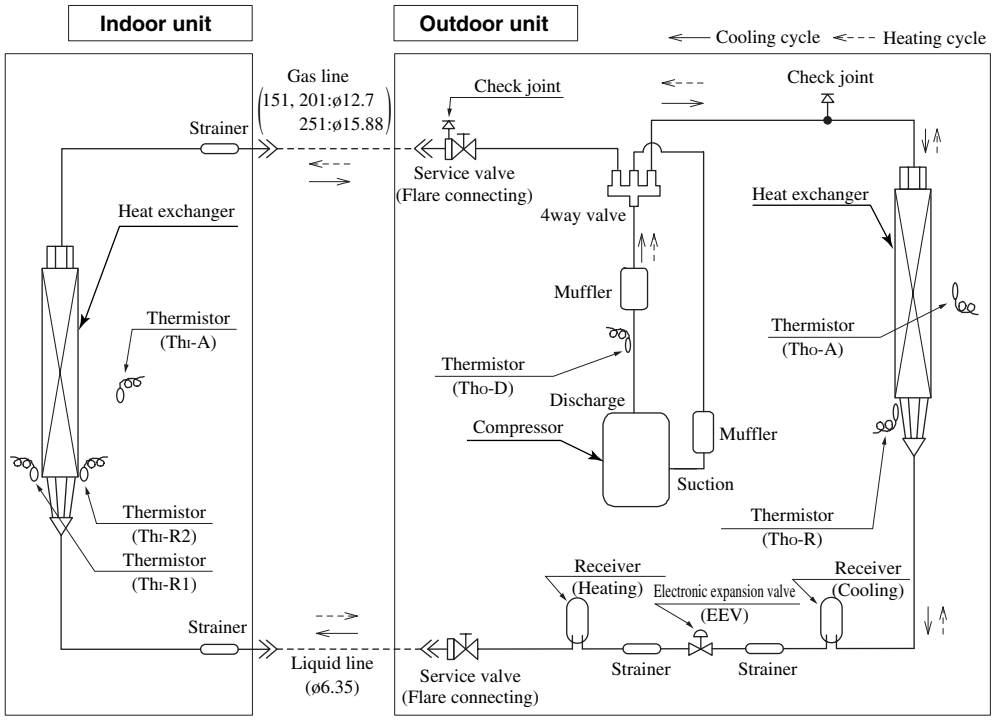


Models FDCA501HES,601HES



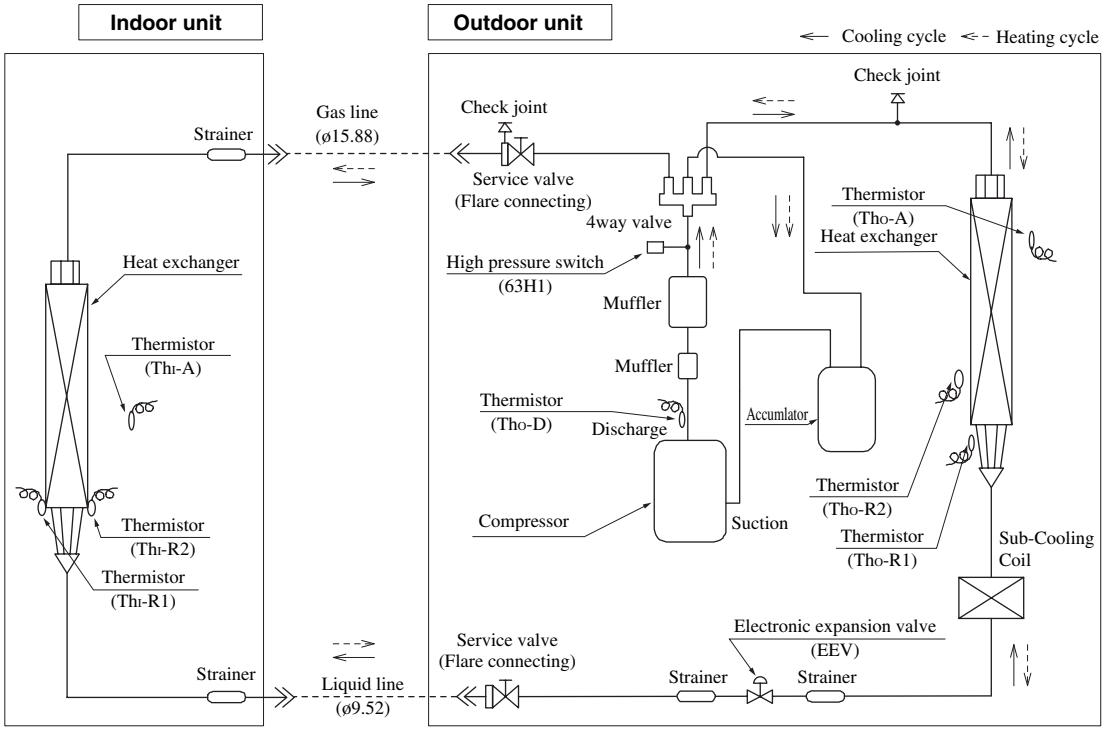
1.2.6 Piping system

Models 151, 201, 251 models



Note (1) A FDE type strainer only should be used for the indoor unit.

Models 301, 401, 501, 601 models



Note (1) A FDE type strainer only should be used for the indoor unit.

Preset point of the protective devices

Parts name	Mark	Equipped unit	151, 201, 251 models	301, 401, 501, 601 models
Thermistor (for protection over-loading in heating)	Th_{I}-R	Indoor unit	OFF 63˚C ON 56˚C	
Thermistor (for frost prevention)			OFF 1.0˚C ON 10˚C	
Thermistor (for detecting discharge pipe temp.)	Tho-D	Outdoor unit	OFF 105˚C ON 80˚C	OFF 121˚C ON 80˚C
High pressure switch (for protection)	63H1	Outdoor unit	————	OFF 4.15MPa ON 3.15MPa

1.2.7 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

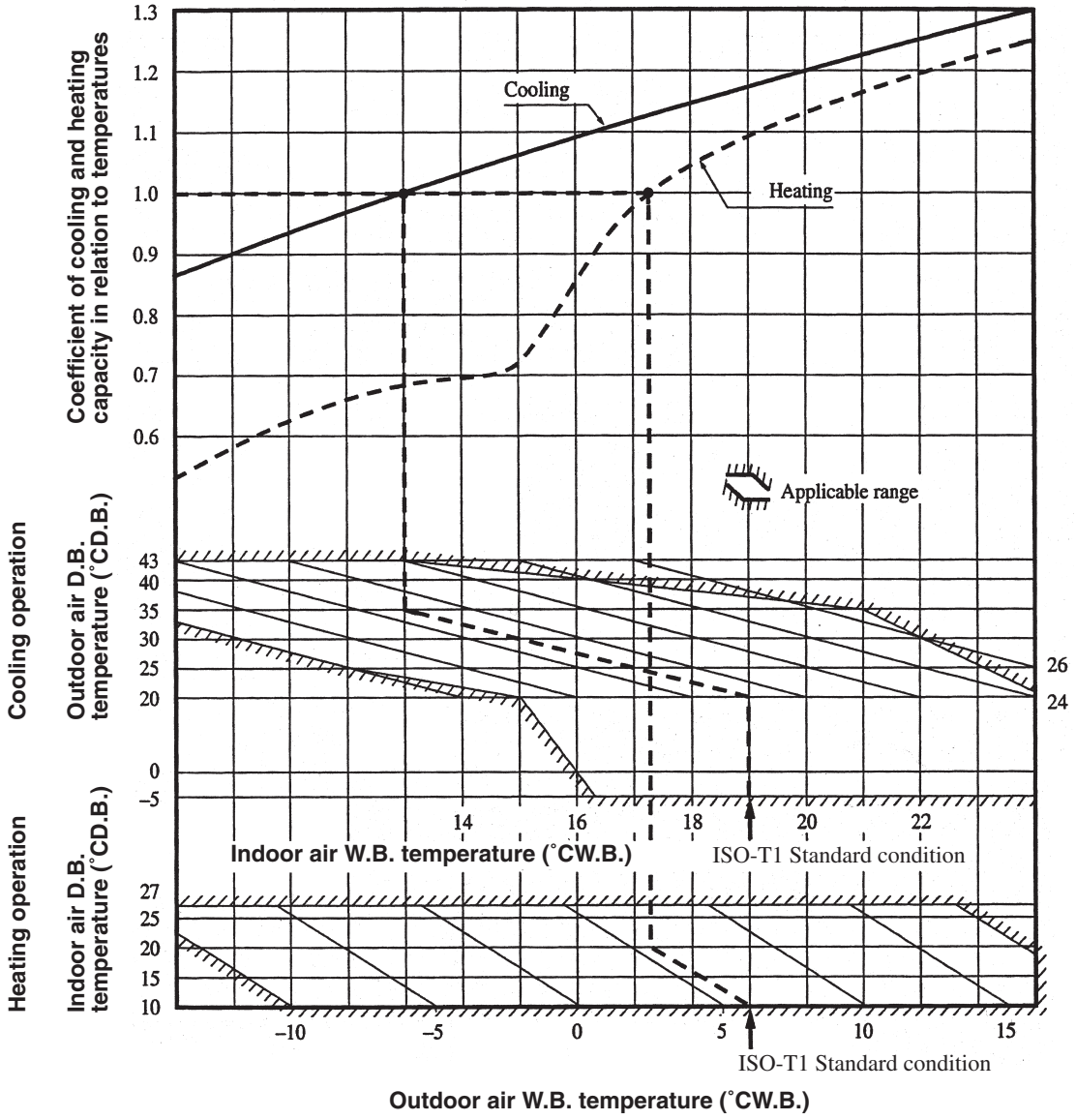


Table of bypass factor (FDT, FDEN, and FDKN series figures show the bypass factor when in the Powerful mode.)

Model FDT type

Item \ Model		FDTA151, 201	FDTA251, 301	FDTA401	FDTA501	FDTA601
Air flow	Hi	0.186	0.040	0.027	0.025	0.028
	Me	0.160	0.031	0.021	0.021	0.022
	Lo	0.151	0.025	0.018	0.017	0.017

Model FDEN type

Item \ Model		FDENA151, 201	FDENA251, 301	FDENA401	FDENA501, 601
Air flow	Hi	0.017	0.026	0.020	0.023
	Me	0.014	0.022	0.016	0.020
	Lo	0.009	0.015	0.013	0.016

Model FDKN type

Item \ Model		FDKNA151, 201	FDKNA251	FDKNA301
Air flow	Hi	0.056	0.063	0.043
	Me	0.041	0.048	0.034
	Lo	0.028	0.034	0.025

Model FDUR type

Item \ Model		FDUR201	FDUR251	FDUR301	FDUR401	FDUR501, 601
Air flow	Hi	0.111	0.053	0.069	0.106	0.050
	Lo	0.083	0.037	0.049	0.079	0.034

(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.

Equivalent piping length(1) m		7.5	10	15	20	25	30	35	40	45	50	55
Heating		1.0	0.995	0.992	0.990	0.987	0.984	0.981	0.978	0.975	0.972	0.970
Cooling	151 series	1.0	0.997	0.991	0.985	0.980	0.974	0.968	0.962	0.956	—	—
	201 series	1.0	0.996	0.989	0.981	0.973	0.966	0.958	0.951	0.943	—	—
	251 series	1.0	0.995	0.986	0.977	0.967	0.958	0.948	0.939	0.930	—	—
	301 series	1.0	0.996	0.989	0.982	0.974	0.967	0.959	0.952	0.945	0.937	0.930
	401 series	1.0	0.995	0.986	0.976	0.967	0.957	0.948	0.938	0.929	0.919	0.910
	501 series	1.0	0.994	0.982	0.969	0.957	0.945	0.933	0.921	0.908	0.896	0.884
	601 series	1.0	0.993	0.978	0.963	0.948	0.933	0.918	0.903	0.888	0.873	0.858

Note (1) Equivalent piping length can be obtained by calculating as follows.
151, 201 series [ϕ12.7(1/2″)]: Equivalent piping length = Real piping length + (0.20 × Number or bends in piping)
251, 301, 401, 501, 601, series [ϕ15.88(5/8″)]: Equivalent piping length = Real piping length + (0.25 × 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	151, 201, 251 models	301~601 models
Max. one way piping length	40m	50m
Max. vertical height difference	Outdoor unit is higher 30m	Outdoor unit is lower 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 FDTA301HEN 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

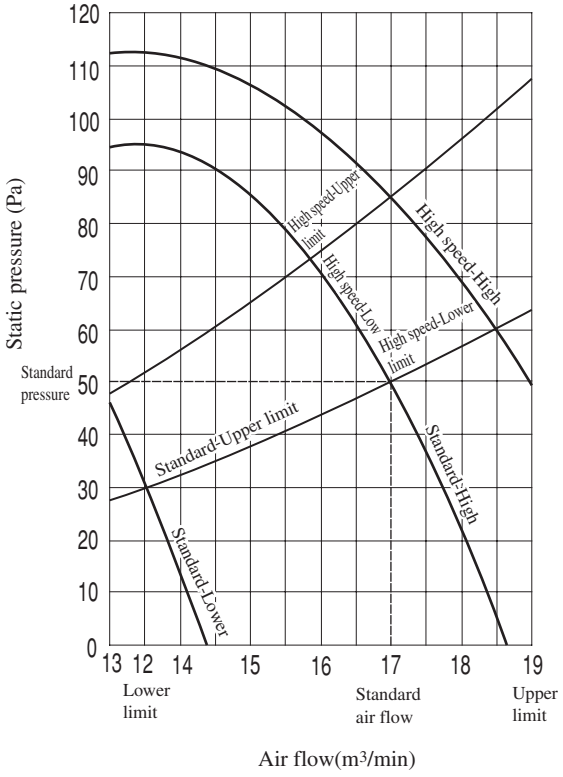
Net cooling capacity = 7200 × 1.00 × (0.989 - 0.01) × 1.0 = 7049 w

- 7200 : FDTA301HEN
- 1.00 : Air flow "High"
- (0.989 - 0.01) : Length 15m. Height difference 5 m
- 1.0 : Factor by air temperatures

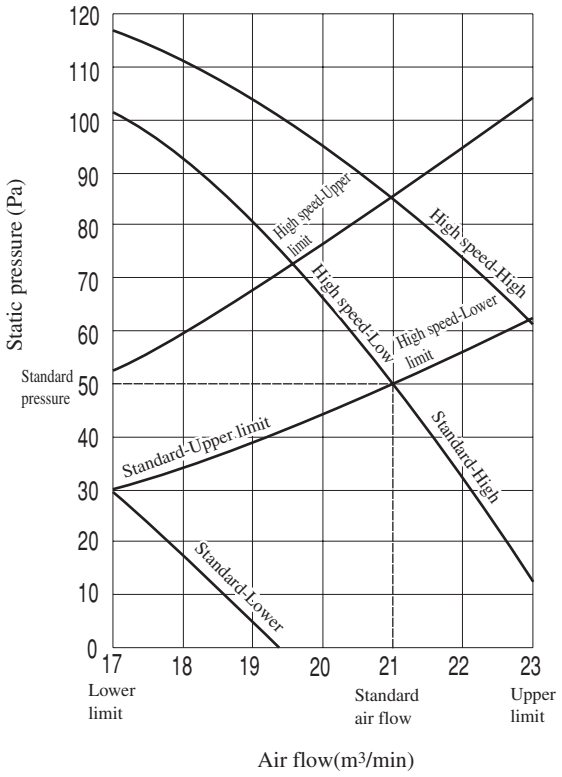
1.2.8 Characteristics of fan

(1) Ceiling mounted duct type (FDUR)

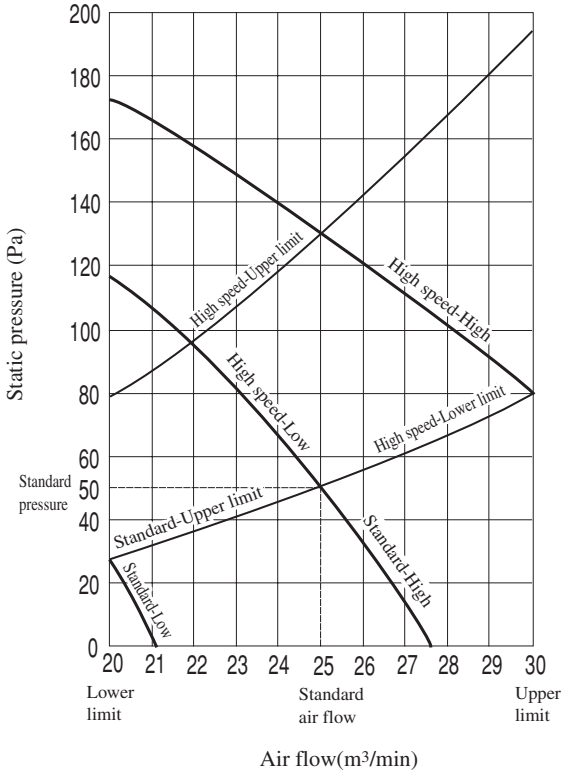
Model FDURA201



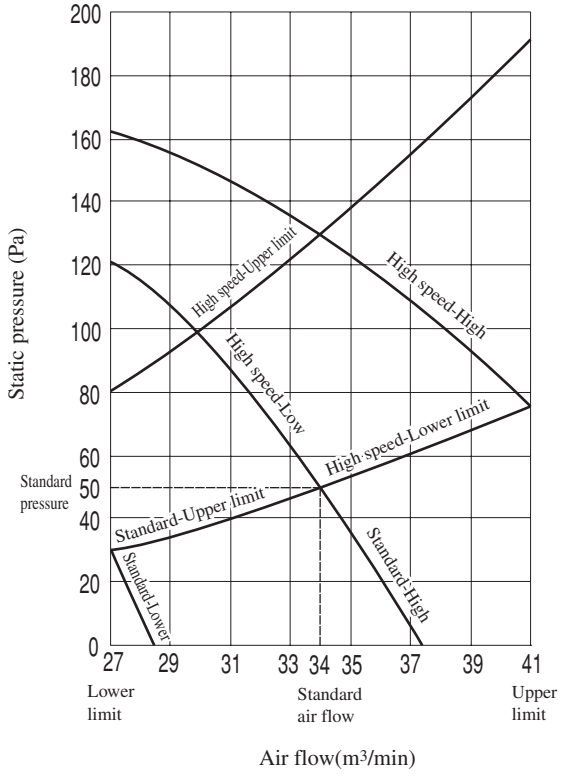
Model FDURA251



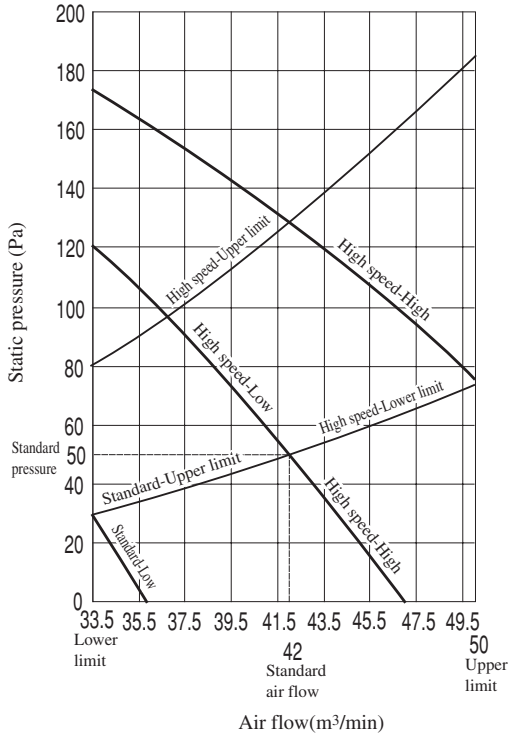
Model FDURA301



Model FDURA401



Models FDUR501, 601



1.2.9 Noise level

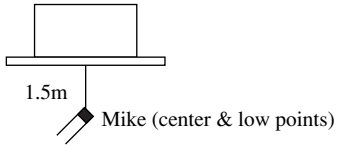
Notes (1) The data are based on the following conditions.
Ambient air temperature: Indoor unit 27˚C DB, 19˚C WB. Outdoor unit 35˚C DB.
(2) The data in the chart are measured in an unechonic room.
(3) The noise levels measured in the field are usually higher than the data because of reflection.
(4) Noise levels for the FDT, FDEN and FDKN series show the noise level when in the Powerful mode.

(1) Indoor unit

(a) Ceiling recessed type (FDT)

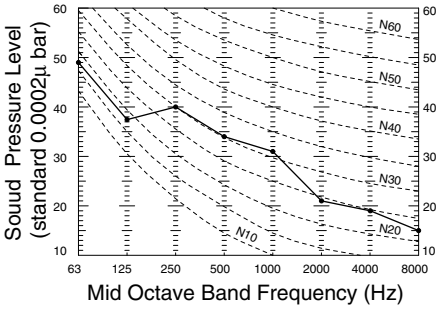
Measured based on JIS B 8616

Mike position as right



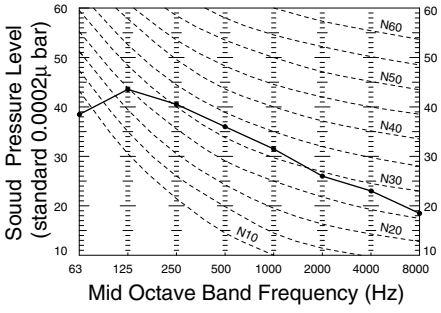
Models FDTA151, 201

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



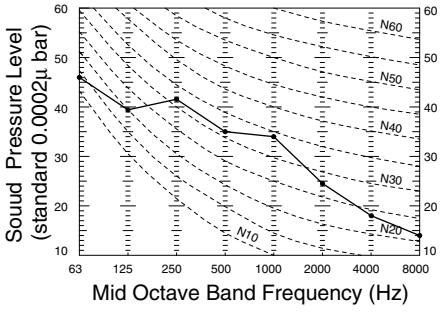
Model FDTA251

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



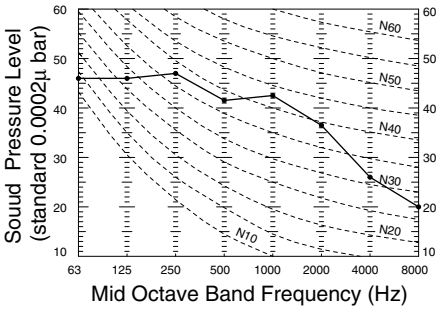
Model FDTA301

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



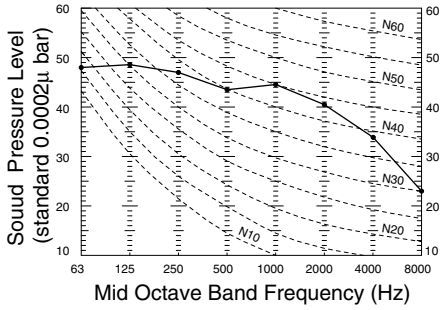
Model FDTA401

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



Models FDTA501, 601

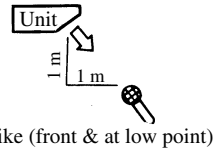
Noise level 48 dB (A) at HIGH
45 dB (A) at MEDIUM
43 dB (A) at LOW



(b) Ceiling suspended type (FDEN)

Measured based on JIS B 8616

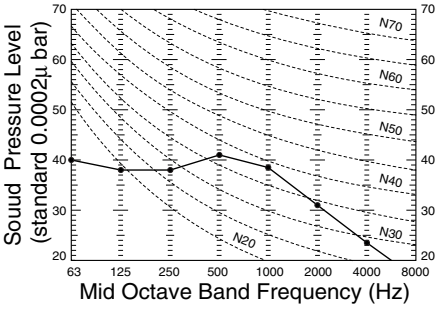
Mike position as right



Mike (front & at low point)

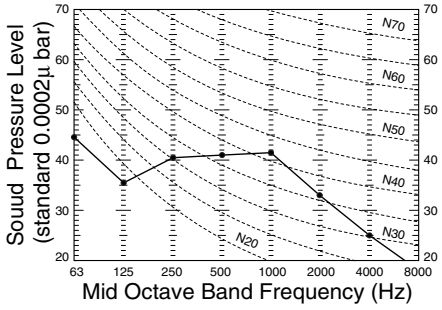
Models FDENA151, 201

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



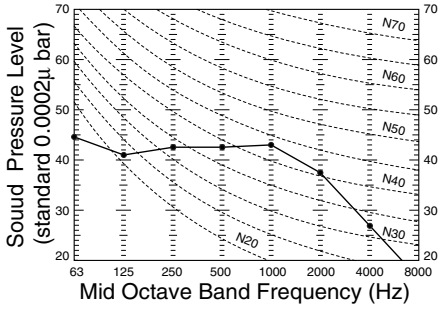
Models FDENA251, 301

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



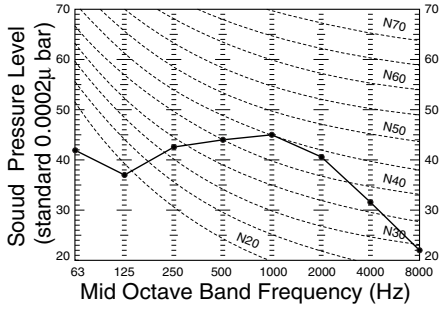
Model FDENA401

Noise level 46 dB (A) at HIGH
44 dB (A) at MEDIUM
41 dB (A) at LOW



Models FDENA501, 601

Noise level 48 dB (A) at HIGH
46 dB (A) at MEDIUM
44 dB (A) at LOW



FD

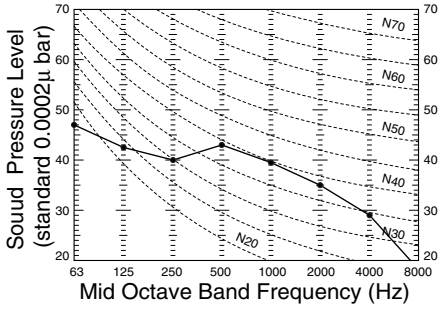
(c) Wall mounted type (FDKN)

Measured based on JIS B 8616

Mike position as right

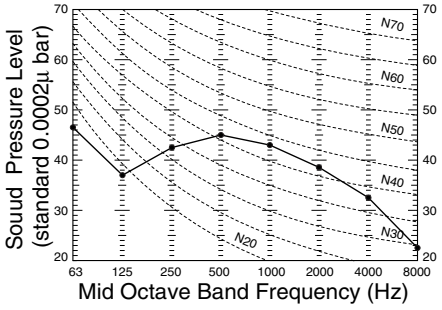
Model FDKNA151

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



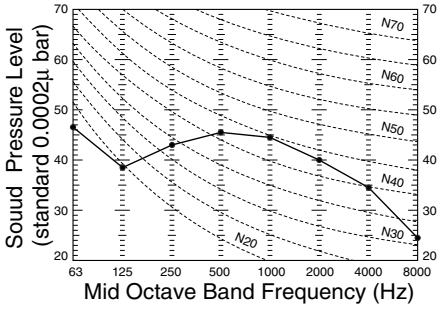
Model FDKNA201

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



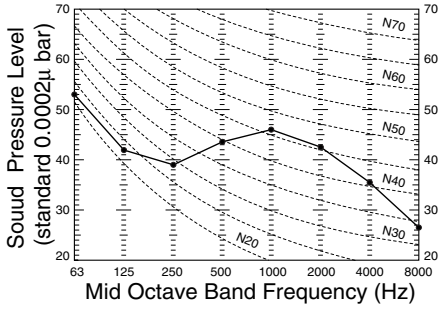
Model FDKNA251

Noise level 48 dB (A) at HIGH
45 dB (A) at MEDIUM
42 dB (A) at LOW



Model FDKNA301

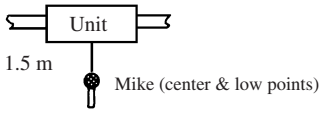
Noise level 49 dB (A) at HIGH
46 dB (A) at MEDIUM
43 dB (A) at LOW



(d) Ceiling mounted duct type (FDUR)

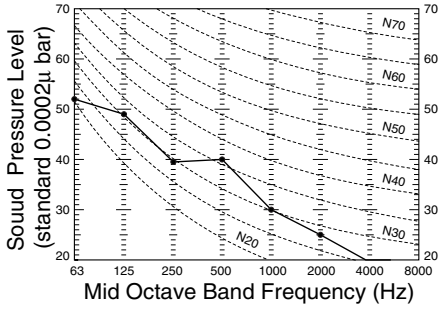
Measured based on JIS B 8616

Mike position as right



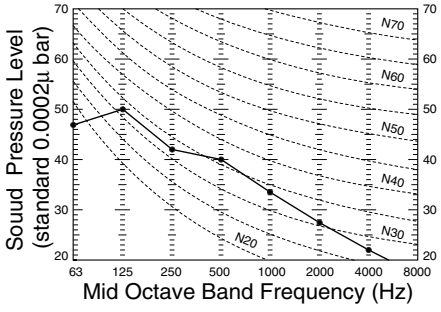
Model FDURA201

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



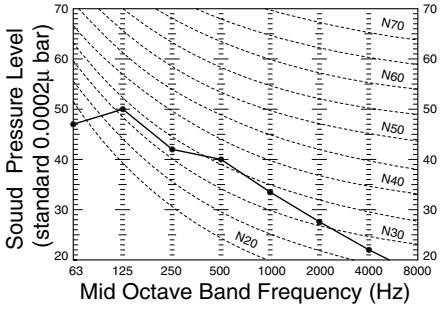
Model FDKN251

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



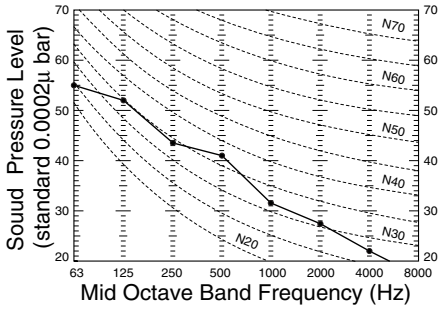
Model FDKN301

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



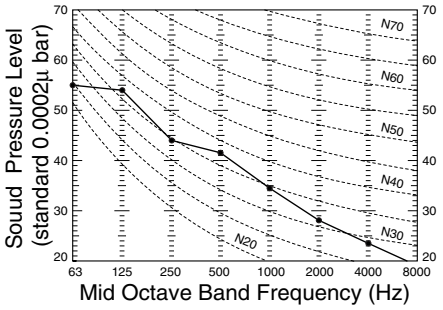
Model FDURA401

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



Models FDURA501, 601

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

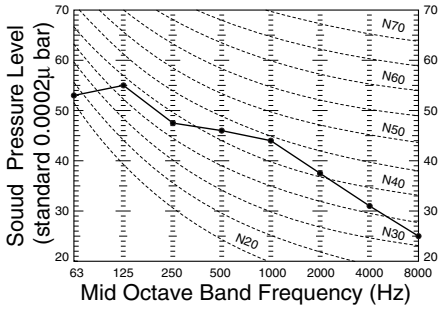


(2) Outdoor unit

Measured based on JIS B 8616
Mike position: at highest noise level in position as below
Distance from front side 1m
Height 1m

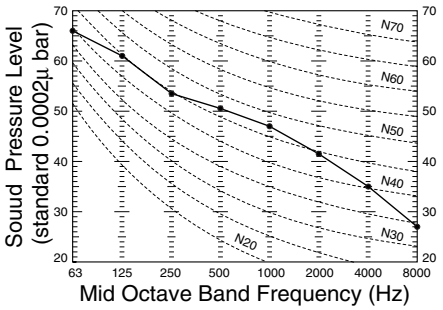
Models FDCVA151HEN, 201HEN, 251HEN

Noise level 48 dB (A)



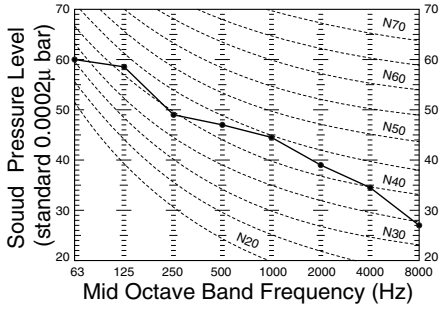
Models FDCA301HEN, 301HES

Noise level 53 dB (A)



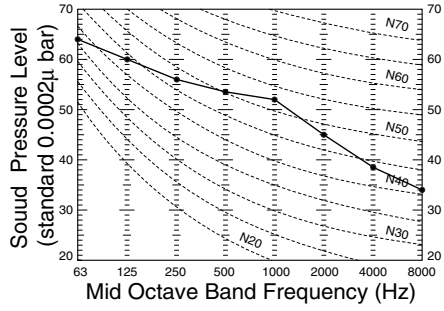
Models FDCA401HEN, 401HES

Noise level 54 dB (A)



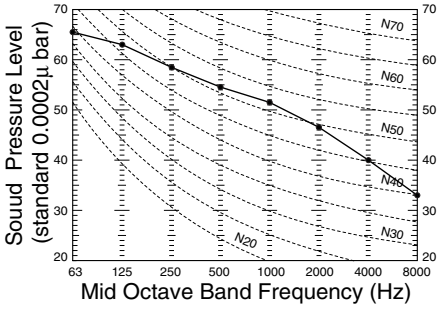
Model FDCA501HES

Noise level 56 dB (A)



Model FDCA601HES

Noise level 57 dB (A)



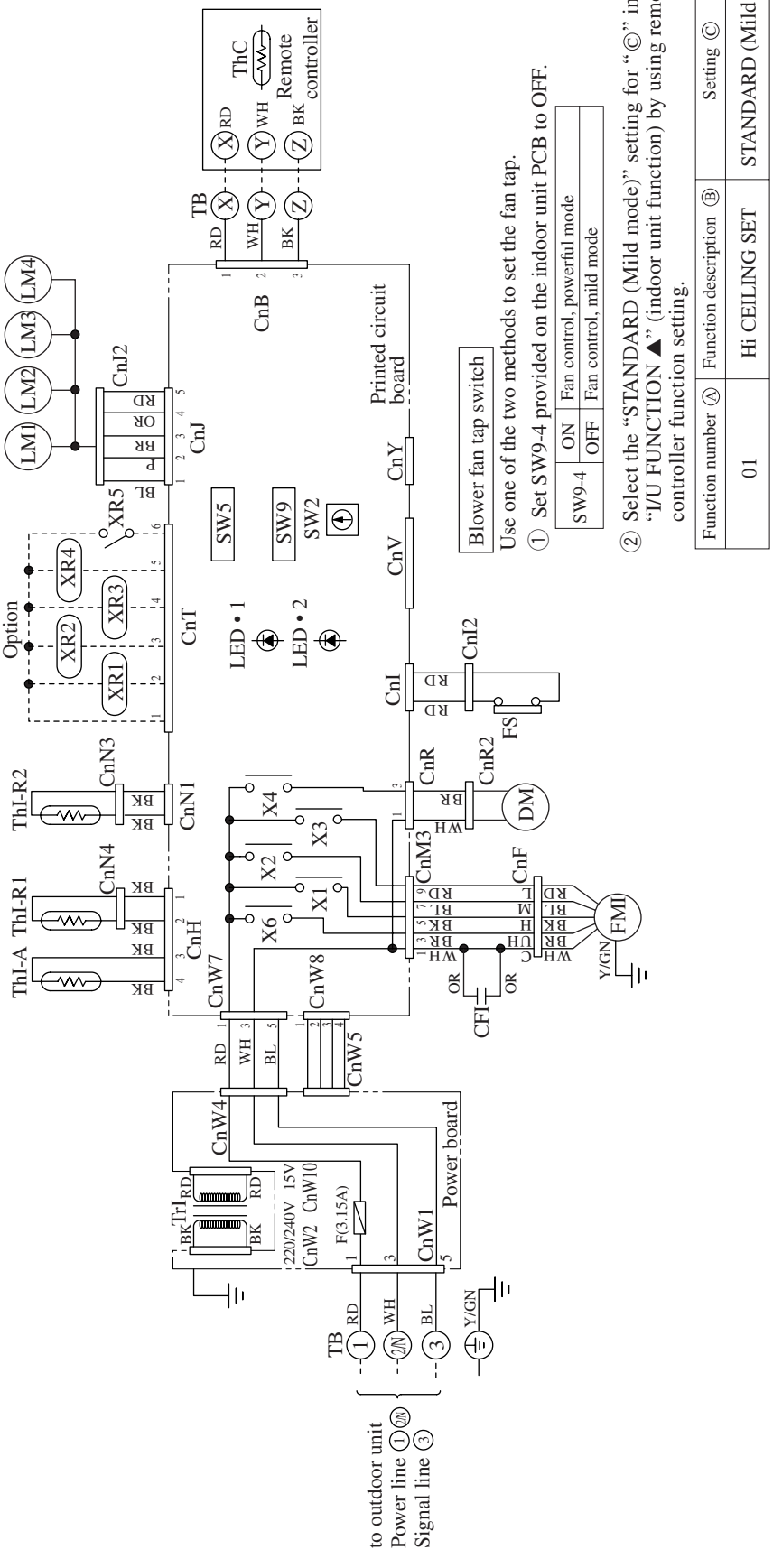
1.3 ELECTRICAL DATA

1.3.1 Electrical wiring

(1) Indoor unit

(a) Ceiling recessed type (FDT)

Models FDTA151,201,251,301,401



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "©" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

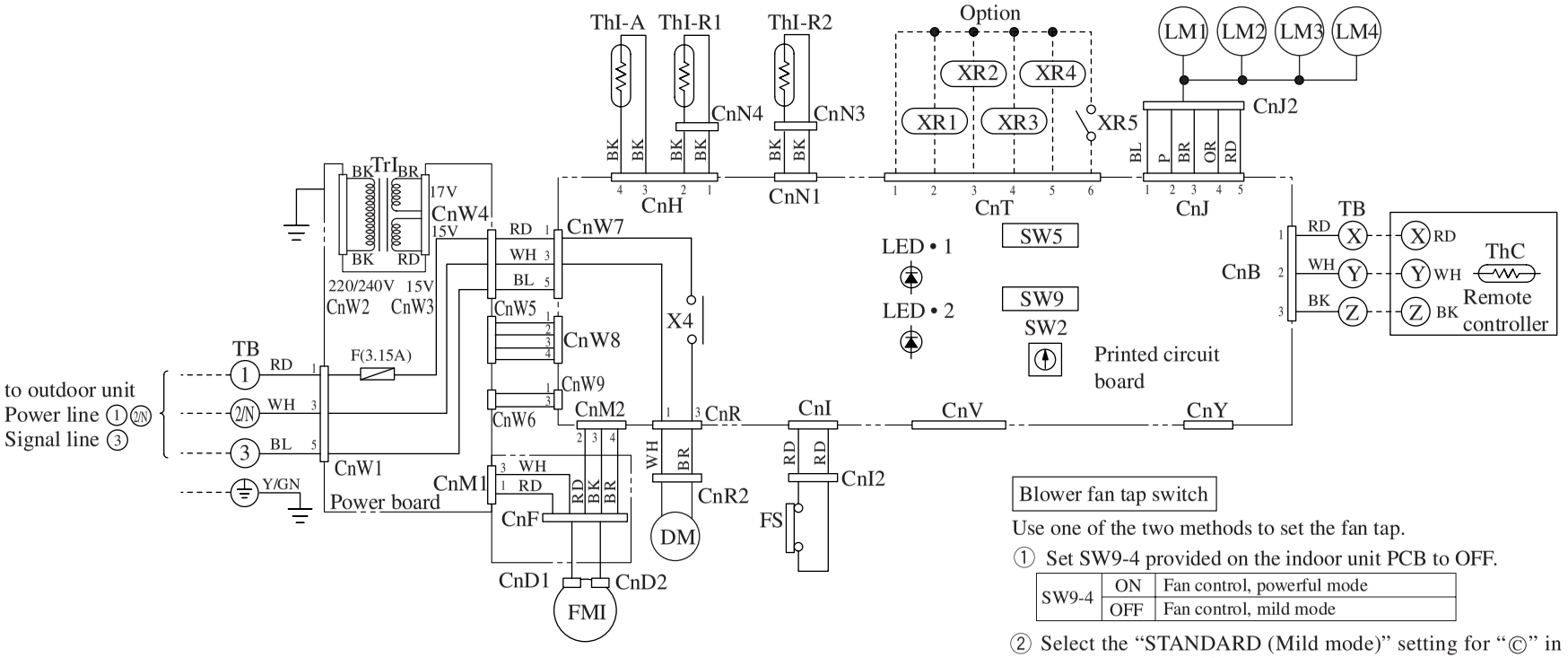
Function number Ⓐ	Function description Ⓑ	Setting ©
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW5-3,4**	Filter sign	**XR5**	Remote operation input(volt-free contact)
CFI	Capacitor for FMI	**SW9-3**	Emergency operation	**X1,2,3,6**	Auxiliary relay(For FM)
DM	Drain motor	**TrI**	Transformer	**X4**	Auxiliary relay(For DM)
FS	Float switch	**F**	Fuse	**TB**	Terminal block(○ mark)
LM1~4	Louver motor	**LED1**	Indication lamp(Red)	**CnB~Z**	Connector
ThI-A	Thermistor	**LED2**	Indication lamp(Green)	**■mark**	Closed-end connector
ThI-R1	Thermistor	**XR1**	Operation output(DC12V output)		
ThI-R2	Thermistor	**XR2**	Heating output(DC12V output)		
ThC	Thermistor	**XR3**	Thermo ON output(DC12V output)		
SW2	Remote controller communication address	**XR4**	Inspection output(DC12V output)		

Color marks

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



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

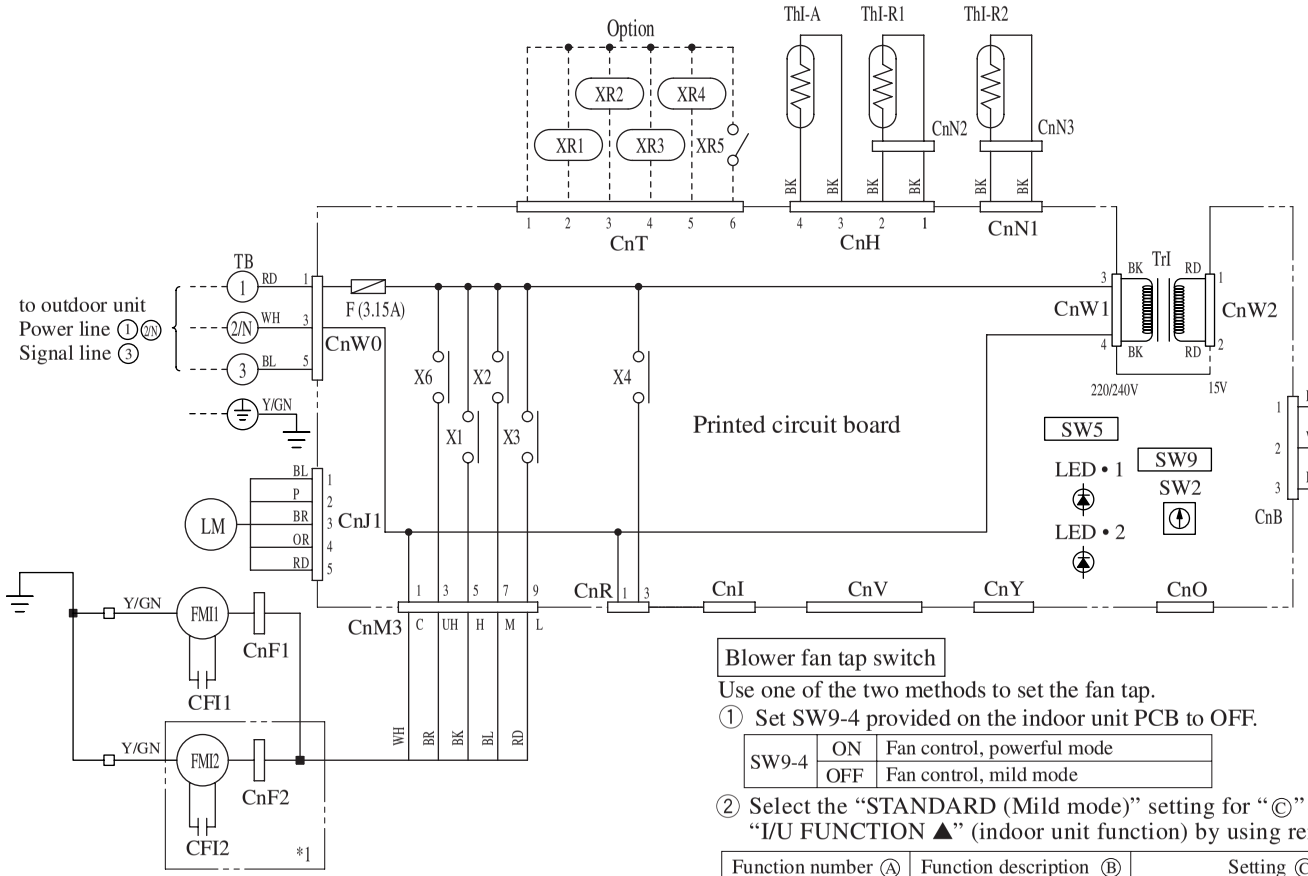
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW9-3**	Emergency operation	**X4**	Auxiliary relay(For DM)
DM	Drain motor	**TrI**	Transformer	**TB**	Terminal block(○ mark)
FS	Float switch	**F**	Fuse	**CnB~Z**	Connector
LM1~4	Louver motor	**LED1**	Indication lamp(Red)	**■mark**	Closed-end connector
ThI-A	Thermistor	**LED2**	Indication lamp(Green)		
ThI-R1	Thermistor	**XR1**	Operation output(DC12V output)		
ThI-R2	Thermistor	**XR2**	Heating output(DC12V output)		
ThC	Thermistor	**XR3**	Thermo ON output(DC12V output)		
SW2	Remote controller communication address	**XR4**	Inspection output(DC12V output)		
SW5-3,4	Filter sign	**XR5**	Remote operation input(volt-free contact)		

Color marks

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



Note(1) *1. FMI2 is equipped only for 251,301,401,501,601.

Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

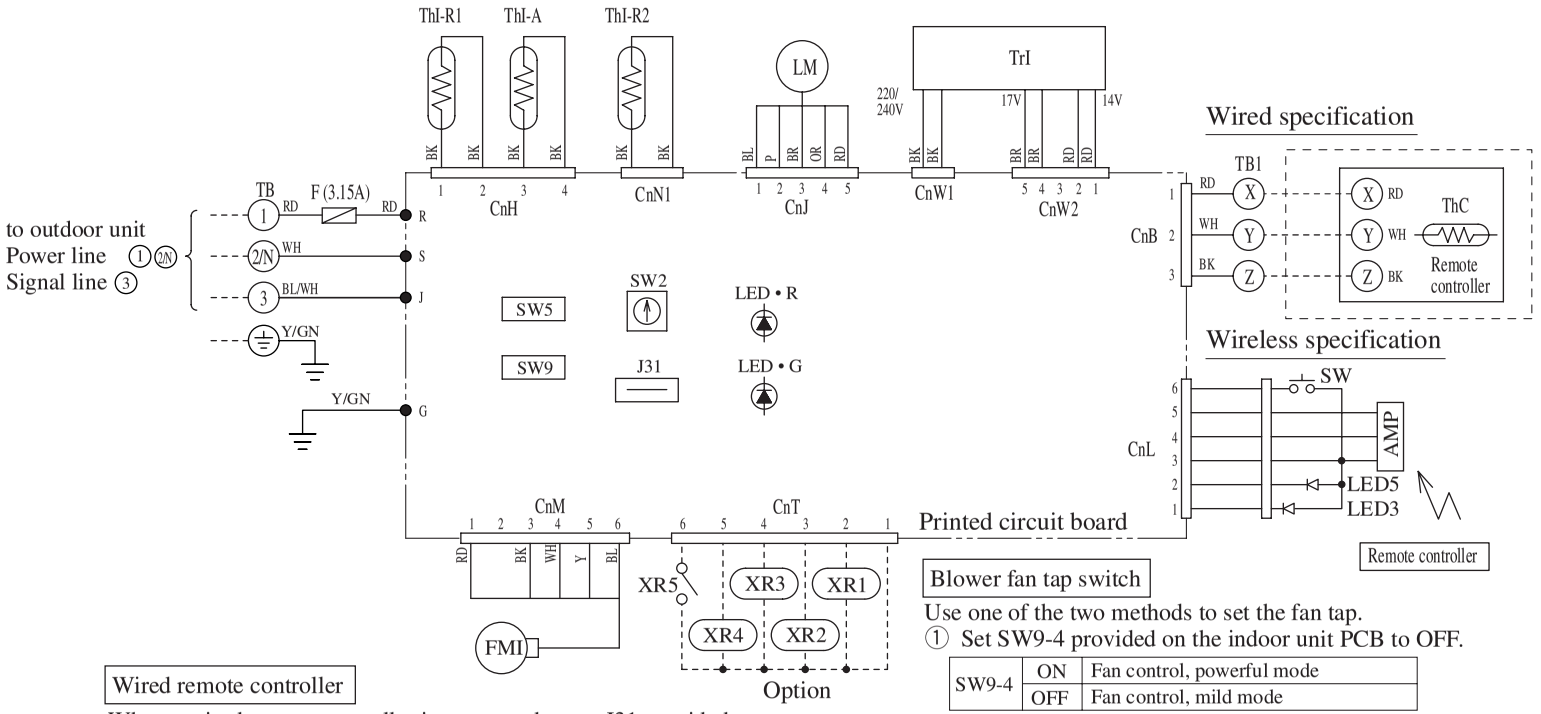
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI1,2	Fan motor	**F**	Fuse	**■mark**	Closed-end connector
CFI1,2	Capacitor for FMI	**LED1**	Indication lamp(Red)	**LED•1**	Indication lamp(Green-Operation)
LM	Louver motor	**LED2**	Indication lamp(Green)	**LED•2**	Indication lamp(Yellow-Timer/Check)
ThI-A	Thermistor	**XR1**	Operation output(DC12V output)	**LED•3**	7-segement indicator(For check)
ThI-R1	Thermistor	**XR2**	Heating output(DC12V output)	**SW1**	Switch(For setting)
ThI-R2	Thermistor	**XR3**	Thermo ON output(DC12V output)	**SW2**	Backup switch(Operation/Stop)
ThC	Thermistor	**XR4**	Inspection output(DC12V output)		
SW2	Remote controller communication address	**XR5**	Remote operation input(volt-free contact)		
SW5-3,4	Filter sign	**X1,2,3,6**	Auxiliary relay(For FM)		
SW9-3	Emergency operation	**TB**	Terminal block(○ mark)		
TrI	Transformer	**CnB~Z**	Connector		

Color marks

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



Wired remote controller

When a wired remote controller is connected, none J31 provided on the indoor unit PCB.

J31	With	Wireless remote controller
	None	Wired remote controller

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

Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

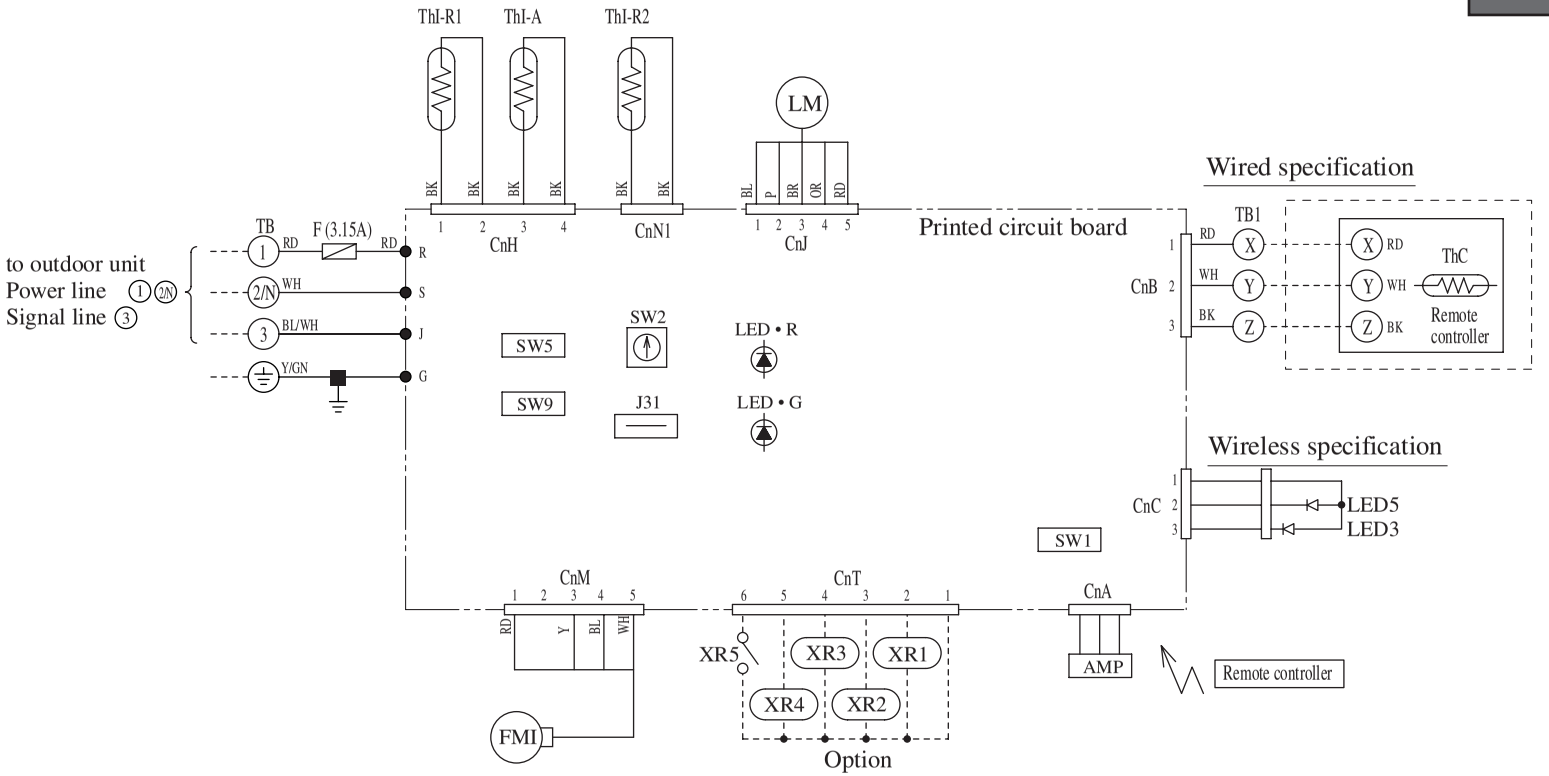
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW9-3**	Emergency operation	**XR3**	Thermo ON output(DC12V output)
LM	Louver motor	**LED3**	Indication lamp(Green-Run)	**XR4**	Inspection output(DC12V output)
ThI-A	Thermistor	**LED5**	Indication lamp(Yellow-Inspection alert)	**XR5**	Remote operation input(volt-free contact)
ThI-R1	Thermistor	**TrI**	Transformer	**TB**	Terminal block(○ mark)
ThI-R2	Thermistor	**F**	Fuse	**CnA~Z**	Connector
ThC	Thermistor	**LED • R**	Indication lamp(Red)	**AMP**	Wirelss receiver
SW	Backup switch(ON/OFF)	**LED • G**	Indication lamp(Green)		
SW2	Remote controller communication address	**XR1**	Operation output(DC12V output)		
SW5-3,4	Filter sign	**XR2**	Heating output(DC12V output)		

Color marks

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



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "©" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

Function number Ⓐ	Function description Ⓑ	Setting ©
01	Hi CEILING SET	STANDARD (Mild mode)

Wired remote controller

When a wired remote controller is connected, none J31 provided on the indoor unit PCB.

J31	With	Wireless remote controller
	None	Wired remote controller

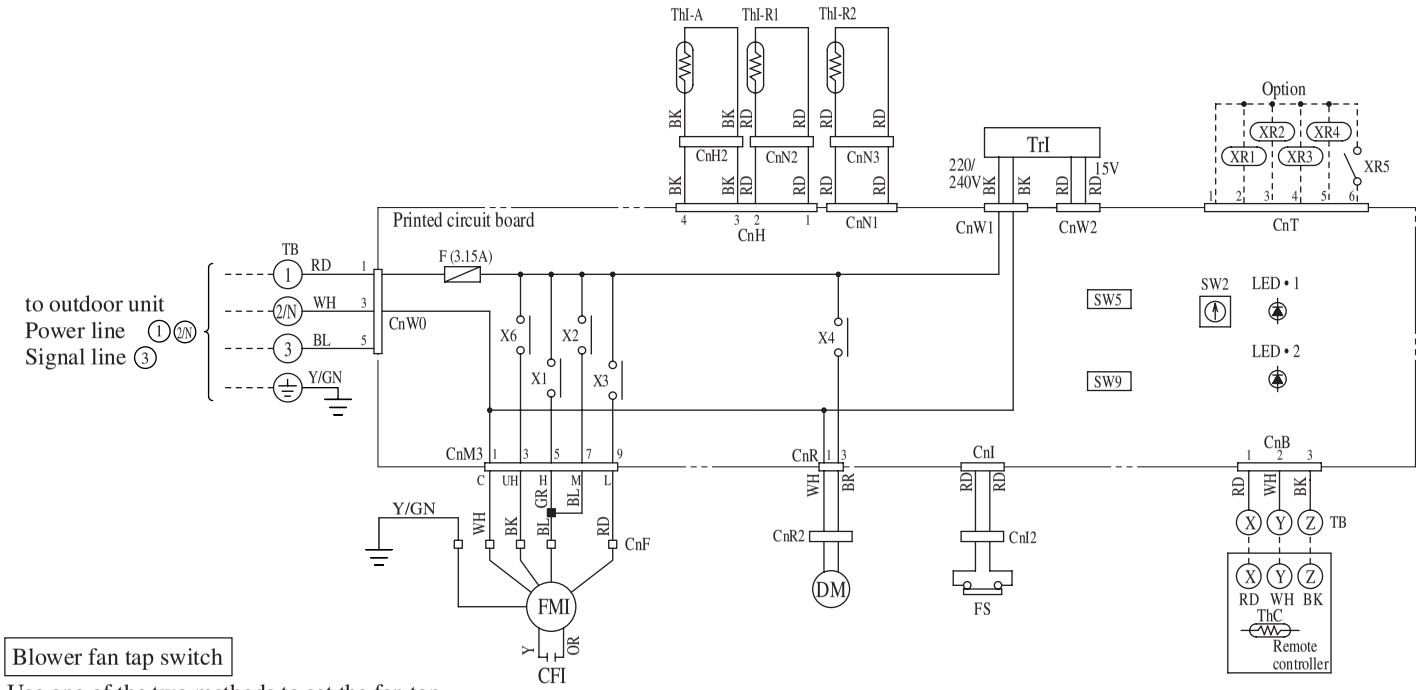
Note (1) "None" means that jumper wire is not provided on the PCB or the connection is cut.

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW5-3,4**	Filter sign	**XR2**	Heating output(DC12V output)
LM	Louver motor	**SW9-3**	Emergency operation	**XR3**	Thermo ON output(DC12V output)
ThI-A	Thermistor	**LED3**	Indication lamp(Yellow-Timer/Inspction alert)	**XR4**	Inspection output(DC12V output)
ThI-R1	Thermistor	**LED5**	Indication lamp(Green-Run)	**XR5**	Remote operation input(volt-free contact)
ThI-R2	Thermistor	**F**	Fuse	**TB**	Terminal block(○ mark)
ThC	Thermistor	**LED • R**	Indication lamp(Red)	**CnA~Z**	Connector
SW1	Backup switch(ON/OFF)	**LED • G**	Indication lamp(Green)	**AMP**	Wirelss receiver
SW2	Remote controller communication address	**XR1**	Operation output(DC12V output)	**■ mark**	Closed-end connector

Color marks

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



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to ON .

SW9-4	ON	Fan control, high speed (High ceiling)
	OFF	Fan control, standard

② Select the "Hi CEILING 1 (high-speed tap)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	Hi CEILING1

Meaning of marks

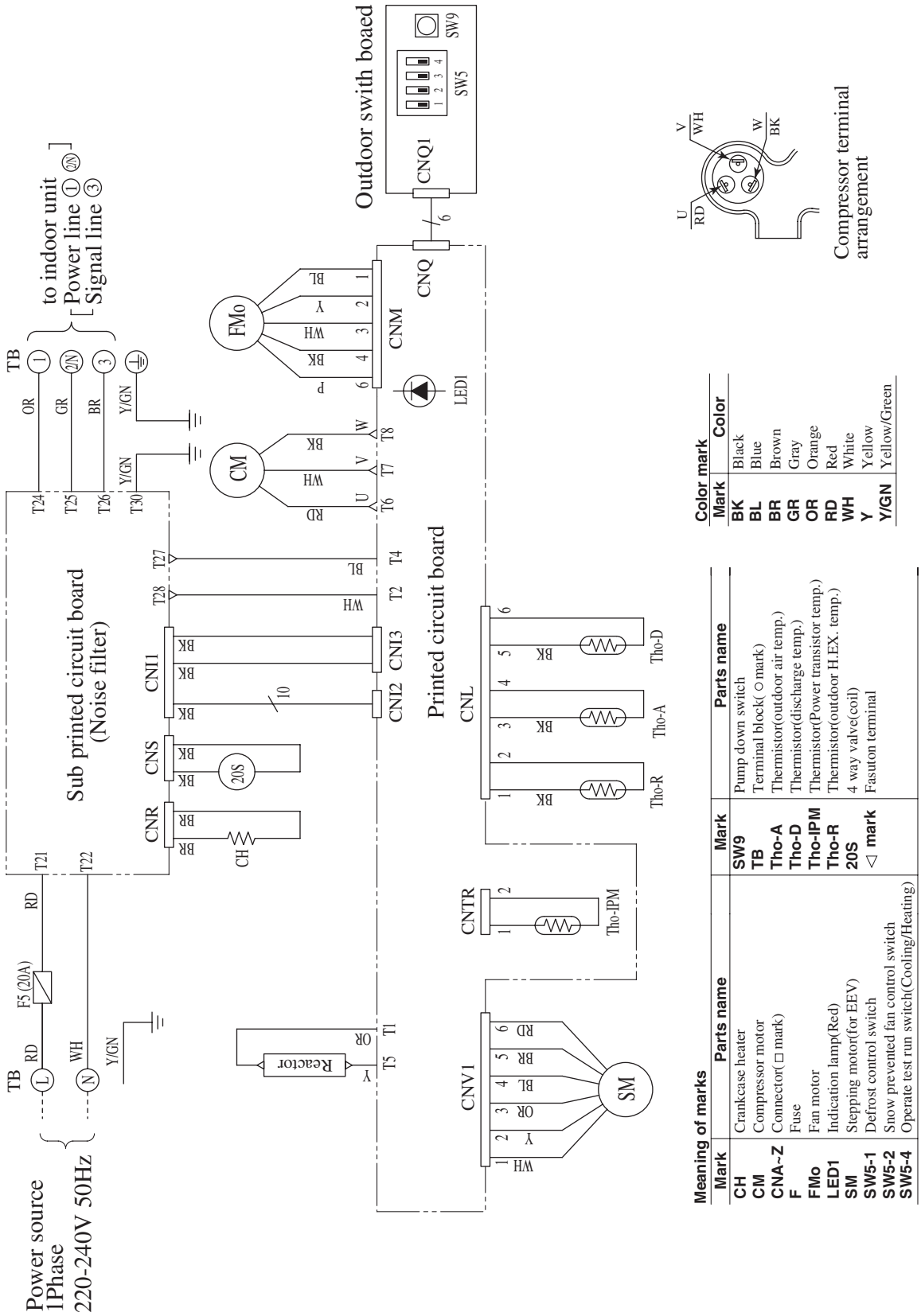
Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW5-3,4**	Filter sign	**XR4**	Inspection output(DC12V output)
CFI	Capacitor for FMI	**SW9-3**	Emergency operation	**XR5**	Remote operation input(volt-free contact)
DM	Drain motor	**TrI**	Transformer	**X1,2,3,6**	Auxiliary relay(For FM)
FS	Float switch	**F**	Fuse	**X4**	Auxiliary relay(For DM)
Thl-A	Thermistor	**LED1**	Indication lamp(Red)	**TB**	Terminal block(○ mark)
Thl-R1	Thermistor	**LED2**	Indication lamp(Green)	**CnA~Z**	Connector
Thl-R2	Thermistor	**XR1**	Operation output(DC12V output)	**■mark**	Closed-end connector
ThC	Thermistor	**XR2**	Heating output(DC12V output)		
SW2	Remote controller communication address	**XR3**	Thermo ON output(DC12V output)		

Color marks

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

(2) Outdoor unit

Models FDCVA151HEN, 201HEN, 251HEN

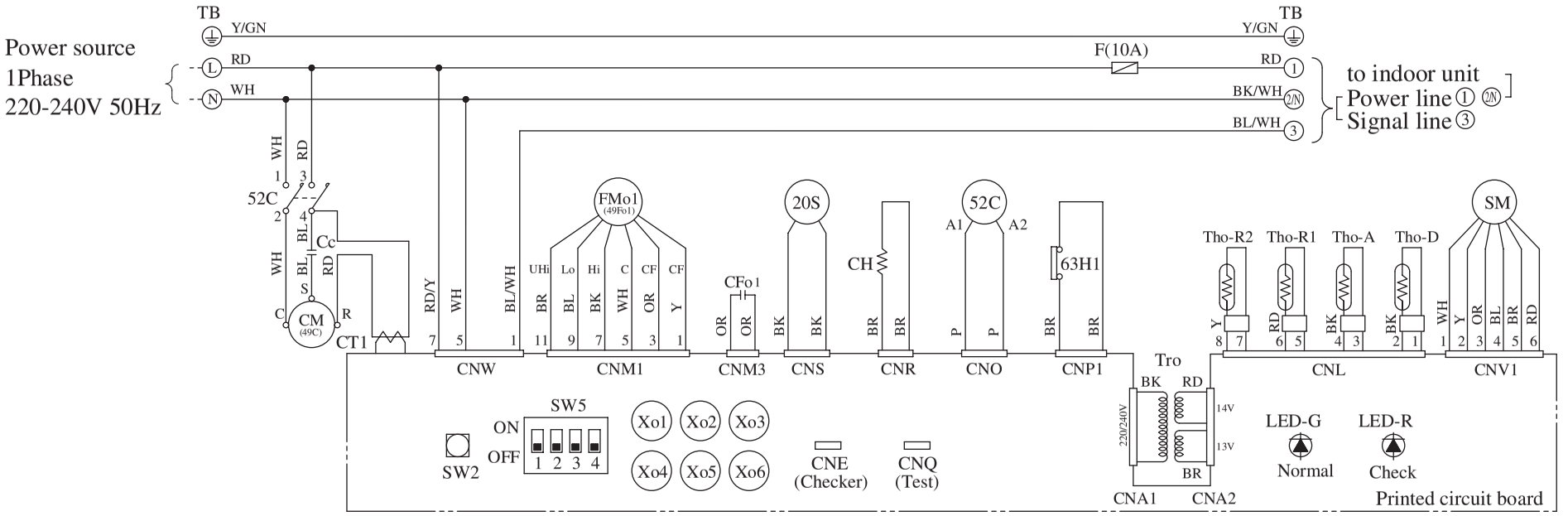


Color mark

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

Meaning of marks

Mark	Parts name	Mark	Parts name
CH	Crankcase heater	SW9	Pump down switch
CM	Compressor motor	TB	Terminal block(○ mark)
CNA~Z	Connector(□ mark)	Tho-A	Thermistor(outdoor air temp.)
F	Fuse	Tho-D	Thermistor(discharge temp.)
FMo	Fan motor	Tho-IPM	Thermistor(Power transistor temp.)
LED1	Indication lamp(Red)	Tho-R	Thermistor(outdoor H.EX. temp.)
SM	Stepping motor(for EEV)	20S	4 way valve(coil)
SW5-1	Defrost control switch	◁ mark	Fasuton terminal
SW5-2	Snow prevented fan control switch		
SW5-4	Operate test run switch(Cooling/Heating)		

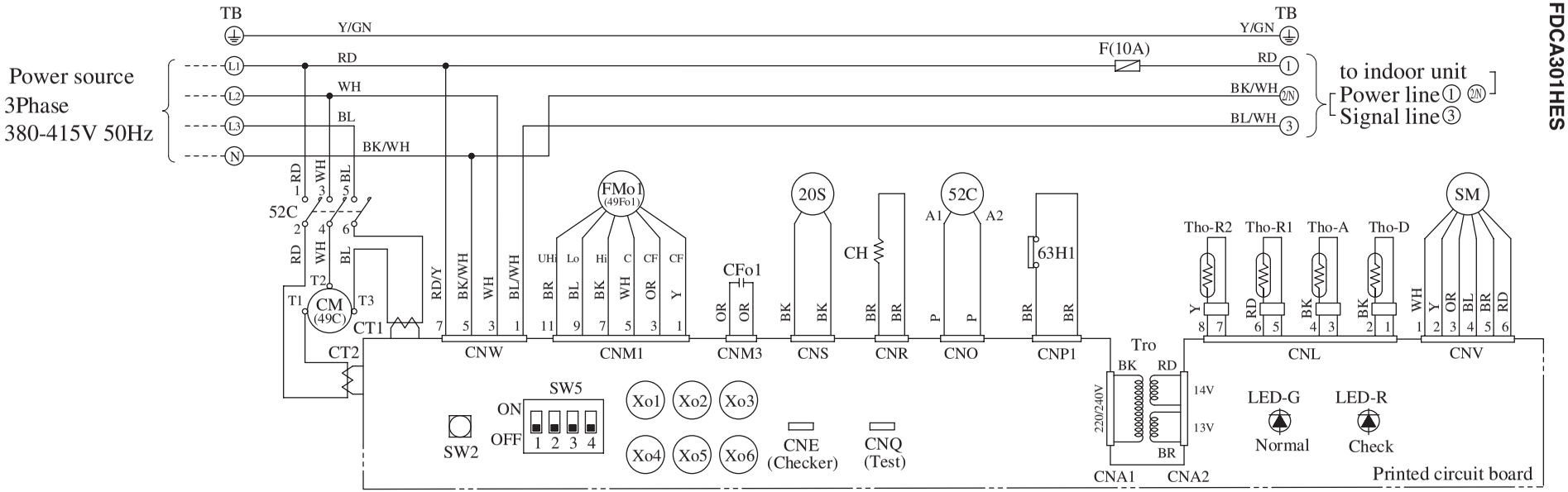


Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
Cc	Capacitor for CM	**SM**	Stepping motor(for EEV)	**Xo1**	Auxiliary relay(for 52C)
CFo1	Capacitor for FMo1	**SW2**	Test run switch	**Xo2,3,4**	Auxiliary relay(for FMo)
CH	Crankcase heater	**SW5-1**	Defrost control switch	**Xo5**	Auxiliary relay(for 20S)
CM	Compressor motor	**SW5-2**	Snow prevented fan control switch	**Xo6**	Auxiliary relay(for CH)
CNA~Z	Connector(□mark)	**SW5-4**	Operate test run switch	**20S**	4 way valve(coil)
CT1	Current sensor	**TB**	Terminal block(○mark)	**49C**	Internal thermostat for CM
F	Fuse	**Tho-A**	Thermistor(outdoor air temp.)	**49Fo1**	Internal thermostat for FMo1
FMo1	Fan motor	**Tho-D**	Thermistor(discharge temp.)	**52C**	Magnetic contactor for CM
LED-G	Indication lamp(Green)	**Tho-R1,2**	Thermistor(outdoor H.EX. temp.)	**63H1**	High pressure switch
LED-R	Indication lamp(Red)	**Tro**	Transformer		

Color mark

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

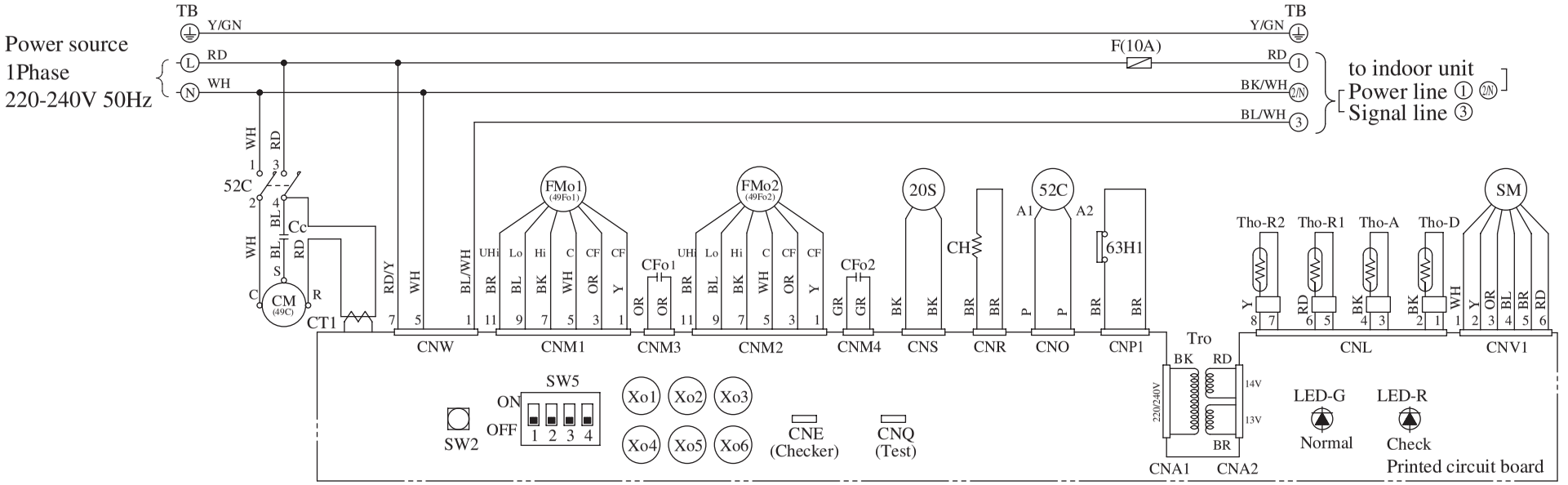


Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CFo1	Capacitor for FMo1	**SW2**	Test run switch	**Xo2,3,4**	Auxiliary relay(for FMo)
CH	Crankcase heater	**SW5-1**	Defrost control switch	**Xo5**	Auxiliary relay(for 20S)
CM	Compressor motor	**SW5-2**	Snow prevented fan control switch	**Xo6**	Auxiliary relay(for CH)
CNA~Z	Connector(□mark)	**SW5-4**	Operate test run switch	**20S**	4 way valve(coil)
CT1,2	Current sensor	**TB**	Terminal block(○mark)	**49C**	Internal thermostat for CM
F	Fuse	**Tho-A**	Thermistor(outdoor air temp)	**49Fo1**	Internal thermostat for FMo1
FMo1	Fan motor	**Tho-D**	Thermistor(discharge temp)	**52C**	Magnetic contactor for CM
LED-G	Indication lamp(Green)	**Tho-R1,2**	Thermistor(outdoor H.Ex.temp)	**63H1**	High pressure switch
LED-R	Indication lamp(Red)	**Tro**	Transformer		
SM	Stepping motor(for EEV)	**Xo1**	Auxiliary relay(for 52C)		

Color mark

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

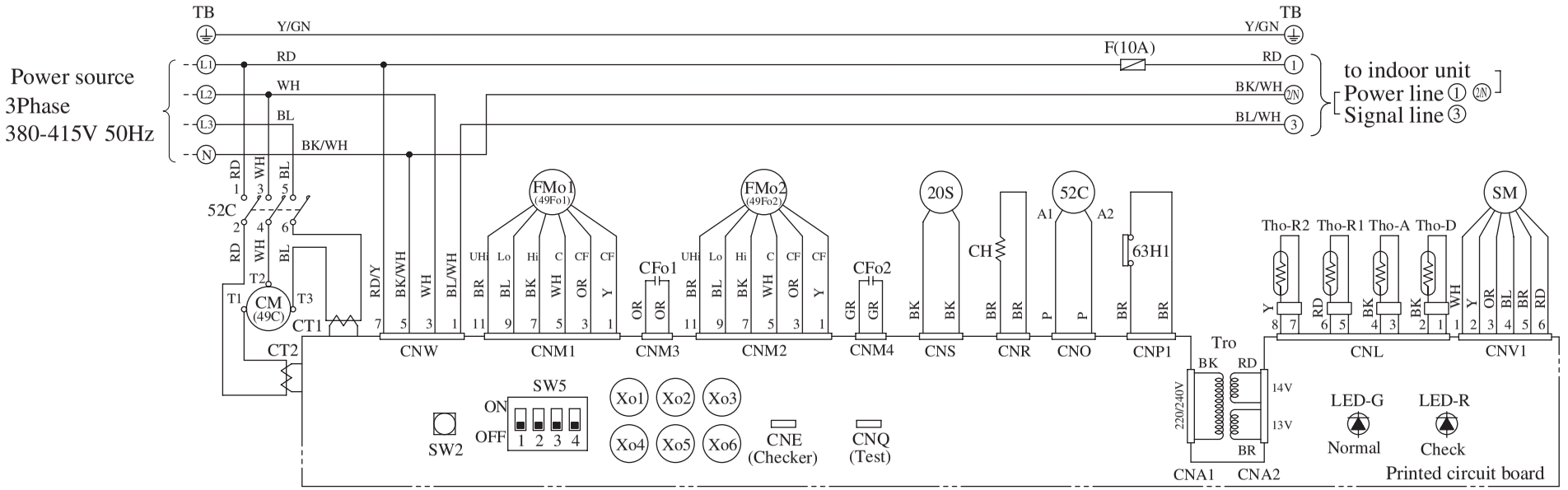


Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
Cc	Capacitor for CM	**SM**	Stepping motor(for EEV)	**Xo1**	Auxiliary relay(for 52C)
CFo1,2	Capacitor for FMo1,2	**SW2**	Test run switch	**Xo2,3,4**	Auxiliary relay(for FMo)
CH	Crankcase heater	**SW5-1**	Defrost control switch	**Xo5**	Auxiliary relay(for 20S)
CM	Compressor motor	**SW5-2**	Snow prevented fan control switch	**Xo6**	Auxiliary relay(for CH)
CNA~Z	Connector(□ mark)	**SW5-4**	Operate test run switch	**20S**	4 way valve(coil)
CT1	Current sensor	**TB**	Terminal block(○ mark)	**49C**	Internal thermostat for CM
F	Fuse	**Tho-A**	Thermistor(outdoor air temp.)	**49Fo1,2**	Internal thermostat for FMo1,2
FMo1,2	Fan motor	**Tho-D**	Thermistor(discharge temp.)	**52C**	Magnetic contactor for CM
LED-G	Indication lamp(Green)	**Tho-R1,2**	Ther mistor(outdoor H.EX. temp.)	**63H1**	High pressure switch
LED-R	Indication lamp(Red)	**Tro**	Transformer		

Color mark

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



Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CFo1,2	Capacitor for FMo1,2	**SW2**	Test run switch	**Xo2,3,4**	Auxiliary relay(for FMo)
CH	Crankcase heater	**SW5-1**	Defrost control switch	**Xo5**	Auxiliary relay(for 20S)
CM	Compressor motor	**SW5-2**	Snow prevented fan control switch	**Xo6**	Auxiliary relay(for CH)
CNA~Z	Connector(□mark)	**SW5-4**	Operate test run switch	**20S**	4 way valve(coil)
CT1,2	Current sensor	**TB**	Terminal block(○ mark)	**49C**	Internal thermostat for CM
F	Fuse	**Tho-A**	Thermistor(outdoor air temp)	**49Fo1,2**	Internal thermostat for FMo1,2
FMo1,2	Fan motor	**Tho-D**	Thermistor(discharge temp)	**52C**	Magnetic contactor for CM
LED-G	Indication lamp(Green)	**Tho-R1,2**	Thermistor(outdoor H.Ex.temp)	**63H1**	High pressure switch
LED-R	Indication lamp(Red)	**Tro**	Transformer		
SM	Stepping motor(for EEV)	**Xo1**	Auxiliary relay(for 52C)		

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

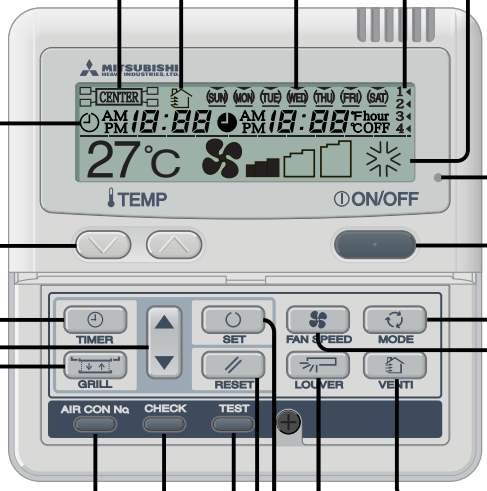
1.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Remote controller

(a) Wired remote controller

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation.
Characters displayed with dots in the liquid crystal display area are abbreviated.

Pull the cover downward to open it.



Central control display
Displayed when the air conditioning system is controlled by the option controller.

Timer operation display
Displays the settings related to timer operation.

Temperature setting switches
These switches are used to set the temperature of the room.

TIMER switch
This switch is used to select a timer mode.

Timer setting switches
These switches are used to set the timer mode and time.

GRILL switch
This switch has no function.
When this switch is pressed,
INVALID OPER (Invalid Operation)
is displayed, but it does not mean a failure.

AIR CON No. (Air conditioning system No.) switch
Displays the number of the connected air conditioning system.

CHECK switch
This switch is used at servicing.

TEST switch
This switch is used during test operation.

Vent Indicator
Indicates operation in the Ventilation mode.

Weekly timer display
Displays the settings of the weekly timer.

Operation setting display area
Displays setting temperature, airflow volume, operation mode and operation message.

Operation/Check indicator light
During operation: Lit in green
In case of error: Flashing in red

Operation/Stop switch
This switch is used to operate and stop the air conditioning system. Press the switch once to operate the system and press it once again to stop the system.

MODE switch
This switch is used to switch between operation modes.

FAN SPEED switch
This switch is used to set the airflow volume.

VENT switch
Switch that operates the connected ventilator.

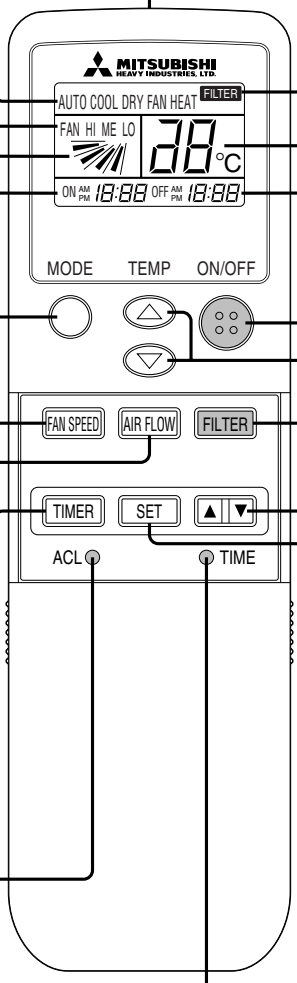
LOUVER switch
This switch is used to operate/stop the swing louver.

SET switch
This switch is used to apply the timer operation setting.
This switch is also used to make silent mode operation settings.

RESET switch
Press this switch while making settings to go back to the previous operation.
This switch is also used to reset the "FILTER CLEANING" message display.
(Press this switch after cleaning the air filter.)

*If you press any of the switches above and " INVALID OPER " is display, the switch has no function.
But it does not mean a failure.

(b) Wireless remote controller



OPERATION MODE indicator
Indicates selected operation mode

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

FAN SPEED button
Every time when the button is pressed, the mode is sequentially changed HI ↔ ME ↔ LO.

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 △, ▽ 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.

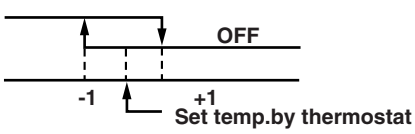
Set button
Used to switch from the hour to minute or vice versa when setting the present time or timer operation time.

Clock switch
Press this before setting the present time.

(2) Operation control function by the indoor controller

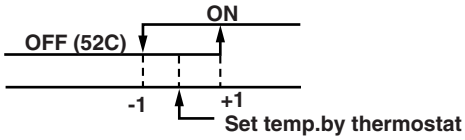
(a) Room temperature control (Differential of thermostat)

Heating operation



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

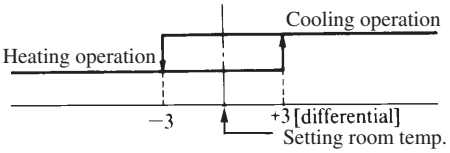
Cooling operation



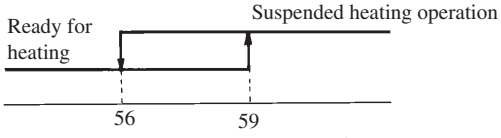
Temperature difference between thermostat set temp. and return air temp. (Detected by Thı-A)

(b) Automatic operation

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 Thı-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.
(2) If the temperature of indoor heat exchanger rises beyond 59˚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.

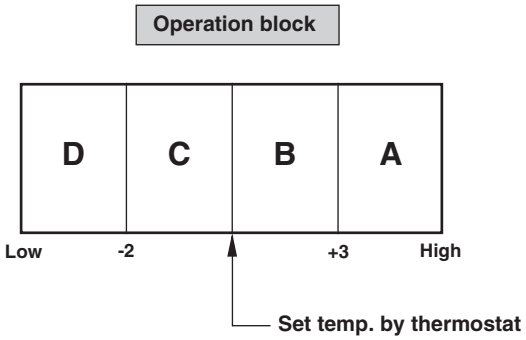
(c) Control parts operation during cooling and heating

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	○	×(5min. ON)	×(5min. ON)	×(5min. ON)				○	×(5min. ON)

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

(d) Dehumidifying operation ("THERMAL DRY")

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



Pattern of operation CM, FMo: ON FMı: ON

Operation block	Thermal drying starting (for 8 or 16 minutes after operation started)	Normal thermal dry operation (after completion of thermal drying)
A	(16 minutes) Normal cooling operation • The air flow is set at 1 speed lower than the set air flow.	(8 minutes) Continuous cooling operation (FMı:Lo)
B		(8 minutes) CM, FMo FMı 4 min. 4 min. 0.5 min. (FMı: Lo)
C	(8 minutes) CM, FMo FMı 5 min. 3 min. 0.5 min. (FMı: Lo)	(8 minutes) CM, FMo FMı 5 min. 3 min. 0.5 min. (FMı: Lo)
D		(8 minutes) All stoppage

Notes (1) Blocks Ⓐ and Ⓑ: Normal cooling operation for 16 minutes after operation starts, then when the set temperature is reached, the thermostat stops. 16 minutes later, it switches to normal operation.
Blocks Ⓒ and Ⓓ: The operation mode shown in the table above is performed for 8 minutes. After 8 minutes, it switches to normal operation.
(2) Under normal operation, the temperature is checked every 8 minutes after normal operation starts to determine which block is operating, then the operation mode is decided.

(e) Timer Operation

1) Simple Timer

This sets the amount of time from the current time that the air conditioner goes OFF.

The off time can be selected in 10 steps, from "Off 1 hour from now" to "Off 10 hours from now." After the simple timer is set, the number of hours until the air conditioning goes off is displayed in one hour units from the current time.

2) Time Off Timer

The time the air conditioner goes OFF can be set in 10-minute increments.

3) Time On Timer

The time the air conditioner goes ON can be set in 10-minute increments. The set temperature can also be set at the same time.

4) Weekly Timer

Each day, it is possible to set this timer's operation up to 4 times (On time, or Off timer).

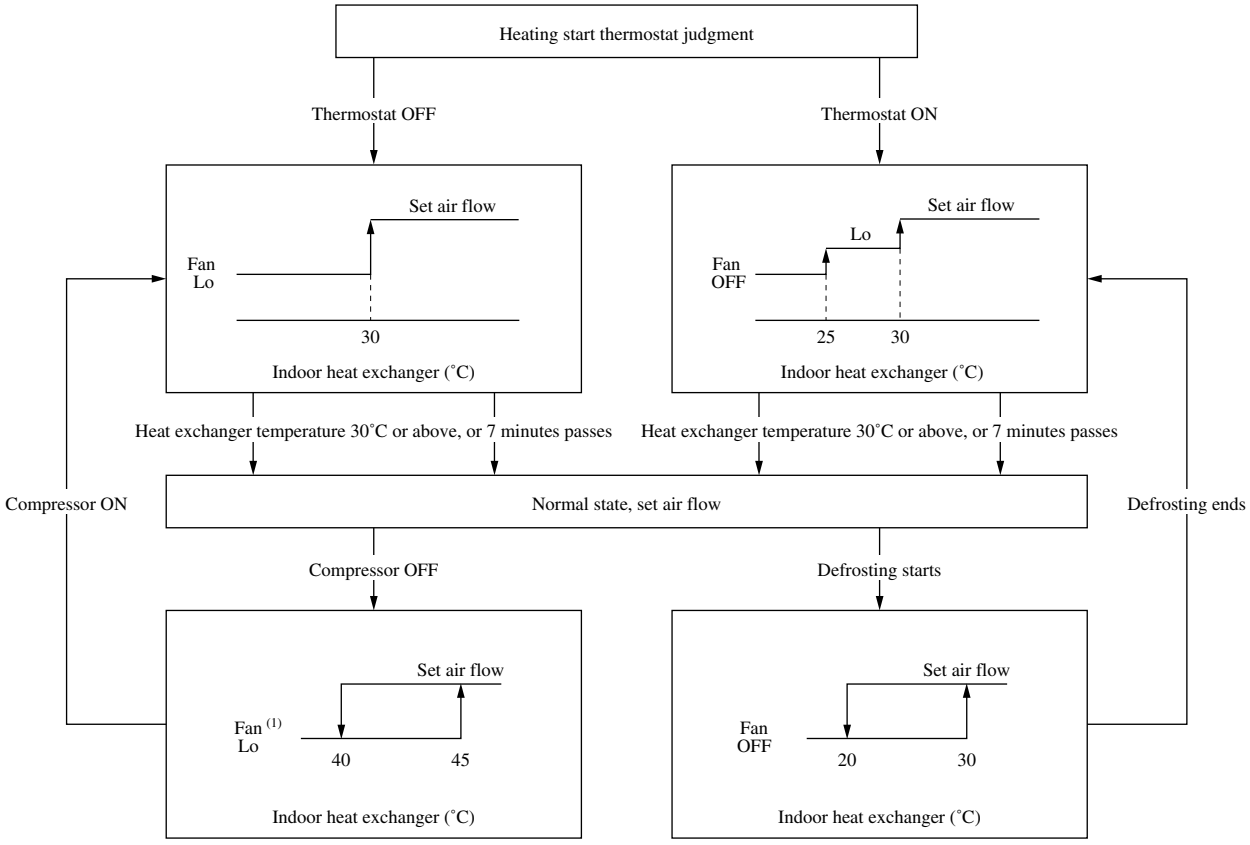
5) Possible joint use timer operation setting combinations

	Simple Timer	Time Off Timer	Time On Timer	Weekly Timer
Simple Timer		×	○	×
Time Off Timer	×		○	×
Time On Timer	○	○		×
Weekly Timer	×	×	×	

Note (1) ○: Possible, ×: Impossible

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

When heating operation starts, when the thermostat is reset, during a defrosting operation or when resetting a heating operation, in order to prevent a cold draft, the indoor heat exchanger (sensed by Thı-R1 and R2) control the indoor fan.

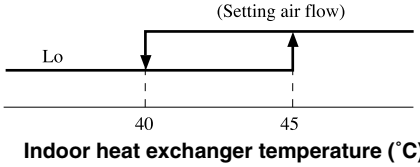


Notes (1) If J2 starts, it changes from OFF to Lo for 5 minutes.

(2) During Hot Start (the compressor is operating and the indoor fan is not operating at the set air flow), Heating preparation is displayed.

(g) FM control with the heating thermostat turned off (For cold draft prevention)

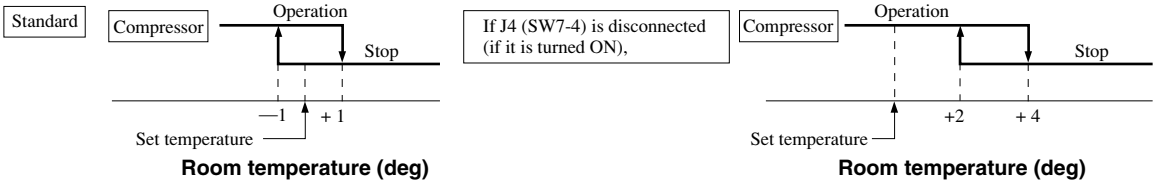
In order to prevent a cold draft while the heating thermostat is turned off, the indoor blower is controlled in response to the temperature of the indoor heat exchanger as illustrated below. It should be noted that if jumer wire J2 (SW7-2) on the indoor PCB is turned off, the indoor blower will stop 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.

(h) Room temperature sensing temperature compensation during heating

In the standard specifications, the temperature set on the thermostat is used to turn the compressor on and off, but in cases where the warm air easily escapes to the ceiling and the thermostat ends up turning off too soon, Jumper wire J4 (SW7-4) on the indoor PCB can be disconnected. When this is done, the compressor can be turned ON and OFF at the set temperature +3 degrees, and the feeling that the room is heated can be improved. However, the upper limit for the set temperature is 30ºC.



(i) Filter sign

If operating time (the length of time the ON/OFF switch is ON) totals 180 hours (1), "FILTER CLEANING" is displayed on the remote control unit. (This is displayed whether the system is running or not, when the unit is broken down, and when there is central control.)

Notes (1) The following controls are enabled by the combination of the ON/OFF settings of 2 switches on the indoor unit PCB, SW5-3 and SW5-4. (They are switched OFF when the unit is shipped from the factory. The setting time is 180 hours.)

Switch	Function
SW5-3 OFF	Setting time: 180 hrs. (when shipped from factory)
SW5-4 OFF	
SW5-3 OFF	Setting time: 600 hrs. (Display)
SW5-4 ON	
SW5-3 ON	Setting time: 1000 hrs. (Display)
SW5-4 OFF	
SW5-3 ON	Setting time: 1000 hrs. (Unit stop)
SW5-4 ON	

(2) When SW5-3, SW5-4 is switched ON, the message "FILTER CLEANING" is displayed after the setting time has passed, then the unit stops after another 24 hours have passed (including stop time).

(j) Auto swing control (Except the FDUR model)

1) Louver Control

a) While the air conditioner is operating, press the "LOUVER" switch.
"AUTO ⇄" is displayed for 3 seconds and the swing louvers move up and down continuously.

b) When fixing the position of the swing louvers, press the "LOUVER" switch once while the swing louvers are moving. 4 stop positions are displayed in sequence at 1-second intervals.
When the display comes to the position where you would like to stop the louvers, press the "LOUVER" switch once more. The display will stop the message (ex. "STOP 1-⌐ ") will be displayed for 3 seconds, then the swing louvers will stop.

c) Louver operation when the louver 4-position controller's power goes On
When the power is turned ON, the louvers automatically swing 1 time automatically (without remote control operation). This is done so that the microcomputer can confirm the louver's position and input the louver motor's (LM) position to the microcomputer.

Note (1) When the "LOUVER" switch is turned ON, the louver position LCD display displays the swing operation for 10 seconds. Then "AUTO ⇄" is displayed for 3 seconds.

2) Auto louver horizontal set during heating

During display of " ✳✋ " (Heating Preparation) (during hot start and heating thermostat OFF), the louvers are in the horizontal position regardless of the operation of the auto swing switch (auto swing and louver stop). (In order to prevent cold drafts.) Also, the louver position display LCD continues the previous display from before this control started.

If the " ✳✋ " (Heating Preparation) display goes off, the LCD display also returns to the original display.

3) Louver free stop control

Setting an open circuit with jumper wire J5 (SW8-1), used for setting louver free stop, causes the louver motor to stop if there is a stop signal from the remote control unit and saves the position of the louver in memory. Then if there is an auto swing signal from the remote control unit, auto swing control starts from the previous stop position.

(k) Condensate pump motor (DM) Control [FDT and FDUR models only]

(a) Drain motor is started no sooner than the compressor is turned ON during cooling or dehumidifying operation. The drain motor continues to operate for 5 minutes after the stop of unit operation, stop with the error stop, thermostat stop and at switching from cooling or dehumidifying operation to blowing or heating operation. When there is any unit subjected to oil return control, the drain motor is operated for 5 minutes at such occasion.

(b) Overflow detection is performed by the float switch at all times regardless of the operating mode. If the float switch circuit is detected to be open continuously for 3 seconds (or when the float switch is disconnected or a wire is broken), an abnormal stop (E9) is performed and the condensate pump motor runs until the float switch recovers.

(l) Air flow mode control

Air flow mode control can be changed using DIP switch SW9-4 on the indoor PCB.

FDT, FDEN, FDKN models

DIP SW / Item	SW9-4 OFF (Mild Mode Control)	SW9-4 ON (Powerful mode Control)
Air flow mode	Hi, Me, Lo	UHi, Hi, Me

Notes (1) When the unit is shipped, SW9-4 is turned ON.
(2) If SW9-4 is ON, the fan operates in Me even during hot start and when the heating thermostat is OFF.

FDUR model

DIP SW / Item	SW9-4 OFF (Standard)	SW9-4 ON (High speed)
Air flow mode	Hi, Lo	UHi, Hi

Notes (1) When the unit is shipped, SW9-4 is turned OFF.
(2) If SW9-4 is ON, the fan operates in Hi even during hot start and when the heating thermostat is OFF.

(m) Compressor inching prevention control

1) 3-minute timer

If the compressor stops due to operation of the thermostat, the Run switch on the remote controller or some trouble, it is not restarted after 3 minutes. However, when the power is turned ON, the 3-minute timer becomes inactive.

2) 3-minute forced operation timer

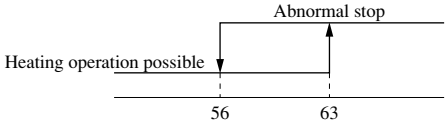
a) For 3 minutes after the compressor goes ON, it does not stop. However, it will stop if the Run/Stop button is pressed and through a change in the operation mode, it sill stop immediately when the thermostat goes OFF.

b) During 3-minute forced operation timer control in heating operation, if the thermostat goes OFF, the louver position is set in the horizontal position.

Note (1) The compressor stops when protection control starts.

(n) Heating overload porotection

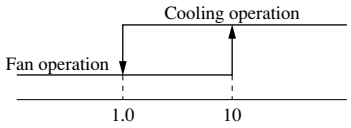
If an overload condition is sensed continuously for 2 seconds by the indoor heat exchanger temperature during heating (sensed by Thi-R1 or R2), the compressor is stopped. After a 3-minute delay, the compressor is restarted. If the overload is sensed 5 times within 60 minutes of the first time it was detected, an abnormal stop is performed (E8). Also, if the overload state is sensed continuously for 6 minutes, it results in an abnormal stop.



Indoor heat exchanger temperature(˚C)

(o) Frost prevention during cooling, dehumidification

In order to prevent frost during cooling and dehumidification, 3 minutes after compressor operation starts, if the indoor heat exchanger temperature (sensed by Thi-R1 or R2) is 3.5ºC or lower for 30 seconds, the compressor's speed is lowered. 30 seconds later, if the indoor heat exchanger temperature is 3.5ºC or lower, the speed is reduced still more. If the temperature becomes lower than 3.5ºC continuously, this control is terminated. Furthermore, even if the compressor's speed is lowered, if the indoor heat exchanger becomes as shown in the diagram below, the unit switches to fan operation.



Indoor heat exchanger temperature (˚C)

(p) Thermistor (Return air, heat exchanger) disconnected wire detection.

If the temperature sensed by the thermistor is –50ºC or lower continuously for 5 seconds, the compressor stops. After a 3-minute delay, the compressor is restarted, but if a recurrence is detected within 60 minutes of the 1st time, or if it is sensed continuously for 6 minutes, it results in an abnormal stop (E6, E7).

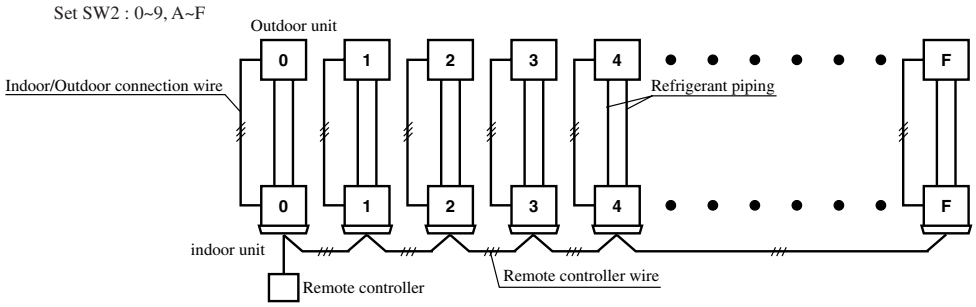
(q) Using 1 remote controller to control multiple units (indoor units - up to 16 units)

1) Function

A single remote control switch can be used for group control of multiple units (indoor units - up to 16 units). All units in the group that have had the remote control switch set at [Operating Mode] can be turned on and off in order of the unit number.

This functions independently of the thermostat and protection functions of each unit.

Notes (1) The unit number is set by a switch (SW2) on the circuit board for the indoor unit.



(2) If unit number is not important, random can be used. However, setting in order from 0, 1, 2, to F will ensure setting without error.

2) Display to remote controller

a) Remote or center and heating preparation: Displays for the youngest unit for the remote mode (center mode if there is no remote mode) of the units in operation.

b) Inspection and filter sign: Displays either to the first corresponding unit.

3) Confirmation of connected units

Pressing the "AIR CON No." switch on the remote control unit displays the indoor unit address. Pressing the ▲ or ▼ button displays the indoor units in the order of lowest to highest assigned No.

4) Error

a) If an error occurs (protection device activation) with some of the units in the group, those units will have an error stop, but the properly operating units will continue operation.

b) Wiring outline

Route the wire connecting each of the indoor and outdoor units as it would be for each unit. Use the terminal block (X, Y, Z) for the remote control for the group controller and use a jumper wire among each of the rooms.

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

1) 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.

2) Control of input signal

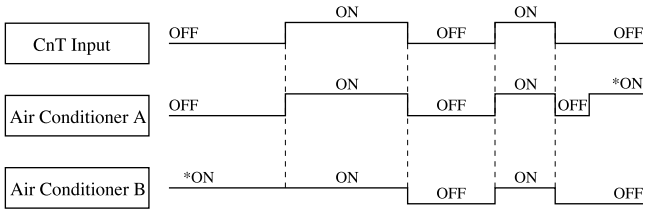
(Make sure to connect the standard remote control unit. Control of input signal is not available without the standard remote controller.)

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.

a) At shipping from factory J1 on PCB OFF

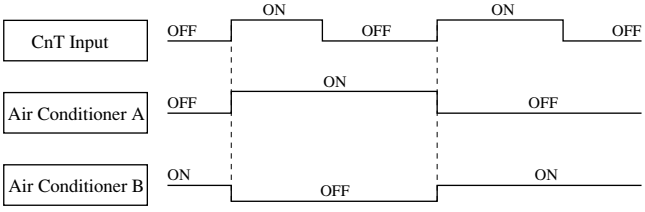
- Input signal to CnT OFF → ON [Edge input] ... Air conditioner ON
- Input signal to CnT ON → OFF [Edge input] ... Air conditioner OFF



Note (1) The ON at the * mark indicates ON using the remote control switch, etc.

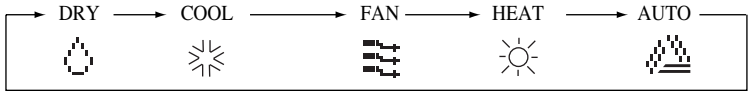
b) When J1 on the PCB of indoor unit is turned on at the field.

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



(3) Operation control function by the wired remote controller

(a) Remote controller operation mode switch switching sequence



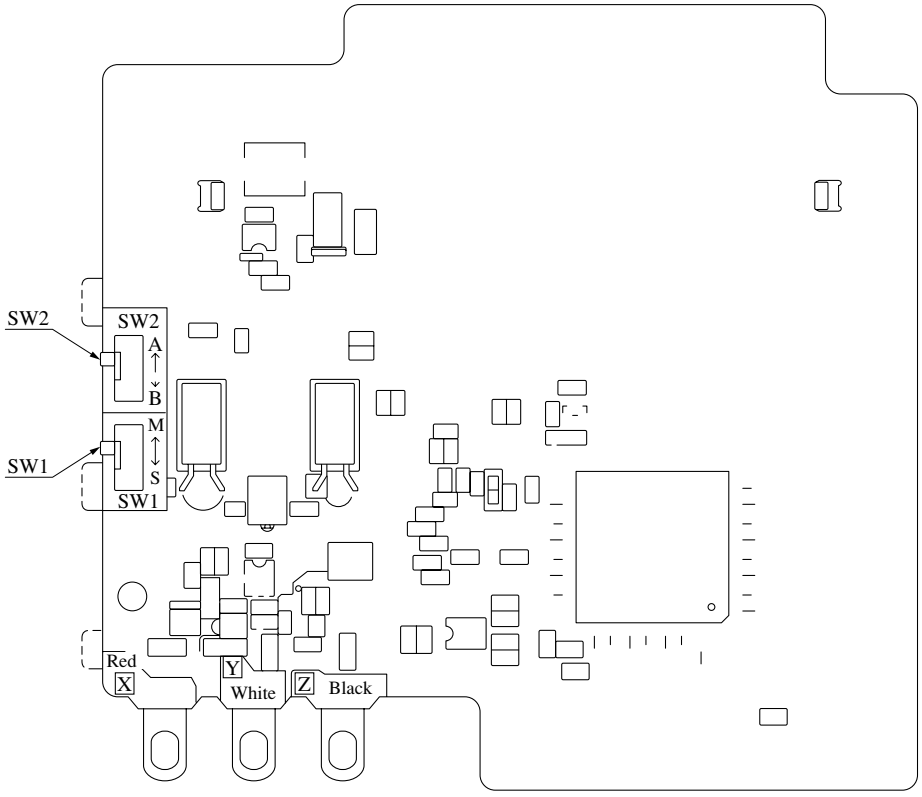
(b) CPU reset

If the “GRILL” switch and “CHECK” switch on the remote controller are pressed at the same time, this function is activated. Power supply reset and run are the same.

(c) Power failure compensation function

This function is activated by setting “Activate Power Failure Compensation” using the remote control function settings. Normally, the remote control’s state is recorded in memory and after recovery following a power failure, operation is re-started in accordance with the contents in memory. However, the auto swing stop position, and the timer mode are cancelled, However the weekly timer setting is reset with the “Holiday setting” set for all day.

Remote controller board parts arrangement



Control select switch (SW1)

Switch		Function
SW1	M	Master remote controller
	S	Slave remote controller

Note (1) SW2 is not normally used, so do not change the selection.

(4) Operation control function by the outdoor controller

(a) Deciding the compressor speed (FDCVA 151~251 models only)

The indoor unit's return air temperature ad the set temperature are used to carry out fuzzy calculations, then the required speed is decided. Speed control compensation is then activated to decide the speed.

Unit required speed

1) Dehumidify and cooling operation

Units: rps

Item \ Model	Outdoor unit		
	151 model	201 model	251 model
Maximum required speed	75 (70)(1)	95 [90](2)	125
Minimum required speed	30	30	40

Notes (1) Values in ( ) show for the FDK series.
(2) Values in [ ] show for the FDT, FDK series.

2) Heating operation

Units: rps

Item \ Model	Outdoor unit		
	151 model	201 model	251 model
Maximum required speed	80	95	125
Minimum required speed	30	30	40

(b) Compressor soft start control (FDCVA 151~251 models only)

1) Compressor protective start Ⅰ

When conditions are as shown below, carry out compressor start I.

a) The time since the previous stop is less than 6 hours, and this start is the 2nd or subsequent cumulative start since the power was turned ON.

① The compressor begins synchronous operation 5 seconds after the thermostat ON conditions have been established.

② The bottom limit compressor speed is 30 rps, and the upper limit is 64 rps. If the compressor's speed is increased, it is increased by 6 rps/30 seconds.

③ This control is terminated 3 minutes after the compressor has started.

2) Compressor protective start Ⅱ

If any of the following conditions is satisfied, compressor start II is implemented.

a) It has been 6 hours or longer since the power was turned on, and this is the first cumulative compressor start since the power was turned ON.

b) If the compressor is stopped for 6 hours or longer, and this is the second or subsequent cumulative start since the power was turned ON.

① The compressor begins synchronous operation 5 seconds after the thermostat ON conditions have been established.

② 30 seconds after the compressor started, the compressor speed is increased by 2 rps/sec. from the lower limit value to the upper limit value.

③ After item ② is terminated, the compressor's speed is retained at the lower limit value for 3 minutes after the compressor starts.

④ After item ③ is terminated, if the compressor's speed becomes greater than the lower limit speed, the compressor's speed is increased by 6 rps/30 sec. for 6 minutes after the compressor is started.

Units: rps

Model \ Item	Lower limit value	Upper limit value
FDCVA151, 201	30	64
FDCVA251	40	64

3) Compressor protective start Ⅲ

When the following conditions are satisfied, compressor start III is implemented.

a) Less than 6 hours have passed since the power was turned ON, and this is the 1st time the compressor has been started since the power was turned ON.

① The compressor begins synchronous operation 5 seconds after the thermostat ON conditions have been established.

② 30 seconds after the compressor started, the compressor speed is increased by 2 rps/sec. from the lower limit value to the upper limit value.

③ After item ② is terminated, the compressor's speed is retained at the lower limit value for 3 minutes after the compressor starts.

④ After item ③ is terminated, if the compressor's speed becomes greater than the lower limit speed, the compressor's speed is increased by 6 rps/2 minutes for 11 minutes after the compressor is started.

Units: rps

Item / Model	Lower limit value	Upper limit value
FDCVA151, 201	30	64
FDCVA251	40	64

Compressor soft start control

		Initial start remotecontrol unit ON, Trouble solved	Thermostat ON start	
			When the thermostat is OFF, there is an operating mode change.	When the thermostat is OFF, there is no operating mode change.
First time since the compressor was turned ON	Less than 6 hours since the power was turned ON	In accordance with the following [conditions]		
	6 hours or longer since the power was turned ON	Protective start II	Protective start II	Protective start II
2nd or subsequent time since the compressor was turned ON	Less than 6 hours since stop	Protective start I	Protective start I	Protective start I
	6 hours or longer since stop	Protective start II	Protective start II	Protective start II

[Conditions]

The discharge pipe temperature (Tho-D) and outdoor air temperature (Tho-A) are detected.

- If the discharge pipe temperature (Tho-D) minus the outdoor air temperature (Tho-A) is ≧ 15 degrees, protective start II is implemented.
- If the discharge pipe temperature (Tho-D) minus the outdoor air temperature (Tho-A) is < 15 degrees, protective start III is implemented.

(c) Compressor protective control according to operating speed (FDCVA 151~251 models only)

1) Compressor protection during high speed operation

When the compressor is operated at speeds exceeding 100 rps for 30 minutes, the upper limit for the compressor's speed is made 100 rps for 3 minutes.

2) Compressor protection during low speed operation

When the compressor is operated at speeds below 26 rps for 60 minutes, the lower limit for the compressor's speed is made 30 rps for 15 seconds.

(d) Outdoor fan control

♦FDCVA151~ 251 models

(i) Outdoor fan tap and fan motor control contents during control

FDCVA151, 201

Cooling	Compressor speed (rps)	less than 46	46 to less than 66	66 to less than 80	80 or more
	Outdoor unit fan tap	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)
Heating	Compressor speed (rps)	less than 62	62 to less than 82	82 to less than 92	92 or more
	Outdoor unit fan tap	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)

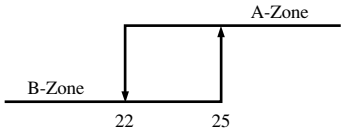
FDCVA251

Cooling	Compressor speed (rps)	less than 46	46 to less than 66	66 to less than 80	80 or more
	Outdoor unit fan tap	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)
Heating	Compressor speed (rps)	less than 62	62 to less than 82	82 to less than 104	104 or more
	Outdoor unit fan tap	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)

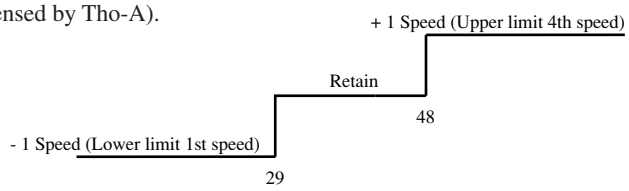
(ii) Outdoor unit fan tap control

1) Fan tap control during low outdoor temperature cooling

The outdoor unit's fan is controlled in accordance with the outdoor heat exchanger temperature (sensed by Tho-R) and the outdoor air temperature (sensed by Tho-A).



Outdoor air temperature (˚C)



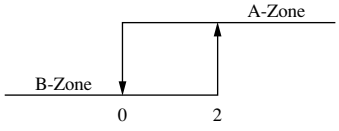
Outdoor heat exchanger temperature (˚C)

a) After detecting the B-zone temperature, the outdoor fan tap speed is immediately raised to 4th speed and this speed is retained for 60 seconds. 4th speed is made the upper limit and 1st speed is made the lower limit. Also, sampling of the outdoor heat exchanger temperature is done at 60-second intervals and the outdoor unit fan tap's speed transitions are made immediately.

b) Control is cancelled when it is judged that the outdoor temperature is in the A-Zone and the outdoor fan tap is running in 3rd speed or higher. Also, if it is running at 2nd speed and ends up in the A-Zone, if the outdoor heat exchanger temperature is 48ºC or higher, this control is cancelled.

2) Outdoor unit fan tap control during heating

If the outdoor air temperature (sensed by Tho-A) is detected in the B-Zone for 5 minutes continuously, the outdoor fan tap speed is increased by 2 speeds and thereafter, this may be repeated, but the upper limit is made 7th speed.



Outdoor air temperature (˚C)

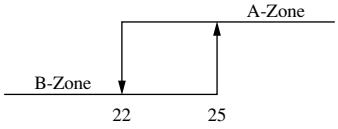
3) When the compressor is ON and the outdoor unit fan motor's outputting, if the outdoor fan motor's speed is 75 rpm or lower for 30 seconds or longer, the compressor is stopped immediately. 3 minutes after the compressor is stopped, if the thermostat ON conditions are satisfied, the compressor is started.

4) If the condition in item 3) is detected 5 times within 60 minutes after the first detection, an abnormal stop occurs and an error message (E48) is displayed.

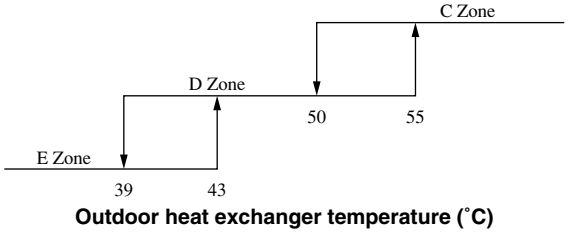
♦ FDCA301~ 601 models

1) Outdoor fan tap control during cooling

The outdoor fan is controlled according to the outdoor heat exchanger temperature (sensed by Tho-R) and outdoor air temperature (sensed by Tho-A).



Outdoor air temperature (˚C)

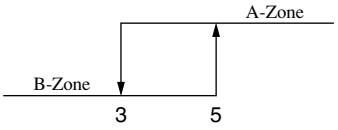


Outdoor heat exchanger temperature (˚C)

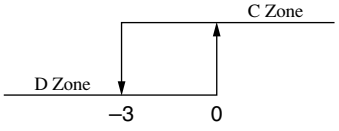
Zone	A	B
C	UHi	
D	Hi	
E	Hi	Lo

2) Outdoor fan tap control during heating

The outdoor fan tap is controlled in accordance with the outdoor heat exchanger temperature (sensed by Tho-R) and the outdoor air temperature (sensed by Tho-A).



Outdoor air temperature (˚C)



Outdoor heat exchanger temperature (˚C)

Zone	A	B
C	Hi	
D	Hi	UHi

3) Outdoor fan tap control during heating high pressure control

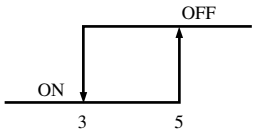
a) If the compressor is started with an outdoor air temperature (sensed by Tho-A) of 12ºC or higher, the outdoor unit's fan motor is turned OFF for 4 minutes, then after 4 minutes of operation, control switches to outdoor fan tap control in item 2).

b) If the outdoor air temperature (sensed by Tho-A) becomes 12 ºC or lower with the outdoor fan motor OFF, operation continues for 4 minutes with the outdoor fan motor OFF.

(e) Snow protection fan control

If SW5-2 on the outdoor unit PCB is turned ON, a full stop results. Then in the abnormal stop mode and with the thermostat OFF unit's outdoor fan outdoor temperature at 3ºC or lower, the fan is run for 10 seconds at 6th speed once every 10 minutes (Hi tap).

Note (1) Values in ( ) show for the 301~601 models.



Outdoor air temperature (˚C)

(f) Defrosting

1) Defrosting start conditions

Defrosting operation starts when all the following conditions are satisfied.

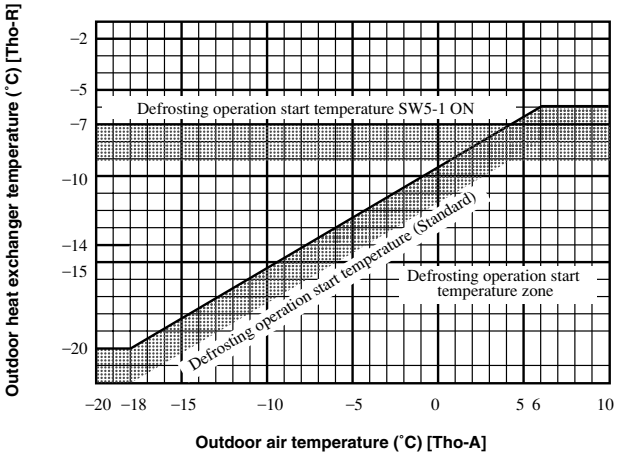
a) If 45 minutes (35) (1) of cumulative compressor operating time have passed since defrosting ended and cumulative compressor operating time of 30 minutes have passed since heating operation started (Remote controller: ON)

b) If 5 minutes have passed since the compressor went ON.

c) 5 minutes of outdoor fan operation have passed.

d) After all the above conditions have been satisfied, when the temperature at the outdoor heat exchanger thermistor (Tho-R) and the temperature at the outdoor air temperature thermistor (Tho-A) is below the defrost operation start temperature shown in the graph at right.

Note (1) Values in ( ) show in the case of the 251 model. In addition, in 301~601 models, the cumulative compressor operating hours can be changed using J7 (SW6-3) on the outdoor unit PCB. If J7 (SW6-3) is open, cumulative time is changed to 37 minutes.



2) Defrosting start temperature change procedure

Turn SW5-1 on the outdoor unit PCB ON.

a) A cumulative total of 30 minutes of compressor operating time has passed since defrosting ended.

b) When the temperature at the outdoor heat exchanger thermistor (Tho-R) and the temperature at the outdoor air temperature thermistor (Tho-A) is below the defrost operation start temperature continuously for 30 seconds.

c) Other than items a) and b), the same as standard conditions.

3) Defrosting end conditions

If any of the following conditions is satisfied, the defrosting end operation starts.

a) If 10 minutes (1) have passed since defrosting started.

b) If the temperature at the outdoor heat exchanger thermistor (Tho-R) is 12ºC or higher (in the case of models 151~251), or 14ºC or higher (in the case of models 301~601) continuously for 2 seconds.

Notes (1) This setting can be changed to 12 minutes by turning SW5-1 on the outdoor unit PCB ON.

(2) When SW-1 on the outdoor unit's control board is ON, or when JA4 is open (in the case of the 151~251 models) or jumper wire J6 (when SW-6 is ON) (in the case of the 301 ~ 601 models) is open, raise the defrosting end temperature and carry out forced defrosting.

(g) Compressor protection control

(i) Compressor overcurrent protection

1) 7 If a value at or higher than the set value is detected continuously for approximately 0.5 second in the L1 and L2 phases (1 phase model: L phase) on the secondary side of the 52C (sensed by the current sensor (CT)), the compressor stops. After a 3-minute delay, the compressor restarts if the detected current is 1.5 ~ 2 A or lower, but if this condition is repeated 5 times within 60 minutes of the first detection, the unit is subjected to an abnormal stop (E33).

2) After the compressor stops the first time, if 60 seconds pass with the detected current not dropping to 1.5~2 A or lower for 60 minutes, An abnormal stop is performed after the first time.

(ii) Reverse phase protection (FDCA 301~601 3-phase models only)

The phase sequence in the 52C secondary side is detected, and in cases other than those shown below, reverse phase is judged and the unit is subjected to an abnormal stop (E32).

Terminal block display	L1 · L2 · L3 · N
Wire connections	L1 · L2 · L3 · N
	L3 · L1 · L2 · N
	L2 · L3 · L1 · N

(iii) Open-phase protection (FDCA 301~601 3-phase models only), Abnormal compressor winding temperature

1) When the detected current on the secondary side of the 52C is 1.5 ~ 2 A or lower continuously for 4 seconds while the compressor is ON, it is judged that there is an open-phase problem and the compressor is stopped. After a 3-minute delay, the compressor is restarted, but if the problem occurs a second time within 60 minutes of the first detection, an abnormal stop (E34) is performed.

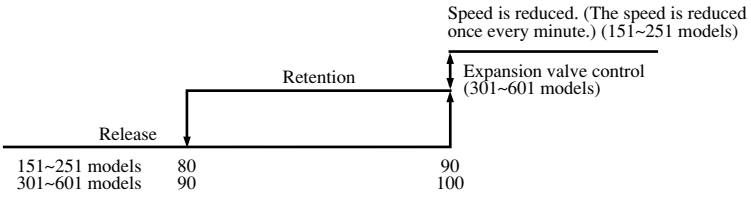
2) When the temperature of the compressor windings is abnormal, and internal thermostat built into the compressor operates. This is judged as an open-phase problem and results in an abnormal stop (E32). In single phase machines, this is sensed by CT1.

Note (1) If the internal thermostat operates, it takes a long time to recover. Please do not mistake this as a defect in the compressor.

(iv) Discharge pipe temperature control

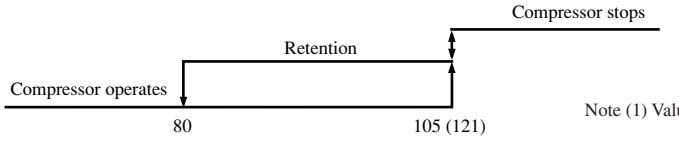
If the discharge pipe temperature (sensed by Tho-D) exceeds the set value, the compressor speed (in the 151~251 models) or the expansion valve opening angle (in the 301~601 models) is controlled to prevent the discharge pipe temperature from rising. If it continues to rise anyway, the compressor is stopped.

1) Compressor speed (Expansion valve) control



2) Abnormal discharge pipe temperature

a) If the discharge pipe temperature rises to 105ºC (121ºC) or higher, the compressor is stopped [the outdoor unit's fan motor stops 1 minute (30 seconds) later. If the temperature drops to 80ºC or lower, the compressor recovers automatically.



Note (1) Values in parenthesis show for the 301~601 models.

b) If the abnormal discharge pipe temperature occurs 2 (5) times in 60 minutes, or continues at 105º (121ºC) or higher for 60 minutes, including when the compressor is stopped, the unit performs an abnormal stop (E36).

Note (1) If the abnormal discharge pipe temperature continues for 45 minutes from the time it first occurs and does not drop below 80ºC, the compressor cannot be operated again.. (It can be reset using the remote control unit.)

(v) Current safe control (FDCVA 151~251 models only)

1) If the current value input at the inverter inlet becomes higher than the set value, the compressor's speed is reduced. If the value continues to be higher than the set value even when the compressor speed is reduced, the speed is reduced again.
2) If the problem continues for 3 minutes and the temperature drops below the cancellation value, this control ends and the compressor begins speed protection release operation.

(vi) High pressure control

♦FDCVA 151~251 models

1) Heating

a) The compressor speed is reduced to control high pressure in accordance with the indoor heat exchanger temperature (sensed by Thi-R) after the compressor starts.

Item / Model	Compressor speed (rps)	Indoor heat exchanger temperature (˚C)
FDCVA151~251	less than 88	57 or more
	88 to less than 108	52 or more
	108 or more	47 or more

b) When the outdoor air temperature (sensed by Tho-A) is 17ºC or higher, the compressor's speed is reduced and the outdoor unit's fan motor tap is changed to 2nd speed, in order to raise the high pressure under the heating overload conditions. Furthermore, the upper limit of the compressor's speed during control is 60 rps.

2) Cooling

a) When the temperature at the outdoor heat exchanger (sensed by Tho-R) and the outdoor air temperature (sensed by Tho-A) is 41ºC or higher after the compressor starts, the compressor's speed is reduced and the outdoor unit's fan motor tap is changed to high speed operation at 7th speed.

Item / Model	Compressor speed (rps)	Indoor heat exchanger temperature (˚C)
FDCVA151~251	less than 88	58.5 or more
	88 to less than 108	53.5 or more
	108 or higher	48.5 or more

b) If the outdoor heat exchanger temperature (sensed by Tho-R) is sensed 5 times in 60 minutes during compressor operation, or sensed continuously for 10 minutes, including when the compressor is stopped, an abnormal stop is performed.

Item / Model	Compressor speed (rps)	Indoor heat exchanger temperature (˚C)
FDCVA151~251	less than 88	65 or more
	88 to less than 108	60 or more
	108 or more	55 or more

♦ **FDCA301~601 models**

1) Heating

a) After the compressor starts, the temperature at the indoor heat exchanger temperature (ThI-R) is checked, and when all the following conditions are met, the electronic expansion valve (EEV) is controlled to control the high pressure rise.
① The indoor heat exchanger temperature (ThI-R) is 60 (56)ºC or higher while the compressor is running.
② The electronic expansion valve's (EEV) opening angle is 470 pulses or lower.

b) This control ends when the indoor heat exchanger temperature (ThI-R) becomes 57 (54) ºC or lower.
Note (1) Values in ( ) show the setting when DIP switch SW 5-3 is ON. (It is normally OFF.)

2) Cooling

a) After the compressor starts, when all the following conditions are met, the electronic expansion valve (EEV) is controlled to control the high pressure rise.
① The outdoor heat exchanger temperature (Tho-R) is 58ºC or higher while the compressor is running.
② The outdoor air temperature (Tho-A) is 41ºC or higher.
③ The outdoor fan motor runs continuously for 30 seconds or longer at the UHi tap.
④ The electronic expansion valve's (EEV) opening angle is 470 pulses or lower.

b) This control ends when the temperature at the outdoor heat exchanger (Tho-R) becomes 53ºC or lower.

3) High pressure abnormal

a) Heating, cooling

① If the high pressure switch (63H1) opens (4.15 MPa), the compressor stops (the outdoor unit's fan motor stops after running for 30 seconds longer). After a 3-minute delay, when the high pressure switch (63H1) is restored to the closed state (3.15 MPa), the compressor restarts. If the same condition occurs 5 times within 60 minutes after the first detection, an abnormal stop is performed and an error message (E40) is displayed.

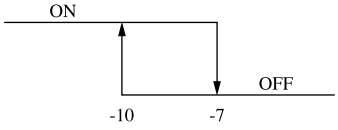
b) Cooling

① If the outdoor heat exchanger temperature (sensed by Tho-R) is 65ºC or higher 5 times within 60 minutes while the compressor is operating, or if that temperature is detected continuously for 60 minutes, an abnormal stop is performed.

② If the outdoor heat exchanger temperature becomes 48ºC or lower, it becomes possible to reset the unit using the remote control unit.

(vii) Heating low outdoor temperature protection control (FDCVA 151~251 models only)

If a temperature of –10ºC is sensed at the heat exchanger (sensed by Tho-R) continuously for 1 minute during operation, the upper limit of the compressor speed is changed to 100 rps.



Heat exchanger temperature (˚C)

(h) Inverter protection control (FDCVA 151~251 models only)

1) Current cut control

This prevents overcurrent in the inverter unit. If the current exceeds the set value, the compressor is stopped. It restarts automatically after 3 minutes, but if current cut operates 3 times in a period of 20 minutes, . an abnormal stop (E42) is performed.

2) Power transistor temperature control

The power transistor's temperature is detected from the time when the compressor starts operation. When the temperature at speeds that are higher than the set speed is 82ºC or higher, the compressor's speed is controlled. If the power transistor's temperature drops to 77ºC or lower, protection control is cancelled.

3) Excessive voltage protection control

The converter's voltage is detected, and if it exceeds approximately 340V, abnormal detection control is exercised. If the same trouble occurs 3 times in 20 minutes after the compressor starts, or if it continues unchanged for 15 minutes, an abnormal stop (E47) is performed.

(i) Thermistor disconnection (discharge pipe, outdoor heat exchanger and outdoor temperature thermistor)

1) Outdoor heat exchanger temperature, outdoor air temperature thermistor

If the detected temperature is –30ºC or lower at the outdoor heat exchanger temperature thermistor and outdoor air temperature thermistor continuously for 5 seconds during the interval from 2 minutes to 2 minutes 20 seconds after the compressor goes ON, the compressor is stopped. After a 3-minute delay, the compressor is restarted, but in the case of the 151~251 models, if this condition is detected 3 times in a 40-minute period, or if it is detected again within a 60-minute period in the case of the 301~601 models, an abnormal stop is performed.

Note (1) The temperature is not detected during defrosting or for 3 minutes after defrosting is ended.

2) Discharge pipe temperature thermistor

If the detected temperature is –10ºC or lower continuously for 5 seconds during the interval from 10 minutes to 10 minutes 20 seconds (2 minutes ~ 2 minutes 20 seconds) after the compressor goes ON, the compressor is stopped. After a 3-minute delay, the compressor is restarted, but in the case of the 151~251 models, if this condition is detected 3 times in a 40-minute period, or if it is detected again within a 60-minute period in the case of the 301~601 models, an abnormal stop is performed.

Notes (1) The temperature is not detected during defrosting or for 3 minutes after defrosting is ended.
(2) Values in ( ) show for the 301~601 models.

3) Power transistor temperature thermistor (FDCVA 151~251 models only)

If the detected temperature is –10ºC or lower continuously for 5 seconds during the interval from 10 minutes to 10 minutes 20 seconds after the compressor goes ON, the compressor is stopped. After a 3-minute delay, the compressor is restarted, but if this condition is detected 3 times in a 40-minute period, an abnormal stop is performed.

(j) Silent mode control (FDCVA 151~251 models only)

If the "Silent Mode Start" signal is received from the remote control unit, silent mode operation is started.

1) Operation is at a speed that is lower than the outdoor fan control speed item (d).
2) The maximum compressor speed in each model is lowered by the amount shown in the table below.

Model	Speed
FDCVA151, 201	0
FDCVA251	25

(k) Abnormal stop due to starting of the compressor (FDCVA 151~251 models only)

(a) If the compressor's DC motor's rotor position detection operation cannot be executed 5 seconds after compressor starting conditions are established, it is switched to the stop state temporarily, then after 3 minutes the detection operation is executed.

(b) If the position detection operation cannot be executed the second time, compressor start is judged to be abnormal, and an abnormal stop (E59) is performed.

(l) Compressor rotor lock trouble (FDCVA 151~251 models only)

If, within 4 seconds after changing to compressor rotor position detection operation, the rotor's position cannot be detected a second time, the compressor is stopped. After 3 minutes, the compressor recovers automatically, but if this condition recurs 4 times in a 15-minute period, an abnormal stop (E60) is performed.

(m) Insufficient refrigerant protection control

♦ FDCVA 151~251 models

1 minute after the compressor is started in the case of cooling and dehumidification, and 9 minutes after in the case of heating, the indoor heat exchanger temperature (sensed by Thi-R) and indoor return air temperature (sensed by Thi-A) are detected and the compressor is stopped.

1) If the following conditions continue uninterrupted for 1 minute or longer
   • During cooling and dehumidification: The indoor heat exchanger temperature (Thi-R) is 4 degrees higher than the indoor return air temperature (Thi-A).
   • During heating: The indoor heat exchanger temperature (Thi-R) is 4 degrees lower than the indoor return air temperature (Thi-A).
2) If the controls in item 1) are implemented 3 times within 30 minutes, an abnormal stop is performed and an error message is displayed (E57).

♦ FDCA 301~601models

1) 3 minutes after the compressor starts in the case of cooling and dehumidification, and 4 minutes after in the case of heating, the indoor heat exchanger temperature (sensed by Thi-R) and indoor return air temperature (sensed by Thi-A) are detected and at the point when all the following conditions are satisfied, stop control is performed.
   a) When the following conditions are detected continuously for 5 minutes or longer.
      • During cooling and dehumidification: The indoor heat exchanger temperature (Thi-R) is 4 degrees higher than the indoor return air temperature (Thi-A).
      • During heating: The indoor heat exchanger temperature (Thi-R) is 6 degrees lower than the indoor return air temperature (Thi-A).
   b) If the controls in item a) are implemented 3 times within 30 minutes, an abnormal stop is performed and an error message is displayed (E57).
2) If the compressor is starting for the first time after the power is turned ON, and abnormal stop is performed the first time and an error message (E57) is displayed.

Note (1) A defrost operation or pump down control are excluded.

(n) Low voltage protection control

If a power supply voltage of 176 V or lower is detected while the compressor is stopped, or if a power supply voltage of 176 V or lower is detected for 3 minutes during compressor operation, the compressor is stopped.

(o) Test operation

1) It is possible to operate the outdoor unit using SW9 (SW2) and SW5-4 on the outdoor unit PCB.

SW9 (SW2)	After pressing continuously for 1 second	**SW5-4**	ON	Cooling test operation
			OFF	Heating test operation
		Test operation is ended by pressing SW9 (SW2) during test operation.		

Note (1) Items in ( ) show in the case of models 301 ~ 601.

2) Test operation control
   a) Operates the air conditioner at the predetermined maximum speed for each model. (FDCVA151~251 models only.)
   b) Each protective control and abnormal sensing control is activated.
   c) If SW5-4 is switched back during test operation, stop control is implemented and the cooling and heating operations are toggled.
   d) Remote control unit settings and displays during test operation

Capacity / Mode	Remote control unit settings, display contents
Cooling operation	Cooling. The initial setting temperature is 5ºC. The temperature at the indoor unit's heat exchanger is displayed in the return air temperature display.
Heating operation	The initial set temperature for heating (preparation) is 30ºC and the return air temperature is displayed in the return air temperature display.

1.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these “Safety Precautios” 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

- Installation should be performed by the dealer or a company speciallizing in this type of installarion. If you install the equipment yourself, installation errors could result in water leaks, electric shock, and/or a fire, as well as other hazards.
- Conduct installation work in accordance with the instructions in this installation manual. Installation errors could result in water leaks, electric shock, or fire.
- Sling the unit at the specified points with ropes property reted for the weight in liftting it for portage. An improper manner of portage can result in a fail of the unit resulting in an accident invoiving personal death or injury.
- When installing a unit in a small rooms, take measure so that if the refrigerant leaks, it does not exceed the concertration limit. For information regarding measures to prevent the concertration limit from being exceed, please contact the dealer.
- It refrigerant leaks and the concentration limit is exceeded, suffocation could occur.
- Install the equipment in a location that can sufficiently support the weight of the equipment. If the area is not strong enough, an accident could result from the unit falling.
- Install the equipment in a location that can withstand strong winds, such as typhoons, and earthquakes. If the installation is not secure, an accident could result from the unit falling.
- Always turn off power before work is performed inside the unit such as for installation or servicing. A failure to observe this instruction can cause a danger or electric shock.
- Electrical work should be done by a licensed electrician who shall do the work in accordance with the Technical Standards Regarding Electrical Equipment. Indoor Wiring Provisions, and this installation manual. The electrician shall use specified circus for the equipment. If the power supply circuit capacity is insuficient or the work is not done correcty, it could result in electric shock or a fire.
- For wiring, the specified cable should be used, the connections should be secure, and the fixtures shall be strong enough to prevent cabies from being pulted out from the terminal connections. Incorrect connections or work fixtures could result in heat generation or a fire.
- In cabling, arrange cables suitably so that they may not get off their support and then fix the service panel securely. Improper installation can cause heat generation and a resultant fire. Please prevent any substance other than the specified refrigerant (R410A) such as air from entering the refrigerant cycle in installing or moving the air conditioning system. Contamination by air or a foreign substance can cause an abnormal pressure build-up inside the refrigerant cycle and a resultant explosion and personaly injury.
- Use only parts supplied with the unit and specified supply parts for installation. The use of unauthorized parts may cause the leaking of water or electricitly causing a danger of electric shock or a fire, a refrigerant leak, performance degradation, and control failures.
- Do not open operation valves (either liquid or gas or both) until refrigerant piping, an air-tightness test and an air purge are completed. When a leak of refrigerant gas occurs during piping work, stop brazing pipes and ventilate the room. Refrigerant gas, when it comes into contact with bare fire, can generate a toxic gas.
- When installation is completed, check for refrigerant gas leaks. If the refrigerant gas leaks indoors, it could come in contact with a tan heater, burner, or hot plate, which could generate a poisonous gas.

⚠ CAUTION

- Ground the equipment. Do not connect the ground wire to gas piping, water piping, a lightning rod, or telephone ground wires. It grounding is not performed correctly electric shock could occur.
- Depending on the installation location, a circuit breaker may need to be installed. It a circuit breaker is not installed, electric shock may occur.
- Please follow this manual faithfully in performing installation work. Improper installation work can cause abnormal vibrations and noise generation.
- Do not install the equipment in areas where there is danger of flammable gas leaks. It such gas does leak it could collect around the units and cause a fire.
- Install the drain piping in accordance with the installation manual so that it properly discharges waste water and is maintained at a temperature that prevents condensation.
- Do not install the outdoor unit where winds from its dan blow directly onto a plant, etc. Winds can affect adversely to the plant, etc.
- Secure a space for inspection and maintenance as specified in the manual. An insufficient space can result in an accident such as a fall from the installation point and a resultant personal injury.
- When the outdoor unit is installed on a roof or at an elevated point, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.
- In tightening a flare nut, use a double spanner and observe the specified tightening torque. Care must be taken so as not to overtighten a nut and damage the flare part. (Please refer to the tightening torque) The loosening or damage of the flare part can cause a refrigerant gas leak and a resultant lack-of-oxygen accident.
- Please dress the refrigerant piping with a heat insulation material for prevention of dew condensation. Improper heat insulation for prevention of dew condensation can cause the leaking or dripping of water and a resultant soaking of household effects.
- When refrigerant piping is completed, check its air-tighteness with nitrogen gas to make sure it does not have a leak. A leak of refrigerant gas in a narrow room beyond the safety limit concentration can cause a lack-of oxygen accident.

1.5.1 Installation of indoor unit

(1) Ceiling recessed type (FDT)

(a) Selection of installation location

1) Select location where the space above ceiling is larger than those mentioned right side and perfect draining can be assured.

Model	Space above ceiling (h)
FDT151, 201, 251, 301	Over 290mm
FDT401	Over 315mm
FDT501, 601	Over 385mm

2) With the customer's consent, select a location with following suitable conditions.
   a) Where cool air or hot air can easily pass through.
      If the height of the location exceeds 3 m, hot air will gather in the ceiling. Suggest to the customer to also install a circulator.
   b) Where water can be completely drained. A sloping location for drainage.
   c) Where there are no wind disturbances to the suction inlet and blowing outlet, where the fire alarm will not be set off erroneously, where no short circuits occur.
   d) Where there is no direct sunlight.
   e) Where the dew point temperature is below 28°C and the relative humidity is below 80%.

   (The unit has been tested according to JIS dew point conditions and has been confirmed to operate without any problems. However, if the unit is operated in an environment with the humidity higher than the above limit, water condensation may occur. Accordingly, all pipes and drain pipes should be further covered with insulation materials of 10 - 20 mm thick.)

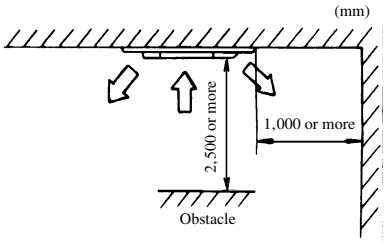
3) Consider the supporting strength of the location. If the strength is not sufficient to sustain the unit weight, use reinforcing materials.

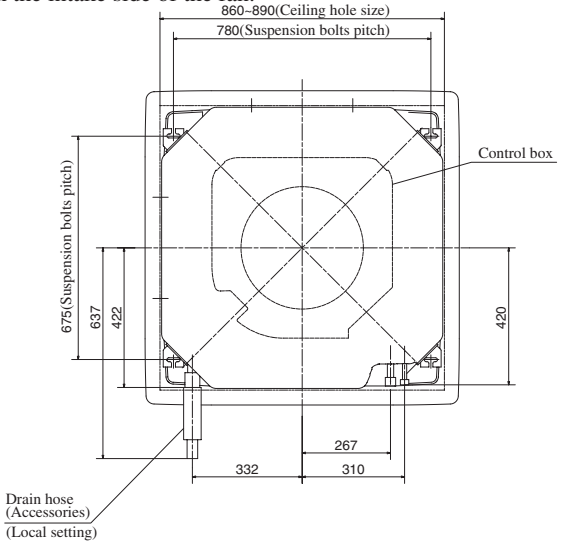
(b) Installation space for unit

a) When a sufficient interval cannot be secured between the unit and a wall or another unit, shut up diffusers on that side to block winds and make sure that no short-circuiting is occurring. (A wind blocking material is available as an optional part)
   • Do not use the unit in the "Lo" wind mode when winds are blown into two or three directions.

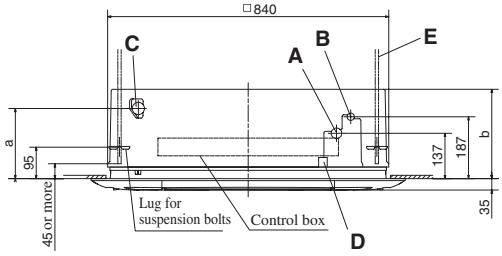
b) When the unit has 2500 mm or less clearance, attach a fan guard (option part) on the intake side of the fan.

• Installation space





A	Gas tube connecting port
B	Liquid tube connecting port
C	Drain line connecting port
D	Power intake
E	Hanging bolt



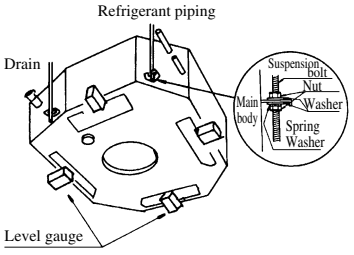
Model	a	b
FDT151, 201, 251, 301	212	270
FDT401	212	295
FDT501, 601	269	365

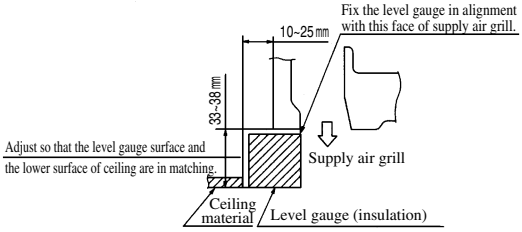
(c) Suspension

- Please arrange four sets of a suspension bolt (M10 or M8), a nut matching the bolt, a flat washers and a spring washer on the installation site.

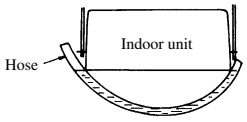
When suspension from the ceiling

1) In the case of the standard series: Cut and opening of □860~□890.
   In cutting an operating on the ceiling, use the unit's cardboard container for shipment as a reference of the size of opening.
   - The center of the opening on the ceiling must accord with the center of the unit.
2) Determine the positions of suspension bolts (675×780).
3) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50 kgf.
4) Make suspension bolts to the length that leaves approximately 70 mm of them above the ceiling.
5) After hoisting in the unit, attach level gauges supplied as accessories and determine the unit position (height).





6) Use a transparent tube with water filled inside to check the level of the unit. (A tolerable height difference at an end of the unit is within 3 mm)



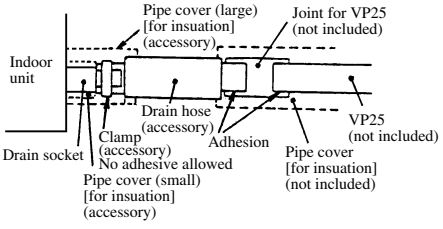
When embedded into ceiling

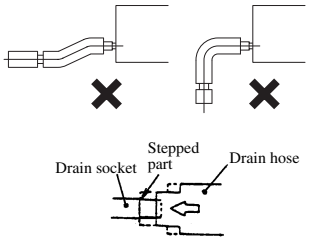
1) Determine the positions of suspension bolts (675×780).
   - The pitch center of a suspension bolt must accord with the center of the unit.
2) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50 kgf.
3) In cutting an opening on the ceiling, use the unit's cardboad container for shipment as a reference of the size of opening.
4) Fix the unit as per A-5 and 6 above.
   - The unit's cardboard container for shipment can be used to cover the indoor unit.

Note (1): When a hanging bolt exceeds 1.3 m in length, use an M10 bolt and give it reinforcements such as braces.

(d) Drain Piping

1) Glue the drain hose supplied as an accessory and a VP-25 joint before lifting the unit.
2) The drain hose is to provide a buffer to absorb a slight dislocation of the unit or the drain piping during installation work. If it is subject to abuse such as being bent or pulled deliberately, it may break, which will result in a water leak.
3) Care must be taken so as not to allow an adhesive to run into the drain hose. When it is hardened, it can cause a breakage of a flexible part, if the flexible part receives stress.
4) Use VP-25 general-purpose hard PVC pipes for drain piping.
5) Insert the drain hose supplied as an accessory (soft PVC end) to the stepped part of the unit's drain socket and then fasten it with the clamp also supplied as an accessory.
6) Adhesive must not be used.
   a) Glue a VP-25 joint (to be procured locally) to joint it with the drain hose (hard PVC end) and then glue a VP-25 (to be procured locally) to the joint.





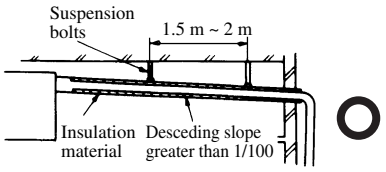
b) Give the drain piping a descending grade (1/50-1/100) and never create a bump to go over or a trap.

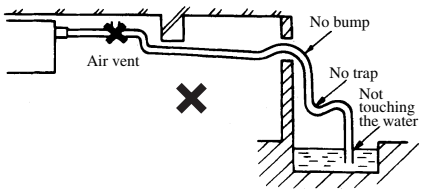
c) In connecting drain pipes, care must be taken so as not to apply force to the unit side piping and fix the pipe at a point as close to the unit as possible.

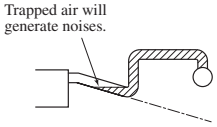
d) Do not create an air vent under any circumstances.

e) When drain piping is implemented for more than one unit, provide a collecting main about 100 mm below the units' drain outlets from which it collects drain. Use a VP-30 or larger pipe for a collecting main.

f) Do not fail to provide heat insulation at the following two points because they can cause dew condensation and a resultant water leak.







7) Drain socket

After a drain test is completed, apply a pipe cover (small: accessory) onto the drain socket, cover the pipe cover (small), the clamp and part of the drain hose with a pipe cover (large: accessory) and wrap it with a tape completely without leaving any gaps.

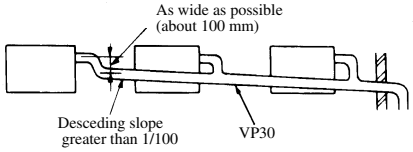
(Cut pipe covers into appropriate shapes)

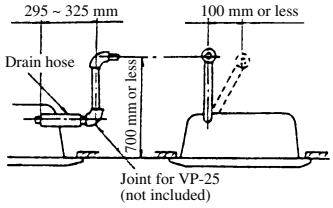
8) Hard PVC pipes laid indoor

a) Since a drain pipe outlet can be raised up to 700 mm from the ceiling, use elbows, etc. to install drain pipes, it there are obstacles preventing normal drain pipe arrangement. When the drain pipe is raised at a point far from a unit, it can cause an overflow due to a back flow of drain upon stoppage, so arrange piping to keep the dimensions specified in the illustration shown on the left.

b) Install the drain pipe outlet where no odor is likely to be generated.

c) Do not lead the drain pipe into a ditch where the generation of harmful gas such as sulfuric gas or flammable gas is expected. A failure to observe this instruction may cause such harmful or flammable gas to flow into the room.





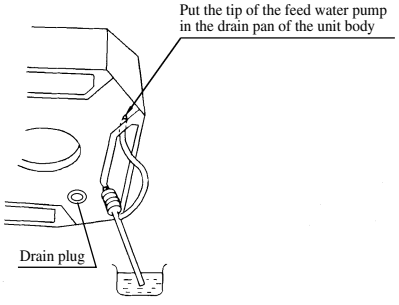
Drainage test

① Check that water is draining thoroughly during test run, and that there are no water leaks from the joints and the drain pan.

② The test has to be performed even if the unit is installed in the season when the unit is used for healting.

③ In a new house, perform the test before the ceiling is fitted.

- Using a water pump, pour about 1000 cc of water to the drain pan through the blowing outlet.
- Check the transparent drain-out section of the drain hose for normal flow of drainage.
  * While observing the noise from the drain motor, test drain operation.
- Take off the drain plug to release the water. After the water is drained, place the drain pulg back where it was..
  * Be careful not to get splashed when pulling the drain plug.



Forced drain pump operation

◆ Set up from a unit side.

① Turn power on after selecting the emergency operation mode with a setting on the indoor unit board (SW9-3 ON) and disconnecting the CnB connector on the board. Then, the drain pump will start a continuous operation 15 seconds later.
(Note: The blower will also start operation in tandem)

② When a drain test is completed, reinstate the setting to cancel the emergency operation mode (SW9-3 OFF) and plug in the CnB connector on the board.
(When electrical work is not completed, connect a convex joint to the drain pipe joint area, arrange an inlet and check leaks and drain connections of the pipe)

◆ Setup from a remote controller side.

Drain pump operation from a remote controller unit is possible. Operate a remote controller unit by following the steps described below.

1. To start a forced drain pump operation.
   ① Press the TEST button for three seconds or longer.
   The display will change from " ▲ SELECT ITEM "→ " ○ SET "→ " TEST RUN ▼ "
   ② Press the ▼ button once while " TEST RUN ▼ " is displayed, and cause " DRAIN PUMP ◆ " to be displayed.
   ③ When the SET button is pressed, a drain pump operation will start.
   Display: " DRAIN PUMP RUN "→ " ○ → STOP "
2. To cancel a drain pump operation.
   ④ If either SET or ON/OFF button is pressed, a forced drain pump operation will stop.
   The air conditioning system will become OFF.

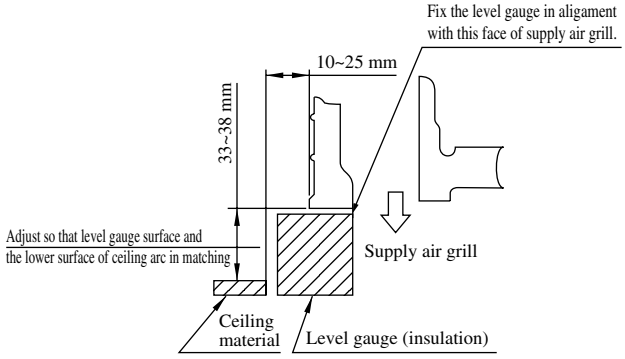
(e) Panel installation

1) Accessories

Name	Quantity	Remarks
Air inlet grille	1	
Air filter	1	
Suspension bolts	4	For panel installation

2) Confirm the unit's installation level.

- Make sure from the level gauge (insulation) packed with the air conditioner unit that the installation height of the unit and the dimensions of the opening in the ceiling are correct.
- Confirm the installation level of the air conditioner unit and ceiling material.
- Affix the level gauge included with the air conditioner unit and fix the unit's installation height.
- Remove the level gauge before installing the unit.
- The unit's installation height can be minutely adjusted by means of the corner openings after the panel is installed. (For details, see 6) "Installing the Panel.")



Note (1) : If the installation level of the air conditioner unit and ceiling material exceed the proper range, it will cause an undue load to be broken during installation of the panel and could cause damage.

3) Unit installation direction and panel and air inlet grille direction

(a) The unit and panel installation orientation is directional.
- Match up the outlet (small) parts with the refrigerant piping direction.
- Make sure of the motor and switch connector connection directions. (For details, see 6) "Installing the Panel.")

(b) The panel and air inlet grille installation orientation is not directional.
If you are changing the direction of the air inlet grille, change the panel's striker installation position to the "Pull" character position direction on the surface of the grille.

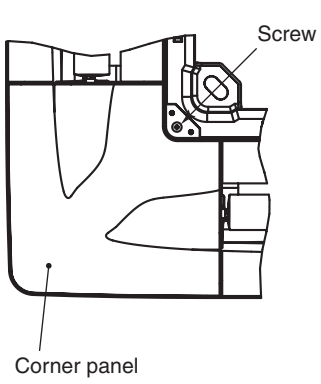
4) Removing the air inlet grille

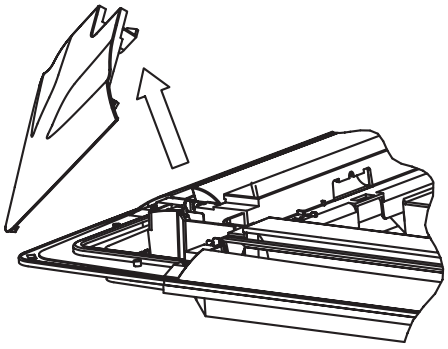
① Raise up the notched portion of the air inlet grille and open it.

② With the air inlet grille open, remove the air inlet grille hinge from the decorator panel.

5) Removing the corner panel

• Take out the screw in the corner, then lift up the corner panel in the arrow direction and remove it.





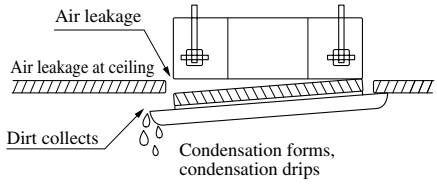
6) Panel installation

① Screw in lightly 2 of the 4 air conditioner unit suspension bolts in opposite corners from each other by about 5 mm. (Fasten the drain piping side and the opposite corner temporarily.)

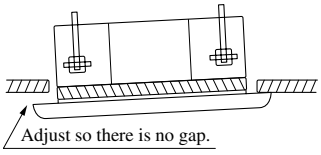
② Hang the panel on the two suspension bolts to install it temporarily.

③ Install the two remaining suspension bolts and tighten all four of the bolts.

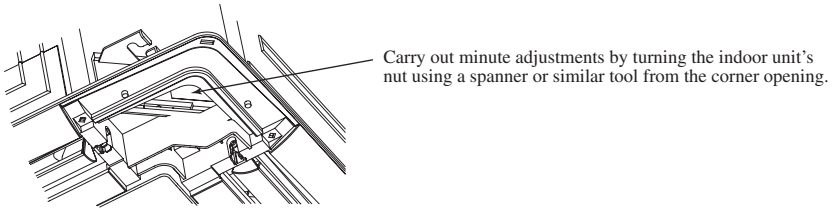
Notes (1) : If the suspension bolts are not tightened sufficiently, it could cause the following trouble, so tighten the bolts securely.



(2) : If there is still a gap between the ceiling and the decorator panel even after the suspension bolts are tightened, readjust the height of the indoor unit.



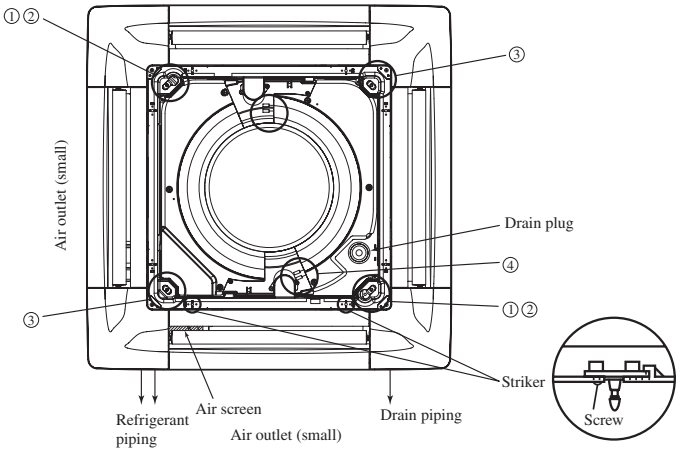
(3) : The unit's installation height can be minutely adjusted with the decorator panel as is as long as the indoor unit is level and drain piping are not affected.



④ Connect the (white, 5p) louver motor connector.

⑤ Place each of the connectors inside the control box.

Note (1) : If the air outlet louver does not operate using the remote controller, check the connector's connection, then turn the main power supply OFF for 10 seconds or longer and turn the power ON again.



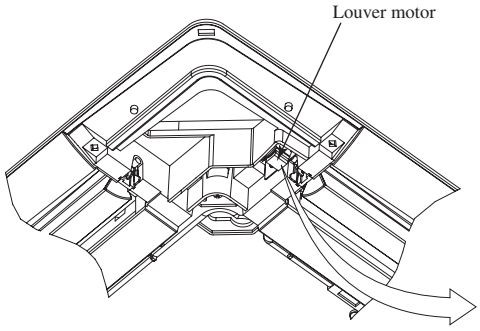
7) If the vertical air-flow direction is fixed

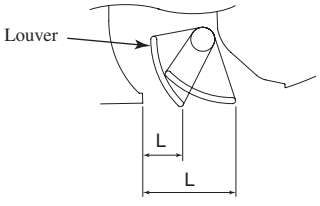
- This decorator panel is designed so that you can fix the vertical air-flow direction at each air outlet to match the environment at your installation location. Set it as required by the customer. Furthermore, when the vertical air-flow direction is fixed, remote control operation and all automatic controls are disabled. The actual setting may also differ from the LCD display in the remote controller.

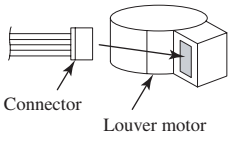
① Turn off the main power supply (turn it off at the ground fault circuit breaker).

② Disconnect the connector to the louver motor at the air outlet you want to fix the position of.
Wrap vinyl electrical tape around the disconnected connector to insulate it.

③ Slowly move the vertical air-flow louver you want to fix the position of by hand and set the vertical air-flow direction so that it is within the range shown in the table below.







<Setting Range>

Vertical air-flow direction criterion	Horizontal 30º	Downward 70º
L Dimension (mm)	36.5	22.5

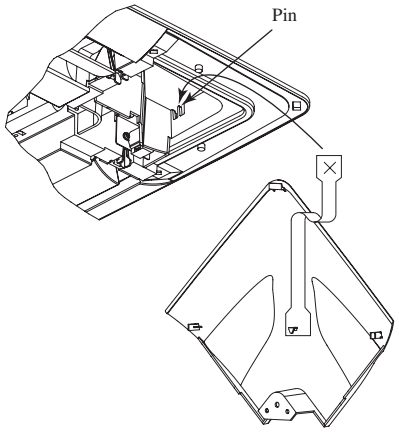
* It can be set anywhere desires as long as it is within a range of 22.5 and 36.5 mm.

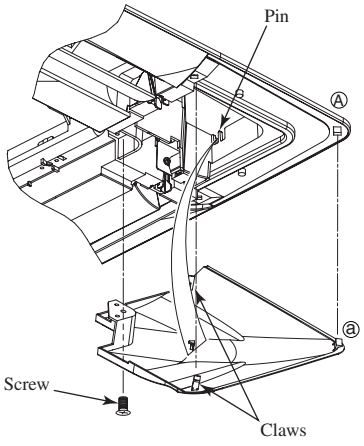
Note (1) : Do not set the position outside this range.
Doing so causes condensate to drip and to form as well as dirtying of the ceiling surface, and could cause abnormal operation.

8) Corner panel installation

① Hook the corner panel strap to the pin on the decorator panel as shown in the figure.

② Insert part ⓐ on the corner panel in part Ⓐ on the decorator panel, then fit the 2 claws and fasten the corner panel screw.





9) Installing the air inlet grille

- Install the air inlet grille by following the removal procedure (item 4) in reverse order.

Note (1) : Match up the installation position of the panel's striker and the "Pull" character position direction on the surface of the grille. If these do not match, the striker could be damaged.

(2) Ceiling suspended type (FDE)

(a) Selection of installation location

1) A place where good air circulation and delivery can be obtained.

Cold air throw

Unit : m

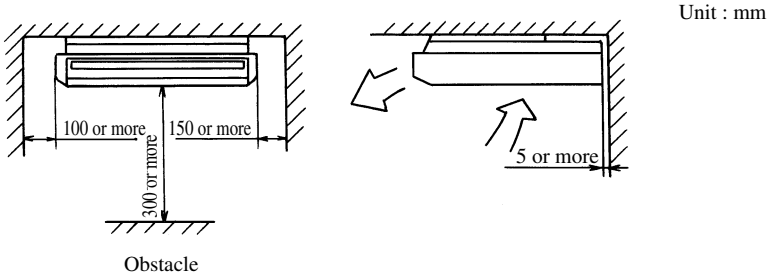
Models	FDE151, 201	FDE251, 301	FDE401, 501, 601
Air throw	7.5	8	9

Conditions
(1) Installation height: 2.4 ~ 3.0 m above the floor
(2) Fan speed: Hi
(3) Location: Free space without obstacles
(4) Distance of reach indicates the horizontal distance after the wind touched down the floor.
(5) Air velocity at the throw: 0.5 (m/sec.)

2) A place where ceiling has enough strength to support the unit.
3) A place where there is no obstruction to the return air inlet and supply air outlet ports.
4) Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
Installation and use at such places will incur deteriorations in the performance or corrosion with the heat exchanger or damage in molded synthetic resin parts.
5) A place where the space shown below may be secured.

Ceiling mouting installation

Unit : mm



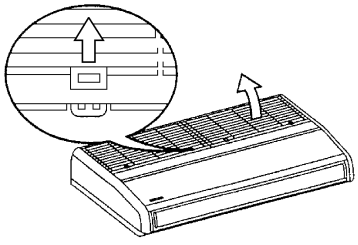
Obstacle

6) This unit uses a microcomputer as a control device. Therefore avoid installing the unit near the equipment that generates strong electromagnetic waves and noise.

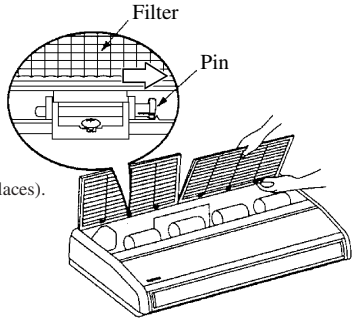
(b) Installation preparation

1) Remove the air inlet grille.

Slide the stoppers (4 places).

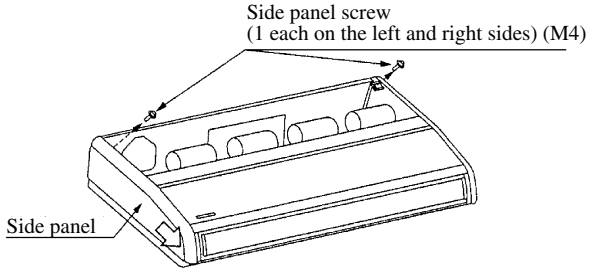


Take out the pins (4 or 6 places).



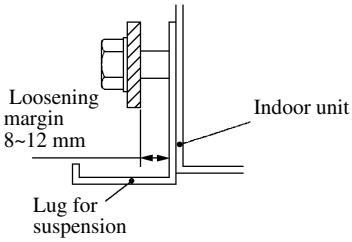
2) Remove the side panels.

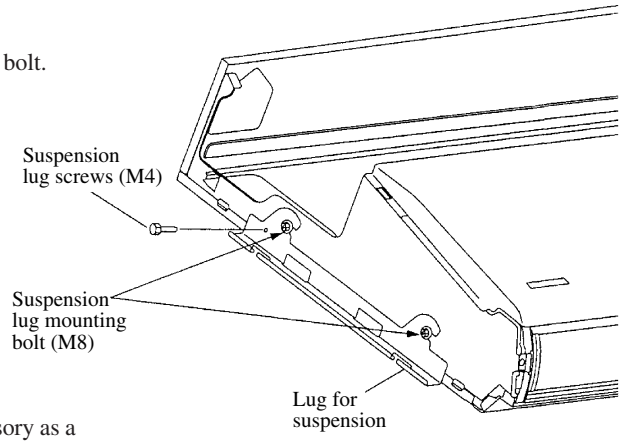
Take out the screws, then slide the side panels in the arrow direction to remove them.



3) Remove the suspension lug.

Take out the screws, then loosen the installation bolt.

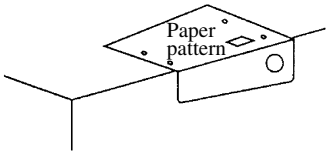


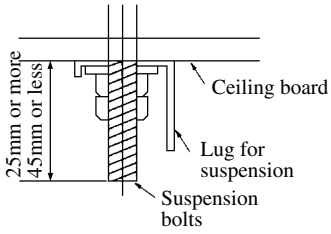


4) Suspension Bolt Position

a) Using the paper pattern supplied as an accessory as a criterion, select suspension bolt positions and piping hole positions, then install the suspension bolts and make holes for piping. After positioning, remove the paper pattern.

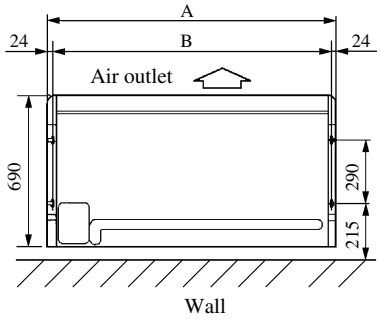
b) Keep strictly to the suspension bolt lengths specified below.





Unit : mm

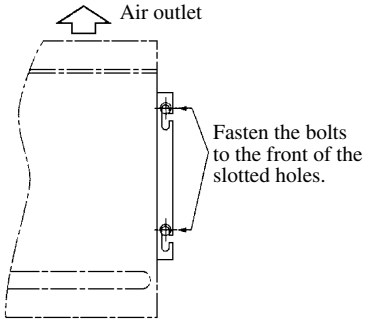
Model	A	B
FDE151, 201	1070	1022
FDE251, 301	1320	1272
FDE401, 501, 601	1620	1572

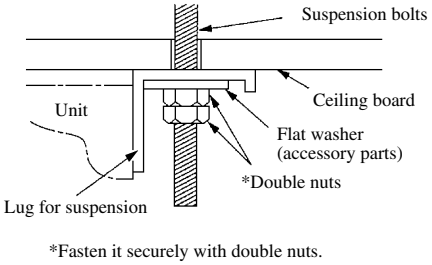


(c) Installation

1) Fasten the suspension lugs to the suspension bolts.

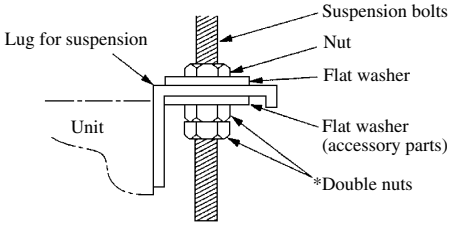
<If there is ceiling material>





*Fasten it securely with double nuts.

<If there is no ceiling material>

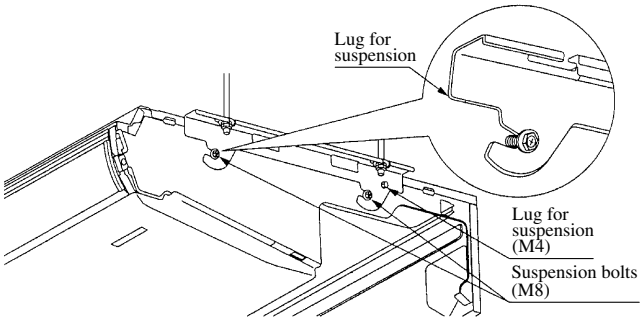


2) Attach the unit to the suspension lugs.

① Slide the unit onto the suspension lugs from the front, hanging it on the bolts.

② Fasten the unit securely on the left and right sides with 4 suspension bolts (M8).

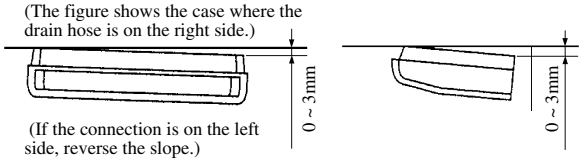
③ Tighten the 2 screws (M4) on the left and right sides.



⚠ After sliding the side panels on from the front to rear, fasten them securely with the screws.

3) In order to make it easier for water to drain out, install the unit so that the water drain side slopes downward.

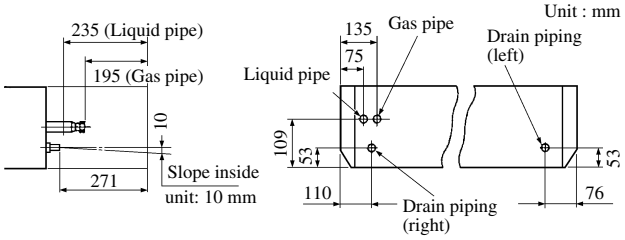
● **Left-right direction** ● **Front-rear direction**



⚠ If the slope is reversed, there is danger of water leaking out.

(c) Refrigerant Piping

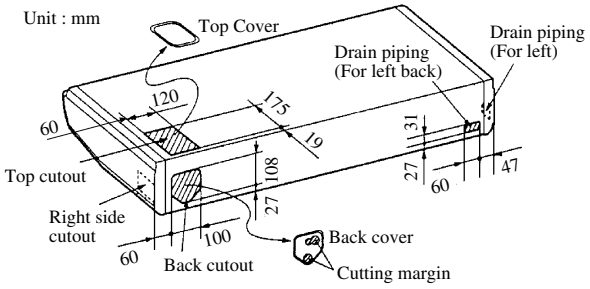
1) Piping Position



2) Piping Connection Position

Piping can be connection from 3 different directions. Remove the cutout from hole where the piping will be connected using side cutters or similar tool. Cut a hole for the piping connection in the back cover according to the cutting margin shown. Cut a hole in the ceiling side in accordance with the position of the piping. Also, after the piping is installed, seal the space around the piping with putty, etc. to keep dust from getting inside the unit.

(In order to prevent damage to wires from the edges, be sure to use the back cover.)



(d) Drain Piping

1) Drain piping can be connected from the back, right and left sides.

2) When installing drain piping, be sure to use the insulating material supplied for the drain hose and drain hose clamp.

a) Connect the drain hose fully all the way to the base of the fitting.

b) Fasten the hose securely with the drain hose clamp.

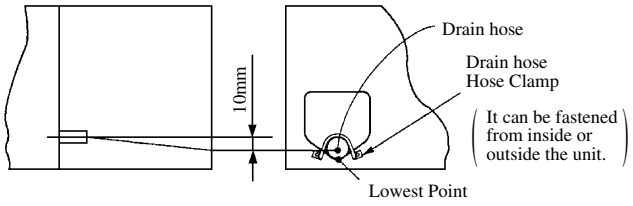
c) Keep strictly within the lengths specified below for the suspension bolts.

3) If drain piping is installed on the left side, change the rubber plug and insulating material (tubular) from the left side piping connection port to the right side.

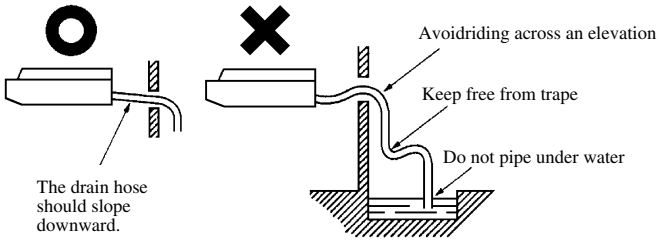
⚠ Be careful that water doesn't pour out when the drain plug is removed.

⚠WARNING

Use the fitting supplied with the unit to connect the drain hose, fastening it at the lowest point so that there is no slack, and establishing a 10 mm drain slope. * Keep electrical wiring from running beneath the drain hose.



⚠ Be sure to fasten the drain hose down with a clamp.
There is danger of water overflowing the drain hose.

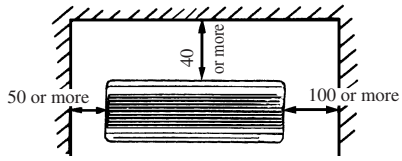


After piping has been installed, check to make sure water drains well and that there is no overflow.

(3) Wall mounted type (FDK)

(a) Selection of installation location

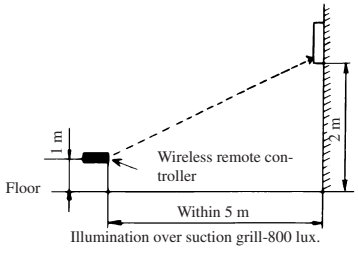
Unit: mm

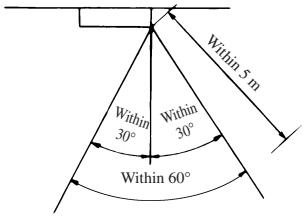


1) Select the installation location that meets the following conditions and obtain the customer's consent.
   a) Location where cold and warm air spread all over the room
   b) Location where piping and wiring to the outdoors can easily be laid down.
   c) Location where the drain can be discharged completely.
   d) Location where the wall to mount the unit is rigid.
   e) Location where there is no wind obstruction to the return air and supply air grills.
   f) Location not exposed to direct sunshine.
   g) Avoid the location exposed to oil splash or vapor.
   h) Avoid the location near to the machine emitting high-frequency radio wave.
   i) Avoid the location where the receiver of remote control is subject to strong illumination.
   j) Select the location where the unit can securely be operated by the wireless remote controller referring to the Article “Effective distance of wireless remote controller” indicated at the backside.
   k) Secure the space for inspection and maintenance work.

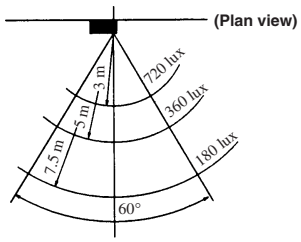
(b) Cautions for use of wireless remote controller

1) Opareting distance of wireless remote controller

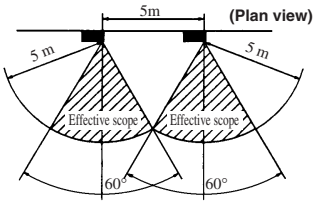




Relation between illumination at receiver unit and operating distance



Caution item for close installation of multiple units



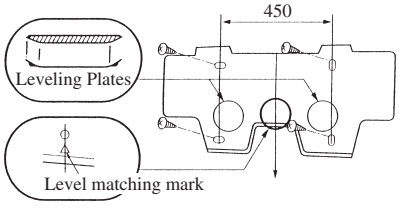
[Condition] Illumination at suction grill face 800 lux

2) Cautions for operation
   a) Orient the remote control switch properly toward the receiver of the unit.
   b) Operating distance is as shown above but it may vary largely depending on the conditions.
   c) Effective distance may be shortened and the receiving may be disturbed when the receiver is under the condition of direct exposure to sunlight or other strong light like electric bulb, dust is accumulated on it and it is shielded with a curtain, etc.

(c) Attaching of mounting plate

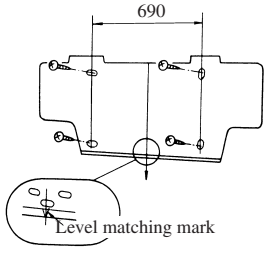
1) The indoor unit weighs approx, FDKN151~251 models : 12kg, FDKN301 model: 13.5kg. Therefore, check whether the portion to install the unit can bear the weight of unit. If it seems to be danger, reinforce the portion by a plate or a beam before installing the unit. It is not allowed to install the unit directly on the wall. Whenever you install the unit, use the attached mounting plate.
2) Find structural members (Intermediate pillar, etc.) suitable for mounting the unit, then install the unit firmly while checking levelness.

Models FDKN151~251

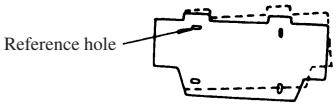


Model FDKN301

Unit: mm



3) Adjust the level of mounting plate under the condition that four screws are tightened temporarily.



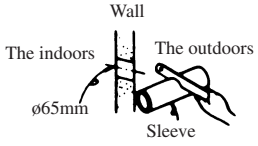
4) Turn the mounting plate around the reference hole to adjust the levelness.

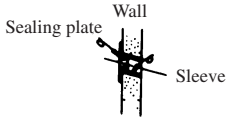
⚠WARNING

Install the unit where it can bear the weight with sufficient strength margin. In the case of insufficient strength or insufficient installation work, the unit may fall and cause injury.

(d) Procedure for making hole on the wall

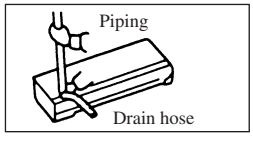
- Make a downgrade (5°) from the indoors toward the outdoors.





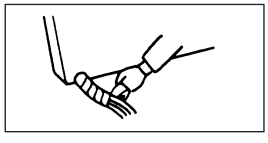
(e) Forming of piping and drain hose

1) Rear take out case
   a) Forming of piping



- Hold the root portion of piping, change the direction then expand and make forming.

   b) Tape winding

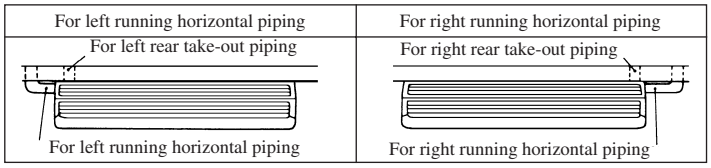


- Wind the tape on the portion which passes through the hole on the wall.
- Always make taping on the wiring which crosses with the piping, if any.

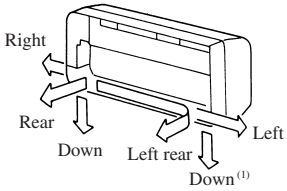
Note (1) After forming of piping and before tape winding, confirm that the connecting wire is securely fixed to the terminal block.

2) Cautions for left take-out and rear take-out case

a) Looking down

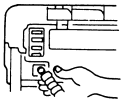
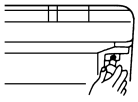
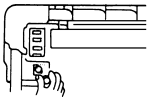
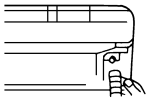


b) The piping can be taken out from the rear, left, left rear, right and down.



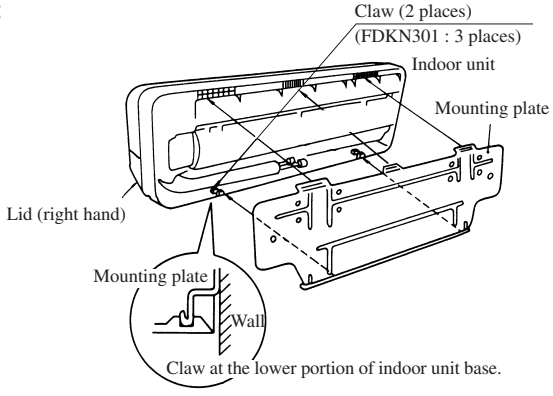
Note (1) Running of piping from the lower left can only be done with the FDKN151~251 models.

b) Procedure for changing drain hose

1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
• Pull the drain hose off while turning the end around. (In the case of the FDKN301 model, loosen the spring clamp.)	• Remove by hand or pliers.	• Insert the drain cap which was removed in procedure 2 securely using a hexagonal wrench, etc. Note(1) When it is not inserted securely, water leakage may occur.	• Push the end of the drain hose onto the fitting while turning it around. (In the case of the FDKN301 model, loosen the spring clamp, then attach the drain hose securely on the fitting.) Note(1) When it is not inserted securely, water leakage may occur.

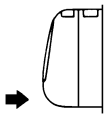
(f) Installation of unit

- To remove the unit from the mounting plate, remove the right and left lids then remove the claw at the lower portion of base.



Installation work procedure

(1) Hang the upper portion of indoor unit on the mounting plate.



(2) The indoor unit can be fixed with one action by pushing its lower portion slightly.

(g) Drain piping

1) Lay the drain piping with downgrade to facilitate flow of drain,and do not make a trap or chevron-shaped bend. (The drain piping can be taken out from the unit to the left, right, rear and down direction.)
2) Wrap the thermal insulator on the hard vinyl chloride pipe (VP-16) laid in the room.
3) Run the drain piping in a place where there is no fear of abnormal odors being generated at the end of the drain hose.
4) Do not run the drain piping directly into a sewer where sulfur-based poisonous or flammable gases are generated. There is danger of poisonous or flammable gases penetrating into the building through the drain piping.
5) Pour water into the drain pan below the heat exchanger to chech that water is drained outdoors.

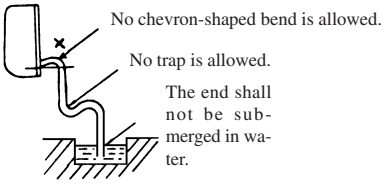
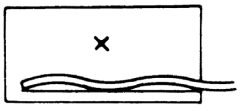


Illustration showing the end of drain hose



(4) Ceiling mounted duct type (FDUR)

(a) Selection of installation location

1) Avoid installation and use at those places listed below.

a) Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
Installation and use at such places will incur deteriorations in the performance or corrosion with the heat exchanger or damage in molded synthetic resin parts.

b) Places where corrosive gas (such as sulfurous acid gas) or inflammable gas (thinner, gasoline, etc.) is gnerated or remains. Installation and use at such places will cause corrosion in the heat exchanger and damage in molded synthetic resin parts.

c) Places adjacent to equipment generating electromagnetic waves or high-frequency waves such as in hospitals. Generated noise may cause malfunctioning of the controller.

2) Select places for installation satisfying the following conditions and, at the same time, obtain the consent on the part of your client user,.

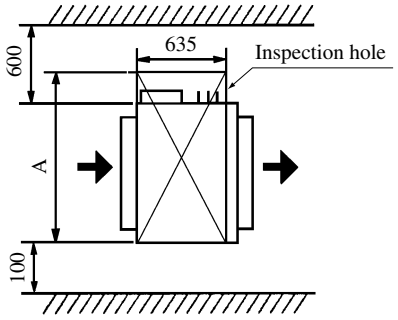
a) Places where chilled or heated air circulates freely. When the installation height exceeds 3m, warmed air stays close to the ceiling. In such cases, suggest your client users to install air circulators.

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

c) Places free from air disturbances to the return air port and supply hole of the indoor unit, places where the fire alarm may not malfunction to short circuit.

d) Places 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.)

3) Check if the selected place for installation is rigid enough to stand the weight of thew unit.
Otherwise, apply reinforcement using boards and beams before starting the installation work.

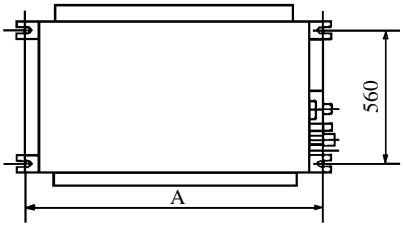


Unit : mm

Models \ Mark	A
FDUR201, 251, 301	1200
FDUR401, 501, 601	1720

(b) Suspension

Be sure to observe the finished length of the suspension bolts given below.

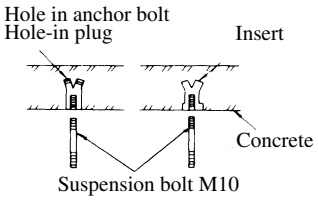


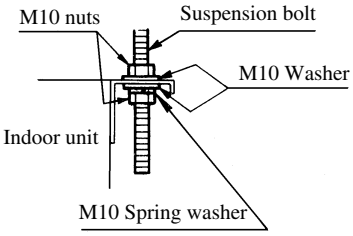
Unit : mm

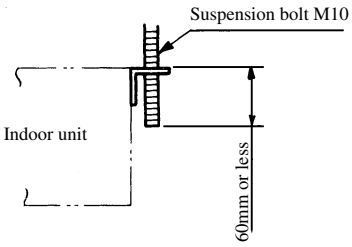
Models \ Mark	A
FDUR201, 251, 301	886
FDUR401, 501, 601	1406

1) Fixing the suspension bolt (customer ordered parts M10)

Securely fix the suspension bolt as illustrated below or in another way.







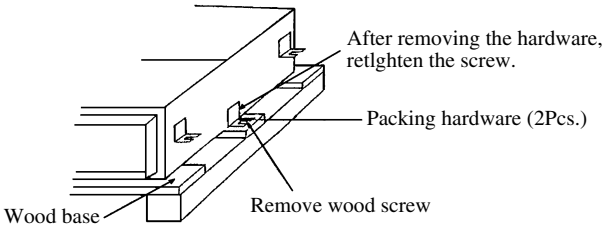
(c) Installation of indoor unit

Packing hardware

Two pieces of packing handware are uesd.

Discard them after unpacking.

- Fix the indoor unit to the hanger bolts.
  If required, it is possible to suspend the unit to the beam,etc.
  Directly by use of the bolts without using the hanger bolts.



- When installing the unit, heed must be taken that the side touching the wood frame is the top surface of the unit.

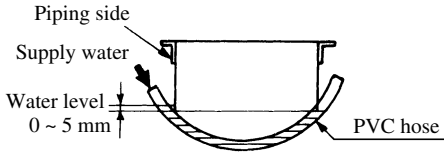
Note

When the dimensions of indoor unit and ceiling holes does not match, it can be adjusted with the slot holes of hanging bracket.

1) Adjusting the unit's levelness

a) Adjust the out-levelness using a level vial or by the following method.

- Make adjustment so that the relation between the lower surface of the unit proper and water level in the hose becomes given below.



Bring the piping side slightly lower

b) Unless the levelness is adjusted properly, the malfunction of the float switch will occur.

2) Blower fan switching. (When the high performance filter is used.)

The fan tap's factory setting is "Standard." If you want to change it to the high static-pressure setting, you can avail yourself of the following two methods. Use one of the two methods to set the fan tap.

SW9-4	ON	Fan control, high speed (High ceiling)
	OFF	Fan control, standard

① Set SW9-4 provided on the indoor unit PCB to ON.

② Select the "HI CEILING 1 (high-speed tap)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting. For the setting method, please refer to the installation manual supplied with the remote controller.

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	Hi CEILING 1

Unit : Pa

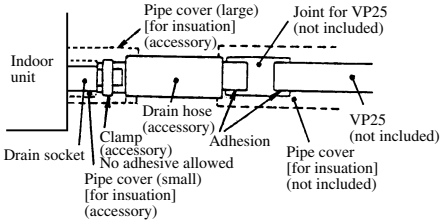
Static Pressure / Models	Standard tap	High tap
FDUR201,251	50	85
FDUR301,401,501,601	50	130

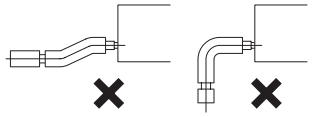
⚠ CAUTION

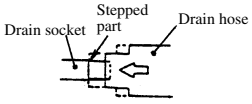
- Taps should not be used under static pressure outside the unit mentioned above. Dew condensation may occur with the unit and wet the ceiling or furniture.
- Do not use under static pressure outside the unit of 50Pa or less. Water drops may be blown from the diffuser outlet of the unit and wet the ceiling or furniture.

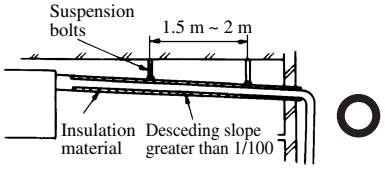
(d) Drain Piping

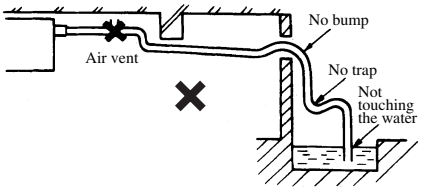
1) Glue the drain hose supplied as an accessory and a VP-25 joint before lifting the unit.
2) The drain hose is to provide a buffer to absorb a slight dislocation of the unit or the drain piping during installation work. If it si subject to abuse such as being bent or pulled deliberately, it may break, which will result in a water leak.
3) Care must be taken so as not to allow an adhesive to run into the drain hose. When it is hardened, it can cause a breakage of a flexible part, if the flexible part receives stress.
4) Use VP-25 general-purpose hard PVC pipes for drain piping.
5) Insert the drain hose supplied as an accessory (soft PVC end) to the stepped part of the unit's drain socket and then fasten it with the clamp also supplied as an accessory.
6) Adhesive must not be used.
   a) Glue a VP-25 joint (to be procured locally) to joint it with the drain hose (hard PVC end) and then glue a VP-25 (to be procured locally) to the joint.
   b) Give the drain piping a descending grade (1/50-1/100) and never create a bump to go over or a trap.
   c) In connecting drain pipes, care must be taken so as not to apply force to the unit side piping and fix the pipe at a point as close to the unit as possible.
   d) Do not create an air vent under any circumstances.
   e) When drain piping is implemented for more than one unit, provide a collecting main about 100 mm below the units' drain outlets from which it collects drain. Use a VP-30 or larger pipe for a collecting main.
   f) Do not fail to provide heat insulation at the following two points because they can cause dew condensation and a resultant water leak.
7) Drain socket
   After a drain test is completed, apply a pipe cover (small: accessory) onto the drain socket, cover the pipe cover (small), the clamp and part of the drain hose with a pipe cover (large: accessory) and wrap it with a tape completely without leaving any gaps.
   (Cut pipe covers into appropriate shapes)
8) Hard PVC pipes laid indoor
   a) Since a drain pipe outlet can be raised up to 700 mm from the ceiling, use elbows, etc. to install drain pipes, it there are obstacles preventing normal drain pipe arrangement. When the drain pipe is raised at a point far from a unit, it can cause an overflow due to a back flow of drain upon stoppage, so arrange piping to keep the dimensions specified in the illustration shown on the left.
   b) Install the drain pipe outlet where no odor is likely to be generated.
   c) Do not lead the drain pipe into a ditch where the generation of harmful gas such as sulfuric gas or flammable gas is expected. A failure to observe this instruction may cause such harmful or flammable gas to flow into the room.

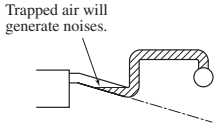


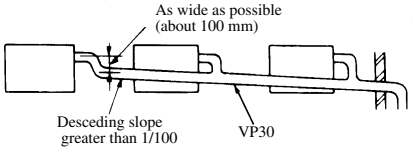


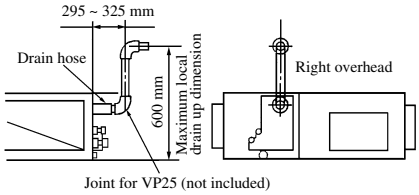












9) Drainage test

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

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

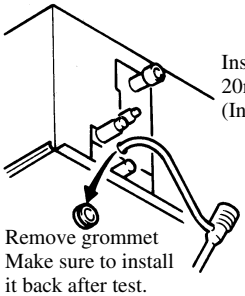
c) In case of a new building, conduct the test before it is furnished with the ceiling.

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

Procedures

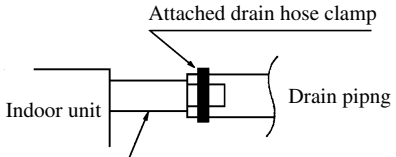
① Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.

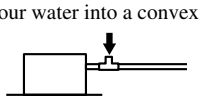
② Check the drain while cooling operation.



Insert water supply hose for 20mm ~ 30mm to suply water. (Insert hose facing toward bottom.)

Remove grommet
Make sure to install it back after test.





Drain situation can be checked with transparent socket.

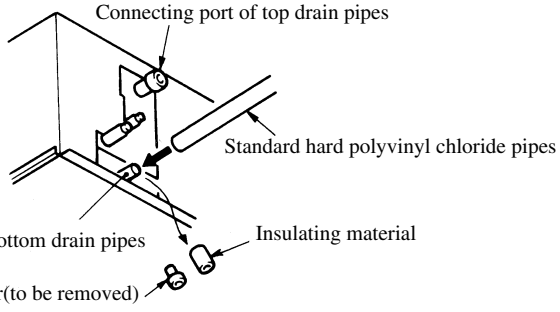
If the electrical work has not been completed, connect a convex joint in the drain pipe connection to provide a water inlet.
Then, check if water leaks from the piping system and that drain flows through the drain pipe normally.

10) Outline of bottom drain piping work

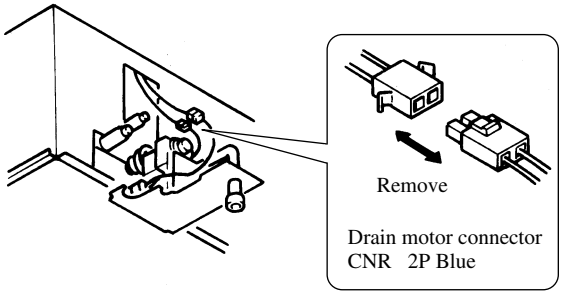
a) If the bottom drain piping can be done with a descending gradient (1/50-1/100), it is possible to connect the pipes as shown in the drawing below.

【Connection of pipes】

(Removing drain motor connector) Remove drain motor connector CNR (blue) as shown in the drawing on the right. (Note: If the connector is left connected, drain water is discharged from the conncting port of top pipes, causing leakage.)



b) Do not use acetone-based adhesives to connect to the drain socket.



Forced drain pump operation

◆ Set up from a unit side.

① Turn power on after selecting the emergency operation mode with a setting on the indoor unit board (SW9-3 ON) and disconnecting the CnB connector on the board. Then, the drain pump will start a continuous operation 15 seconds later.
(Note: The blower will also start operation in tandem)

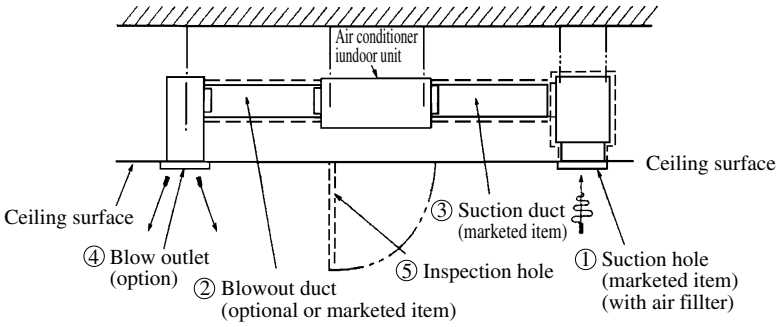
② When a drain test is completed, reinstate the setting to cancel the emergency operation mode (SW9-3 OFF) and plug in the CnB connector on the board.
(When electrical work is not completed, connect a convex joint to the drain pipe joint area, arrange an inlet and check leaks and drain connections of the pipe)

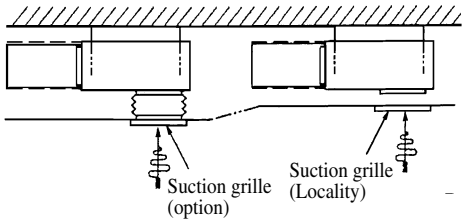
◆ Setup from a remote controller side.

Drain pump operation from a recomte controller unit is possible. Operate a remote controller unit by following the steps described below.

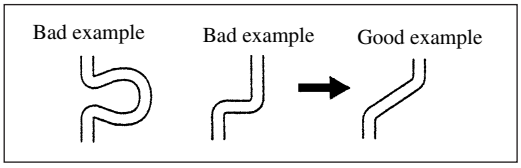
1. To start a forced drain pump operation.
   ① Press the TEST button for three seconds or longer.
   The display will change from " ◆ SELECT ITEM " → " ○ SET " → " TEST RUN ▼ "
   ② Press the ▼ button once while " TEST RUN ▼ " is displayed, and cause " DRAIN PUMP " to be displayed.
   ③ When the SET button is pressed, a drain pump operation will start.
   Display: " DRAIN PUMP RUN " → " ○ → STOP "
2. To cancel a drain pump operation.
   ④ If either SET or ON/OFF button is pressed, a forced drain pump operation will stop.
   The air conditioning system will become OFF.

(e) Duct work

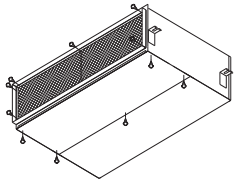




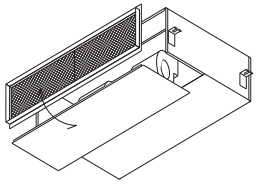
1) A corrugated board (for preventing sputtering) is attached to the main body of the air conditioner (on the outlet port). Do not remove it until connecting the duct.
   a) An air filter is provided on the main body of the air conditioner (on the inlet port). Remove it when connecting the duct on the inlet port.
2) Blowout duct
   a) Reduce the length of duct as much as possible.
   b) Reduce the number of bends as much as possible.
   c) (Corner R should be as larger as possible.)



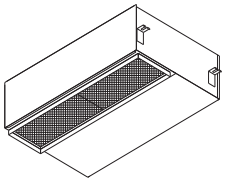
   d) Conduct the duct installation work before finishing the ceiling.
3) Inlet port
   a) When shipped, the inlet port lies on the back.
   b) When connecting the duct to the inlet port, remove the air filter fitted to the inlet port.
   c) When placing the inlet port to carry out suction from the bottom side, use the following procedure to replace the suction duct joint and the bottom plate.
4) Make sure to insulate the duct to prevent dewing on it.
5) Location and form of blow outlet should be selected so that air from the outlet will be distributed all over the room, and equipped with a device to control air volume.
6) Make sure provide an inspection hole on the ceiling. It is indispensable to service electric equipment, motor, functional components and cleaning of heat exchanger.



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

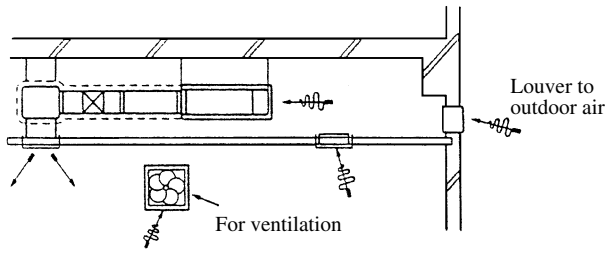


● Replace the removed bottom plate and duct joint



● Fit the duct joint with a screw, fit the bottom plate.

Bad example of duct work

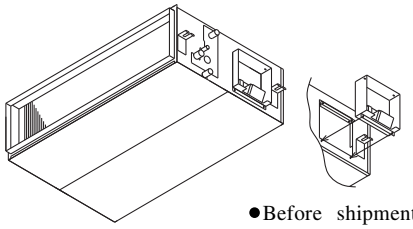


7) If a duct is not provided at the suction side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the out door air louver, weather (rainy day) and others.
   a) Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling.
      Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume.
      When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct.
      In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold the glass wool in place.)
   b) It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35˚C DB, suction air temperature is 27˚C WB) and it could result in such troubles as compressor overload, etc..
   c) There is a possibillty that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fail to reach the drain pan but leak outside (e. g. drip on to the ceiling) with consequential water leakage in the room.

(f) Control box (Only case of FDURA401, 501, 601)

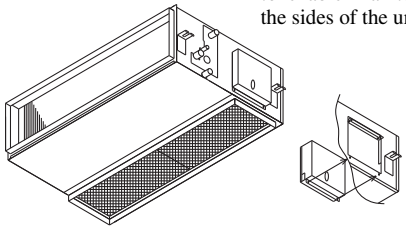
- During bottom side suction, the orientation of the control box can be changed to allow the control box to be maintained from the inlet port.

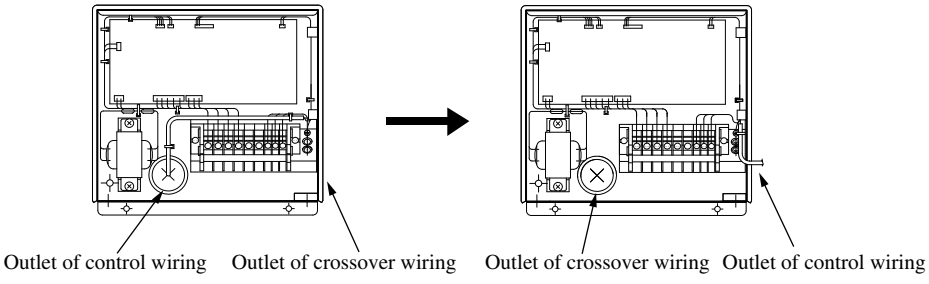
1) Remove the bottom plate (on the inlet port side), and all wiring connectors from the control box.



2) Remove the three screws that fasten the cabinet inside the control box.
3) Pull the control box toward the outside of the unit.
4) Change the ejection of the wiring inside the control box.
5) Fit the control box from the inside of the unit.
6) Fit the three screws that fasten the cabinet.
7) Correctly connect all wiring connectors.

●Before shipment from the plant, arrangements are made to enable maintenance from the sides of the unit.





1.5.2 Installation of remote controller

(a) Selection of installation location

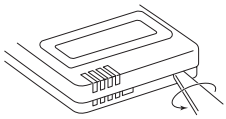
Avoid the following locations

1) Direct sunlight.
2) Close to heating device.
3) Highly humid or water splashing area.
4) Uneven surface.

(b) Installation procedure

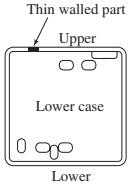
a) Exposed fiting

1) Open the remote controller cover and unscrew the screw located beneath the switch.
2) Open the remote controller case.



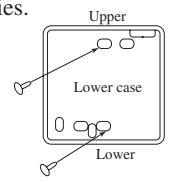
- Put a screw driver (flat-head) into the concavity made on the upper part of a remote controller and twist it lightly to open the casing.

3) The cord of a remote controller can only be pulled out in the upward direction.



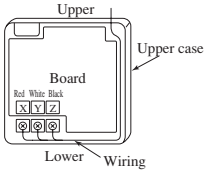
- Cut off with nippers or a knife a thin walled part made on the upper end of the rmote controller bottom casing, and then remove burrs with a file or the like.

4) Fix the remote controller bottom casing onto a wall with two wood screws supplied as accessories.



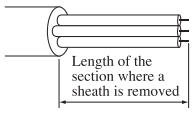
5) Connect the remote controller to the terminal block. Connect the terminals of the remote controller to the indoor unit with the same numbers. Because the terminal block has polarity, the device becomes inoperative if there are wrong connections.

Terminals: ⓧRed wire, ⓨWhite wire, ⓩBlack wire



- Use a cord of 0.3mm^2 (recommended) - 0.5mm^2 (maximum) for a remote controller cord. Remove a sheathe of the remote controller cord for the section laid within the remote controller casing.

The length of each wire that should be left after a sheath is removed is as follows:

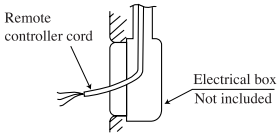


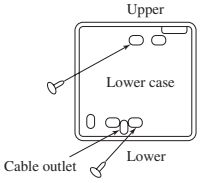
Black: 195mm, White: 205mm, Red: 125mm

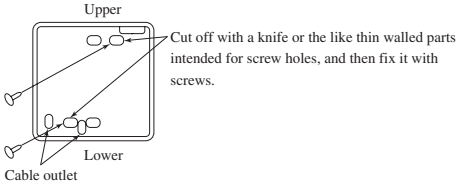
6) Replace the top casing as before.
7) Use a cord clamp to attach the remote controller cord to the wall.
8) Set the functions according to the types of indoor unit. See Section "Function Setting".

(b) Recessed fitting

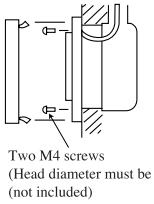
1) The Electrical box and remote controller (shield wire must be use in case of extension) are first embedded.







2) Remote the upper case to the remote controller.
3) Attach the lower case to the Electricl box with two M4 screws. (Head diameter must be 8 mm). Choose either of the following two positions in fixing it with screws.
4) Connect the remote controller cord to the remote controller.
   Refer to [Exposed fitting].
5) Installation work is completed by replacing the top casing onto the bottom casing as before.
6) Set the function switch according to the type of the indoor unit. (Refer to 124 page)



Precation in Extending the Remote controller cord

▶Maximum total extension 600m.

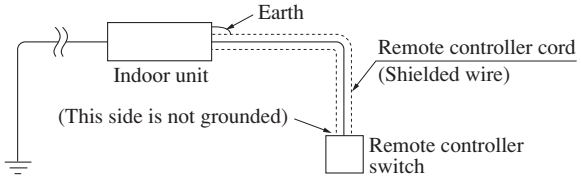
The cord should be a shielded wire.

● For all types : 0.3mm^2 × 3 cores

Note (1) Use cables up to 0.5mm^2 (maximum) for those laid inside the remote controller unit casing and connect to a different size cable at a vicinity point outside the remote controller unit, if necessary.

Within 100-200m……0.55 mm^2 × 3 cores
Within 300m……0.75 mm^2 × 3 cores
Within 400m……1.25 mm^2 × 3 cores
Within 600m……2.05 mm^2 × 3 cores

● The shielded wire should be grounded at one side only.



1.5.3 Installation of outdoor unit

Special instructions for R410A air conditioning systems

- Use only R410A refrigerant. R410A refrigerant is operated at about 1.6 times as high pressure as the conventional refrigerant is.
- Air conditioning systems using R410A are equipped with different-diameter outdoor unit service valve charge ports and check joints provided in the units so as to prevent wrong refrigerant from being charged by mistake. To achieve higher strength resistible to refrigerant pressure, the dimensions of flaring and the across-the-flats measurement of a flare nut have been changed for refrigerant piping. Therefore, please arrange dedicated R410A tools as listed in the table shown on the below before you set to installation or service work.
- Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, resulting in performance degradation falling short of the rated capacity.
- In charging refrigerant, always take out refrigerant from a cylinder in the liquid phase.

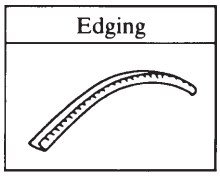
	Dedicated R410 tools
ⓐ	Gauge manifold
ⓑ	Charge hose
ⓒ	Electronic scale for refrigerant charging
ⓓ	Torque wrench
ⓔ	Flare tool
ⓕ	Protrusion control copper pipe gauge
ⓖ	Vacuum pump adapter
ⓗ	Gas leak sensor

(1) Installation

(a) Accessories (only case of FDCA301~601 models)

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

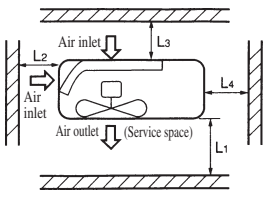
Select the installation location after obtaining the approval of customer.

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) 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.

- 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.

(c) The minimum space for installation

Select the space considering the direction of refrigerant piping.



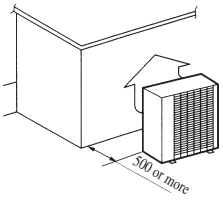
Unit : mm

Installation example / Distance	FDCVA151, 201, 251			FDCA301			FDCA401, 501, 601		
	Ⅰ	Ⅱ	Ⅲ	Ⅰ	Ⅱ	Ⅲ	Ⅰ	Ⅱ	Ⅲ
L_1	Open space	280	280	Open space	Open space	500	Open space	Open space	500
L_2	100	75	Open space	300	5	Open space	300	5	Open space
L_3	100	80	80	100	150	100	150	300	150
L_4	250	Open space	250	5	5	5	5	5	5

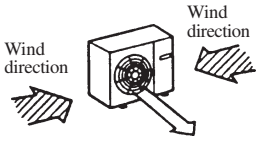
(d) Location where strong wind blows against the unit

- Where the unit is likely to be subjected to strong winds, guard it from winds with the following measures.
  A failure to give protection against winds may cause performance degradation, a rise of high pressure resulting is an operation interruption, a broken fan, etc.

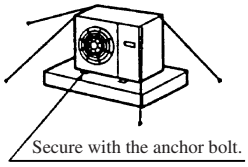
1) Install the unit directing the discharge air port to the wall.



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.

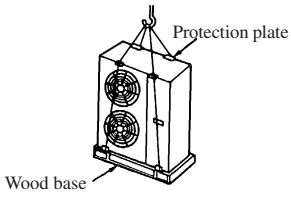


(2) Carry-in and installation of unit

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

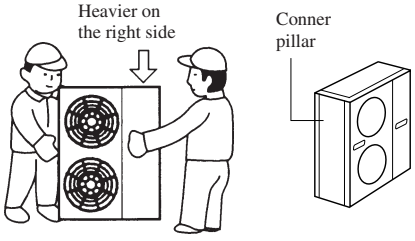
1) When carrying-in the unit, carry it in as packed condition to the installation site as near as possible.
2) If you are compelled to carry-in the unit unpacked condition, lift the unit by the rope using a nylon sling or applying protection plates so that the unit is not marred.



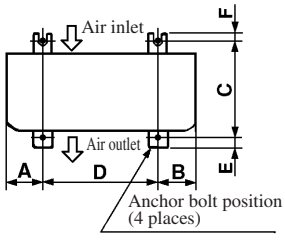
⚠ CAUTION ● **Rope the unit taking the discrepancy of center of gravity into consideration.**

(b) Moving

1) The unit is heavier on the right side looking from the front of unit (air outlet 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.



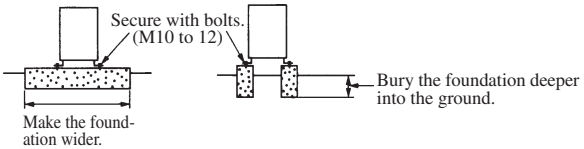
(c) Bolt securing position



Unit : mm

Model \ Item	A	B	C	D	E	F
FDCVA151, 201, 251	106	164	312.5	510	14	13.5
FDCA301	150	150	380	580	20	20
FDCA401	165	175	380	580	20	20
FDCA501, 601	190	200	410	580	20	20

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

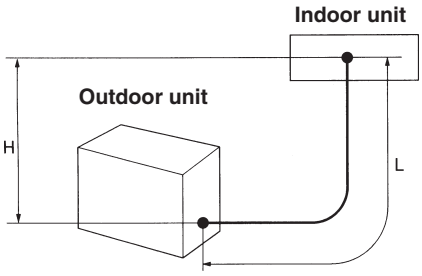


2) Limit the protrusion height of front side anchor bolts to 15 mm at the maximum.
3) Install the unit firmly so that it does not fall by earthquake and strong wind.
4) Make the concrete foundation by referring the above illustration.
5) Install the unit in level. (The height difference between right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

(3) Refrigerant piping work

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

(a) Decision of piping specification



Tightening torque

ø6.35 Flare nut	14~18 N·m (1.4~1.8 kg·m)
ø9.52 Flare nut	34~42 N·m (3.4~4.2 kg·m)
ø12.7 Flare nut	49~61 N·m (4.9~6.1 kg·m)
ø15.88 Flare nut	68~82 N·m (6.8~8.2 kg·m)

Piping specification

Unit : mm

Outdoor unit model	Gas pipe	Liquid pipe
FDCVA151, 201	ø 12.7 × t0.8	ø 6.35 × t0.8
FDCVA251	ø 15.88 × t1.0	ø 6.35 × t0.8
FDC301, 401, 501, 601	ø 15.88 × t1.0	ø 9.52 × t0.8

Maximum one way length

FDCVA151~251 : L=40 m or less

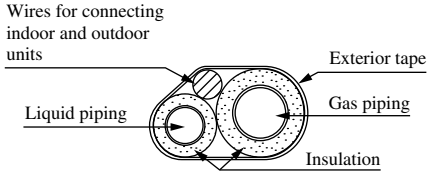
FDCVA301~601 : L=50 m or less

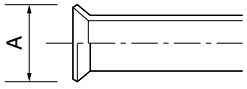
Height difference

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

(b) Points for attention in installing refrigerant piping

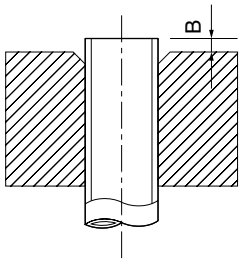
1) Use pipes made of the following material
   Material: Phosphorus deoxidized copper seamless pipes (C1220T, JIS H3300)
2) Please dress the refrigerant piping (both gas and liquid pipes) with a heat insulating material for prevention of dew condensation. Improper heat insulation incapable of preventing dew condensation can cause the leaking or dripping of water and a resultant soaking of household effects.
3) Use only a good heat insulating material (120˚C or higher) for heat insulation. A poor heat insulating material offers only poor heat insulation and can cause cable deterioration.
   a) The gas pipes can cause dew condensation during a cooling operation, which may become drain water causing a water-leak accident, or a risk of burns during a heating operation, if touched accidentally, with its surface reaching a high temperature because of discharged gas flowing inside. So, do not fail to dress it with a heat insulating material to prevent such mishap.
   b) Dress the flare joints of the indoor units with a heat insulating material (pipe covers) (for both gas and liquid pipes).
   c) Dress both gas and liquid pipes with a heat insulating material. In doing so, leave no gaps between the pipe and the heat insulating material and wrap them, together with the connecting cable, with a dressing tape.
4) When you need to bend a pipe, bend it to the largest possible radius (R100-R150) permitted. Do not bend a pipe repeatedly in an effort to shape it appropriately.
5) In laying pipes, take care to avoid debris, chips or water from entering the piping system.
6) A unit and a refrigerant pipe are to be flare connected. Flare a pipe after you have attached a flare nut to the pipe. The dimensions of flaring for R410A are different from those for the conventional R407C refrigerant. Although we recommend the use of flare tools developed specifically for R410A, conventional flare tools can also be used, if the measurement of protrusion B is adjusted with a protrusion control copper pipe gauge.
7) Tighten a flare joint securely with double spanners. Observe the following tightening torque values for flare nuts:
8) A branching pipe set (option part supplied separately) and refrigerant piping should be connected by blazing.
9) In blazing pipes, keep nitrogen gas flowing inside the pipes so that an oxide film may not form on the inner surfaces of the pipes.





Flared pipe end: A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
ø6.35	9.1
ø9.52	13.2
ø12.7	16.6
ø15.88	19.7



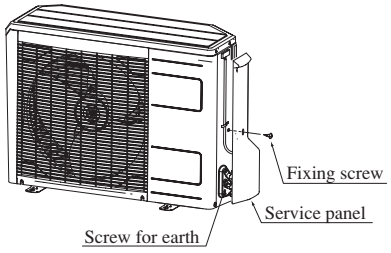
Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ø6.35	0~0.5	1.0~1.5
ø9.52		
ø12.7		
ø15.88		

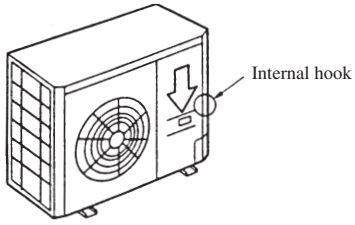
(c) How to remove the service panel

First unscrew four screws holding the service panel in place, pull down the panel toward the direction indicated by the arrow, and then pull it toward you to remove it from the casing.

Models FDCVA151~251



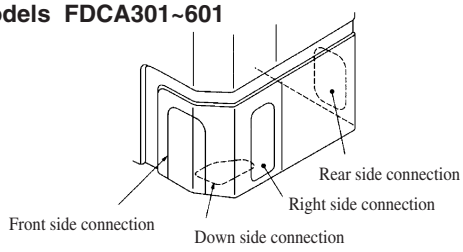
Models FDCA301~601



(d) Refrigerant pipe connection

1) The pipe can be laid in any of the following directions: side right, front, rear and downward.
2) Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an approriate length before laying a pipe.

Models FDCA301~601



Note (1) Piping can be run toward the back only of the FDCVA151~251 models.

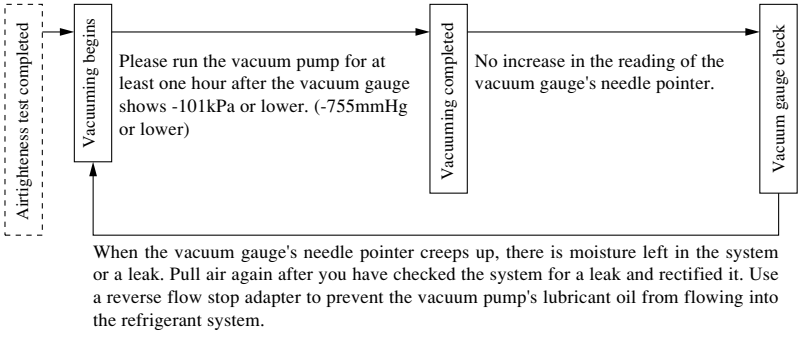
(4) Air tightness test and air purge

- Always use a vacuum pump to purge air trapped within an indoor and the refrigerant piping.

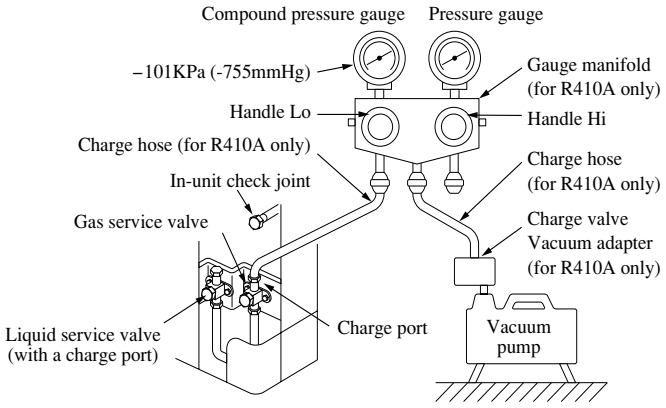
(a) Air tightness test

1) When all the flare nuts on both indoor and outdoor unit sides are fastened. Conduct an air-tightness test from the service valves (on both liquid and gas sides) closed tightly to check whether the system has no leaks.
2) Use nitrogen gas in the air-tightness test. Do not use gas other than nitrogen gas under any circumstances. Conduct the air-tightness test by applying 4.15MPa (42kg/cm^{3}G) of pressure.
3) Do not apply the specified pressure at once, but increase pressure gradually.
   a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
   b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
   c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
   d) If the pressure does not drop after the units is left for approximately one day, the airtighteness is acceptable. When the ambient temperature changes 1˚C, the pressure also changes approximately 0.01 MPa. The pressure. if changed, should be compensated for.

(b) Air purge

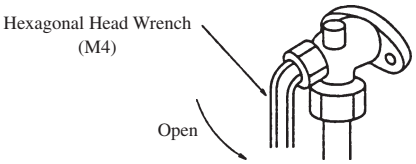


When a vacuum air purge is completed, remove the valve rod cap nuts and open the service valves (both liquid and gas sides) as illustrated below. After you have made sure that the valves are in the full-open position, lighten the cap nuts (for the valve rads and charge ports).



- You can purge air with either liquid operation valve or gas operation valve.

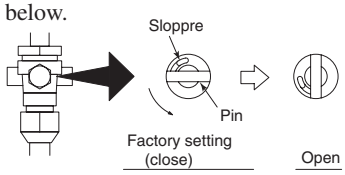
▶ Hexagonal wrench type



- Open the valve rod until it touches the stopper. You need not apply lorce to push it further.
- When an operation is completed, replace the cap nut and tighten it as before.

▶ Pin type (only case of FDCA301~601 models)

Remove the hexagon cap nut, set it as illustrated in the drawing below.



- When a pin setting operation is completed, replace the cap nut and tighten it as before.

(5) Refrigerant charge

(a) The outdoor unit is charged with enough refrigerant for a piping length of 30 m when it is shipped from the factory, and additional charging is not necessary in the case of a system with 30 m or piping or less.

(b) If the system's piping exceeds 30 m, charge with an amount of additional refrigerant corresponding to the additional length of piping in the system.

Item \ Model	Model 151, 201	Model 251	Model 301	Model 401	Model 501	Model 601
Factory Charge Amount (for 30 m of pipe) (kg)	1.55	1.75	3.15	3.9	3.2	3.9
Standard Charge Amount (for 15 m of pipe) (kg)	1.25	1.45	-	-	-	-
Additional Charge Amount (for each 1 m of piping) (kg/m)	0.020		0.040			

(Example) If the FDCA301 model is newly installed and the piping length is 45 m.

Additional Charge Amount: 0.60 kg = (45 – 30) m × 0.040 kg/m

(c) If the system is recharged during servicing, etc., recharge in accordance with the following.

1) Models 151, 201, 251

If the piping length is 15 m or less, recharge the system with the standard charge in the above table. If the piping length is greater than 15 m, charge with the standard charge plus an additional charge amount corresponding to the length of piping that exceeds 15 m.

(Example) If the model FDCVA151, with a piping length of 40 m is being recharged:

Recharge Amount: 1.75 kg = 1.25 kg + (40 – 15) m × 0.020 kg/m

2) Models 301~ 601

If the piping length is 30 m or less, recharge the system with the standard charge in the above table. If the piping length is greater than 30 m, charge with the factory charge amount plus an additional charge amount corresponding to the length of piping that exceeds 30 m.

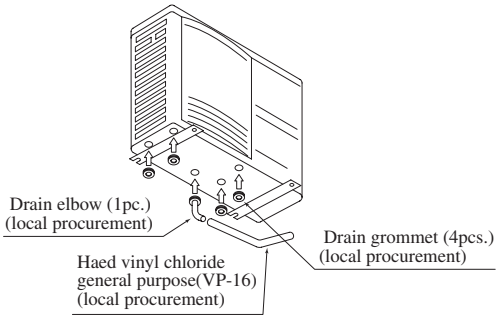
(Example) If the model FDCA601, with a piping length of 50 m is being recharged:

Recharge Amount: 4.7 kg = 3.9 kg + (50 – 30) m × 0.040 kg/m

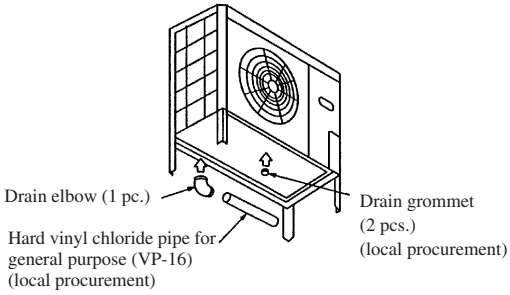
(6) Drain piping work

- ● Execute drain piping by using a drain elbow and drain grommets supplied separately as optional parts, where water drained from the outdoor units is a problem.
- ○ There are 3 (FDCVA 151~251: 5) drain holes provided on the bottom plate of an outdoor unit to discharge condensed water.
- ○ When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
- ○ Connect a drain elbow as shown in the illustration and close the other two drain holes with grommets.

Models FDCVA151~251



Models FDCA301~601



(7) 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.

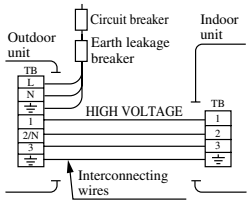
Table 2

Item / Model	Phase	Earth leakage breaker	Circuit breaker		Power source wires (minimum)	Interconnecting and grounding wires (minimum)
			Switch breaker (A)	Over-current protector rated capacity (A)		
FDCVA151HEN	1	15A, 30mA, 0.1 sec or less	30	15	2.0mm²	ø 1.6
FDCVA201HEN						
FDCVA251HEN						
FDCA301HEN		20A, 30mA, 0.1 sec or less		20	3.5mm²	
FDCA301HES	3	15A, 30mA, 0.1 sec or less		15	2.0mm²	
FDCA401HEN	1	40A, 30mA, 0.1 sec or less	40	40	5.5mm²	
FDCA401HES	3	15A, 30mA, 0.1 sec or less	30	15	3.5mm²	
FDCA501HES		20A, 30mA, 0.1 sec or less		20		
FDCA601HES						

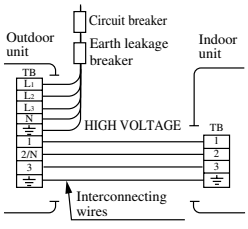
(b) Wiring connection.

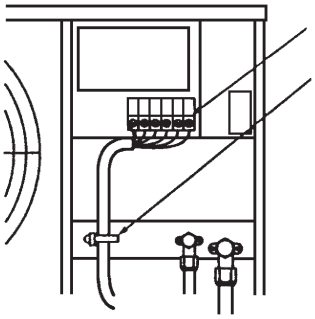
1) Connect the same terminal number between the Indoor unit and Outdoor unit as shown in the following diagram.
2) Secure the wiring with wiring clamp so that no external force is transmitted to the connecting portion of terminal.
3) There is a ground (Earth) terminal in the control box.

(a) 1 phase model



(b) 3 phase model





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.

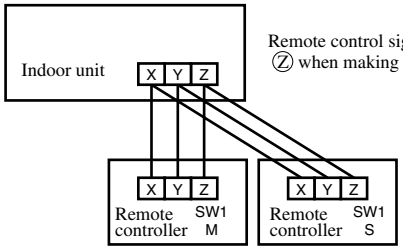
FD

(c) Remote controller wiring and connection procedure

1) Master-slave settings when using multiple remote controllers

- Up to 2 remote controllers can be connected for each indoor unit (or group).

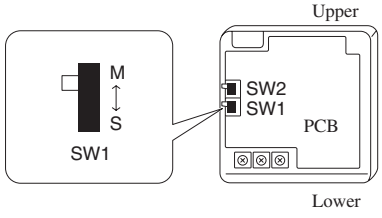
a) There are two methods, one where the remote controller signal line (3-wire) for the slave remote controller is taken from the indoor unit and the other where the signal lines are taken from the master remote controller.



b) Set the SW1 select switch on the slave remote controller on the Slave setting. (It is set on the Master setting at the factory.)

Note (1) Remote controller sensor activation settings are possible only with the master remote controller. Install the master remote controller in a location where it can sense the room temperature.

Switch		Function
SW1	M	Mastor remote controller
	S	Slave remote controller

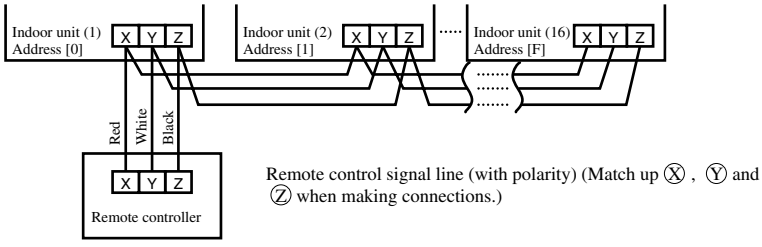


2) Controlling multiple indoor units using a single remote controller.

- Up to 16 indoor units can be controlled with a single remote controller.

a) Run 3-wire remote control lines between each of the indoor units. See “Cautions when extending remote control lines” on page concerning extended remote control lines.

b) Set the remote controller communications address on “0” ~ “F” using rotary switch SW2 on the indoor unit’s control board, taking care not to overlap the addresses of any of the units.



c) After turning the power on, press the AIR CON No. button to display the indoor unit’s address. Be sure to confirm that the settings are displayed correctly in the remote controller by using the ▲ and ▼ buttons to display the address of each connected indoor unit.

(9) Setting functions using the remote controller

(a) The default settings of this unit's functions are as follows: If you want to charge a setting, follow the procedure found in the installation manual and set to your desired setting.

For the method of setting, please refer to the installation manual of a remote controller unit.

① Remote controller unit functions (FUNCTION ▼)

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting
01	GRILLE SET (Grille lift panel setting)	INVALID	○
		50Hz AREA ONLY	
		60Hz AREA ONLY	
02	AUTO RUN SET	AUTO RUN ON	✻
		AUTO RUN OFF	
03	TEMP S/W	VALID	○
		INVALID	
04	MODE S/W	VALID	○
		INVALID	
05	ON/OFF ON/OFF S/W	VALID	○
		INVALID	
06	FANSPEED S/W	VALID	○
		INVALID	
07	LOUVER S/W	VALID	✻
		INVALID	
08	TIMER S/W	VALID	○
		INVALID	
09	SENSOR S/W (Remote control sensor setting)	SENSOR OFF (Invalid)	○
		SENSOR ON (Valid)	
10	POWER FAILURE COMPENSATION SET	INVALID	○
		VALID	✻
11	VENTI SET	NO VENTI	○
		VENTI LINK SET	
		NO VENTI LINK	○
12	TEMP RANGE SET	DISP CHANGE	
		NO DISP CHANGE	○
13	I/U FAN SPEED (Indoor unit fan speed setting)	3 FAN SPEED	✻
		2 FAN SPEED	
		1 FAN SPEED	
14	MODEL TYPE	HEAT PUMP	✻
		COOLING ONLY	
15	EXTERNAL CONTROL SET	INDIVIDUAL OPERATION	○
		SAME OPERATION FOR ALL UNITS	
16	ERROR DISP SET	ERROR DISP	○
		NO ERROR DISP	
17	POSITION (Louver control setting)	FIX (1 OF 4) (4 position stop)	○
		IN MOTION (Free stop)	
18	°C/°F SET	°C	○
		°F	

Notes(1) Setting marked with [○] are the default setting.
(2) Setting marked with [✻] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.
(3) When Item 17 : "POSITION" is changed, please also change Item 04 "POSITION" setting found in "Indoor unit functions".

② Indoor unit functions (I/U FUNCTION ▲)

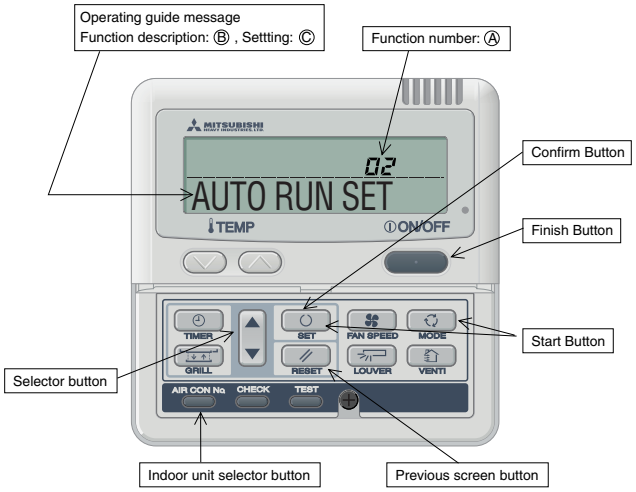
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting
01	Hi CEILING SET	STANDARD (Mild mode)	✻
		Hi CEILING 1 (Powerful mode)	
03	FILTER SIGN SET	NO DISPLAY	✻
		AFTER 180H	
		AFTER 600H	
		AFTER 1000H	
		1000H→STOP	
04	POSITION (Louver control setting)	FIX (1 OF 4) (4 positiion stop)	○
		IN MOTION (Free stop)	
05	EXTERNAL INPUT SET	LEVEL INPUT	○
		PULSE INPUT	
06	OPERATION PERMISSION PROHIBITED	NORMAL OPERATION	○
		VALID	
07	ROOM TEMP OFFSET (Heating room temperature offset)	NORMAL OPERATION	○
		TEMP SHIFT +3°C	
08	FAN CONTROL (Heating fan control)	LOW FAN	✻
		STOP→LOW FAN (Intermittent operation)	
09	FREEZE PREVENT TEMP	TEMP Hi	
		TEMP Lo	○
10	FREEZE PREVENT CONTROL	FAN CONTROL ON	○
		FAN CONTROL OFF	

Notes(1) Setting marked with [○] are the default setting.
(2) Setting marked with [✻] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.

(b) Function setting method

1) Stop the air conditioner
2) Press the SET and MODE buttons simultaneously for 3 seconds or longer.
   The screen display will be switched as follows:
   "SELECT ITEM" →
   "SET" →
   "FUNCTION SET ▼ "

3) Press the SET button.
   The unit will enter the function setting mode. The screen display will charge to " FUNCTION ▼".



4) Check which category your desired setting belongs to, " FUNCTION ▼ (Remote controller unit function)" or "I/U FUNCTION ▲" (Indoor unit function).
5) Press either ▲ or ▼ button.
   Select either " FUNCTION ▼ " or "I/U FUNCTION ▲".

6) Press the SET button.

When " FUNCTION▼ " is selected.

① "DATA LOADING" (blinking) → "FUNCTION"→
"01 GRILLE ↑↓ SET" (Function number: Ⓐ, Function description: Ⓑ)
The screen display will be switched like this.

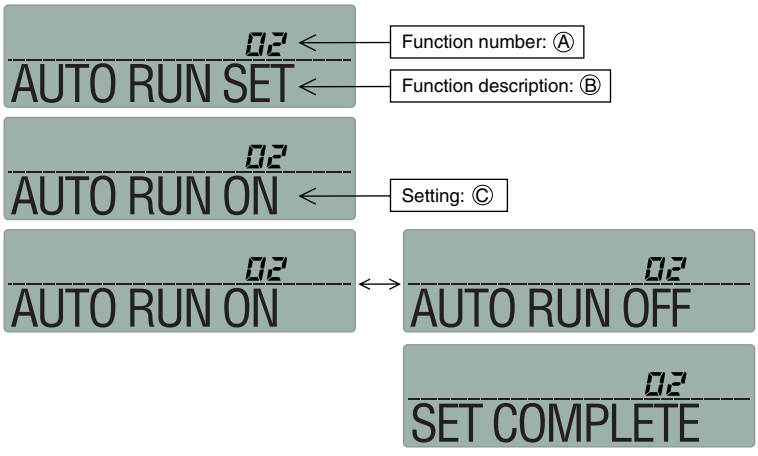
② Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ "from the list of remote controller unit functions will be displayed one by one. Select a desired function.

③ Press the SET button.
The screen display will be switched as follows:
"SETTING" → "Setting: Ⓒ" (ex. "AUTO RUN ON")

④ Press either ▲ or ▼ button.
A list of "Settings: Ⓒ" will be displayed one by one. Select your desired setting.

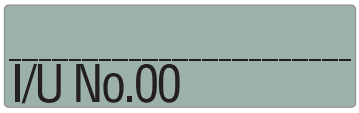
⑤ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be swiched to "Function number: Ⓐ, Function description: Ⓑ," so if you want to continue to set another function, repeat the steps as explained above.
To finish the function setting process, please proceed to Step (c).

* When "02 AUTO RUN SET " is selected.



When "I/U FUNCTION ▲" is selected.

① The screen display will be switched as follows:
"◆☝ I/U SELECT" → "○☝ SET" → "I/U No.00" (blinking)



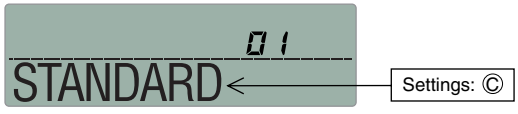
② Press either ▲ or ▼ button.
Select the indoor unit number that you want to change settings. If only one indoor unit is connected, the indoor unit number will not charge, so please proceed to Step ③.
If "ALL I/U ▼ " is selected while indoor group control is in effect, you can set all units to the same settings.

③ Press the SET button.
Indoor unit number indication will change from blinking to lit continuously, The screen display will be switched as follows:
"DATA LOADING" (blinking for about 2 to 23 seconds) → "◆☝ FUNCTION" → "01 Hi CEILING SET"
(Function number: Ⓐ, Function description: Ⓑ)

* When "01 Hi CEILING SET" is selected.

④ Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ" from the list of indoor unit functions will be displayed one by one. Select a desired function.

⑤ Press the SET button.
The screen display will be switched as follows: "◆☝ SETTING" → "Setting: Ⓒ" (ex. "STANDARD")



⑥ Press either ▲ or ▼ button.
A list "Setting: Ⓒ" will be displayed one by one. Select your desired setting.

⑦ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be switched to "Function number: Ⓐ, Function description: Ⓑ" so if you want to continue to set another function, repeat the stepa as explained above. To finish the function setting process, please proceed to Step 8.

⑧ Press AIR CON No. button.
The screen display will go back to the indoor unit selection screen (ex. " I/U No.00").
If you want to continue to set another indoor unit, please follow the steps explained above.

(c) Press the ON/OFF button.

This ends a function setting process. Even if a function setting process is not completed, this ends the process.
Please note that any setting that is not completed will become void.

- **Pressing the RESET button during a function setting process will allow you to go back the previous step. Please note that any setting that is not completed will become void.**
- **Method of checking the current setting**
  While following the above mentioned step, the setting that appears when the SET button is pressed for each "Function number: Ⓐ, Function description: Ⓑ" is the current setting "Stting: Ⓒ". (When "ALL I/U ▼" is selected, the setting of the indoor unit with the lowest number is displayed)
- **Settings are stored in the controller and not lost even a power outage occurs.**

(d) Changing the remote controller's temperature setting range

1) The temperature setting range of the remote controller can be changed.
   Through remote controller button operations, the upper limit and lower limit set temperature values can be changed individually.
   During heating operation, the changed upper limit value becomes valid and at times other than during heating operation, (during cooling, dehumidification, auto and fan operation), the changed lower limit value becomes valid.
   Range of Possible Changes
   Upper Limit Value: 22~30ºC (valid during heating) Lower Limit Value: 18 ~ 26ºC (valid at times other than during heating)
2) Operation
   a) With the remote controller in the stopped state, press the SET and MODE buttons simultaneously for 3 seconds or longer. The display will changed from " SELECT ITEM" → " SET" → "FUNCTION SET ▼ "
   b) Press the ▼ button once. The display will change to TEMP RANGE ▲ .
   c) Press the SET button to enter the temperature range setting mode.
   d) Using the ▲ or ▼ button, select "Hi LIMIT SET ▼ " or "Lo LIMIT SET ▲ ," the press the SET button.
   e) If "Hi LIMIT SET" is selected,
      ① The display changes from " SET UP" → "Hi LIMIT 22ºC " (flashing).
      ② Using the " " button, select the upper limit value. Display example: "Hi LIMIT 22ºC " (flashing)
      ③ Press the SET button to fix the setting. Display example: "Hi LIMIT 22ºC" (lighted up)
   f) If "Lo LIMIT SET" is selected,
      ① The display changes from " SET UP" → "Lo LIMIT 26ºC " (flashing).
      ② Using the " " button, select the upper limit value. Display example: "Lo LIMIT 26ºC " (flashing)
      ③ Press the SET button to fix the setting. Display example: "Lo LIMIT 26ºC" (lighted up)
   g) Press the ON/OFF button to end the setting procedure.
      (The procedure also ends if the ON/OFF button is pressed during the setting operation. However, settings which have not been fixed become invalid, so exercise caution.)

- If the RESET button is pressed during a setting operation, the display returns to the previously displayed setting screen. However, settings which have not been fixed become invalid, so exercise caution.
  * If "NO DISP CHANGE" is selected in No. 12, "TEMP RANGE SET" of the remote controller's functions, of the function setting modes, the remote controller's display does not change even if the temperature range has been changed.

(Example) If the upper limit is set at 28˚C

Function No. A	Function Contents B	Setting Contents C	Control Contents
12	TEMP RANGE SET	DISP CHANGE	The remote controller's display and sent data upper limit changes to 28°C.
		NO DISP CHANGE	The remote controller's display upper limit remains at 30ºC and only the upper limit of the sent data is changed to 28°C.

(10) Cooling Test Operation Procedure

Carry out the following test operation procedure using the remote controller.

(a) Starting the Cooling Test Operation

① Press the ON/OFF button to start operation.

② Press the MODE button and select "✳ (COOL)".

③ Press the TEST button continuously for 3 seconds or longer.
The display changes from " ◆ SELECT ITEM" → "○ SET" → " ✳ TEST RUN ▼ ".

④ When " ✳ TEST RUN ▼ " is displayed, press the SET button to begin the cooling test operation. The display shows " ✳ TEST RUN."

(b) Canceling the Cooling Test Operation

Pressing the ON/OFF button or the TEMP ▽ △ button ends the cooling test operation.
The " ✳ TEST RUN" display is cleared.

(11) Checking Operation Data

Operation data can be checked with remote controller unit operation.

① Press the CHECK button.
The display change from " ◆ SELECT ITEM" → "○ SET" → "OPERATION DATA ▼ ".

② Press the SET button while "OPERATION DATA ▼ " is displayed.

③ The display will change to "I/U No. 00 ▲ " (blinking indication).
Select the indoor unit number you want to have data displayed with the ▲ ▼ button.
(When only one indoor unit connected, the indoor unit number displayed on the screen will not change.)

④ Determine the indoor unit number will the SET button.
(The indoor unit number changes from blinking indication to continuous indication.)
"DATA LOADING" (A blinking indication appears while data is loaded)
↓
"OPERATION DATA ◆ " appears and data number 01 is displayed.

⑤ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from Data number 01.
The items displayed are as follows:
* Depending on models, the items that do not have corresponding data are not displayed.

⑥ To display the data of a different indoor unit, press the AIR CON No. button, which allows you to go back to the indoor unit selection screen.

⑦ Pressing the ON/OFF button will stop displaying data.

> Pressing the RESET button during remote controller unit operation will undo your last operation and allow you to go back to the previous screen.

Number	Data item	
01	✳	(Operation mode)
02	SET TEMP	
03	RETURN AIR	
04	I/U HEAT EXCH 1	(Indoor unit heat exchanger temperature 1)
05	I/U HEAT EXCH 2	(Indoor unit heat exchanger temperature 2)
07	I/U FAN	(Indoor unit fan speed)
11	TOTAL I/U RAN	(Indoor unit operation hours)
21	OUTDOOR	(Outside air temperature)
22	O/U HEAT EXCH 1	(Outdoor unit heat exchanger temperature 1)
23	O/U HEAT EXCH 2	(Outdoor unit heat exchanger temperature 2)
24	COMP HERTZ	
27	DISCHARGE	(Discharge pipe temperature)
28	DOME BOTTOM	
29	CT	
31	O/U FAN	(Outdoor unit fan speed)
32	SILENT MODE ON/OFF	
34	63H1 ON/OFF	
35	DEFROST ON/OFF	
36	TOTAL COMP RUN	(Compressor operation hours)
37	EEV 1	(Expansion valve opening 1)

(12) Test run

(a) Test run method

1) A test run can be initiated from an outdoor unit by using SW9 (SW2) and SW5-4 for on-site setting.

2) Models FDCVA151~251

When SW9 (press button switch) is pressed for 1 second and then released, the compressor will start operation approximately 5 seconds later.

Models FDCA301~601

Press SW2 (push-button switch) for one second. The compressor will start when the button is released. The compressor will stop when 30 minutes elaps.

3) The unit will start a cooling operation, when SW5-4 is OFF, or a heating operation, when SW5-4 is ON.

4) When a test run is completed, press SW9 (SW2) (push-button switch) again for one second and then release it.

Note (1) Items in ( ) show for the FDCA 301~601.

(b) Checking the state of the unit in operation

Check discharge pressure and suction pressure, using the check joint provided inside the outdoor unit and the gas charge valve charge port. The check joint in the unit is provided on the pipe connecting the four-way valva and the heat exchanger, and these points offer different pressure measurements depending on a cooling or heating operation as summarized in the table below.

	Check joint in the unit	Gas operation valve charge port
Cooling	Discharge pressure (high pressure)	Suction pressure (low pressure)
Heating	Suction pressure (low pressure)	Discharge pressure (high pressure)

(c) Setting SW5-1, SW5-2 on-site

1) Defrost conteol switching (SW5-1)

a) When this switch is turned on, the unit will run in the defrost mode more frequentiy.

b) Please set this switch to ON, when installed in a region where outdoor temperaure falls below zero during the season the unit is run for a heating operation.

2) Snow guard fan control (SW5-2)

a) When this switch is turned on, the outdoor unit fan will run for 10 seconds in every 10 minutes, when outdoor temperature falls to 3˚C or lower and the compressor is not running.

b) When the unit is used in a very snowy country, please set this switch to ON.

1.6 MAINTENANCE DATA

1.6.1 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 R410A is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called ice clogging.

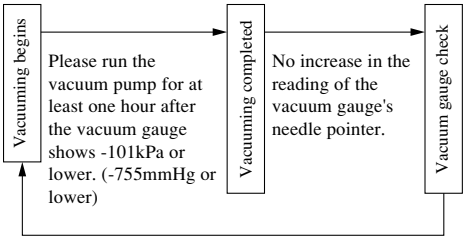
Evacuation procedure

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.

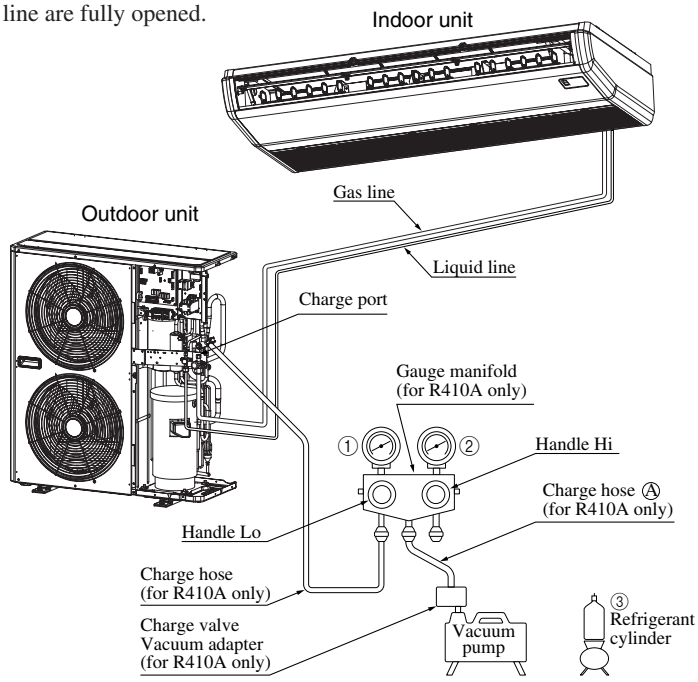
(b) Connect the charging hose of the gauge manifold to the service port of the gas piping.
Close high pressure valve ② of gange manifold.

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



When the vacuum gauge's needle pointer creeps up, there is moisture left in the system or a leak. Pull air again after you have checked the system for a leak and rectified it. Use a reverse flow stop adapter to prevent the vacuum pump's lubricant oil from flowing into the refrigerant system.

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.



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

(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.

1.6.2 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 / Circuit	Too low	A little low	Normal	A little high	Too high	
High side					●	1) Excessive overcharging of refrigerant
Low side					●	2) Mixture of non condensable gas (air etc.)
High side	●					Ineffective compression
Low side					●	(defective compressor)
High side		●				1) Insufficient refrigerant in circuit
Low side	●					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					●	1) Locking of outdoor unit fan (in cooling)
Low side				●		2) Dirty outdoor heat exchanger (in cooling) 3) Mixture of non condensable gas (air etc.)
High side				●		1) Too high temperature of room
Low side					●	

(1) Selfdiagnosis function

(a) Check Indicator Table

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

1) Indoor unit side

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause
	Green	Red	Green	Red	
No-indication	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Normal
	Stays OFF	Stays OFF	Stays OFF	Stays OFF	Power OFF, L phase wiring is open, power source failure
	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Indoor unit microcomputer failure
	Keeps flashing	*3 time flash	Keeps flashing	Stays OFF	Remote controller wires X and Y are reversely connected. *For wire breaking at power ON, the LED is OFF. Remote controller wire is open. (X wire breaking : A beep is produced and no indication is made. Z wire breaking : No beep and no indication) The remote controller wires Y and Z are reversely connected.
LCD flashes continuously or is off.	Keeps flashing	Stays OFF	Keeps flashing	2 time flash	Poor connection or disconnection in wires connecting the indoor and outdoor units.
E1	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	When multiple remote controllers are used for control, the power supply to some indoor units is OFF.
	Stay OFF or Lights continuously	Stay OFF	Keeps flashing	Stays OFF	Indoor unit PCB fault
	Keeps flashing	Stay OFF	Keeps flashing	Stays OFF	The remote controller wire Y is open. The remote controller wires X and Y are reversely connected. Noise is penetrating the remote control lines. The remote controller or indoor control PCB is faulty. (The communications circuit is faulty.)
E5	Keeps flashing	2 time flash	Keeps flashing	2 time flash	Indoor / outdoor transmission error.
	Keeps flashing	2 time flash	Stays OFF	Stays OFF	Outdoor unit control PCB is faulty when the power is turned on, or the inverter parts are faulty (FDCVA 151~251 type).
	Keeps flashing	2 time flash	Keeps flashing	Stays OFF	Outdoor unit microcomputer failure
E6	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit heat exchanger thermistor failure
E7	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit return air thermistor failure
E8	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Heating overload (indoor heat exchanger temperature is abnormally high) and indoor heat exchanger thermistor is faulty.
E9	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	The float SW operates (with FS only). Drain up kit wiring fault.
E10	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	When multi-unit control by remote controller is performed, the number of units is over (more than 17 units). Two remote controller are provided for one controller is performed.
E16	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Fan motor is faulty (FDTA 501, 601 type, FDKN type).
E28	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Remote controller thermistor failure

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

2) Outdoor unit side

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause
	Green	Red	Green	Red	
E32	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Wiring is open or reversal phase (FDCA 301~601 type)
E33	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Inverter primary side current is abnormal. (FDCVA151~251 type) Abnormal current cut of compressor (FDCA 301~601 type)
E34	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	52C secondary side L3-phase wiring is open. (FDCA 301~601 type)
E35	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor heat exchanger temperature is high or outdoor heat exchanger thermistor is faulty.
E36	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Discharge temperature abnormality.
E37	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor unit heat exchanger thermistor failure
E38	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor air temperature thermistor failure
E39	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Discharge pipe thermistor failure
E40	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	63H1 operation (FDCA 301~601 type)
E42	Keeps flashing	Stays OFF		1 time flash	Current (Abnormalities in a compressor over current)
E47	Keeps flashing	Stays OFF		1 time flash	Inverter Over-voltage Trouble. (FDCVA 151~251 type)
E48	Keeps flashing	Stays OFF		1 time flash	DC fan motor abnormal. (FDCVA 151~251 type)
E52	Keeps flashing	Stays OFF	Keeps flashing	Lights contiously	52C abnormal. (FDCA 301~601 type)
E56	Keeps flashing	Stays OFF		1 time flash	Power transistor thermistor is faulty or disconnection or connector connections are poor. (FDCVA 151~251 type)
E57	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Insufficient refrigerant.
E59	Keeps flashing	Stays OFF		1 time flash	Compressor startup error (FDCVA 151~251 type)
				2 time flash	
				3 time flash	
E60	Keeps flashing	Stays OFF		1 time flash	Compressor loader position detection error. (FDCVA 151~251 type)

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

FD

(b) Display sequence of error, inspection display lamp

1) One kind error
   Display corresponding to the error is shown.
2) More than one errors.

Section	Display section
Error code of remote controller	• Displays the error of higher priority (When plural errors are persisting) E1> E5> ..... E10 > E32 ..... E60 • Displays the present errors. (When a new error has occurred after the former error was reset.)
Inspection LED (red) of indoor unit PCB	
Inspection LED (red) of outdoor unit PCB	

3) Timing of error detection

● Indoor unit side.

Error detail	Error code	Timing of error detection
Drain error (float switch motion)	E9	Normally, 30 seconds after the power is turned ON.
Wrong connection between the indoor and outdoor units.	"Wait"	No communications even once with the outdoor unit.
Transmission error of remote controller indoor unit	E1	After 1 or more communications of the indoor unit with the remote controller following power on, transmission errors cause an interruption for 2 minutes.
Transmission error between indoor/outdoor units	E5	After communications with the outdoor unit 1 or more times, communications are abnormal continuously for 2 minutes.
The number of connected indoor units exceeds the connection limit (when multiple units are control by a single remote controller).	E10	Normally after the power is turned ON (during communications).
Broken wire of indoor unit return air thermistor	E7	When an input temperature of –50°C or lower is measured by the return air thermistor is measured for 5 seconds or longer within 60 minutes after the first detection.
Broken wire of heat exchanger thermistor	E6	When an input temperature of –50°C or lower is measured by the heat exchanger thermistor is measured for 5 seconds or longer within 60 minutes after the first detection.

● Outdoor unit side.

Error detail	Error code	Timing of error detection
Broken wire of outdoor air temperature thermistor	E38	When a thermistor input temperature of –30°C or lower is measured for 5 seconds or longer 3 times within 40 (60) minutes after the 1st detection between 2 minutes and 2 minutes 20 seconds after compressor operation starts.
Broken wire of heat exchanger thermister	E37	When a thermistor input temperature of –30°C or lower is measured for 5 seconds or longer 3 times within 40 (60) minutes after the 1st detection between 2 minutes and 2 minutes 20 seconds after compressor operation starts.
Broken wire of discharge pipe thermistor	E39	When a thermistor input temperature of –10°C or lower is measured for 5 seconds or longer 3 times within 40 (60) minutes after the 1st detection between 10 minutes and 10 minutes 20 seconds (between 2 minutes and 2 minutes 20 seconds) after compressor operation starts.
Broken wire of power transistor thermistor	E55	When the under-dome thermistor input temperature of –10°C is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection between 10 minutes and 10 minutes 20 seconds after compressor operation starts.

Notes (1) Values in ( ) show for the FDCA301~601 models.
(2) The power transistor temperature sensor is used in the FDCVA151~251 models only.

4) Recording and reset of error

Error display	Memory	Reset
Error code of remote controller	• Saves in memory the mode (1) of higher priority	• Stop the unit operation by pressing the ON/OFF switch of remote controller. • Operation can be started again if the error has been reset.
Indoor unit inspection lamp (red)	• Cannot save in memory	
Outdoor unit inspection lamp (red)	• Saves in memory the mode (1) of higher priority	

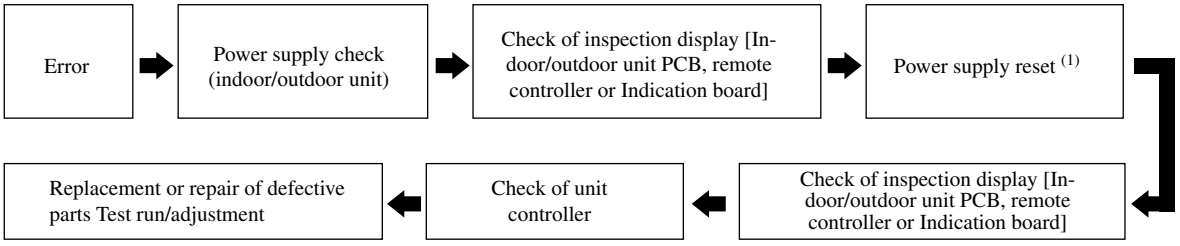
Notes (1) Priority is in the order of E1 > ... > E10 > ... > E60.

Indoor unit : Press the ON/OFF button on the remote controller. Or disconnect and reconnect the power supply connector (CNW1 or CNW0) on the indoor unit control PCB or turn the main power supply OFF.

Outdoor unit : Turn the main power supply OFF.

(2) Procedures of trouble diagnosis

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



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

(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 discoverd, 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

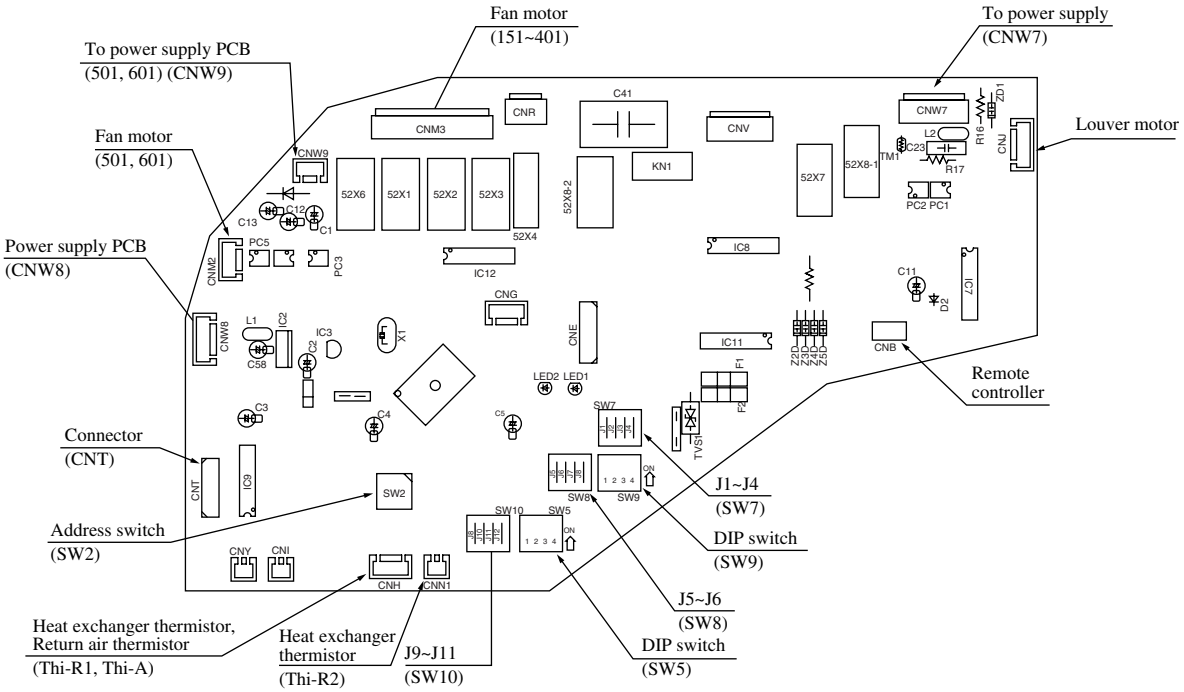
Microcomputer printed circuit board can be replaced with following procedure.

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

Model	Parts number	Model	Parts number
FDTA 151~401	PJA505A122ZD	FDKA 151~251	PHA505A018ZF
FDTA 501, 601	PJA505A122ZC	FDKA 301	PHA505A018ZG
FDE	PJA505A128ZF	FDUR	PJA505A131ZC

Parts layout on the indoor unit PCB

Model: FDT series



● Change by the jumper wire

Name		Function
J1 (SW7-1)	With	Input signal - Reverse invalid
	None (1)	Input signal - Run stop
J2 (SW7-2)	With	Heating thermostat OFF-Lo
	None (1)	Heating thermostat OFF-Stop, Lo
J3 (SW7-3)	With	Normal operation operable
	None (1)	Operation permission prohibited
J4 (SW7-4)	With	Normal
	None (1)	Heating temp. +3
J5 (SW8-1)	With	Louver free stop control - Invalid
	None (1)	Louver free stop control - Effective
J6 (SW8-2)	With	Freeze prevention fan control activated.
	None (1)	Freeze prevention fan control deactivated.

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

(2) The replacement board is not equipped with jumpers J1 ~ J6. Instead, SW7 and 8, with the same functions as jumpers J1~J6, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● Control change switch (SW5, SW9, SW10)

Function of DIP switch SW5 (Usually all turned OFF)

Switch				Function
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (when shipped from factory)

Function of DIP switch SW9 (Usually all turned OFF)

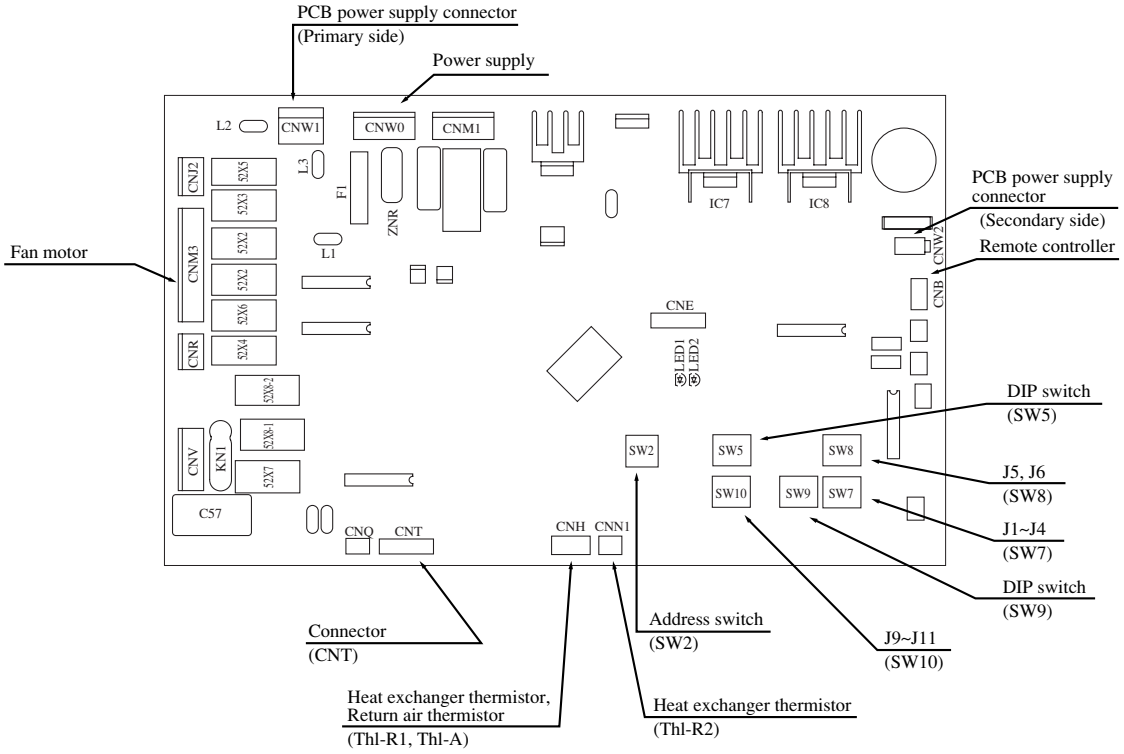
Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10 (Usually all turned OFF)

Switch				Function
SW10-1 (J9)			OFF	Auto swing function - None
			ON	Auto swing function - With
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

Model: FDEN series



● Change by the jumper wire

Name		Function
J1 (SW7-1)	With	Input signal - Reverse invalid
	None (1)	Input signal - Run stop
J2 (SW7-2)	With	Heating thermostat OFF-Lo
	None (1)	Heating thermostat OFF-Stop, Lo
J3 (SW7-3)	With	Normal operation operable
	None (1)	Operation permission prohibited
J4 (SW7-4)	With	Normal
	None (1)	Heating temp. +3
J5 (SW8-1)	With	Louver free stop control - Invalid
	None (1)	Louver free stop control - Effective
J6 (SW8-2)	With	Freeze prevention fan control activated.
	None (1)	Freeze prevention fan control deactivated.

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

(2) The replacement board is not equipped with jumpers J1 ~ J6. Instead, SW7 and 8, with the same functions as jumpers J1~J6, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● Control change switch (SW5, SW9, SW10)

Function of DIP switch SW5 (Usually all turned OFF)

Switch				Function
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (when shipped from factory)

Function of DIP switch SW9 (Usually all turned OFF)

Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

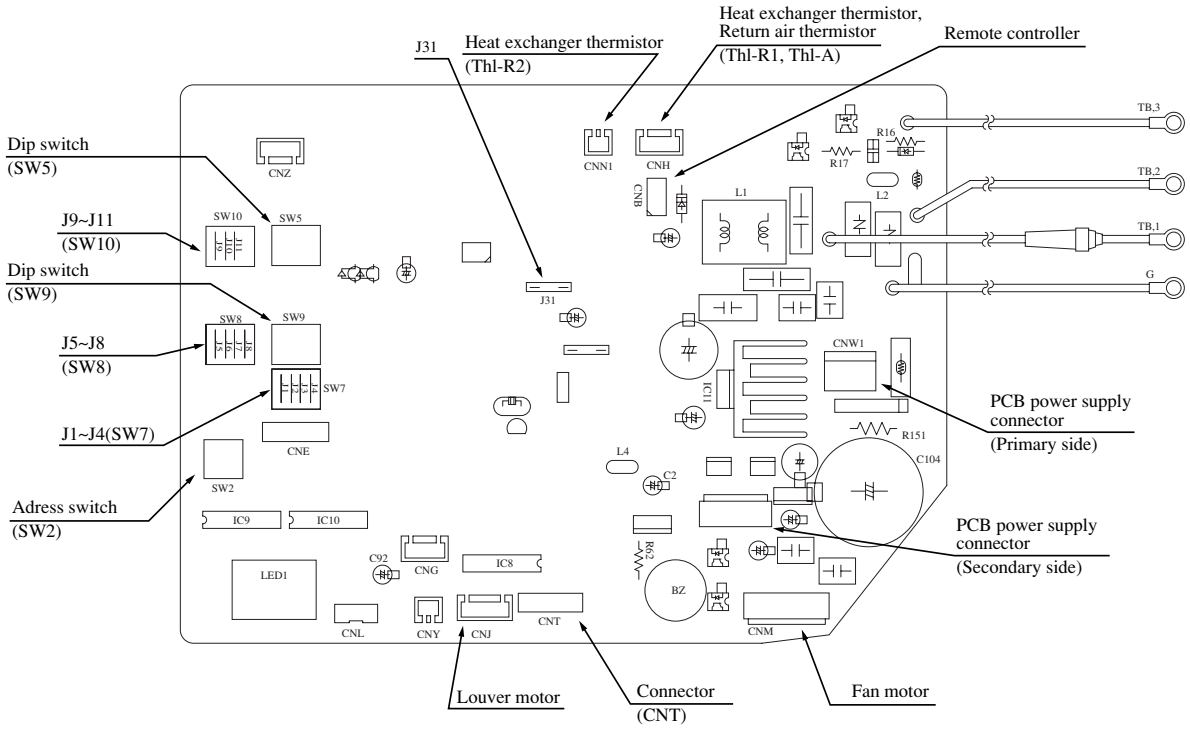
Function of DIP switch SW10 (Usually all turned OFF)

Switch				Function
SW10-1 (J9)			OFF	Auto swing function - None
			ON	Auto swing function - With
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

FD

Model: FDKN series

This diagram shows the PCB for the 151~251. The component layout on the 301 PCB is different, but the functions are the same.



● Change by the jumper wire

Name		Function
J1 (SW7-1)	With	Input signal - Reverse invalid
	None (1)	Input signal - Run stop
J2 (SW7-2)	With	Heating thermostat OFF-Lo
	None (1)	Heating thermostat OFF-Stop, Lo
J3 (SW7-3)	With	Normal operation operable
	None (1)	Operation permission prohibited
J4 (SW7-4)	With	Normal
	None (1)	Heating temp. +3
J5 (SW8-1)	With	Louver free stop control - Invalid
	None (1)	Louver free stop control - Effective
J6 (SW8-2)	With	Freeze prevention fan control activated.
	None (1)	Freeze prevention fan control deactivated.
J8 (SW8-4)	With	Model 151~251
	None (1)	Model 301
J31	With	Wireless remote controller
	None (1)	Wired remote controller

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

(2) The replacement board is not equipped with jumpers J1 ~ J8. Instead, SW7 and 8, with the same functions as jumpers J1~J8, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● Control change switch (SW5, SW9, SW10)

Function of DIP switch SW5 (Usually all turned OFF)

Switch				Function
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (when shipped from factory)

Function of DIP switch SW9 (Usually all turned OFF)

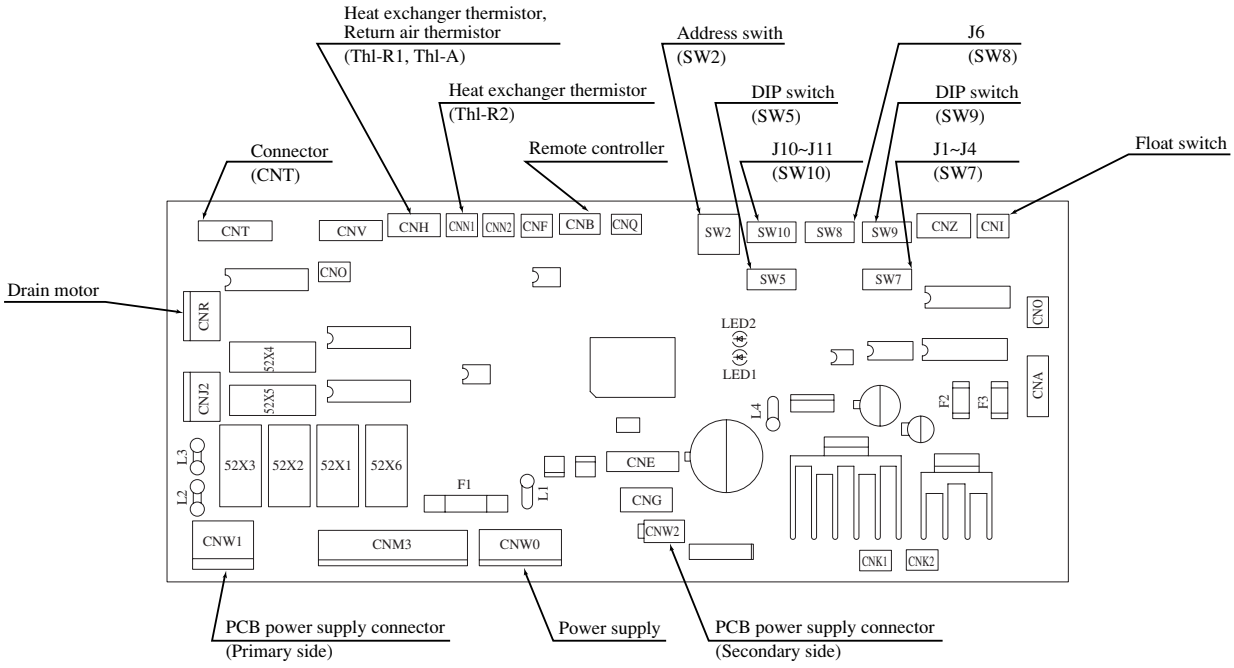
Switch		Function
SW9-1	OFF	Custom code - Change
	ON	Custom code - Normal
SW9-2	OFF	Power failure security - Effective
	ON	Power failure security - Invalid
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10 (Usually all turned OFF)

Switch				Function
SW10-1 (J9)	OFF	SW10-2 (J10)	OFF	Dryness operation: 120 minutes (Louver level)
			ON	Dryness operation: 60 minutes (Louver close)
	ON		OFF	Dryness operation: 120 minutes (Louver close)
			ON	Dryness operation: Invalid

Model: FDUR series



● Change by the jumper wire

Name		Function
J1 (SW7-1)	With	Input signal - Reverse invalid
	None (1)	Input signal - Run stop
J2 (SW7-2)	With	Heating thermostat OFF-Lo
	None (1)	Heating thermostat OFF-Stop, Lo
J3 (SW7-3)	With	Normal operation operable
	None (1)	Operation permission prohibited
J4 (SW7-4)	With	Normal
	None (1)	Heating temp. +3
J6 (SW8-2)	With	Freeze prevention fan control activated
	None (1)	Freeze prevention fan control deactivated

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

(2) The replacement board is not equipped with jumpers J1 ~ J4, J6. Instead, SW7 and 8, with the same functions as jumpers J1~J4, J6, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● Control change switch (SW5, SW9, SW10)

Function of DIP switch SW5 (Usually all turned OFF)

Switch				Function
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (when shipped from factory)

Function of DIP switch SW9 (Usually all turned OFF)

Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : High speed (High Ceiling)
	OFF	Fan control : Standard

Function of DIP switch SW10 (Usually all turned OFF)

Switch				Function
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

(c) Check method when the error code is display

Remote controller or Indication board: Inspection LED, error code

Indoor unit PCB: Red LED (inspection display), Green LED (CPU. normal display)

Outdoor unit PCB: ARed LED (inspection display), Green LED (CPU. normal display)

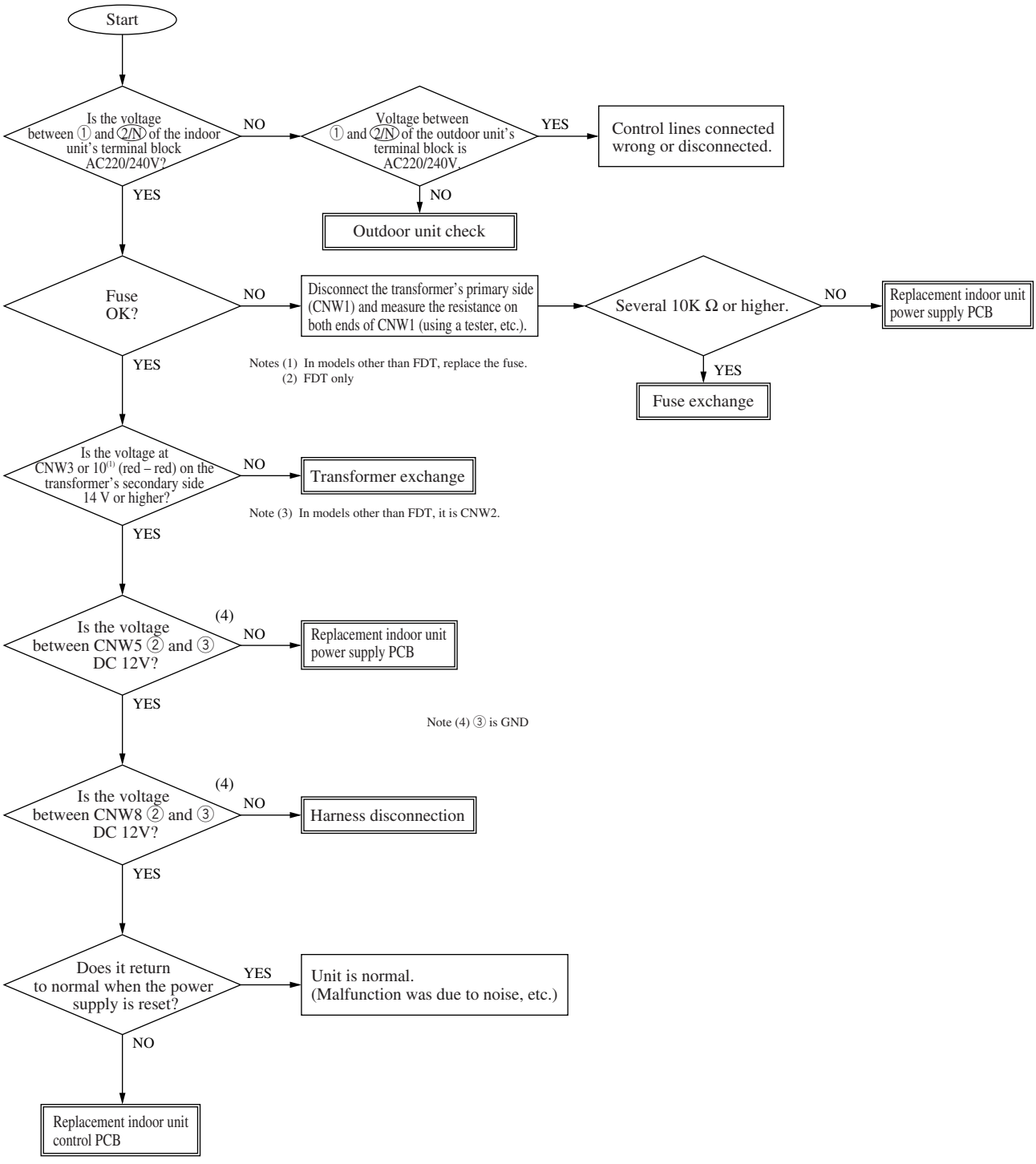
FD

1 **Error display : No display**
LCD display : No display

[Power supply line error]

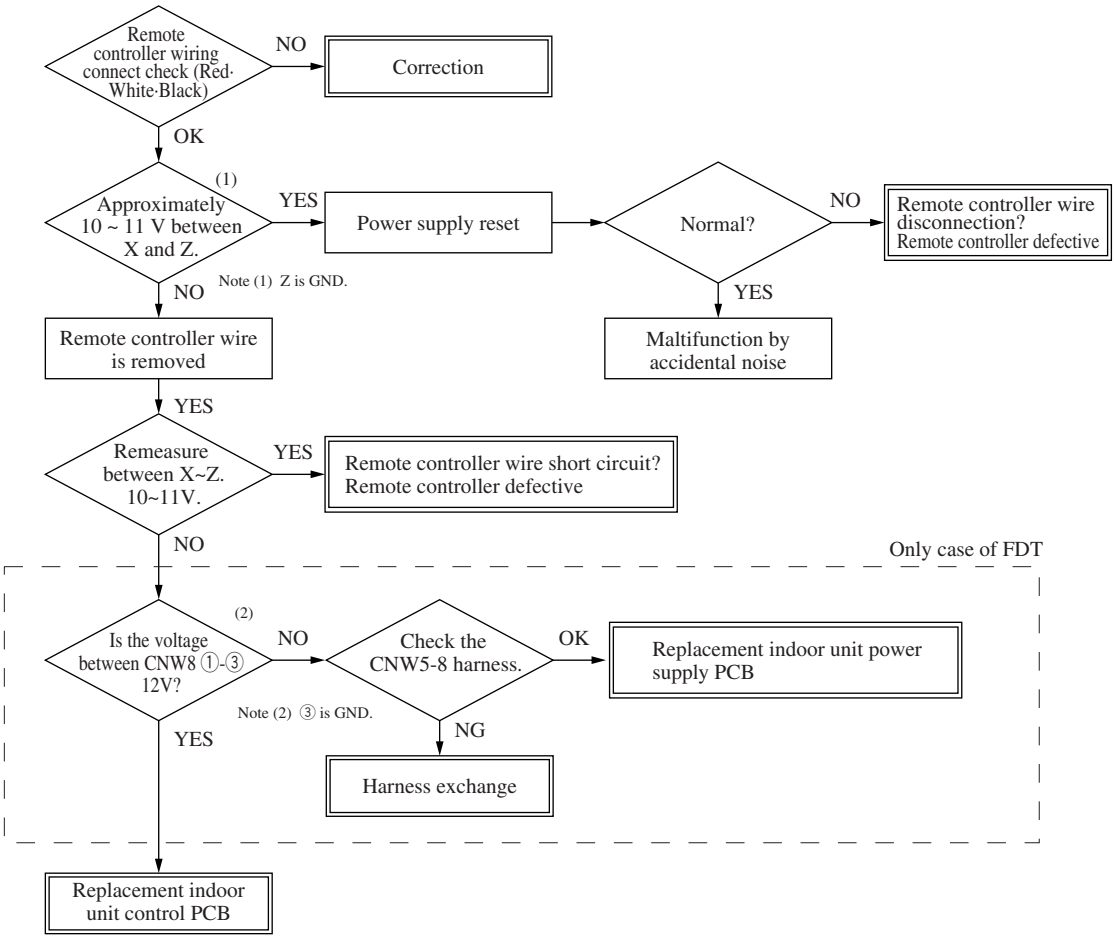
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Stays OFF	Green LED	Stays OFF

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



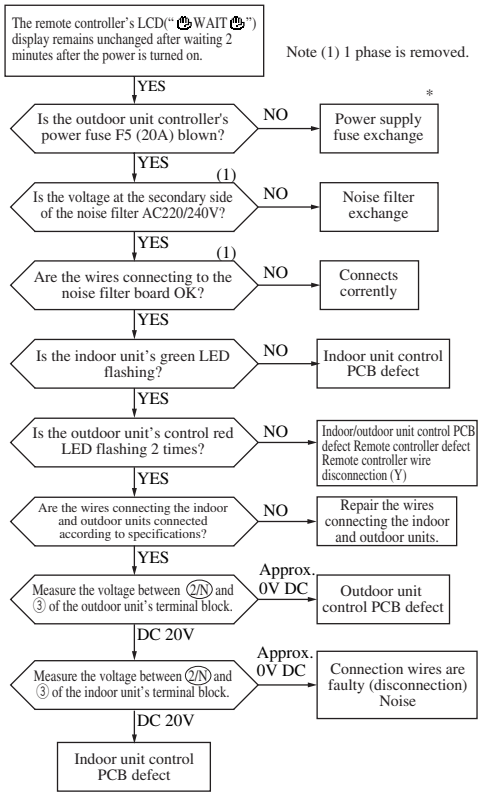
2 Error display "WAIT"

Indoor – outdoor communications trouble (Initial (when the power is turned on)

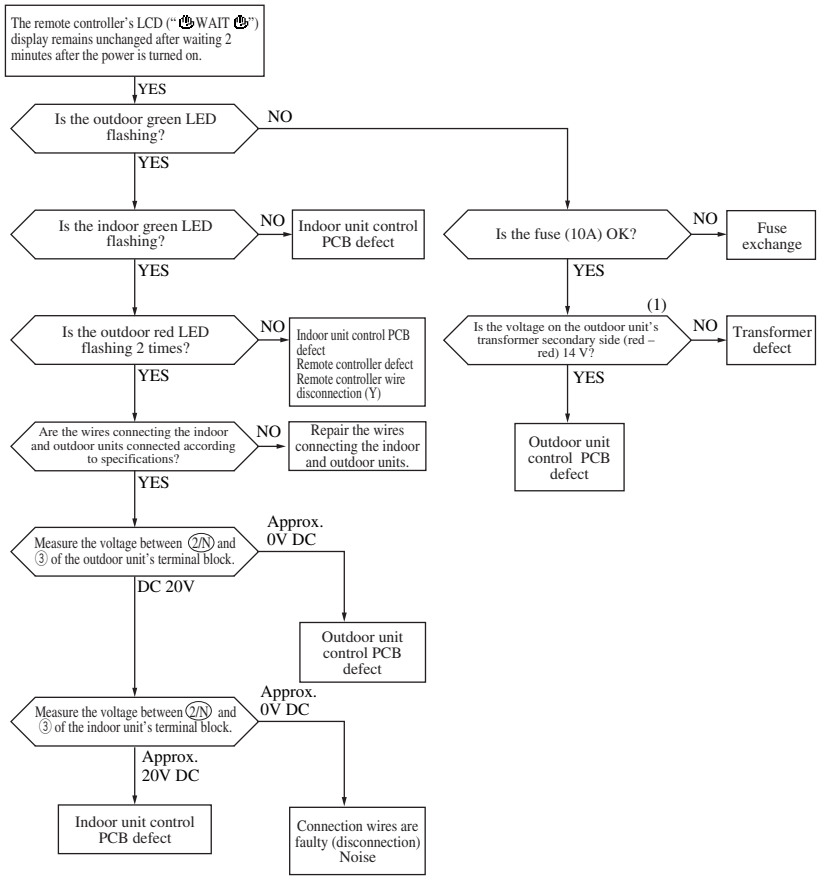
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	2 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

Notes (1) If trouble occurs during communications, the error code E5 is displayed (Outdoor, Red LED flashes 2 times). The check procedure is as shown below. (However, excluding connection related problems) Also, if the power supply is reset after E5 occurs, if the trouble is intermittent, it will be displayed in the LCD(" WAIT ").
(2) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

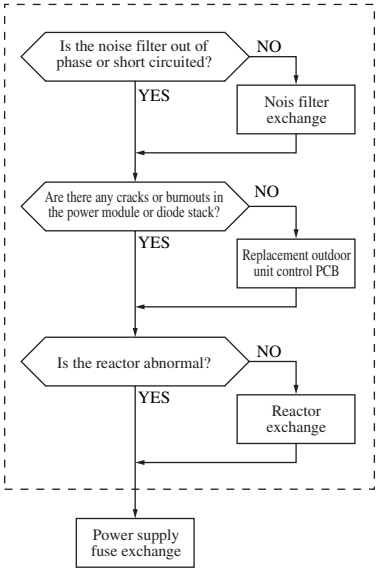
● 151~251

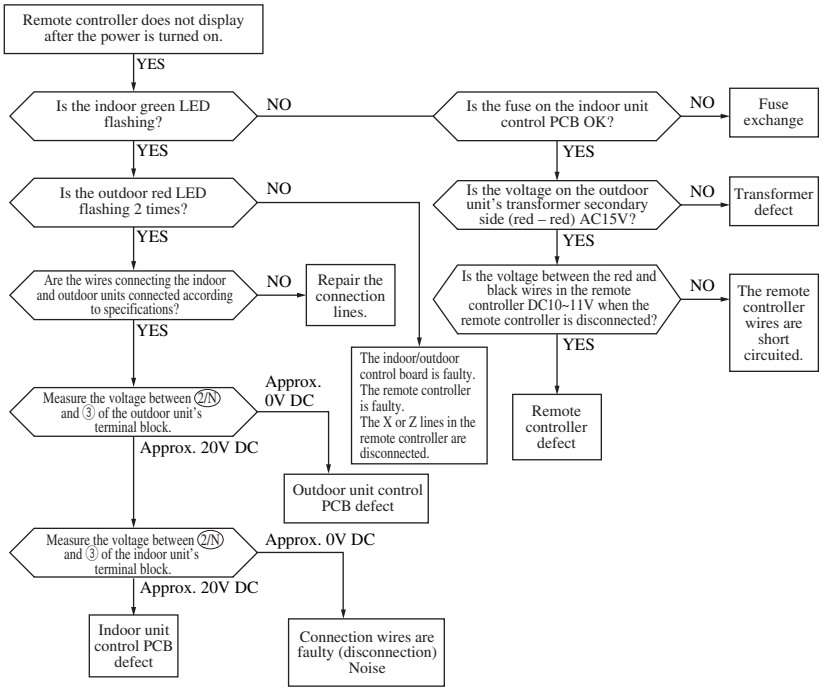


● 301~601



Inverter check before replacing the power supply fuse.

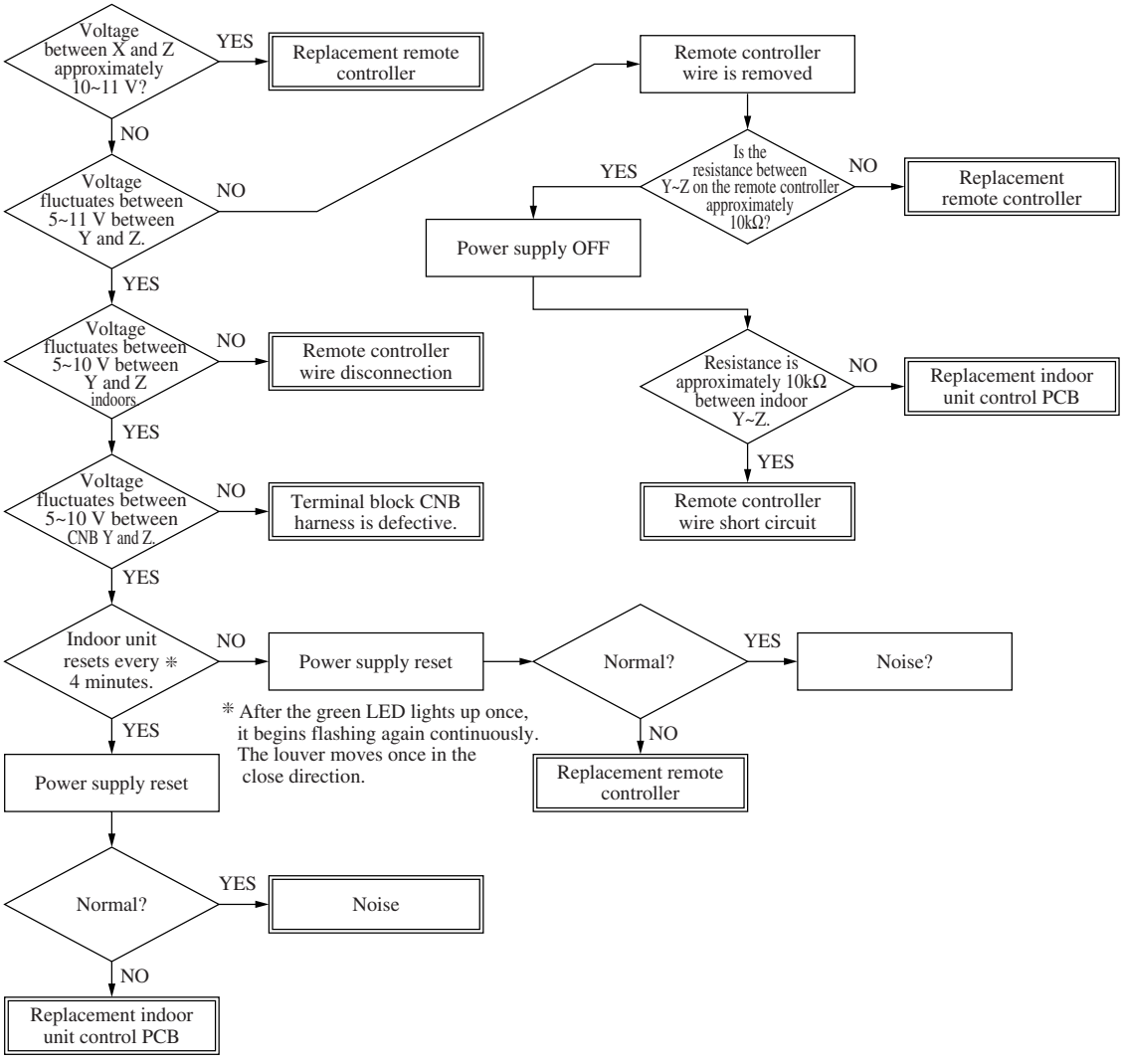




3 Error display : E1 [Communication error between remote controller~Indoor unit]

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

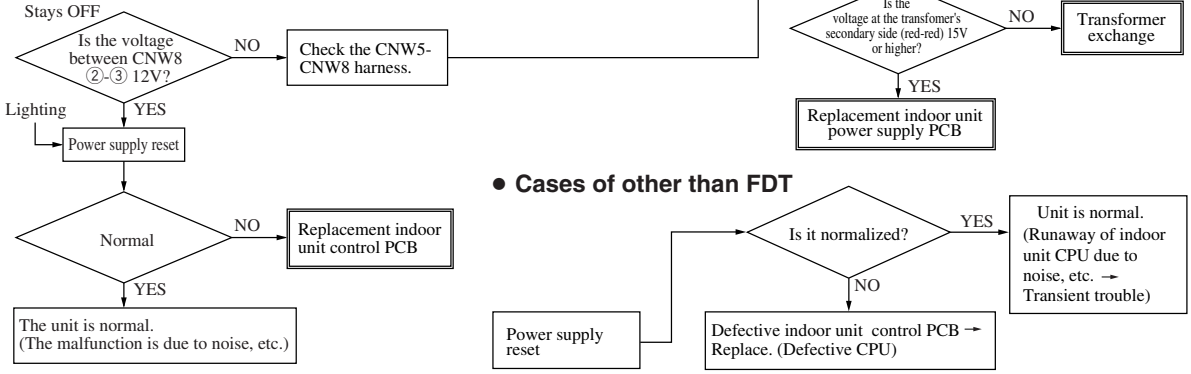
Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Stays OFF or Lights continuously	Green LED	Keeps flashing

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

● Only case of FDT

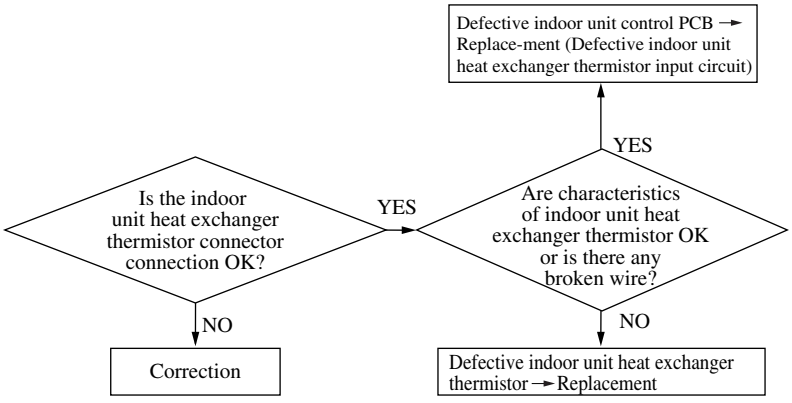


● Cases of other than FDT

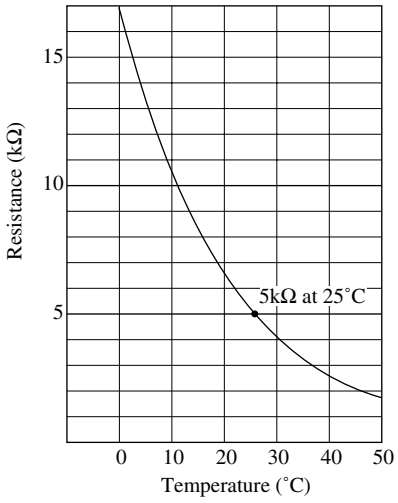
4 Error display : E6 [Defective indoor unit heat exchanger thermistor]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Return air thermistor (Th_R-A)
Indoor unit heat exchanger thermistor (Th_R1, R2)
Resistance temperature characteristics



Note (1) 22.5 kΩ at -6˚C

- Display condition

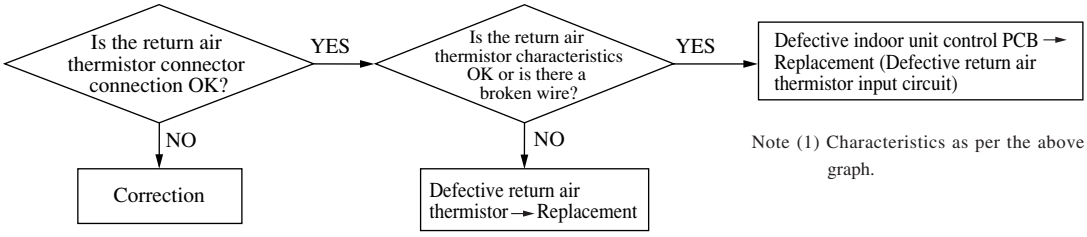
  If a temperature of –50ºC or lower is detected continuously for 5 seconds or longer by the thermistor, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected again within 60 minutes after the first detection.

---

5 Error display : E7 [Detective return air thermistor]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Note (1) Characteristics as per the above graph.

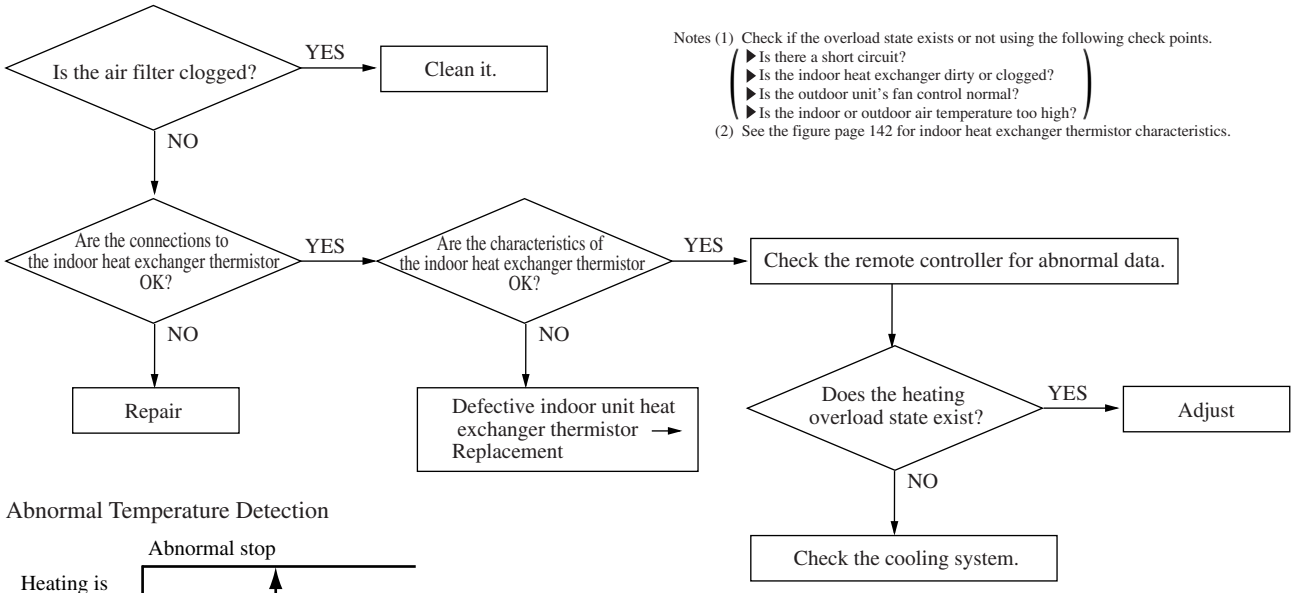
- Display condition

  If a temperature of –50ºC or lower is detected continuously for 5 seconds or longer by the thermistor, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected again within 60 minutes after the first detection.

6 Error display : E8 [Heating overload]

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

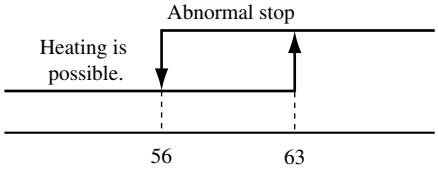
Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Notes (1) Check if the overload state exists or not using the following check points.
- Is there a short circuit?
- Is the indoor heat exchanger dirty or clogged?
- Is the outdoor unit's fan control normal?
- Is the indoor or outdoor air temperature too high?

(2) See the figure page 142 for indoor heat exchanger thermistor characteristics.

● Abnormal Temperature Detection



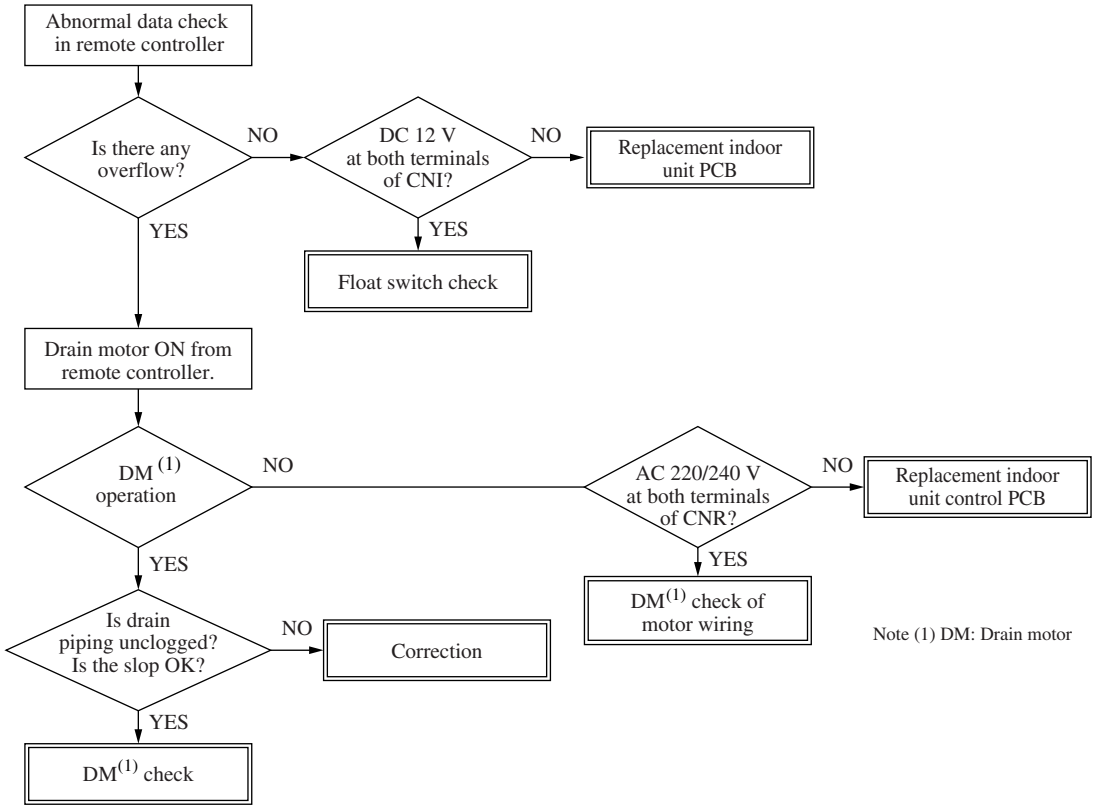
● Display condition

An abnormal stop occurs if this state is detected 5 times within 60 minutes of the first detection, or if the overload state is detected continuously for 6 minutes.

7 Error display : E9 [Drain trouble]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

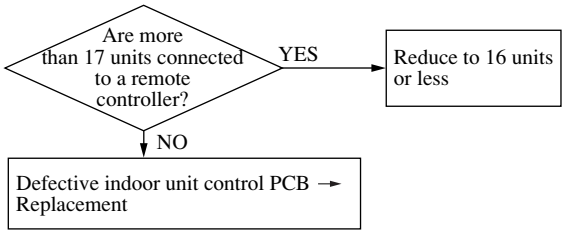


Note (1) DM: Drain motor

8 Error display : E10 [Control of 1 remote controller VS multiple units — Excessive number of units (more than 17 units)]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

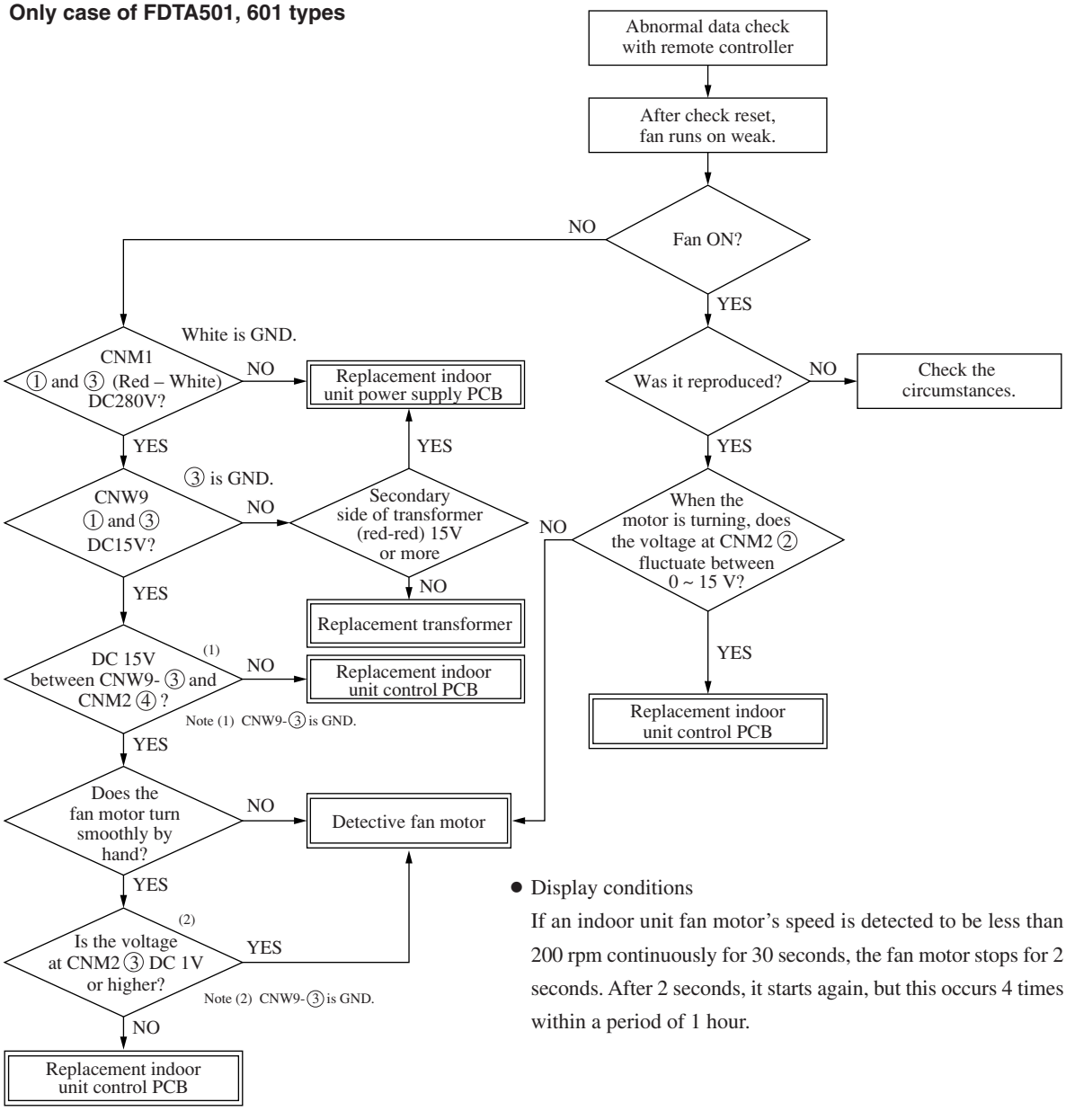


9 Error display : E16 [Fan motor abnormalities]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

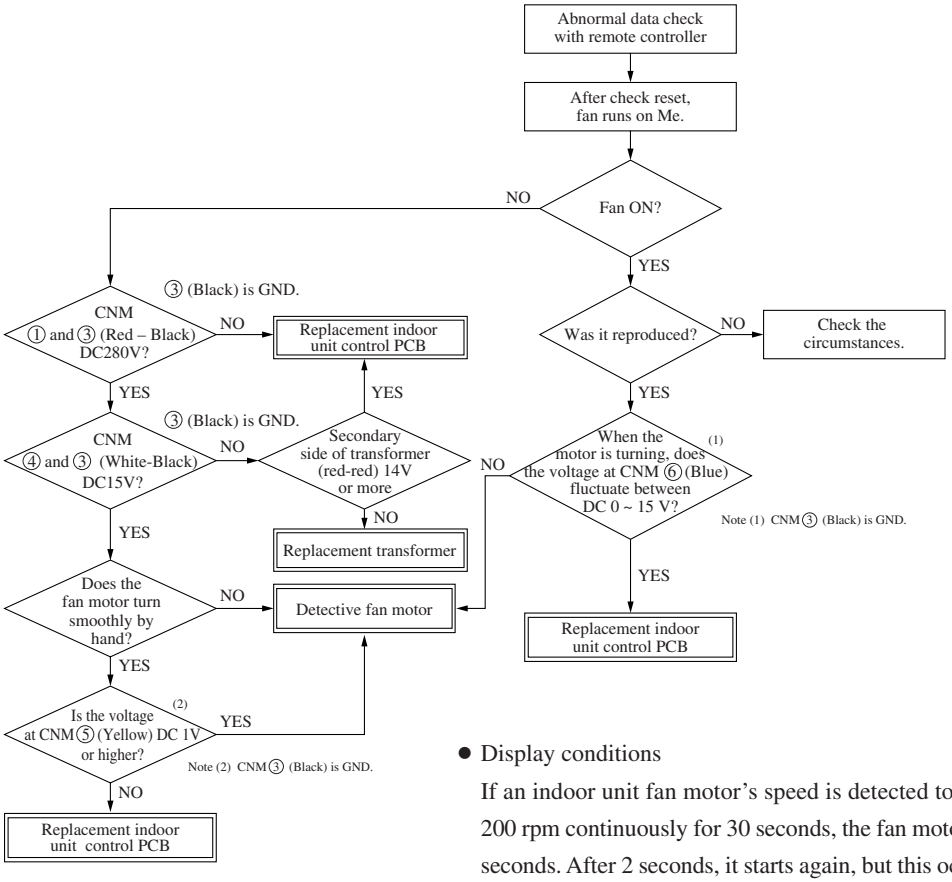
◆ **Only case of FDTA501, 601 types**



- Display conditions

  If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

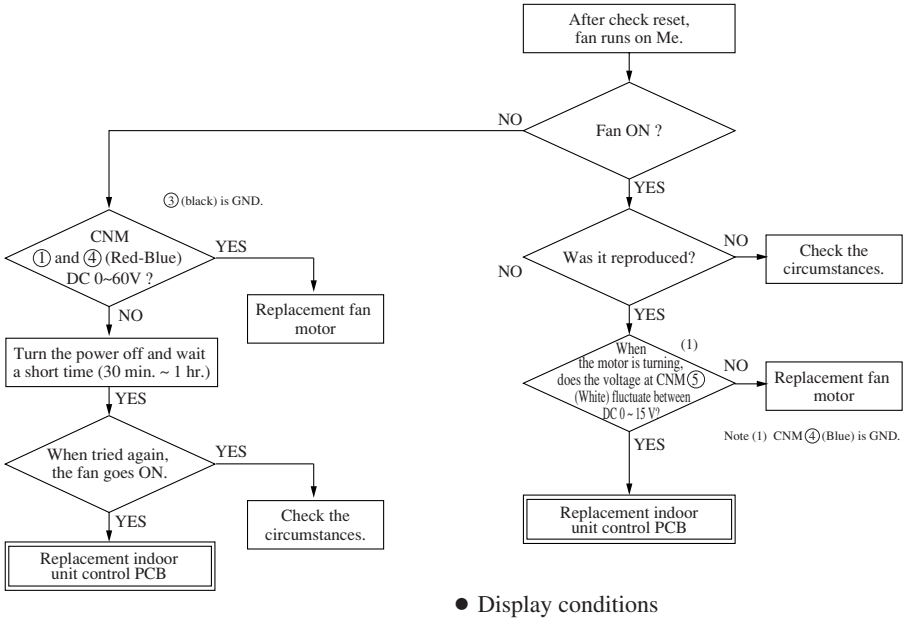
◆ **Only case of FDKN**
Only case of 151~251 types



- Display conditions

  If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

Only case of 301 type



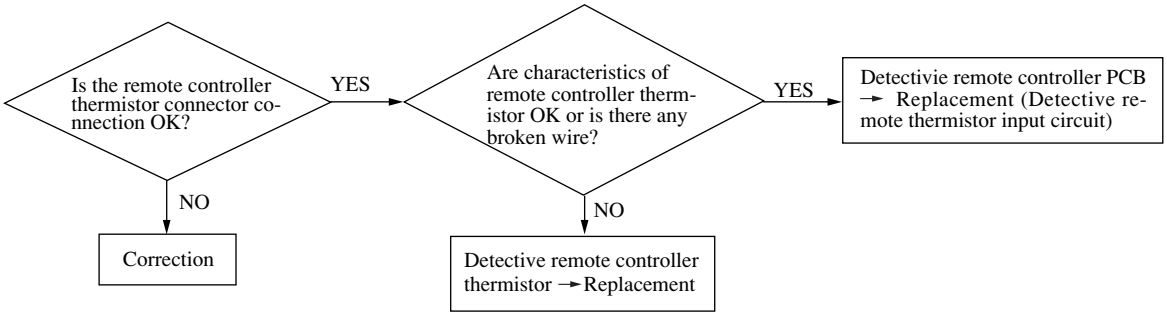
- Display conditions

  If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

10 Error display : E28 [Directive remote controller thermistor.]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Resistance-temperature characteristic of remote controller thermister

Temperrature(°C)	Resistance value (kΩ)	Temperrature(°C)	Resistance value (kΩ)	Temperrature(°C)	Resistance value (kΩ)	Temperrature(°C)	Resistance value (kΩ)
0	65	14	33	30	16	46	8.5
1	62	16	30	32	15	48	7.8
2	59	18	27	34	14	50	7.3
4	53	20	25	36	13	52	6.7
6	48	22	23	38	12	54	6.3
8	44	24	21	40	11	56	5.8
10	40	26	19	42	9.9	58	5.4
12	36	28	18	44	9.2	60	5.0

(4) Error diagnosis procedures at the outdoor units side

At the error diagnosis related to the outdoor unit, check at first the error code of remote controller and the illumination patterns of norma1 and inspection display lamps in the same manner as the case of indoor unit.
Then estimate the outline, the cause and the location of error based on the pattern and proceed to the inspcetion and repair.
Since the self diagnosis function by means of the microcomputers of indoor/outdoor units provide the judgement of error of microcomputers them selves irregularity power supply line, overload, etc. caused by the installation space, inadequate volume of refrigerant etc., the location and cause of trouble will be discovered without difficulty.
In addition, the display lamps error code of indoor/outdoor unit is kept flashing, (except when the power supply is iterrupted) after the irregularity is automatically recovered to give irregularity information to the service presonnel. If any mode of higher priority than the error retained in memory occurs after the reset of error, it is switched to that mode and saved in the memory.

(a) Replacement parts assembly related to the outdoor unit controller

Outdoor unit PCB, power transistor module, capacitor, noise filter, thermistor, (heat exchanger, discharge pipe, outdoor temperature, power transistor), fuse, transformer, etc.

(b) Replacement procedure of outdoor unit microcomputer printed circuit board.

Microcomputer printed circuit board can replaced with following procedure.

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

Parts No.	Applicable Model
PCA505A080Z	FDCVA151HEN, 201HEN, 251HEN
PCA505A065ZN	FDCA301HEN, 401HEN
PCA505A065ZS	FDCA301HES, 401HES, 501HES, 601HES

2) Set the model using the model setting switch (SW6). (In the case of the 151~251 only).
Switch Setting Table (All switches are set in the OFF position when shipped from the factory.)

Model	151	201	251
Switch Setting Table Set the switches ON or OFF for each switch No. (■ON, □OFF)	1: OFF, 2: OFF, 3: OFF, 4: ON	1: OFF, 2: ON, 3: OFF, 4: ON	1: OFF, 2: OFF, 3: ON, 4: ON

3) Set the overcurrent value using the overcurrent setting switch for CM (SW3). (In the case of the 301~601 only)
Switch Setting Table (All switches are set in the OFF position when shipped from the factory.)

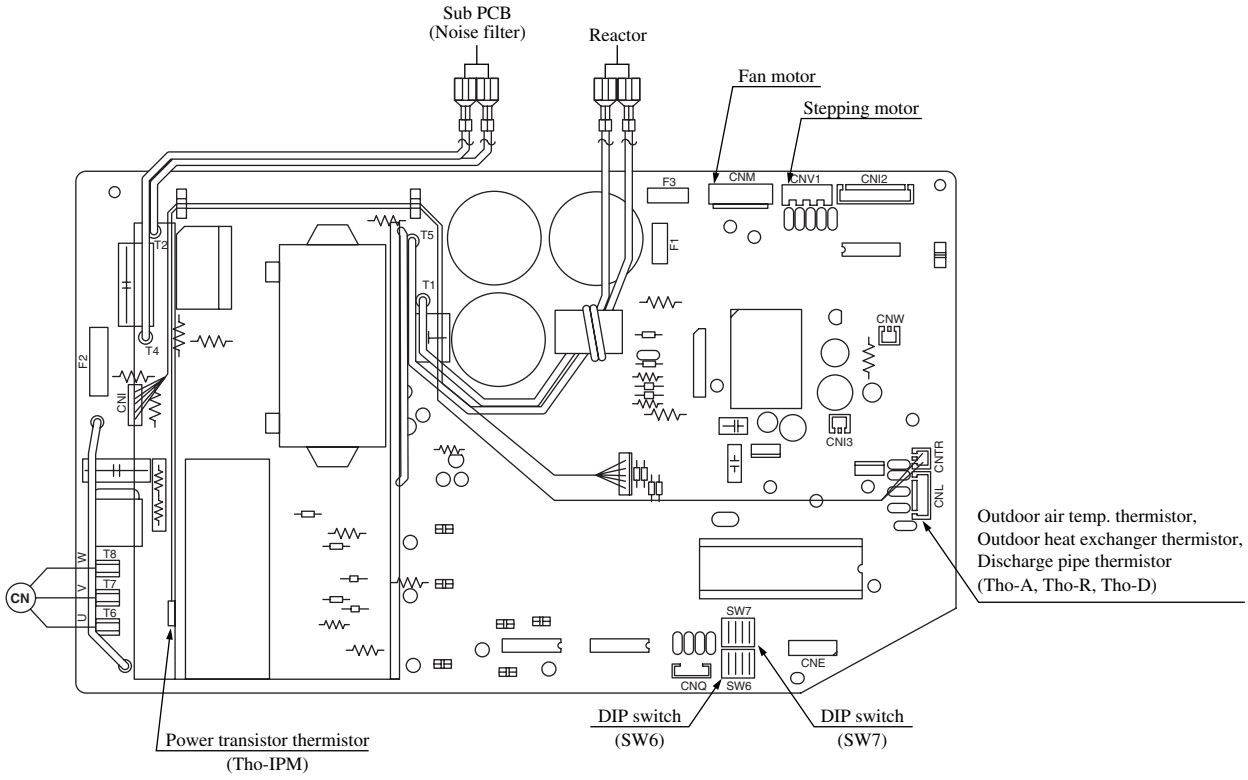
Model	301HEN	301HES	401HEN	401HES	501HES	601HES
Setting Value (A)	17	10	27	11	12	14
Switch Setting Table Set the switches ON or OFF for each switch No. (■ON, □OFF)	1: ON, 2: OFF, 3: OFF, 4: OFF, 5: OFF, 6: OFF	1: ON, 2: OFF, 3: OFF, 4: OFF, 5: OFF, 6: OFF	1: ON, 2: OFF, 3: ON, 4: OFF, 5: OFF, 6: OFF	1: ON, 2: OFF, 3: ON, 4: OFF, 5: OFF, 6: OFF	1: ON, 2: ON, 3: OFF, 4: OFF, 5: OFF, 6: OFF	1: ON, 2: ON, 3: ON, 4: OFF, 5: OFF, 6: OFF

4) Set the control select switch to match the previously set settings on the previous board.
If the previously set settings were set with jumper wires, the control select switch should be set in the ON position if there was a jumper wire and in the OFF position if there wasn't a jumper wire.
5) Connect the faston terminals and connectors to the control board.
When connecting the wires to the faston terminals, connect each wire to the terminal printed with the same color on the board.

Note (1) When connecting the faston terminals to the control board, connect them so that there is no deformation of the far end of the circuit board.

Parts layout on the outdoor unit PCB

◆ **FDCVA151~251 type**



● Change by the jumper wire

Model	151	201	251
JA1 (SW7-1)	None	None	None
JA5 (SW6-1)	None	None	None
JA6 (SW6-2)	None	With	None
JA7 (SW6-3)	None	None	With
JA8 (SW6-4)	With	With	With

Notes (1) "None" means that jumper wire is not provided on the PCB or the connection is cut
(2) The replacement PCB is not equipped with jumper wires JA1 and JA5~JA8. Instead, SW6 and 7 are mounted in the same position and have the same functions as jumper wires JA1 and JA5~JA8. Carry out the local settings in accordance with the table using SW6 and 7.

● Function of DIP switches (SW5) (Usually all turned OFF)

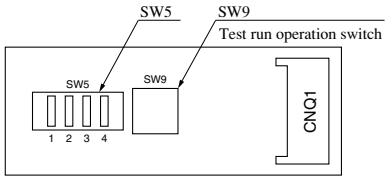
Switch		Function
SW5-1	ON	Defrost Setting Select For cold regions.
	OFF	Normal
SW5-2	ON	Snow-guard fan control-Effective
	OFF	Snow-guard fan control-Invalid
SW5-3	ON	Low refrigerant protection control-Effective
	OFF	Low refrigerant protection control-Invalid
SW5-4	ON	Test run operation-Heating
	OFF	Test run operation-Cooling

● Change by the JA3

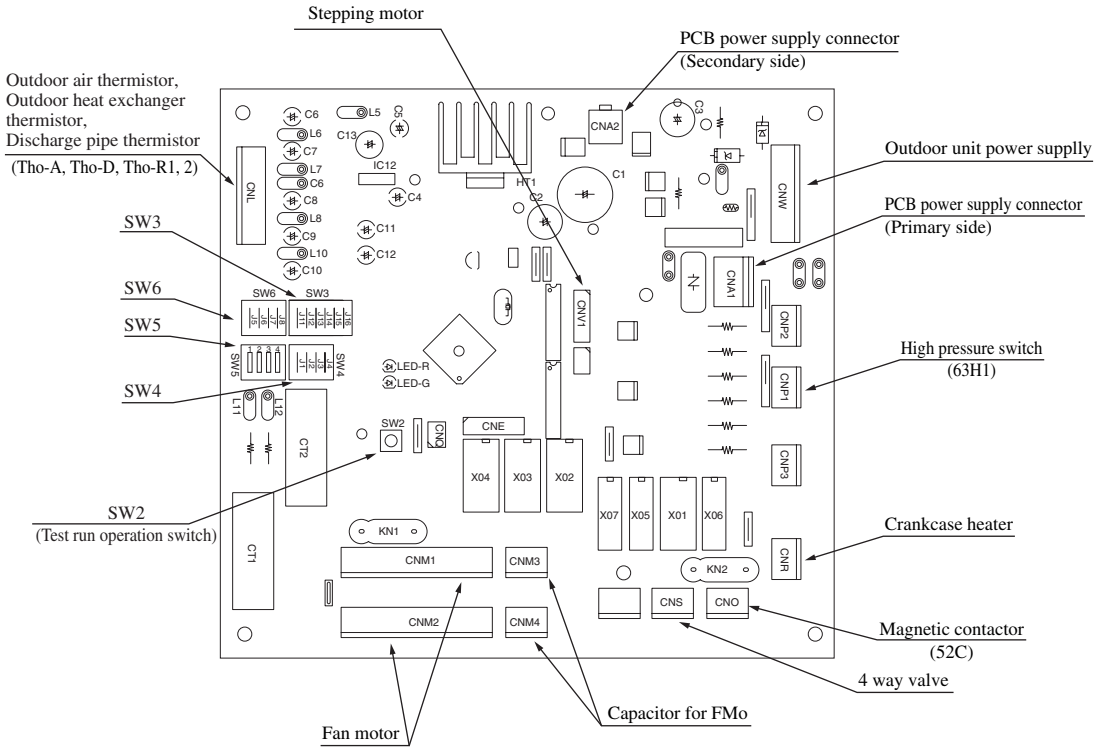
Switch		Function
JA3 (SW7-3)	with	Model selection-Energy saving
	None	Model selection-Standerd

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

External PCB



◆ FDCA301~601 type



● Change by the jumper wire

Switch		Function
J1 (SW4-1)	with	1 Phase
	None(1)	3 Phase
J2 (SW4-2)	with	Cooling
	None(1)	Heating
J6 (SW6-2)	with	Defrost recovery temperature 14ºC
	None(1)	Defrost recovery temperature (See page 88)
J7 (SW6-3)	with	Defrost prohibited temperature 45 min.
	None(1)	Defrost prohibited temperature 37 min.
J8 (SW6-4)	None(1)	—

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

(2) The replacement board is not equipped with jumper wires JA1~JA8. Instead, SW4 and 6 are mounted in the same position and have the same functions as jumper wires JA1~JA8. Carry out the local settings in accordance with the above table using SW4 and 6.

● Function of DIP switches (SW5) (Usually all turned OFF)

Switch		Function
SW5-1	ON	Defrost Setting Select For cold regions.
	OFF	Normal
SW5-2	ON	Snow-guard fan control-Effective
	OFF	Snow-guard fan control-Invalid
SW5-3	ON	Low refrigerant protection control-Effective
	OFF	Low refrigerant protection control-Invalid
SW5-4	ON	Test run operation-Heating
	OFF	Test run operation-Cooling

● Overcurrent Setting

Model	301HEN	301HES	401HEN	401HES	501HES	601HES
Setting Value (A)	17	10	27	11	12	14
J11 (SW3-1)	With	With	With	With	With	With
J12 (SW3-2)	None(1)	None(1)	None(1)	None(1)	With	With
J13 (SW3-3)	None(1)	None(1)	With	With	None(1)	With

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

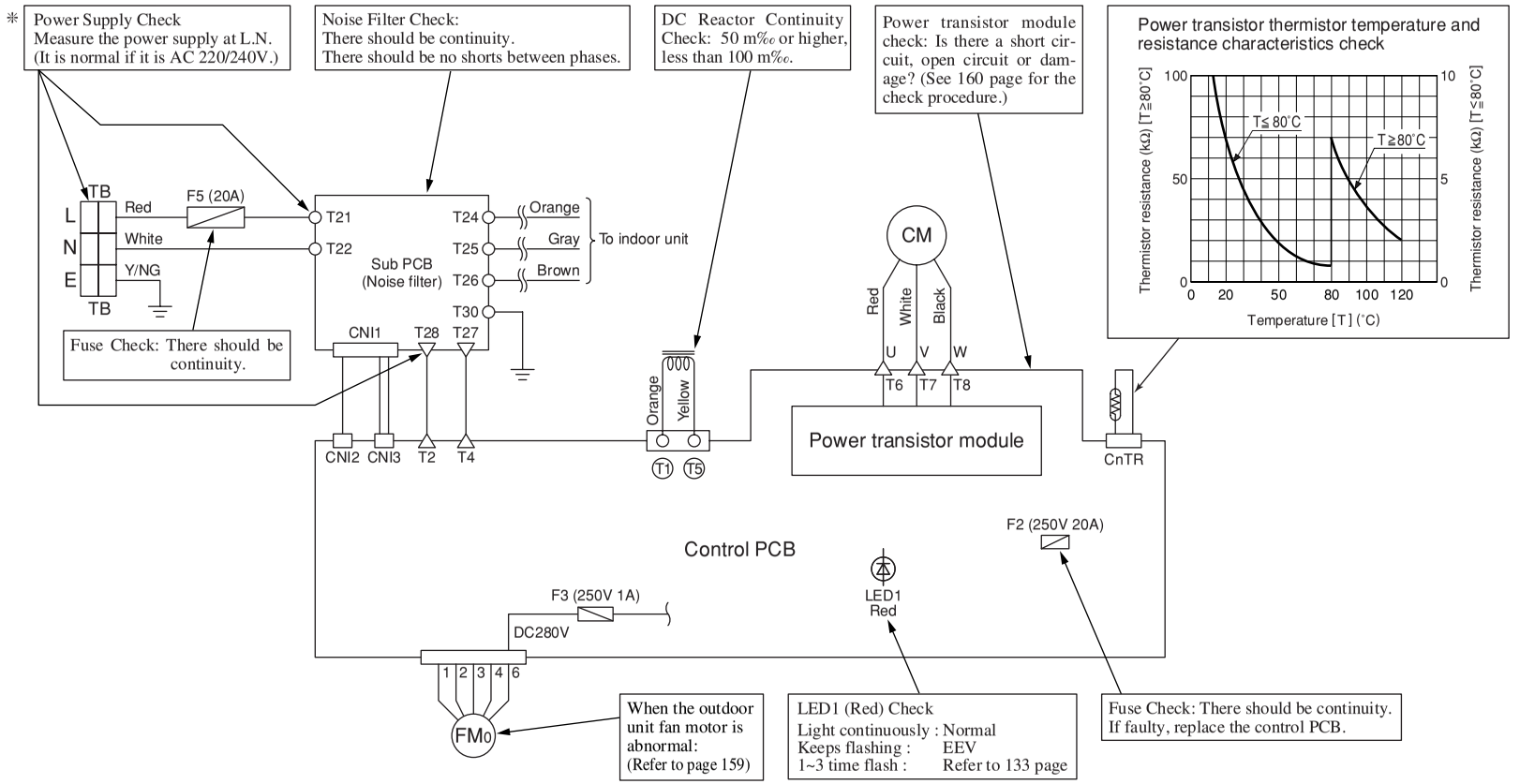
(2) The replacement board is not equipped with jumper wires J11~J13. Instead, SW3 is mounted in the same position and has the same functions as jumper wires J11~J13. Carry out the local settings in accordance with the above table using SW3.

(3) The overcurrent setting value becomes the above setting value (A) automatically in accordance with the settings on J11(SW3-1) ~ J13(SW3-3) and J1(SW4-1).

Outdoor Unit controller failure diagnosis circuit diagram

◆FDCVA151~251 type

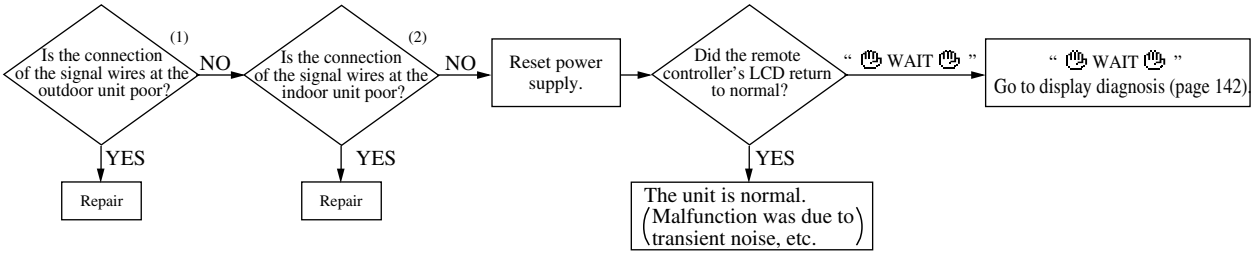
● Outdoor unit check points
Check items with the *mark when the power is ON.



1 Error display : E5 [Communications error during operation]

Indoor unit		Outdoor unit	
Red LED	2 time flash	Red LED	2 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

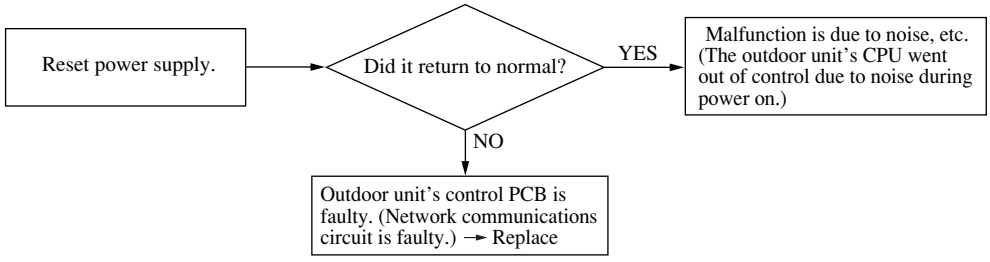
Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



Notes (1) Check for poor connections (disconnection, looseness) on the outdoor unit's terminal block.
(2) Check for poor connections or disconnection of the signal lines between the indoor and outdoor units.

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



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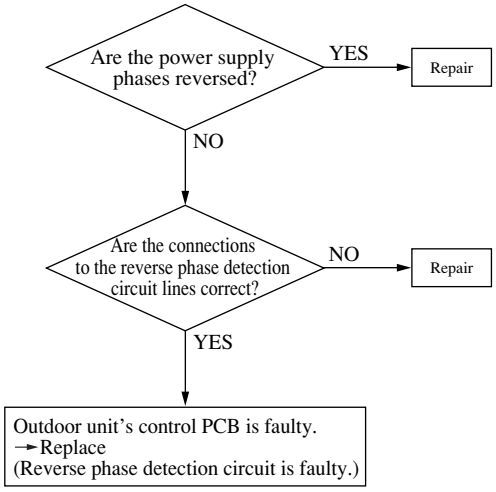
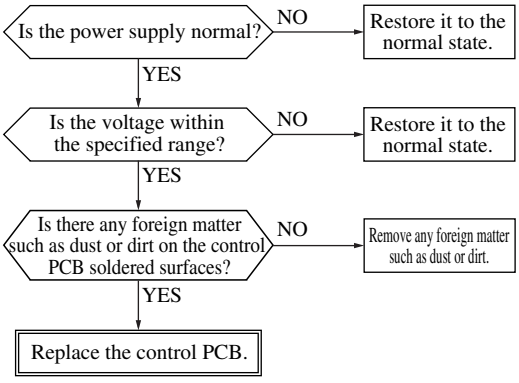
2 Error display : E32 [Power supply phases reversed] [Only case of 301~601 type]

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



3 Error display : E33 [Inverter primary current abnormal] [Only case of 151~251 type]

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

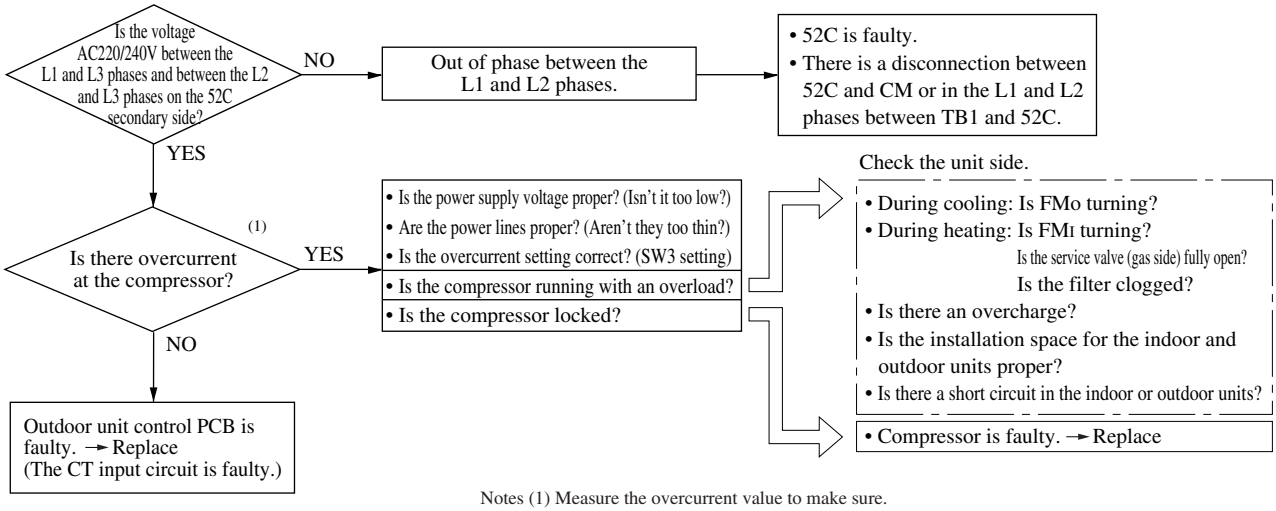


- Display Conditions

  If the inverter's primary current exceeds the set value for 3 seconds, the compressor stops. After a 3 minute delay, it restarts, but when this occurs 5 times within 60 minutes.

[Compressor overcurrent trouble] [Only case of 301~601 type]

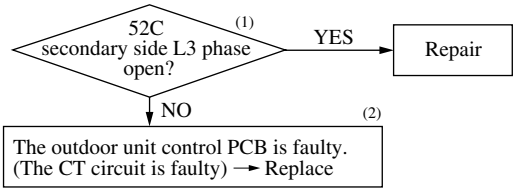
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing



Notes (1) Measure the overcurrent value to make sure.
Also make sure the overcurrent setting set with SW3 and SW4-1 on the outdoor unit control PCB is not incorrect.

4 Error display : E34 [Open phase at L3 phase of 52C secondary side] (Only case of 301~601 type)

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



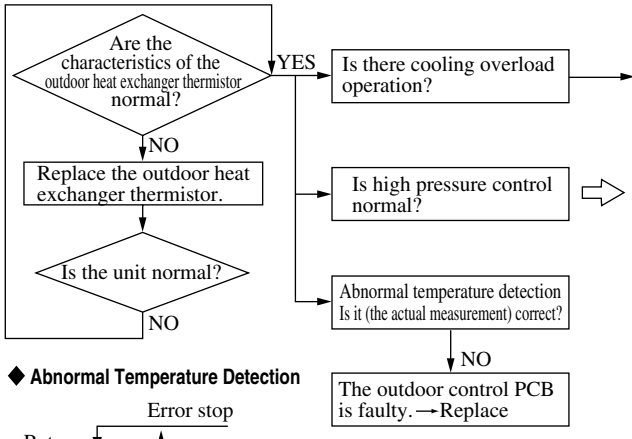
Notes (1) Also check if there is voltage at the L3 phase on the 52C primary side, but no voltage on the secondary side (coil wire disconnection or faulty contacts).
(2) If there is voltage at the L3 phase on the 52C primary side and it is not abnormal, the outdoor unit control PCB is faulty.

If the unit is operated with the service valve closed, 49C (internal thermostat) operates. E34 may also be displayed. Check the service valve.

5 Error display : E35 [Cooling overload operation]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



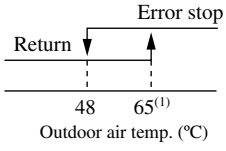
Check the unit side.
- Is there a short circuit in the outdoor unit?
- Is the installation space proper?
- Is the refrigerant level too high?
- Is the heat exchanger dirty or clogged?

(1) The compressor's speed drops when all the following conditions are met (151~251). In the case of the 301~601, expansion valve control is performed.
① Outdoor heat exchanger temperature: A˚C or higher
② Outdoor air temperature: 41ºC or higher
③ The outdoor unit's fan runs at 7 speed (UHi)(1) continuously for 30 seconds or longer.
(2) Control is cancelled when the temperature drops to BºC or lower.

Model \ Item		A	B
151~251 type	Compressor speed (rps) less than 88	58.5	53.5
	Compressor speed (rps) 88 to less than 108	53.5	48.5
	Compressor speed (rps) 108 or higher	48.5	43.5
301~601 type		58	53

Note (1) Values in ( ) show for the case of the 301~601 models.

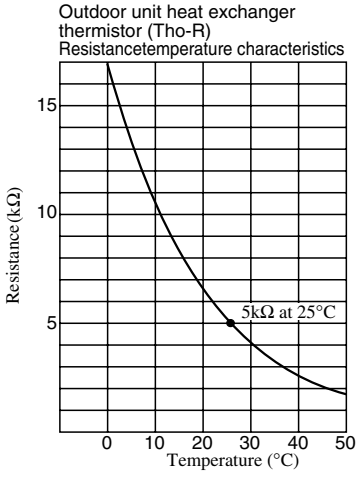
◆ Abnormal Temperature Detection



Note (1) In the case of the 151 ~ 251, the abnormal stop temperature differs depending on the compressor's speed.

Compressor speed (rps)	Indoor heat exchanger temprature (˚C)
less than 88	65 or more
88 to less than 108	60 or more
108 or higher	55 or more

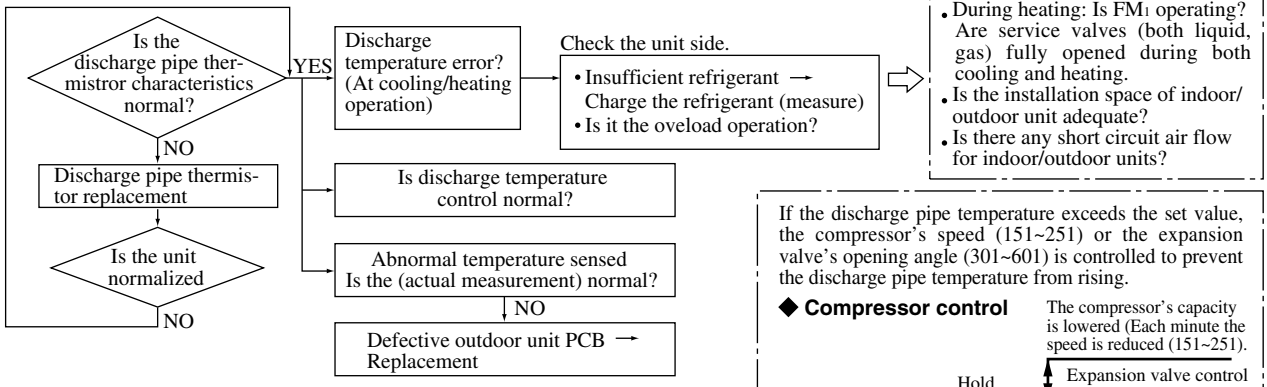
- Display Conditions
  If the outdoor heat exchanger temperature becomes 65ºC 5 times within 60 minutes, including while the compressor is stopped, or if it continues at that temperature for 10 minutes or longer.



6 Error display : E36 [Discharge temperature error]

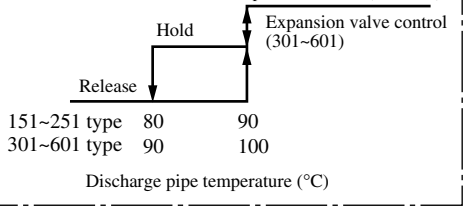
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



If the discharge pipe temperature exceeds the set value, the compressor's speed (151~251) or the expansion valve's opening angle (301~601) is controlled to prevent the discharge pipe temperature from rising.

◆ Compressor control

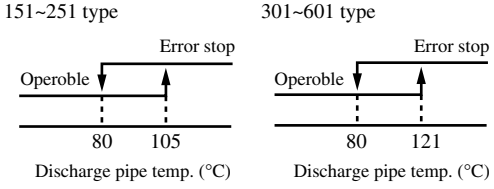


- Display conditions

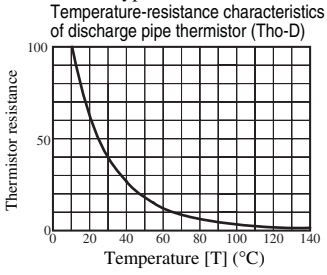
  If the discharge temperature is as shown at left 2 (5) times within 60 minutes, or continuously for 60 minutes, including when the compressor is stopped.

Note (1) Values in ( ) show for the case of the 301~601 models.

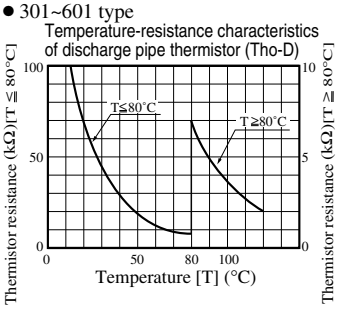
◆ Abnormal Temperature Detection



- 151~251 type



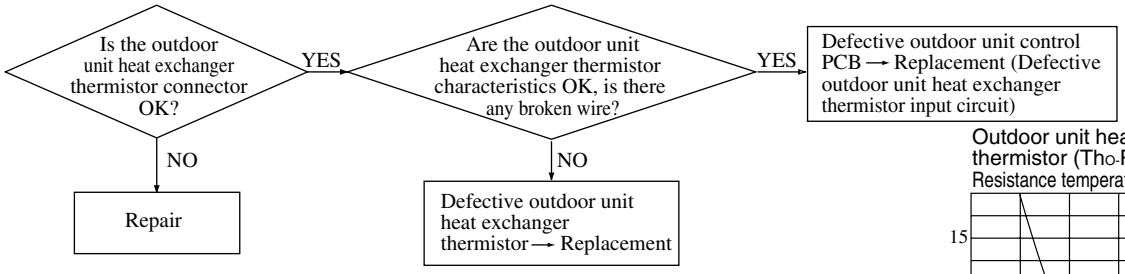
- 301~601 type



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

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.

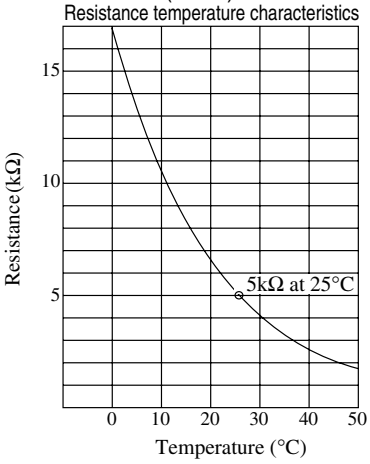


- Display conditions

  If the temperature sensed by the thermistor is –30ºC or lower continuously for 5 seconds between 2 minutes and 2 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected 3 times in 40 (60) minutes.

Note (1) Values in ( ) show for the case of the 301~601 models.

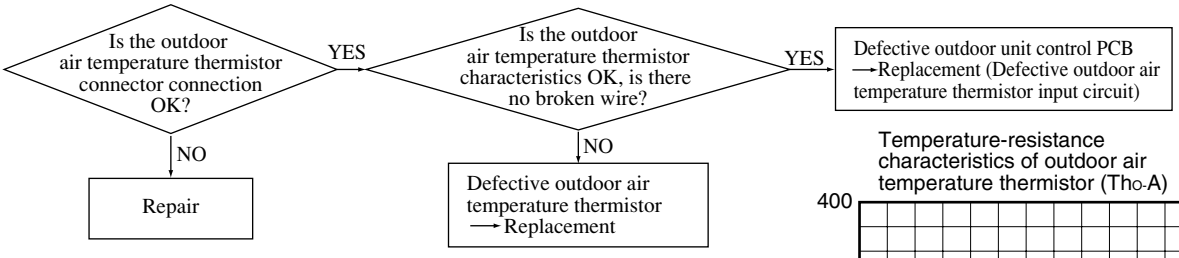
Outdoor unit heat exchanger thermistor (Tho-R)

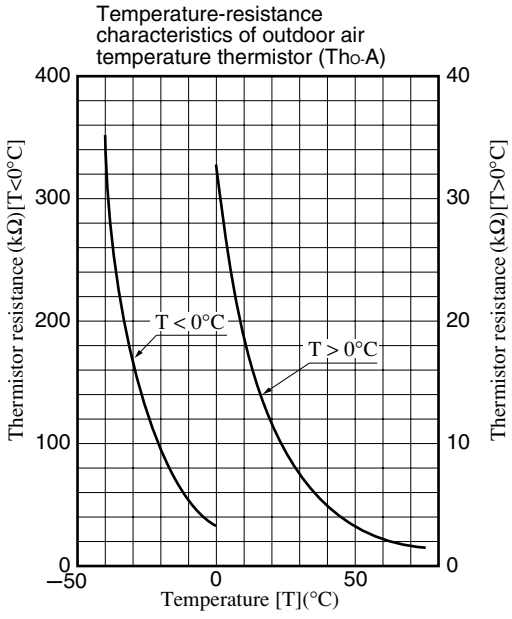


8 Error display : E38 [Defective outdoor air temperature thermistor]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.





- Display conditions

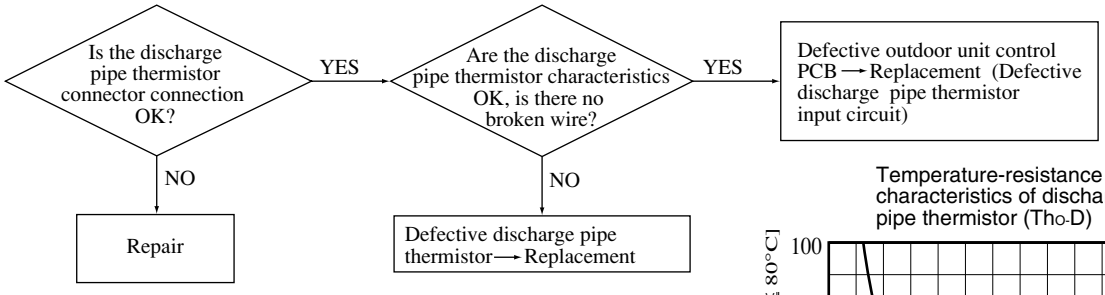
  If the temperature sensed by the thermistor is –30ºC or lower continuously for 5 seconds between 2 minutes and 2 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected 3 times in 40 (60) minutes.

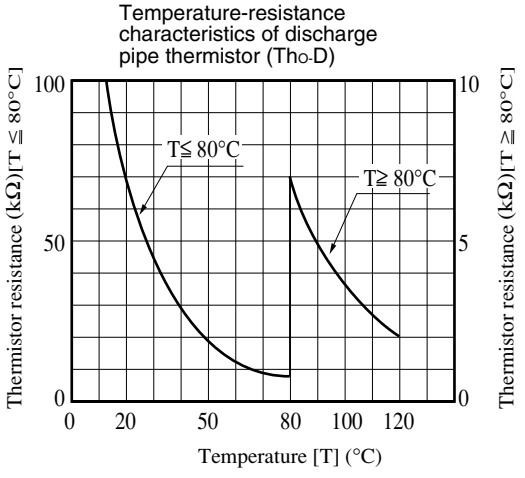
  Note (1) Values in ( ) show for the case of the 301~601 models.

9 Error display : E39 [Defective discharge pipe thermistor]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.





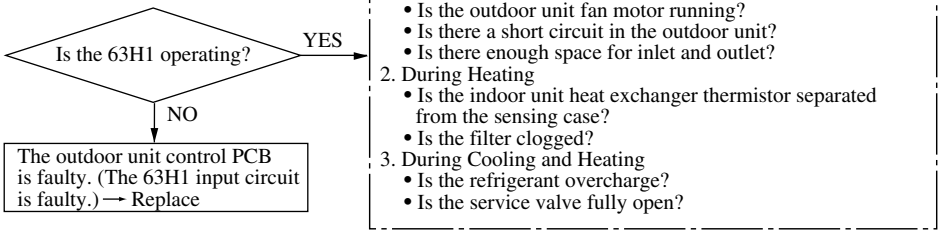
- Display conditions

  If the temperature sensed by the thermistor is –10ºC or lower continuously for 5 seconds between 10 minutes and 10 minutes 20 seconds (2minutes and 2minutes 20seconds) after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected 3 times in 40 (60) minutes.

  Note (1) Values in ( ) show for the case of the 301~601 models.

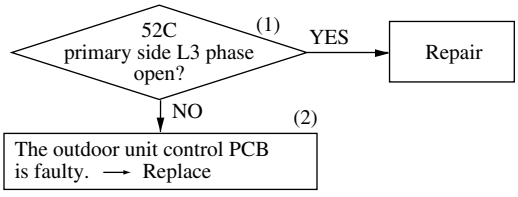
10 Error display : E40 [63H1 operation] (Only case of 301~601 type)

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



[Open phase at L3-phase of 52C primary side]

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

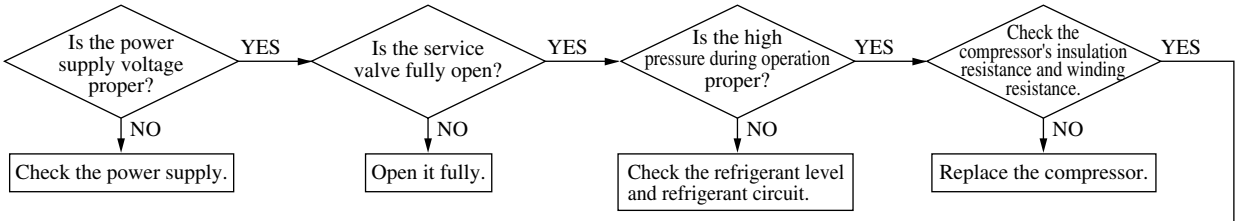


Notes (1) Also check if there is voltage at the L3 phase on the 52C primary side, but no voltage on the secondary side (coil wire disconnection or faulty contacts).
(2) If there is voltage at the L3 phase on the 52C primary side and it is not abnormal, the outdoor unit control PCB is faulty.

---

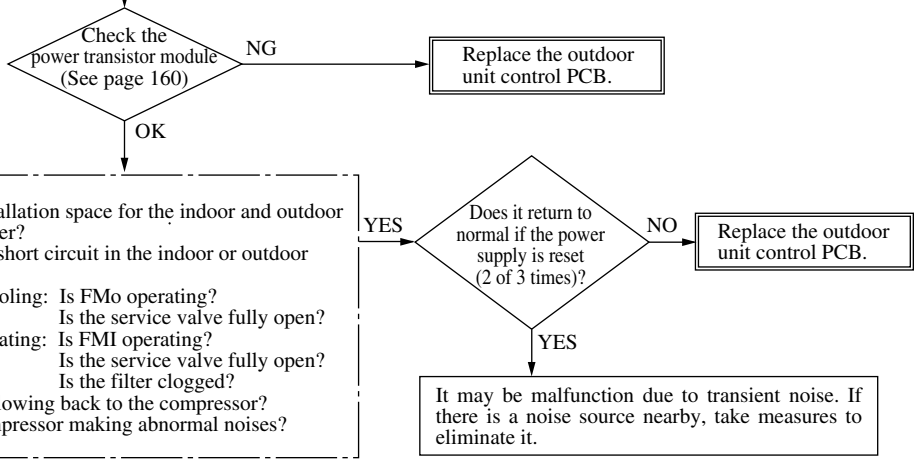
11 Error display : E42 [Current cut] (Only case of 151~251 type)

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



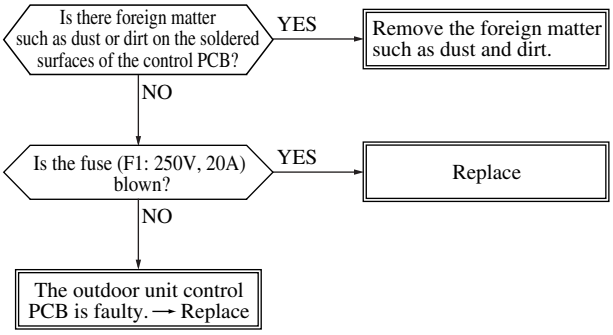
● Display conditions

If the inverter's output current exceeds the set value, the compressor stops. After a 3-minute delay, it restarts, but if this occurs 3 times within 20 minutes.



12 Error display : E47 [Inverter over-voltage trouble] (Only case of 151~251 type)

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

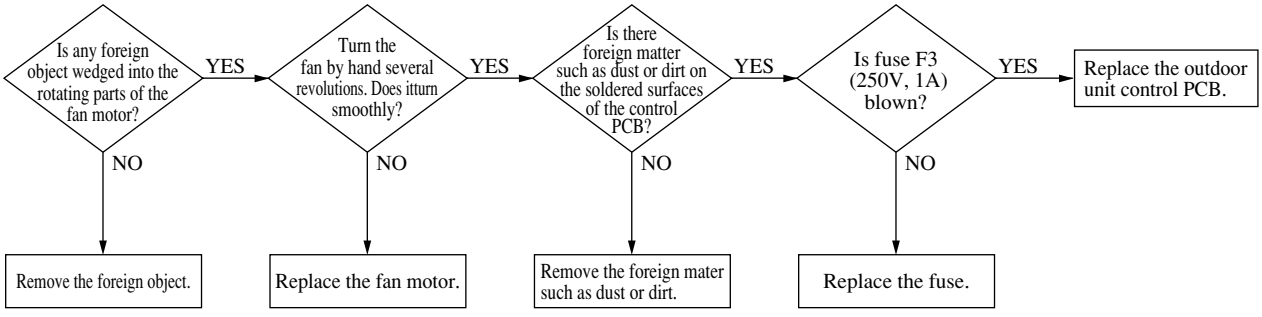


- Display Conditions

  If the inverter voltage exceeds 340V, (3 times in 20 minutes), this error is displayed. After 3 minutes passes, it can be reset using the remote controller.

13 Error display : E48 [DC Fan motor abnormal] (Only case of 151~251 type)

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

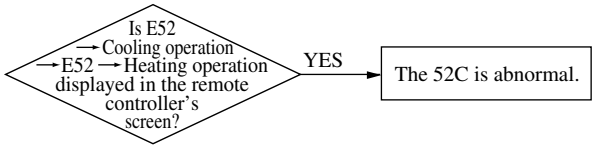


- Display conditions

  When the DC fan motor's output is ON, if the fan motor's speed drops to 75 rpm or lower continuously for 30 seconds or longer, the compressor stops. After a 3-minute delay, the compressor is restarted, but if this state is detected 5 times within 60 minutes.

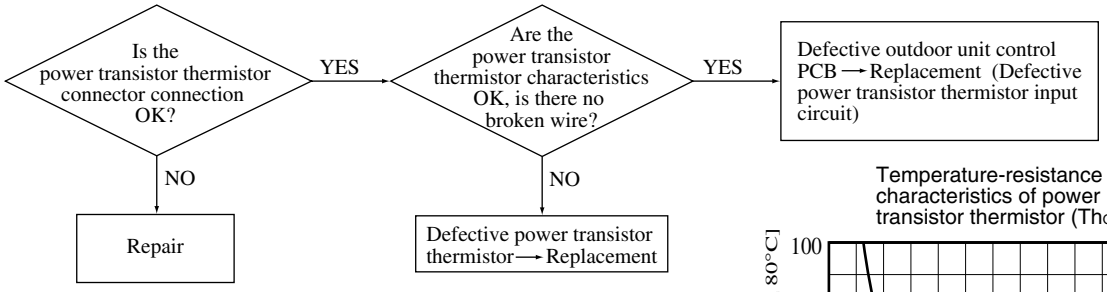
14 Error display : E52 [52C Abnormal] (Only case of 301~601 type)

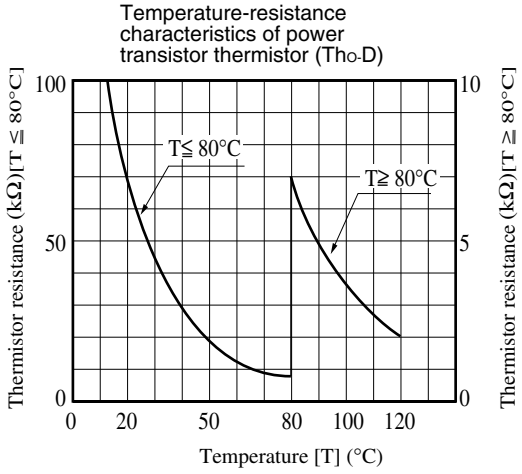
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Lights contiously
Green LED	Keeps flashing	Green LED	Keeps flashing



15 Error display : E56 [Power transistor thermistor faulty.] (Only case of 151~251 type)

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





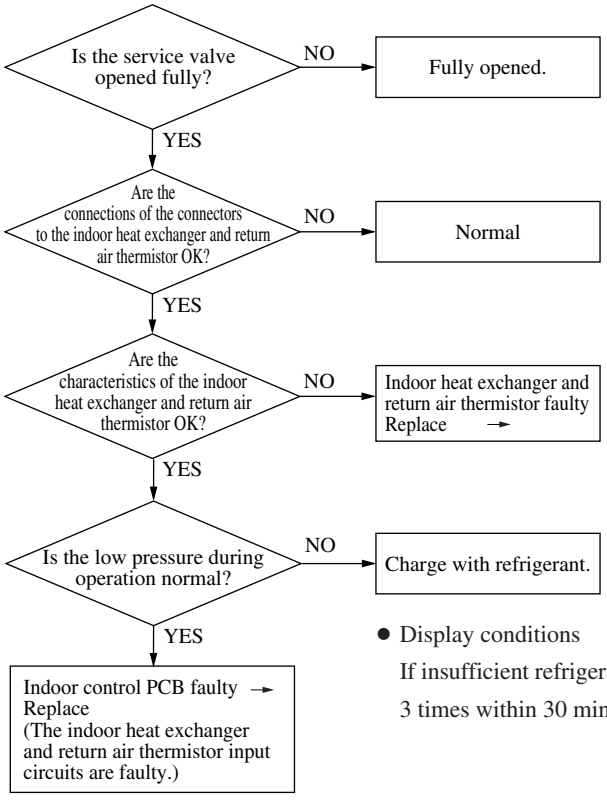
- Display conditions

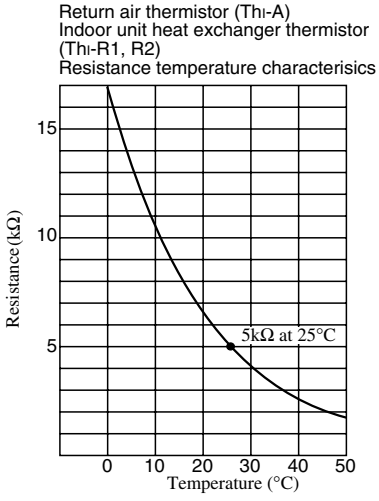
  If the temperature sensed by the thermistor is –10ºC or lower continuously for 5 seconds between 10 minutes and 10 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts. If this state is detected 3 times in 40 minutes.

16 Error display : E57 [Insufficient refrigerant volume.]

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

Note (1) The green LED in the outdoor unit is used in the FDCA301 ~ 601 models only.



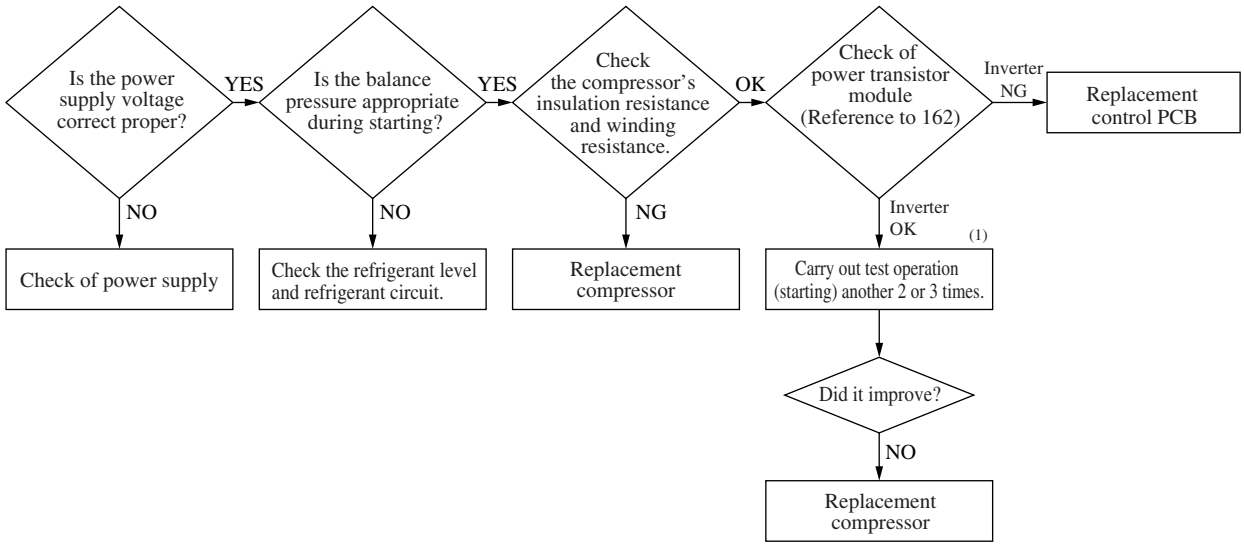


- Display conditions

  If insufficient refrigerant protection (See page 92) is implemented 3 times within 30 minutes.

17 Error display : E59 [Abnormalities in compressor starting] (Only case of 151~251 type)

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time, 2 time, 3 time flash
Green LED	Keeps flashing		



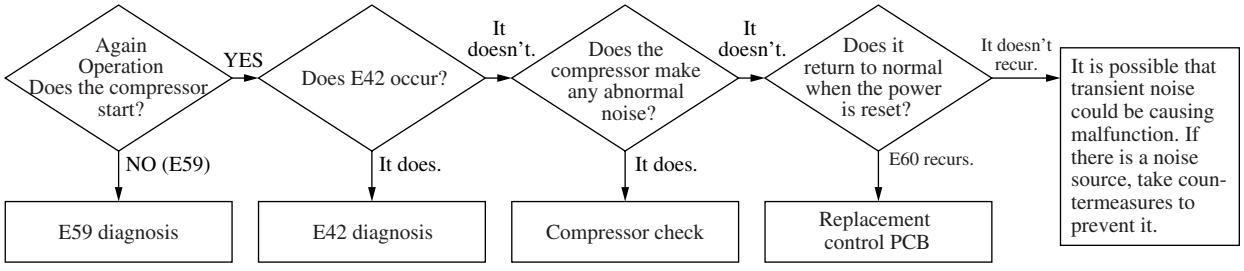
Note (1) If the test operation is repeated 2 or 3 times, the liquid refrigerant inside the compressor may be expelled from the compressor may recover from its starting abnormality.

- Display conditions
  (1) If it won't start 2 times out of 7 attempted starts.
  (2) Remote controller reset is possible after 3 minutes have passed.

18 Error display : E60 [Compressor loader position detection error] (Only case of 151~251 type)

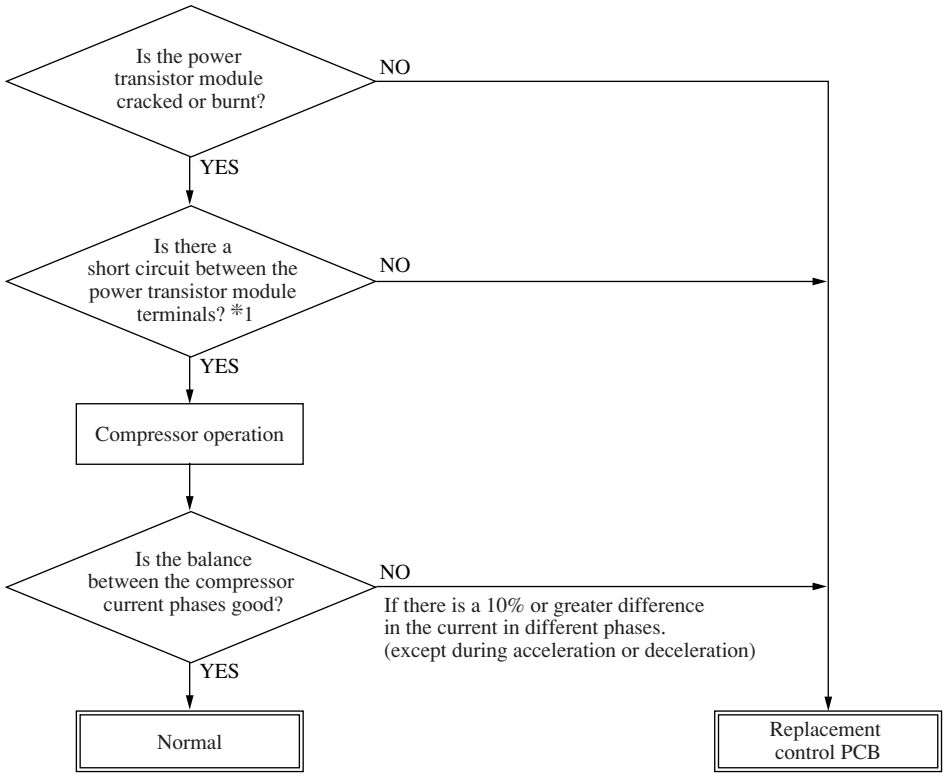
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing		

Note (1) Check if the power supply system is normal.



- Display conditions
  (1) If a rotor position detection operation is conducted, then the rotor position cannot be detected again after that (4 times in 15 minutes), an abnormal state is displayed.
  (2) After 3 minutes passes, it is reset with the remote controller is possible.

Power transistor module (including drive circuit) check method



***1 Power transistor module terminal short circuit check procedure**

Disconnect the compressor wiring, then conduct a short circuit check.

P-U, P-V, P-W

N-U, N-V, N-W

Check between the P-N terminals.

Bring the tester probes in contact with the following places on each terminal.

P: Power transistor P terminal,

N: Power transistor N terminal,

U: End of red harness to compressor

V: End of white harness to compressor

W: End of black harness to compressor

(4) Check abnormal operation data with the remote controller

Operation data are recorded when there is an abnormal state and these data can be displayed in the remote controller by operating the remote controller buttons.

(1) Press the CHECK button.
The display will change from " FUNCTION" → " SET " → "OPERATION DATA ▼"

(2) Press the ▼ button once. The display will change to "ERROR DATA ▲".

(3) Press the SET button to enter the abnormal operation data display mode.

(4) If there are abnormalities from the past, they will be displayed by an error code and unit No.
(Example) "E8" (Lighted up)
"I/U No. 00 ▲" (Flashing)

(5) Using the ▲ or ▼ button, select the indoor unit No. you want to display the error data for.
If only one indoor unit is connected, the indoor unit No. does not change.

(6) Fix the selection using the SET button. (The displayed indoor unit No. will change from flashing to light up continuously.)
(Example) "E8"
"DATA LOADING" (This message flashes while data are being read.)
↓
"E8"
"ERROR DATA "
The data are then displayed beginning with item No. 01.
Displayed items are as shown below.

(7) Display the other data for when the error occurred in order from the currently displayed operation data No. 01 using the ▲ or ▼ button.
* Depending on the model, items for which corresponding data do not exist are not displayed.

(8) To change the indoor unit, press the AIR CON No. button and return to the indoor unit selection display.

(9) Press the ON/OFF button to end the abnormal operation data check.

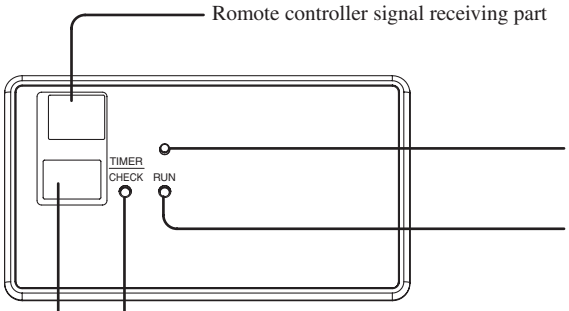
If you press the RESET button during the settings, the display returns to the previous setting screen.

No.	Data item	
01	(Operation mode)	
02	SET TEMP	27°C
03	RETURN AIR	28°C
04	I/U HEAT EXCH1	6°C
05	I/U HEAT EXCH2	5°C
07	I/U FAN	Hi
11	TOTAL I/U RUN	10500H
21	OUTDOOR	35°C
22	O/U HEAT EXCH1	55°C
23	O/U HEAT EXCH2	55°C
24	COMP HERTZ	85.0Hz
26	Lo PRESSURE	0.40MPa
27	DISCHARGE	98°C
28	DOME BOTTOM	56°C
29	CT	26A
31	O/U FAN	Hi
32	SILENT MODE	ON/OFF
34	63H1 ON/OFF	
35	DEFROST ON/ OFF	
36	TOTAL COMP RUN	8500H
37	EEV1	480PULS

1.6.4 Check display on wireless specification models (FDEN · FDKN)

(1) Indication board

(a) FDEN Series



Romote controller signal receiving part

Backup switch

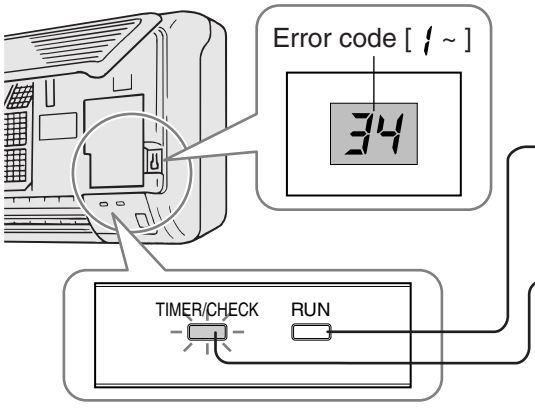
Operation display light (Green)
- Lights continuously: Under air conditioner operaton
- Keeps flashing: Under heating preparation (At the time of heating operation)
- 3 time flash: Under reception of a remote controller signal

Timer/Check display light (Yellow)
- Lights continuously: Under timer operation
- 0.5 seconds lighting, 0.5 seconds stays OFF : At the time of abnormalities
- 2 seconds lighting, 1 second stays OFF : Filter sign

Check monitor
(Error code display E1~E60)

(b) FDKN Series

This figure shows the display on the 301 model. The shape of the display differs slightly on other models, but the functions are the same.



Operation display light (Green)
The following two kinds are displayed.
- Lights continuously: Under air conditioner operation
- Keeps flashing: Under heating preparation

Flashes 3 times when a signal is received from the remote controller.

Timer/Check display (Yellow)
The following three kinds are displayed.
- Lights continuously:Under timer operation
- Long lighting (2 seconds lighting, 1 second stays OFF): Filter sign
  (Clean the air filter when this display is output.)
- Short lighting (0.5 seconds lighting, 0.5 seconds stays OFF): At the time of the abnormalites air conditioner

1.7 WIRELESS KIT (OPTION FOR FDT MODEL ONLY)

The FDT series is an exclusive series with all wired models. However, these models can also be used as wireless units by using the optional wireless kit.

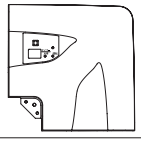
Model

Model
FDT series all model

(1) Wireless kit model

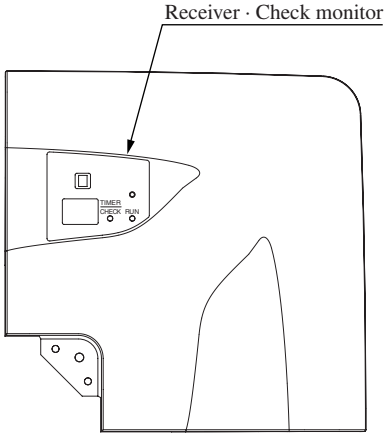
Model	Paint color
RCN-T-W-E	Pearl white

(2) Accessories

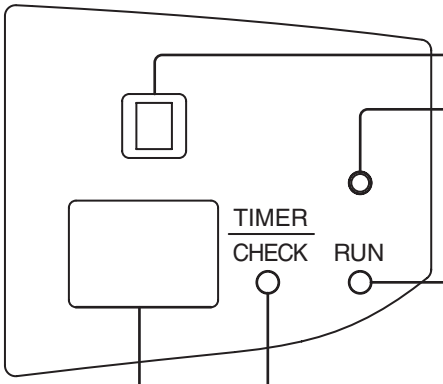
Name		Quantity	Name		Quantity
Receiver		1	AAA dry cell battery		2
Wireless remote controller		1	Wood screw for holder		2
Remote controller holder		1	Installation manual		1

(3) Receiving outside view and function

• Corner panel



• Receiver part details



Remote controller signal receiving part

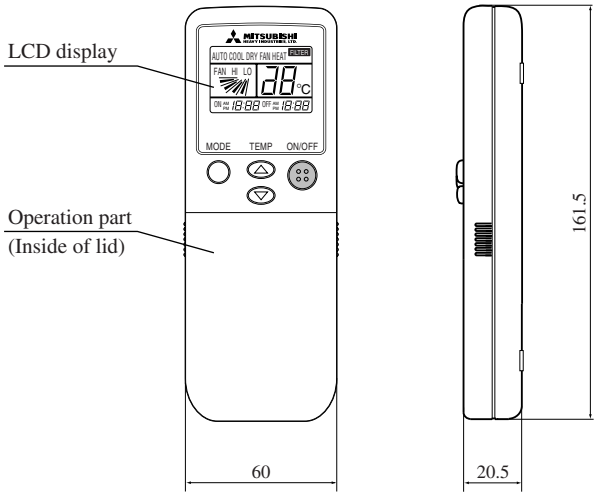
Backup switch

Operation display light (Green)
- Lights continuously: Under air conditioner operation
- Keeps flashing: Under heating preparation (At the time of heating operation)
- 3 time flash: Under reception of a remote controller signal

Timer/Check display light (Yellow)
- Lights continuously: Under timer operation
- 0.5 seconds lighting, 0.5 seconds stays OFF: At the time of abnormalities
- 2 seconds lighting, 1 second stays OFF: Filter sign

Check monitor
(Error code display E1~E60)

(4) Wireless remote controller



unit: mm

(5) Attachment of wireless kit

(a) Installation of the receiver

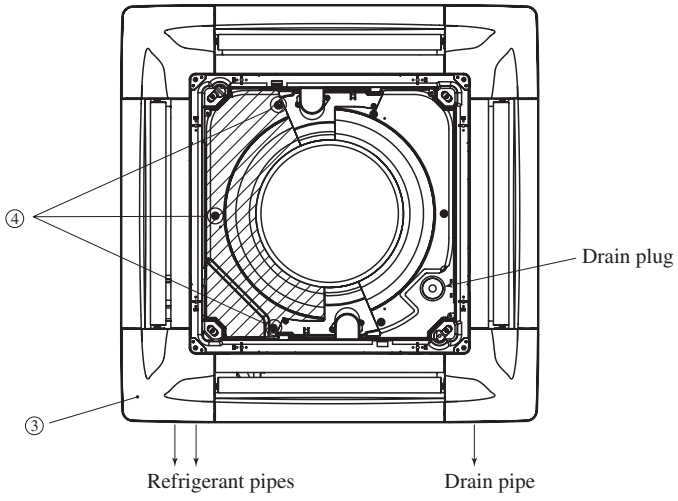
1) Preparation before installation

① Attach the cover panel supplied as an accessory onto the indoor unit according to the panel installation manual. (Refer to 100 pages)

② Remove the air inlet grille. (Refer to 101 pages)

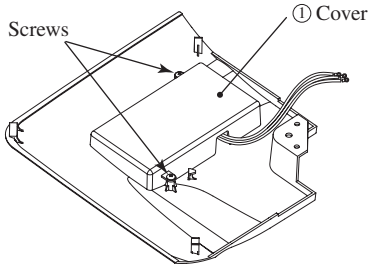
③ Remove a corner panel located on the refrigerant pipe side. (Refer to 99 pages)

④ Remove three screws and detach the cover (indicated as a shadowed area) from the indoor unit control box.



2) Local setup

① Remove the cover by unscrewing two screws from the back of the receiver.



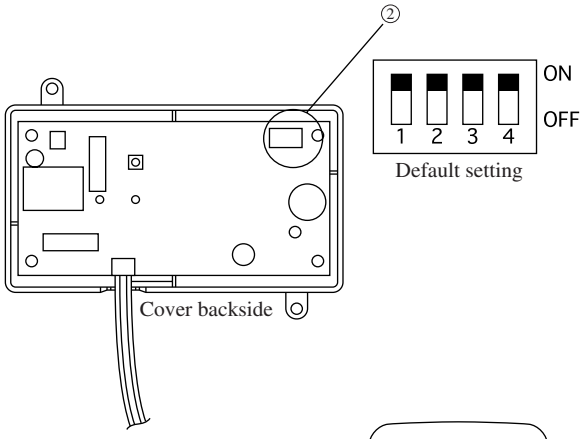
Wireless kit backside

② Turn switches provided on the back of the PCB.

Switches (SW1-4) provided on the receiver PCB are for setting the following.

All switched are set to the ON position for shipment.

SW1	Prevention of unintended movement caused by interference.	ON: Normal OFF: Remote
SW2	Receiver master/slave setting	ON: Master OFF: Slave
SW3	Buzzer valid/invalid	ON: Valid OFF: Invalid
SW4	Cooling only/heat pump switching	ON: Heat pump OFF: Cooling only

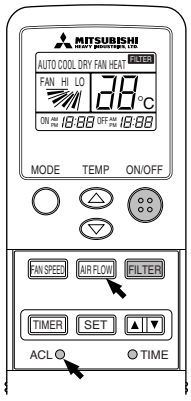


③ When SW1 is turned to the OFF position, change the corresponding remote controller setting as follows.

Wireless remote controller setting change

Change the interference prevention setting to “Enabled” by pressing the ACL button or inserting batteries, while the AIR FLOW button is depressed.

(* When batteries are removed, the setting will be reset to the default setting. When batteries are removed, please follow the above procedure again.)



3) Attachment of wireless kit

① By loosening the panel hanger bolt, create a gap between the panel and the indoor unit.

② Lay the wireless kit wiring through the opening.

③ Place the wiring together with other wiring laid on site into the indoor unit.

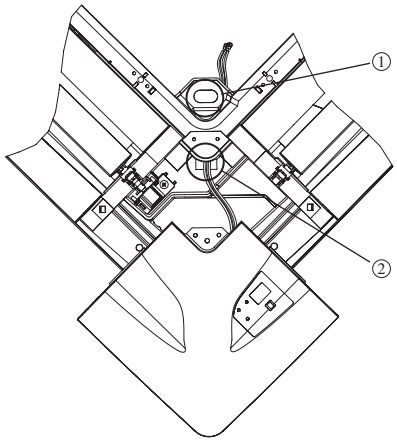
④ Connect the wiring to the terminal block provided in the control box as follows.

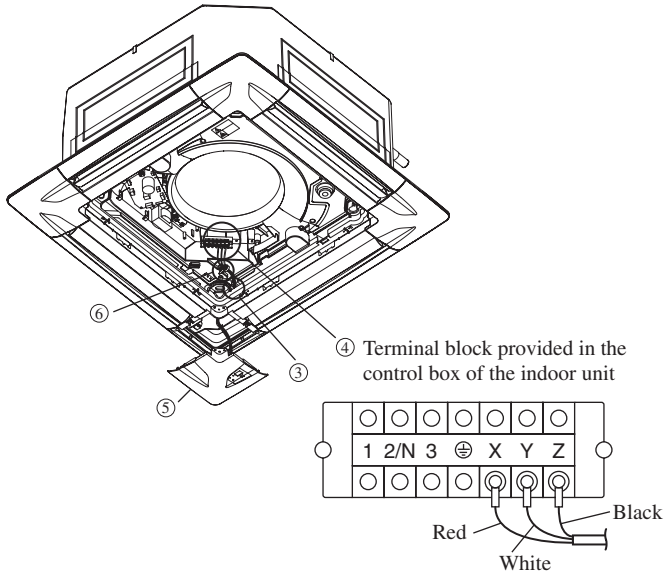
X-Red, Y-White, Z-Black.

⑤ Attach the wireless kit to the panel according to the panel installation manual. (Refer to 101 pages)

⑥ Bundle redundant wiring together with other wiring laid on site.

Note (1) Ensure that wirings are not caught between the receiver and the panel in attaching the receiver.

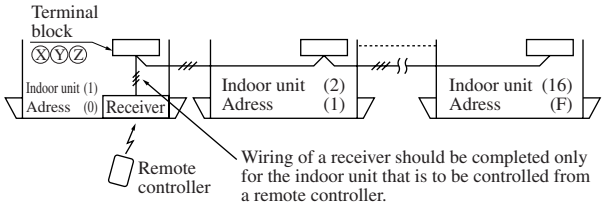




(6) Control of a plural number of indoor units with one remote controller

(a) Up to 16 indoor units can be connected.

① Connect indoor unit's Ⓧ, Ⓨ and Ⓩ terminals with 3-core connecting wires (remote controller signal wires). For a connecting wire, please refer to the "Restrictions on the thickness and length of a connecting wire".



② The receiver wiring must be connected only for the indoor unit that will be operated by the remote controller directly.

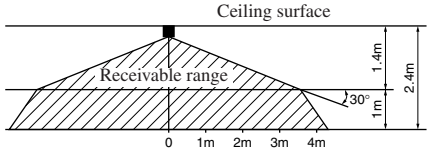
③ Set the address of remote controller communication to [0] through [F] avoiding overlap with the rotaly switch SW2 provided on the indoor unit's PCB.

(b) Wireless remote controller operation distance

① Standard signal receiving range

[Condition] Illuminance at the receiver area: 300 lux.

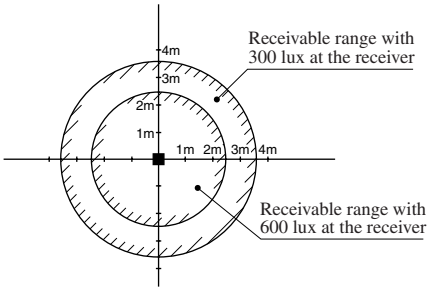
(When no lighting fixture is located within 1m of PAC in an ordinary office)



② Relation between illuminance at the receiver and the receivable range viewed from above

[Condition] Relation between illuminance at the receiver and the receivable range when a remote controller is operated 1m above the floor under the ceilling that is 2.4m above the floor.

When illuminance doubles, the receivable range drops to two thirds.



③ Points for attention in connecting a plural number of indoor units

[Condition] Illuminance at the receiver area: 300 lux.

(When no lighting fixture is located within 1m of PAC in an ordinary office)

[When more than one unit are installed close each other]

Distance between units that can prevent them from making the same movement is 5m.

(7) Check display list

Display	LED		Display method
	RUN	TIMER/CHECK	
Reception	Green	—	3 time flash (ON-0.25 seconds, OFF-0.25 seconds)
Hot keep	Green	—	Keeps flashing (ON-0.5 seconds, OFF-0.5 seconds)
Operation	Green	—	Lights continuously
Stop	Green	—	Stays OFF
Center mode	—	Yellow	3 time flash (ON-0.25 seconds, OFF-0.25 seconds)
Check	—	Yellow	Keeps flashing (ON-0.5 seconds, OFF-0.5 seconds)
Filter sign	—	Yellow	Keeps flashing (ON-2 seconds, OFF-1 seconds)
Timer	—	Yellow	Lights continuously